

Optocoupler Product Portfolio

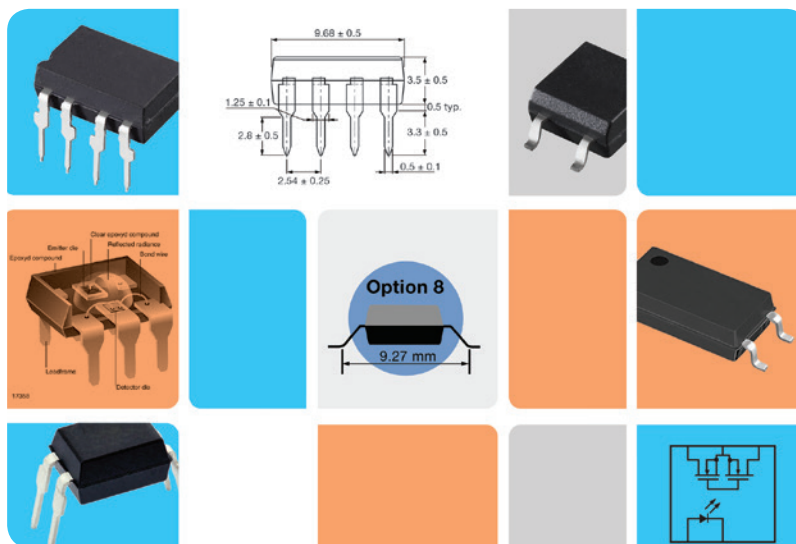


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OPTOCOUPERS

Complete Product Portfolio

Introduction

In an electrical circuit, an optocoupler ensures total electric isolation, including potential isolation, as in the case of a transformer. In practice, this means that the control circuit is located on one side of the optocoupler, i.e., the emitter side, while the load circuit is located on the other side, i.e., the detector side. Both circuits are electrically isolated by the optocoupler.

Signals from the control circuit are transmitted optically to the load circuit. In most cases, this optical transmission is realized with light beams whose wavelengths span the red to infrared range, depending on the requirements applicable to the optocoupler. The bandwidth of the signal to be transmitted ranges from a dc voltage signal to frequencies in the MHz band. An optocoupler is comparable to a transformer or relay. Besides having smaller dimensions in most cases, the advantages of optocouplers are shorter switching times, no contact bounce, no interference caused by arcs, and no wear to the circuitry.*

Optocouplers are suitable for circuits used in microelectronics, data processing, and telecommunication systems. Optocouplers are used to an increasing extent as safety tested components, e.g., in switch mode power supplies.

* Note: See Applications Notes for additional information.

Design

An optocoupler has to fulfill five essential requirements:

- Good isolation
- High current transfer ratio (CTR)
- Low degradation
- Low coupling capacitance
- No interference by field strength influences

These factors are essentially dependent on the design, the materials used, and the corresponding chips used for the emitter/detector.

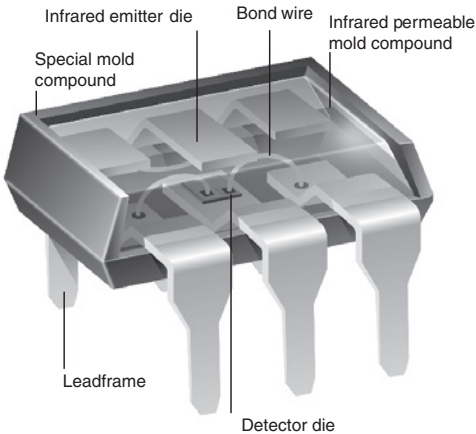
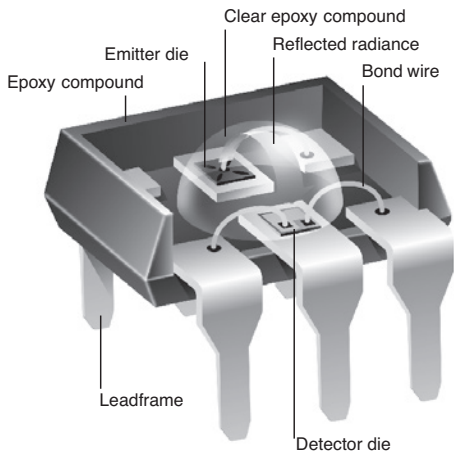


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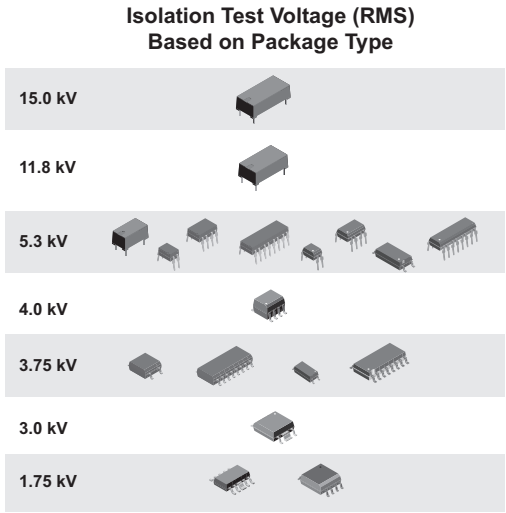
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Construction

Vishay’s over-under construction optimizes optical transfer efficiency and the need for effective insulation and isolation. The direct optical path from LED and detector optimizes the photon flux on the detector, while providing the highest possible Distance through insulation (DTI). Because of their high DTI most Vishay couplers are rated as “reinforced insulation” by meeting a DTI > 0.4 mm. For those devices that come in packages too small to meet the DTI > 0.4mm, reinforced isolation is achieved through testing.

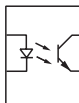

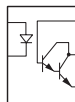
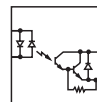
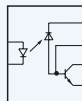
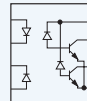
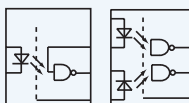
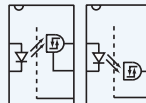
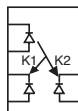
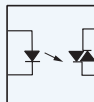
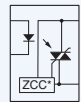
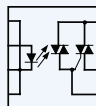
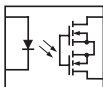

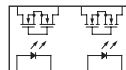
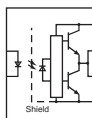
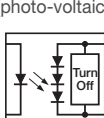
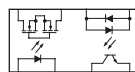


Packages and Functions













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Optocoupler		Structure		
Phototransistor		DC-Input 	AC-Input 	
Photo-Darlington		DC-Input 	AC-Input 	
High-Speed	Analog	Photodiode-transistor 	Dual Channel 	
	Digital	OC-Output 	Totem Pole Output 	
Linear	Photodiode			
Phototriac	Phototriac	Non Zero-crossing 	Zero-crossing  *Zero crossing circuit	
	Power Phototriac			
SSR (photo-MOSFET)		Form A (normally open) 	Form B (normally close) 	Form A/B, C 
IGBT / MOSFET Driver		IGBT 	MOSFET Driver (photo-voltaic) 	Telecom Switch 

Optocouplers / Isolators - Phototransistor Output

Phototransistor		SSOP-4	SOP-4	SOIC-8	DIP-4	LSOP-4	DIP-6	DIP-8 (2-ch)	DIP-16 (4-ch)	HV-DIP
										
V_{ISO}		3750 V _{RMS}		4000 V _{RMS}	5300 V _{RMS}					8200 V _{RMS}
DC input	1 mA	VOS618A	VOM618A	VO20xx, VOD20x (2), VOD21x (2)	VO618A	VOL618A	-	-		-
	5 mA	VOS617A	VOM617A		VO617A	VOL617A, TCLT1100	CNY17, CNY17F	ILD621	ILQ621	-
	10 mA	VOS615A	-		VO615A, VO610A	TCLT1100 (5-pin)		ILD615	ILQ1/2/5, ILQ615	CNY64(A), CNY65(A), CNY66(A), CNY65Exi

Features

- Isolation test voltage up to 7900 V_{RMS}
- Extensive CTR (current transfer ratio) ranges from 40 % to 600 %
- Low input drive current down to 1 mA
- Certified to UL, CSA, VDE, Fimko, and CQC safety standards
- RoHS-compliant, lead (Pb)-free, and eco-friendly "green" compound

Applications

- Switch mode power supply (SMPS)
- Home appliances
- Telecommunication
- Industrial control and automation

Resources

- Phototransistor Output
www.vishay.com/optocouplers/opt-tran-output/

Phototransistor

Base Part Number	Package	Forward Current I _F	Part Number	CTR min (%)	CTR max (%)	V _{CEO} (V)	Forward Current I _F max. (mA)	Operating Temperature max. (°C)	Isolation Voltage V _{ISO} (V _{RMS})	Ch(s)	Creepage distance (mm)	Safety Standard(s)
VO610A	DIP-4	10 mA	VO610A-1	40	80	70	60	-55 to +110	5000	1	≥7	BSI, VDE, FIMKO, UL, cUL, CQC
	DIP-4	10 mA	VO610A-2	63	125	70	60	-55 to +110	5000	1	≥7	BSI, VDE, FIMKO, UL, cUL, CQC
	DIP-4	10 mA	VO610A-3	100	200	70	60	-55 to +110	5000	1	≥7	BSI, VDE, FIMKO, UL, cUL, CQC
	DIP-4	10 mA	VO610A-4	160	320	70	60	-55 to +110	5000	1	≥7	BSI, VDE, FIMKO, UL, cUL, CQC

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Phototransistor cont'd

Base Part Number	Package	Forward Current I _F	Part Number	CTR min (%)	CTR max (%)	V _{CEO} (V)	Forward Current I _F max. (mA)	Operating Temperature max. (°C)	Isolation Voltage V _{ISO} (V _{RMS})	Ch(s)	Creepage distance (mm)	Safety Standard(s)
VO615A	DIP-4	5 mA	VO615A	50	600	70	60	-55 to +110	5000	1	≥7; ≥8	BSI, VDE, FIMKO, UL, cUL, CQC
	DIP-4	10 mA	VO615A-1	40	80	70	60	-55 to +110	5000	1	≥7; ≥8	BSI, VDE, FIMKO, UL, cUL, CQC
	DIP-4	10 mA	VO615A-2	63	125	70	60	-55 to +110	5000	1	≥7; ≥8	BSI, VDE, FIMKO, UL, cUL, CQC
	DIP-4	10 mA	VO615A-3	100	200	70	60	-55 to +110	5000	1	≥7; ≥8	BSI, VDE, FIMKO, UL, cUL, CQC
	DIP-4	10 mA	VO615A-4	160	320	70	60	-55 to +110	5000	1	≥7; ≥8	BSI, VDE, FIMKO, UL, cUL, CQC
	DIP-4	5 mA	VO615A-5	50	150	70	60	-55 to +110	5000	1	≥7; ≥8	BSI, VDE, FIMKO, UL, cUL, CQC
	DIP-4	5 mA	VO615A-6	100	300	70	60	-55 to +110	5000	1	≥7; ≥8	BSI, VDE, FIMKO, UL, cUL, CQC
	DIP-4	5 mA	VO615A-7	80	160	70	60	-55 to +110	5000	1	≥7; ≥8	BSI, VDE, FIMKO, UL, cUL, CQC
	DIP-4	5 mA	VO615A-8	130	260	70	60	-55 to +110	5000	1	≥7; ≥8	BSI, VDE, FIMKO, UL, cUL, CQC
	DIP-4	5 mA	VO615A-9	200	400	70	60	-55 to +110	5000	1	≥7; ≥8	BSI, VDE, FIMKO, UL, cUL, CQC
TCET1200	DIP-4	5 mA	TCET1200	50	600	70	60	-40 to +100	5000	1	≥7	BSI, VDE, FIMKO, UL, cUL
	DIP-4	10 mA	TCET1201	40	80	70	60	-40 to +100	5000	1	≥7	BSI, VDE, FIMKO, UL, cUL
	DIP-4	10 mA	TCET1202	63	125	70	60	-40 to +100	5000	1	≥7	BSI, VDE, FIMKO, UL, cUL
	DIP-4	10 mA	TCET1203	100	200	70	60	-40 to +100	5000	1	≥7	BSI, VDE, FIMKO, UL, cUL
	DIP-4	10 mA	TCET1204	160	320	70	60	-40 to +100	5000	1	≥7	BSI, VDE, FIMKO, UL, cUL
VO617A	DIP-4	5 mA	VO617A	40	600	80	60	-55 to +110	5300	1	≥7; ≥8	UL, cUL, VDE, BSI, FIMKO, CQC
	DIP-4	5 mA	VO617A-1	40	80	80	60	-55 to +110	5300	1	≥7; ≥8	UL, cUL, VDE, BSI, FIMKO, CQC
	DIP-4	5 mA	VO617A-2	63	125	80	60	-55 to +110	5300	1	≥7; ≥8	UL, cUL, VDE, BSI, FIMKO, CQC
	DIP-4	5 mA	VO617A-3	100	200	80	60	-55 to +110	5300	1	≥7; ≥8	UL, cUL, VDE, BSI, FIMKO, CQC
	DIP-4	5 mA	VO617A-4	160	320	80	60	-55 to +110	5300	1	≥7; ≥8	UL, cUL, VDE, BSI, FIMKO, CQC
	DIP-4	5 mA	VO617A-7	80	160	80	60	-55 to +110	5300	1	≥7; ≥8	UL, cUL, VDE, BSI, FIMKO, CQC
	DIP-4	5 mA	VO617A-8	130	260	80	60	-55 to +110	5300	1	≥7; ≥8	UL, cUL, VDE, BSI, FIMKO, CQC
VO618A	DIP-4	1 mA	VO618A	50	600	80	60	-55 to +110	5300	1	≥7; ≥8	UL, cUL, VDE, BSI, FIMKO, CQC
	DIP-4	1 mA	VO618A-2	63	125	80	60	-55 to +110	5300	1	≥7; ≥8	UL, cUL, VDE, BSI, FIMKO, CQC
	DIP-4	1 mA	VO618A-3	100	200	80	60	-55 to +110	5300	1	≥7; ≥8	UL, cUL, VDE, BSI, FIMKO, CQC
	DIP-4	1 mA	VO618A-4	160	320	80	60	-55 to +110	5300	1	≥7; ≥8	UL, cUL, VDE, BSI, FIMKO, CQC

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Phototransistor cont'd

Base Part Number	Package	Forward Current I _F	Part Number	CTR min (%)	CTR max (%)	V _{CEO} (V)	Forward Current I _F max. (mA)	Operating Temperature max. (°C)	Isolation Voltage V _{ISO} (V _{RMS})	Ch(s)	Creepage distance (mm)	Safety Standard(s)
SFH1617A	DIP-4	10 mA	SFH1617A-1	40	80	70	60	-55 to +150	5300	1	≥7; ≥8	UL, BSI, cUL, VDE
	DIP-4	10 mA	SFH1617A-2	63	125	70	60	-55 to +150	5300	1	≥7; ≥8	UL, BSI, cUL, VDE
	DIP-4	10 mA	SFH1617A-3	100	200	70	60	-55 to +150	5300	1	≥7; ≥8	UL, BSI, cUL, VDE
	DIP-4	10 mA	SFH1617A-4	160	320	70	60	-55 to +150	5300	1	≥7; ≥8	UL, BSI, cUL, VDE
SFH610A	DIP-4	10 mA	SFH610A-1	40	80	70	60	-55 to +100	5300	1	≥7	UL, BSI, cUL, VDE
	DIP-4	10 mA	SFH610A-2	63	125	70	60	-55 to +100	5300	1	≥7	UL, BSI, cUL, VDE
	DIP-4	10 mA	SFH610A-3	100	200	70	60	-55 to +100	5300	1	≥7	UL, BSI, cUL, VDE
	DIP-4	10 mA	SFH610A-4	160	320	70	60	-55 to +100	5300	1	≥7	UL, BSI, cUL, VDE
	DIP-4	10 mA	SFH610A-5	250	500	70	60	-55 to +100	5300	1	≥7	UL, BSI, cUL, VDE
SFH615A	DIP-4	10 mA	SFH615A-1	40	80	70	60	-55 to +100	5300	1	≥7; ≥8	UL, cUL, BSI, FIMKO, VDE
	DIP-4	10 mA	SFH615A-2	63	125	70	60	-55 to +100	5300	1	≥7; ≥8	UL, VDE
	DIP-4	10 mA	SFH615A-3	100	200	70	60	-55 to +100	5300	1	≥7; ≥8	UL, VDE
	DIP-4	10 mA	SFH615A-4	160	320	70	60	-55 to +100	5300	1	≥7; ≥8	UL, VDE
SFH615	DIP-4	10 mA	SFH615AA	50	600	70	60	-55 to +100	5300	1	≥7; ≥8	UL, BSI, VDE
	DIP-4	10 mA	SFH615AB	80	260	70	60	-55 to +100	5300	1	≥7; ≥8	UL, BSI, VDE
	DIP-4	10 mA	SFH615ABL	200	600	70	60	-55 to +100	5300	1	≥7; ≥8	UL, BSI, VDE
	DIP-4	10 mA	SFH615ABM	200	400	70	60	-55 to +100	5300	1	≥7; ≥8	UL, BSI, VDE
	DIP-4	10 mA	SFH615AGB	100	600	70	60	-55 to +100	5300	1	≥7; ≥8	UL, BSI, VDE
	DIP-4	10 mA	SFH615AGR	100	300	70	60	-55 to +100	5300	1	≥7; ≥8	UL, BSI, VDE
	DIP-4	10 mA	SFH615AY	50	150	70	60	-55 to +100	5300	1	≥7; ≥8	UL, BSI, VDE
SFH617A	DIP-4	10 mA	SFH617A-1	40	80	70	60	-55 to +110	5300	1	≥7	UL, BSI, cUL, VDE, FIMKO
	DIP-4	10 mA	SFH617A-2	63	125	70	60	-55 to +110	5300	1	≥7	UL, BSI, cUL, VDE, FIMKO
	DIP-4	10 mA	SFH617A-3	100	200	70	60	-55 to +110	5300	1	≥7	UL, BSI, cUL, VDE, FIMKO
	DIP-4	10 mA	SFH617A-4	160	320	70	60	-55 to +110	5300	1	≥7	UL, BSI, cUL, VDE, FIMKO
SFH618A	DIP-4	1 mA	SFH618A-2	63	125	55	60	-55 to +100	5300	1	≥7; ≥8	UL, BSI, cUL, VDE, FIMKO
	DIP-4	1 mA	SFH618A-3	100	200	55	60	-55 to +100	5300	1	≥7; ≥8	UL, BSI, cUL, VDE, FIMKO
	DIP-4	1 mA	SFH618A-4	160	320	55	60	-55 to +100	5300	1	≥7; ≥8	UL, BSI, cUL, VDE, FIMKO
	DIP-4	1 mA	SFH618A-5	250	500	55	60	-55 to +100	5300	1	≥7; ≥8	UL, BSI, cUL, VDE, FIMKO
TCED1100	DIP-4	1 mA	TCED1100	600		35	60	-55 to +100	5300	1	≥7; ≥8	UL, BSI, cUL, FIMKO
TCED1100G	DIP-4	1 mA	TCED1100G	600		35	60	-55 to +100	5300	1	≥7; ≥8	UL, BSI, cUL, FIMKO
TCET1100	DIP-4	5 mA	TCET1100	50	600	70	60	-55 to +100	5000	1	≥7; ≥8	UL, BSI, VDE, FIMKO
TCET1101	DIP-4	10 mA	TCET1101	40	80	70	60	-55 to +100	5000	1	≥7; ≥8	UL, BSI, VDE, FIMKO
TCET1102	DIP-4	10 mA	TCET1102	63	125	70	60	-55 to +100	5000	1	≥7; ≥8	UL, BSI, VDE, FIMKO
TCET1103	DIP-4	10 mA	TCET1103	100	200	70	60	-55 to +100	5000	1	≥7; ≥8	UL, BSI, VDE, FIMKO
TCET1104	DIP-4	10 mA	TCET1104	160	320	70	60	-55 to +100	5000	1	≥7; ≥8	UL, BSI, VDE, FIMKO
TCET1105	DIP-4	10 mA	TCET1105	50	150	70	60	-55 to +100	5000	1	≥7; ≥8	UL, BSI, VDE, FIMKO
TCET1106	DIP-4	5 mA	TCET1106	100	300	70	60	-55 to +100	5000	1	≥7; ≥8	UL, BSI, VDE, FIMKO
TCET1107	DIP-4	5 mA	TCET1107	80	160	70	60	-55 to +100	5000	1	≥7; ≥8	UL, BSI, VDE, FIMKO
TCET1108	DIP-4	5 mA	TCET1108	130	260	70	60	-55 to +100	5000	1	≥7; ≥8	UL, BSI, VDE, FIMKO

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Phototransistor cont'd

Base Part Number	Package	Forward Current I_F	Part Number	CTR min (%)	CTR max (%)	V_{CE0} (V)	Forward Current I_F max. (mA)	Operating Temperature max. (°C)	Isolation Voltage V_{ISO} (V_{RMS})	Ch(s)	Creepage distance (mm)	Safety Standard(s)
TCET1109	DIP-4	5 mA	TCET1109	200	400	70	60	-55 to +100	5000	1	≥7; ≥8	UL, BSI, VDE, FIMKO
TCET1100G	DIP-4	5 mA	TCET1100G	50	600	70	60	-55 to +100	5000	1	≥7; ≥8	UL, BSI, VDE, FIMKO
TCET1101G	DIP-4	10 mA	TCET1101G	40	80	70	60	-55 to +100	5000	1	≥7; ≥8	UL, BSI, VDE, FIMKO
TCET1102G	DIP-4	10 mA	TCET1102G	63	125	70	60	-55 to +100	5000	1	≥7; ≥8	UL, BSI, VDE, FIMKO
TCET1103G	DIP-4	10 mA	TCET1103G	100	200	70	60	-55 to +100	5000	1	≥7; ≥8	UL, BSI, VDE, FIMKO
TCET1104G	DIP-4	10 mA	TCET1104G	160	320	70	60	-55 to +100	5000	1	≥7; ≥8	UL, BSI, VDE, FIMKO
TCET1105G	DIP-4	10 mA	TCET1105G	50	150	70	60	-55 to +100	5000	1	≥7; ≥8	UL, BSI, VDE, FIMKO
TCET1106G	DIP-4	5 mA	TCET1106G	100	300	70	60	-55 to +100	5000	1	≥7; ≥8	UL, BSI, VDE, FIMKO
TCET1107G	DIP-4	5 mA	TCET1107G	80	160	70	60	-55 to +100	5000	1	≥7; ≥8	UL, BSI, VDE, FIMKO
TCET1108G	DIP-4	5 mA	TCET1108G	130	260	70	60	-55 to +100	5000	1	≥7; ≥8	UL, BSI, VDE, FIMKO
TCET1109G	DIP-4	5 mA	TCET1109G	200	400	70	60	-55 to +100	5000	1	≥7; ≥8	UL, BSI, VDE, FIMKO
TCET1110	DIP-4	5 mA	TCET1100	50	600	70	60	-40 to +110	5000	1	≥7; ≥8	UL, BSI, VDE, FIMKO
	DIP-4	10 mA	TCET1102	63	125	70	60	-40 to +110	5000	1	≥7; ≥8	UL, BSI, VDE, FIMKO
	DIP-4	10 mA	TCET1103	100	200	70	60	-40 to +110	5000	1	≥7; ≥8	UL, BSI, VDE, FIMKO
	DIP-4	10 mA	TCET1104	160	320	70	60	-40 to +110	5000	1	≥7; ≥8	UL, BSI, VDE, FIMKO
	DIP-4	5 mA	TCET1100G	50	600	70	60	-40 to +110	5000	1	≥7; ≥8	UL, BSI, VDE, FIMKO
	DIP-4	10 mA	TCET1102G	63	125	70	60	-40 to +110	5000	1	≥7; ≥8	UL, BSI, VDE, FIMKO
	DIP-4	10 mA	TCET1103G	100	200	70	60	-40 to +110	5000	1	≥7; ≥8	UL, BSI, VDE, FIMKO
VO615C	DIP-4	10 mA	VO615C-1	40	80	70	60	-55 to +110	5000	1		BSI, VDE, FIMKO, UL, cUL, CQC
	DIP-4	10 mA	VO615C-2	63	125	70	60	-55 to +110	5000	1		BSI, VDE, FIMKO, UL, cUL, CQC
	DIP-4	10 mA	VO615C-3	100	200	70	60	-55 to +110	5000	1		BSI, VDE, FIMKO, UL, cUL, CQC
	DIP-4	10 mA	VO615C-4	160	320	70	60	-55 to +110	5000	1		BSI, VDE, FIMKO, UL, cUL, CQC
VO617C	DIP-4	5 mA	VO617C-1	40	80	70	60	-55 to +110	5000	1		BSI, VDE, FIMKO, UL, cUL, CQC
	DIP-4	5 mA	VO617C-2	63	125	70	60	-55 to +110	5000	1		BSI, VDE, FIMKO, UL, cUL, CQC
	DIP-4	5 mA	VO617C-3	100	200	70	60	-55 to +110	5000	1		BSI, VDE, FIMKO, UL, cUL, CQC
	DIP-4	5 mA	VO617C-4	160	320	70	60	-55 to +110	5000	1		BSI, VDE, FIMKO, UL, cUL, CQC
CNY65Exi	DIP-4 HV	10 mA	CNY65Exi	50	300	32	75	-55 to +85	11600	1		ATEX
	DIP-4 HV	10 mA	CNY65BExi	100	200	32	75	-55 to +85	11600	1		ATEX
CNY64	DIP-4 HV	10 mA	CNY64	50	300	32	75	-55 to +85	8200	1		UL, VDE
	DIP-4 HV	10 mA	CNY64A	50	300	32	75	-55 to +85	8200	1		UL, VDE
	DIP-4 HV	10 mA	CNY64B	50	300	32	75	-55 to +85	8200	1		UL, VDE
CNY65	DIP-4 HV	10 mA	CNY65	63	125	32	75	-55 to +85	8200	1		UL, VDE
	DIP-4 HV	10 mA	CNY65A	63	125	32	75	-55 to +85	8200	1		UL, VDE
	DIP-4 HV	10 mA	CNY65B	63	125	32	75	-55 to +85	8200	1		UL, VDE

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Base Part Number	Package	Forward Current I_F	Part Number	CTR min (%)	CTR max (%)	V_{CE0} (V)	Forward Current I_F max. (mA)	Operating Temperature max. (°C)	Isolation Voltage V_{ISO} (V_{RMS})	Ch(s)	Creepage distance (mm)	Safety Standard(s)
CNY651	DIP-4 HV	5 mA	CNY651AGR	100	300	32	75	-55 to +85	8200	1		UL, cUL, VDE
CNY66	DIP-4 HV	10 mA	CNY66	100	200	32	75	-55 to +85	8200	1		UL, VDE
	DIP-4 HV	10 mA	CNY66B	100	200	32	75	-55 to +85	8200	1		UL, VDE
CNY64S	SMD-4 HV	5 mA	CNY64ST	50	300	32	75	-55 to +85	8200	1		UL, cUL, VDE
CNY64S	SMD-4 HV	5 mA	CNY64AYST	50	150	32	75	-55 to +85	8200	1		UL, cUL, VDE
CNY64S	SMD-4 HV	5 mA	CNY64ABST	80	240	32	75	-55 to +85	8200	1		UL, cUL, VDE
CNY64S	SMD-4 HV	5 mA	CNY64AGRST	100	300	32	75	-55 to +85	8200	1		UL, cUL, VDE
CNY65S	SMD-4 HV	5 mA	CNY65ST	50	300	32	75	-55 to +85	8200	1		UL, cUL, VDE
CNY65S	SMD-4 HV	5 mA	CNY65AYST	50	150	32	75	-55 to +85	8200	1		UL, cUL, VDE
CNY65S	SMD-4 HV	5 mA	CNY65ABST	80	240	32	75	-55 to +85	8200	1		UL, cUL, VDE
CNY65S	SMD-4 HV	5 mA	CNY65AGRST	100	300	32	75	-55 to +85	8200	1		UL, cUL, VDE
CNY651	SMD-4 HV	5 mA	CNY651AYST	50	150	32	75	-40 to +110	8200	1		UL, cUL, VDE
CNY651	SMD-4 HV	5 mA	CNY651AGRST	100	300	32	75	-40 to +110	8200	1		UL, cUL, VDE
SFH6106	SMD-4	10 mA	SFH6106-1	40	80	70	60	-55 to +100	5300	1	≥7; ≥8	UL, BSI, cUL, VDE
	SMD-4	10 mA	SFH6106-2	63	125	70	60	-55 to +100	5300	1	≥7; ≥8	UL, BSI, cUL, VDE
	SMD-4	10 mA	SFH6106-3	100	200	70	60	-55 to +100	5300	1	≥7; ≥8	UL, BSI, cUL, VDE
	SMD-4	10 mA	SFH6106-4	160	320	70	60	-55 to +100	5300	1	≥7; ≥8	UL, BSI, cUL, VDE
	SMD-4	10 mA	SFH6106-5	250	500	70	60	-55 to +100	5300	1	≥7; ≥8	UL, BSI, cUL, VDE
SFH6156	SMD-4	10 mA	SFH6156-1	40	80	70	60	-55 to +100	5300	1	≥7	UL, BSI, cUL, VDE, FIMKO, CQC
	SMD-4	10 mA	SFH6156-2	63	125	70	60	-55 to +100	5300	1	≥7	UL, BSI, cUL, VDE, FIMKO, CQC
	SMD-4	10 mA	SFH6156-3	100	200	70	60	-55 to +100	5300	1	≥7	UL, BSI, cUL, VDE, FIMKO, CQC
	SMD-4	10 mA	SFH6156-4	160	320	70	60	-55 to +100	5300	1	≥7	UL, BSI, cUL, VDE, FIMKO, CQC
SFH6186	SMD-4	1 mA	SFH6186-2	63	125	55	60	-55 to +100	5300	1	≥7	UL, BSI, cUL, VDE, FIMKO
	SMD-4	1 mA	SFH6186-3	100	200	55	60	-55 to +100	5300	1	≥7	UL, BSI, cUL, VDE, FIMKO
	SMD-4	1 mA	SFH6186-4	160	320	55	60	-55 to +100	5300	1	≥7	UL, BSI, cUL, VDE, FIMKO
	SMD-4	1 mA	SFH6186-5	250	500	55	60	-55 to +100	5300	1	≥7	UL, BSI, cUL, VDE, FIMKO
TCMT110	SMD-4	5 mA	TCMT1110	50	600	70	50	-45 to +110	3750	1	≥5	UL, BSI, cUL, VDE
TCMT1111	SMD-4	5 mA	TCMT1111	40	80	70	50	-45 to +110	3750	1	≥5	UL, BSI, cUL, VDE
TCMT1112	SMD-4	10 mA	TCMT1112	63	125	70	50	-45 to +110	3750	1	≥5	UL, BSI, cUL, VDE
TCMT1113	SMD-4	10 mA	TCMT1113	100	200	70	50	-45 to +110	3750	1	≥5	UL, BSI, cUL, VDE
TCMT1114	SMD-4	10 mA	TCMT1114	160	320	70	50	-45 to +110	3750	1	≥5	UL, BSI, cUL, VDE
TCMT1115	SMD-4	10 mA	TCMT1115	50	150	70	50	-45 to +110	3750	1	≥5	UL, BSI, cUL, VDE
TCMT1116	SMD-4	10 mA	TCMT1116	100	300	70	50	-45 to +110	3750	1	≥5	UL, BSI, cUL, VDE
TCMT1117	SMD-4	5 mA	TCMT1117	80	160	70	50	-45 to +110	3750	1	≥5	UL, BSI, cUL, VDE
TCMT1118	SMD-4	5 mA	TCMT1118	130	260	70	50	-45 to +110	3750	1	≥5	UL, BSI, cUL, VDE
TCMT1119	SMD-4	5 mA	TCMT1119	200	400	70	50	-45 to +110	3750	1	≥5	UL, BSI, cUL, VDE

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Base Part Number	Package	Forward Current I_F	Part Number	CTR min (%)	CTR max (%)	V_{CEO} (V)	Forward Current I_F max. (mA)	Operating Temperature max. (°C)	Isolation Voltage V_{ISO} (V_{RMS})	Ch(s)	Creepage distance (mm)	Safety Standard(s)
VOM618A	SOP-4	1 mA	VOM618A	50	600	80	60	-55 to +110	3750	1	≥5	UL, cUL, VDE, FIMKO, CQC
	SOP-4	1 mA	VOM618A-1	40	80	80	60	-55 to +110	3750	1	≥5	UL, cUL, VDE, FIMKO, CQC
	SOP-4	1 mA	VOM618A-2	63	125	80	60	-55 to +110	3750	1	≥5	UL, cUL, VDE, FIMKO, CQC
	SOP-4	1 mA	VOM618A-3	100	200	80	60	-55 to +110	3750	1	≥5	UL, cUL, VDE, FIMKO, CQC
	SOP-4	1 mA	VOM618A-4	160	320	80	60	-55 to +110	3750	1	≥5	UL, cUL, VDE, FIMKO, CQC
	SOP-4	1 mA	VOM618A-5	50	100	80	60	-55 to +110	3750	1	≥5	UL, cUL, VDE, FIMKO, CQC
	SOP-4	1 mA	VOM618A-7	80	160	80	60	-55 to +110	3750	1	≥5	UL, cUL, VDE, FIMKO, CQC
	SOP-4	1 mA	VOM618A-8	130	260	80	60	-55 to +110	3750	1	≥5	UL, cUL, VDE, FIMKO, CQC
VOM617A	SOP-4	5 mA	VOM617A	50	600	80	60	-55 to +110	3750	1	≥5	UL, cUL, VDE, FIMKO, CQC
	SOP-4	5 mA	VOM617A-2	63	125	80	60	-55 to +110	3750	1	≥5	UL, cUL, VDE, FIMKO, CQC
	SOP-4	5 mA	VOM617A-3	100	200	80	60	-55 to +110	3750	1	≥5	UL, cUL, VDE, FIMKO, CQC
	SOP-4	5 mA	VOM617A-4	160	320	80	60	-55 to +110	3750	1	≥5	UL, cUL, VDE, FIMKO, CQC
	SOP-4	5 mA	VOM617A-6	250	500	80	60	-55 to +110	3750	1	≥5	UL, cUL, VDE, FIMKO, CQC
	SOP-4	5 mA	VOM617A-7	80	160	80	60	-55 to +110	3750	1	≥5	UL, cUL, VDE, FIMKO, CQC
	SOP-4	5 mA	VOM617A-8	130	260	80	60	-55 to +110	3750	1	≥5	UL, cUL, VDE, FIMKO, CQC
	SOP-4	5 mA	VOM617A-9	200	400	80	60	-55 to +110	3750	1	≥5	UL, cUL, VDE, FIMKO, CQC
VOS615A	SSOP-4	10 mA	VOS615A	50	600	80	50	-55 to +110	3750	1	≥5	UL, cUL, VDE, FIMKO, CQC
	SSOP-4	10 mA	VOS615A-1	40	80	80	50	-55 to +110	3750	1	≥5	UL, cUL, VDE, FIMKO, CQC
	SSOP-4	10 mA	VOS615A-2	63	125	80	50	-55 to +110	3750	1	≥5	UL, cUL, VDE, FIMKO, CQC
	SSOP-4	10 mA	VOS615A-3	100	200	80	50	-55 to +110	3750	1	≥5	UL, cUL, VDE, FIMKO, CQC
	SSOP-4	10 mA	VOS615A-4	160	320	80	50	-55 to +110	3750	1	≥5	UL, cUL, VDE, FIMKO, CQC
VOS617A	SSOP-4	5 mA	VOS617A	50	600	80	50	-55 to +110	3750	1	≥5	UL, cUL, VDE, FIMKO, CQC
	SSOP-4	5 mA	VOS617A-2	63	125	80	50	-55 to +110	3750	1	≥5	UL, cUL, VDE, FIMKO, CQC
	SSOP-4	5 mA	VOS617A-3	100	200	80	50	-55 to +110	3750	1	≥5	UL, cUL, VDE, FIMKO, CQC
	SSOP-4	5 mA	VOS617A-4	160	320	80	50	-55 to +110	3750	1	≥5	UL, cUL, VDE, FIMKO, CQC
	SSOP-4	5 mA	VOS617A-7	80	160	80	50	-55 to +110	3750	1	≥5	UL, cUL, VDE, FIMKO, CQC
	SSOP-4	5 mA	VOS617A-8	130	260	80	50	-55 to +110	3750	1	≥5	UL, cUL, VDE, FIMKO, CQC
	SSOP-4	5 mA	VOS617A-9	200	400	80	50	-55 to +110	3750	1	≥5	UL, cUL, VDE, FIMKO, CQC
VOS618A	SSOP-4	1 mA	VOS618A	50	600	80	50	-55 to +110	3750	1	≥5	UL, cUL, VDE, FIMKO, CQC
	SSOP-4	1 mA	VOS618A-2	63	125	80	50	-55 to +110	3750	1	≥5	UL, cUL, VDE, FIMKO, CQC
	SSOP-4	1 mA	VOS618A-3	100	200	80	50	-55 to +110	3750	1	≥5	UL, cUL, VDE, FIMKO, CQC
	SSOP-4	1 mA	VOS618A-7	80	160	80	50	-55 to +110	3750	1	≥5	UL, cUL, VDE, FIMKO, CQC
	SSOP-4	1 mA	VOS618A-8	130	260	80	50	-55 to +110	3750	1	≥5	UL, cUL, VDE, FIMKO, CQC
VOL617A >>>>	LSOP-4	5 mA	VOL617A-1	40	80	80	60	-55 to +110	5000	1	≥5	UL, cUL, VDE, BSI, FIMKO, CQC
	LSOP-4	5 mA	VOL617A-2	63	125	80	60	-55 to +110	5000	1	≥5	UL, cUL, VDE, BSI, FIMKO, CQC
	LSOP-4	5 mA	VOL617A-3	100	200	80	60	-55 to +110	5000	1	≥5	UL, cUL, VDE, BSI, FIMKO, CQC
	LSOP-4	5 mA	VOL617A-4	160	320	80	60	-55 to +110	5000	1	≥5	UL, cUL, VDE, BSI, FIMKO, CQC

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Base Part Number	Package	Forward Current I _F	Part Number	CTR min (%)	CTR max (%)	V _{CEO} (V)	Forward Current I _F max. (mA)	Operating Temperature max. (°C)	Isolation Voltage V _{ISO} (V _{RMS})	Ch(s)	Creepage distance (mm)	Safety Standard(s)
VOL617A (cont)	LSOP-4	5 mA	VOL617A-8	130	260	80	60	-55 to +110	5000	1	≥5	UL, cUL, VDE, BSI, FIMKO, CQC
VOL618A	LSOP-4	10 mA	VOL628A-2	63	125	80	60	-55 to +110	5000	1	≥5	UL, cUL, VDE, BSI, FIMKO, CQC
	LSOP-4	10 mA	VOL628A-3	100	200	80	60	-55 to +110	5000	1	≥5	UL, cUL, VDE, BSI, FIMKO, CQC
SFH690	SOP-4	5 mA	SFH690AB	50	300	70	50	-55 to +100	3750	1	≥5	UL, cUL, BSI, VDE, CQC
	SOP-4	5 mA	SFH690A	50	150	70	50	-55 to +100	3750	1	≥5	UL, cUL, BSI, VDE, CQC
	SOP-4	5 mA	SFH690B	100	300	70	50	-55 to +100	3750	1	≥5	UL, cUL, BSI, VDE, CQC
	SOP-4	5 mA	SFH690C	100	200	70	50	-55 to +100	3750	1	≥5	UL, cUL, BSI, VDE, CQC
	SOP-4	5 mA	SFH690D	200	400	70	50	-55 to +100	3750	1	≥5	UL, cUL, BSI, VDE, CQC
SFH1690	SOP-4	5 mA	SFH1690AB	50	300	70	50	-55 to +110	3750	1	≥5	UL, cUL, BSI, VDE
	SOP-4	5 mA	SFH1690A	50	150	70	50	-55 to +110	3750	1	≥5	UL, cUL, BSI, VDE
	SOP-4	5 mA	SFH1690B	100	300	70	50	-55 to +110	3750	1	≥5	UL, cUL, BSI, VDE
	SOP-4	5 mA	SFH1690C	100	200	70	50	-55 to +110	3750	1	≥5	UL, cUL, BSI, VDE
TCMT1100	SOP-4	5 mA	TCMT1100	50	600	70	50	-55 to +100	3750	1	≥5	UL, BSI, cUL, VDE, FIMKO
TCMT1101	SOP-4	10 mA	TCMT1101	40	80	70	50	-55 to +100	3750	1	≥5	UL, BSI, cUL, VDE, FIMKO
TCMT1102	SOP-4	10 mA	TCMT1102	63	125	70	50	-55 to +100	3750	1	≥5	UL, BSI, cUL, VDE, FIMKO
TCMT1103	SOP-4	10 mA	TCMT1103	100	200	70	50	-55 to +100	3750	1	≥5	UL, BSI, cUL, VDE, FIMKO
TCMT1104	SOP-4	10 mA	TCMT1104	160	320	70	50	-55 to +100	3750	1	≥5	UL, BSI, cUL, VDE, FIMKO
TCMT1105	SOP-4	10 mA	TCMT1105	50	150	70	50	-55 to +100	3750	1	≥5	UL, BSI, cUL, VDE, FIMKO
TCMT1106	SOP-4	5 mA	TCMT1106	100	300	70	50	-55 to +100	3750	1	≥5	UL, BSI, cUL, VDE, FIMKO
TCMT1107	SOP-4	5 mA	TCMT1107	80	160	70	50	-55 to +100	3750	1	≥5	UL, BSI, cUL, VDE, FIMKO
TCMT1108	SOP-4	5 mA	TCMT1108	130	260	70	50	-55 to +100	3750	1	≥5	UL, BSI, cUL, VDE, FIMKO
TCMT1109	SOP-4	5 mA	TCMT1109	200	400	70	50	-55 to +100	3750	1	≥5	UL, BSI, cUL, VDE, FIMKO
TCLT1010 Series	LSOP-4	5 mA	TCLT1000	50	600	70	60	-55 to +110	5000	1	≥8	UL, BSI, cUL, VDE, FIMKO
	LSOP-4	10 mA	TCLT1001	40	80	70	60	-55 to +110	5000	1	≥8	UL, BSI, cUL, VDE, FIMKO
	LSOP-4	10 mA	TCLT1002	63	125	70	60	-55 to +110	5000	1	≥8	UL, BSI, cUL, VDE, FIMKO
	LSOP-4	10 mA	TCLT1003	100	200	70	60	-55 to +110	5000	1	≥8	UL, BSI, cUL, VDE, FIMKO
	LSOP-4	10 mA	TCLT1004	160	320	70	60	-55 to +110	5000	1	≥8	UL, BSI, cUL, VDE, FIMKO
	LSOP-4	10 mA	TCLT1005	50	150	70	60	-55 to +110	5000	1	≥8	UL, BSI, cUL, VDE, FIMKO
	LSOP-4	5 mA	TCLT1006	100	300	70	60	-55 to +110	5000	1	≥8	UL, BSI, cUL, VDE, FIMKO
	LSOP-4	5 mA	TCLT1007	80	160	70	60	-55 to +110	5000	1	≥8	UL, BSI, cUL, VDE, FIMKO
	LSOP-4	5 mA	TCLT1008	130	260	70	60	-55 to +110	5000	1	≥8	UL, BSI, cUL, VDE, FIMKO
TCLT11.. Series	LSOP-5	5 mA	TCLT1100	50	600	80	60	-55 to +100	5000	1	≥8	UL, BSI, cUL, VDE, FIMKO
	LSOP-5	10 mA	TCLT1101	40	80	80	60	-55 to +100	5000	1	≥8	UL, BSI, cUL, VDE, FIMKO
	LSOP-5	10 mA	TCLT1102	63	125	80	60	-55 to +100	5000	1	≥8	UL, BSI, cUL, VDE, FIMKO
	LSOP-5	10 mA	TCLT1103	100	200	80	60	-55 to +100	5000	1	≥8	UL, BSI, cUL, VDE, FIMKO
	LSOP-5	10 mA	TCLT1104	160	320	80	60	-55 to +100	5000	1	≥8	UL, BSI, cUL, VDE, FIMKO
>>>>	LSOP-5	10 mA	TCLT1105	50	150	80	60	-55 to +100	5000	1	≥8	UL, BSI, cUL, VDE, FIMKO

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Base Part Number	Package	Forward Current I_F	Part Number	CTR min (%)	CTR max (%)	V_{CEO} (V)	Forward Current I_F max. (mA)	Operating Temperature max. (°C)	Isolation Voltage V_{ISO} (V_{RMS})	Ch(s)	Creepage distance (mm)	Safety Standard(s)
TCLT11.. Series (cont)	LSOP-5	5 mA	TCLT1106	100	300	80	60	-55 to +100	5000	1	≥8	UL, BSI, cUL, VDE, FIMKO
	LSOP-5	5 mA	TCLT1107	80	160	80	60	-55 to +100	5000	1	≥8	UL, BSI, cUL, VDE, FIMKO
	LSOP-5	5 mA	TCLT1108	130	260	80	60	-55 to +100	5000	1	≥8	UL, BSI, cUL, VDE, FIMKO
	LSOP-5	5 mA	TCLT1109	200	400	80	60	-55 to +100	5000	1	≥8	UL, BSI, cUL, VDE, FIMKO
TCLT1110	LSOP-5	5 mA	TCLT1110	50	600	80	60	-55 to +110	5000	1	≥8	UL, cUL, VDE
TCLT1111	LSOP-5	10 mA	TCLT1111	40	80	80	60	-55 to +110	5000	1	≥8	UL, cUL, VDE
TCLT1112	LSOP-5	10 mA	TCLT1112	63	125	80	60	-55 to +110	5000	1	≥8	UL, cUL, VDE
TCLT1113	LSOP-5	10 mA	TCLT1113	100	200	80	60	-55 to +110	5000	1	≥8	UL, cUL, VDE
TCLT1114	LSOP-5	10 mA	TCLT1114	160	320	80	60	-55 to +110	5000	1	≥8	UL, cUL, VDE
TCLT1115	LSOP-5	10 mA	TCLT1115	50	150	80	60	-55 to +110	5000	1	≥8	UL, cUL, VDE
TCLT1116	LSOP-5	5 mA	TCLT1116	100	300	80	60	-55 to +110	5000	1	≥8	UL, cUL, VDE
TCLT1117	LSOP-5	5 mA	TCLT1117	80	160	80	60	-55 to +110	5000	1	≥8	UL, cUL, VDE
TCLT1118	LSOP-5	5 mA	TCLT1118	130	260	80	60	-55 to +110	5000	1	≥8	UL, cUL, VDE
TCLT1119	LSOP-5	5 mA	TCLT1119	200	400	80	60	-55 to +110	5000	1	≥8	UL, cUL, VDE
SFH600	DIP-6	10 mA	SFH600-0	40	80	70	60	-55 to +100	5300	1	≥7	UL, BSI, cUL, VDE
	DIP-6	10 mA	SFH600-1	63	125	70		-55 to +100	5300	1	≥7	UL, BSI, cUL, VDE
	DIP-6	10 mA	SFH600-2	100	200	70	60	-55 to +100	5300	1	≥7	UL, BSI, cUL, VDE
	DIP-6	10 mA	SFH600-3	160	320	70	60	-55 to +100	5300	1	≥7	UL, BSI, cUL, VDE
SFH601	DIP-6	10 mA	SFH601-1	40	80	100	60	-55 to +100	5300	1	≥7; ≥8	UL, BSI, cUL, VDE
	DIP-6	10 mA	SFH601-2	63	125	100	60	-55 to +100	5300	1	≥7; ≥8	UL, BSI, cUL, VDE
	DIP-6	10 mA	SFH601-3	100	200	100	60	-55 to +100	5300	1	≥7; ≥8	UL, BSI, cUL, VDE
	DIP-6	10 mA	SFH601-4	160	320	100	60	-55 to +100	5300	1	≥7; ≥8	UL, BSI, cUL, VDE
SFH608	DIP-6	1 mA	SFH608-2	63	125	55	50	-55 to +100	5300	1	≥7; ≥8	UL, BSI, cUL, VDE
	DIP-6	1 mA	SFH608-3	100	200	55	50	-55 to +100	5300	1	≥7; ≥8	UL, BSI, cUL, VDE
	DIP-6	1 mA	SFH608-4	160	320	55	50	-55 to +100	5300	1	≥7; ≥8	UL, BSI, cUL, VDE
	DIP-6	1 mA	SFH608-5	250	500	55	50	-55 to +100	5300	1	≥7; ≥8	UL, BSI, cUL, VDE
SFH640	DIP-6	10 mA	SFH640-1	40	80	300	60	-55 to +100	5300	1	≥7; ≥8	UL, BSI, cUL, VDE
	DIP-6	10 mA	SFH640-2	63	125	300	60	-55 to +100	5300	1	≥7; ≥8	UL, BSI, cUL, VDE
	DIP-6	10 mA	SFH640-3	100	200	300	60	-55 to +100	5300	1	≥7; ≥8	UL, BSI, cUL, VDE
TCDT1110	DIP-6	10 mA	TCDT1110	100		70	60	-55 to +100	5300	1	≥7	UL, BSI, VDE, FIMKO
TCDT1110G	DIP-6	10 mA	TCDT1110G	100		70	60	-55 to +100	5300	1	≥8	UL, BSI, VDE, FIMKO
TCDT1100	DIP-6	10 mA	TCDT1100	40		32	60	-55 to +110	5300	1	≥7	UL, BSI, FIMKO
TCDT1101	DIP-6	10 mA	TCDT1101	63	125	32	60	-55 to +110	5300	1	≥7	UL, BSI, FIMKO
TCDT1102	DIP-6	10 mA	TCDT1102	100	200	32	60	-55 to +110	5300	1	≥7	UL, BSI, FIMKO
TCDT1103	DIP-6	10 mA	TCDT1103	160	320	32	60	-55 to +110	5300	1	≥7	UL, BSI, FIMKO
TCDT1100G	DIP-6	10 mA	TCDT1100G	40		32	60	-55 to +110	5300	1	≥8	UL, BSI, FIMKO
TCDT1101G	DIP-6	10 mA	TCDT1101G	63	125	32	60	-55 to +110	5300	1	≥8	UL, BSI, FIMKO
TCDT1102G	DIP-6	10 mA	TCDT1102G	100	200	32	60	-55 to +110	5300	1	≥8	UL, BSI, FIMKO

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Base Part Number	Package	Forward Current I _F	Part Number	CTR min (%)	CTR max (%)	V _{CEO} (V)	Forward Current I _F max. (mA)	Operating Temperature max. (°C)	Isolation Voltage V _{ISO} (V _{RMS})	Ch(s)	Creepage distance (mm)	Safety Standard(s)
TCDT1103G	DIP-6	10 mA	TCDT1103G	160	320	32	60	-55 to +110	5300	1	≥8	UL, BSI, FIMKO
TCDT1120	DIP-6	10 mA	TCDT1120	40				-55 to +100	5300	1	≥7	UL, BSI, VDE, FIMKO
	DIP-6	10 mA	TCDT1120G	40			60	-55 to +100	5300	1	≥8	UL, BSI, VDE, FIMKO
TCDT1122	DIP-6	10 mA	TCDT1122	63	125		60	-55 to +100	5300	1	≥7	UL, BSI, VDE, FIMKO
	DIP-6	10 mA	TCDT1122G	63	125		60	-55 to +100	5300	1	≥8	UL, BSI, VDE, FIMKO
TCDT1123	DIP-6	10 mA	TCDT1123	100	200		60	-55 to +100	5300	1	≥7	UL, BSI, VDE, FIMKO
	DIP-6	10 mA	TCDT1123G	100	200		60	-55 to +100	5300	1	≥8	UL, BSI, VDE, FIMKO
TCDT1124	DIP-6	10 mA	TCDT1124	160	320		60	-55 to +100	5300	1	≥7	UL, BSI, VDE, FIMKO
	DIP-6	10 mA	TCDT1124G	160	320		60	-55 to +100	5300	1	≥8	UL, BSI, VDE, FIMKO
CNY117	DIP-6	10 mA	CNY117-1	40	80	70	60	-55 to +110	5000	1	≥7; ≥8	UL, cUL, VDE, BSI, CQC
	DIP-6	10 mA	CNY117-2	63	125	70	60	-55 to +110	5000	1	≥7; ≥8	UL, cUL, VDE, BSI, CQC
	DIP-6	10 mA	CNY117-3	100	200	70	60	-55 to +110	5000	1	≥7; ≥8	UL, cUL, VDE, BSI, CQC
	DIP-6	10 mA	CNY117-4	160	320	70	60	-55 to +110	5000	1	≥7; ≥8	UL, cUL, VDE, BSI, CQC
CNY117F	DIP-6	10 mA	CNY117F-1	40	80	70	60	-55 to +110	5000	1	≥7; ≥8	UL, cUL, VDE, BSI, CQC
	DIP-6	10 mA	CNY117F-2	63	125	70	60	-55 to +100	5000	1	≥7; ≥8	UL, cUL, VDE, BSI, CQC
	DIP-6	10 mA	CNY117F-3	100	200	70	60	-55 to +100	5000	1	≥7; ≥8	UL, cUL, VDE, BSI, CQC
	DIP-6	10 mA	CNY117F-4	160	320	70	60	-55 to +100	5000	1	≥7; ≥8	UL, cUL, VDE, BSI, CQC
SFH640	DIP-6	10 mA	SFH640-2	63	125	300	60	-55 to +100	5300	1	≥7	UL, VDE, cUL, BSI
	DIP-6	10 mA	SFH640-3	100	200	300	60	-55 to +100	5300	1	≥7	UL, VDE, cUL, BSI
4N25	DIP-6	10 mA		20		70	60	-55 to +100	5000	1	≥7	UL, BSI, VDE, FIMKO
4N26	DIP-6	10 mA		20		70	60	-55 to +100	5000	1	≥7	UL, BSI, VDE, FIMKO
4N27	DIP-6	10 mA		10		70	60	-55 to +100	5000	1	≥7	UL, BSI, VDE, FIMKO
4N28	DIP-6	10 mA		10		70	60	-55 to +100	5000	1	≥7	UL, BSI, VDE, FIMKO
4N35	DIP-6	10 mA		100		70	60	-55 to +100	5300	1	≥7	UL, VDE
4N36	DIP-6	10 mA		100		70	60	-55 to +100	5300	1	≥7	UL, VDE
4N37	DIP-6	10 mA		100		70	60	-55 to +100	5300	1	≥7	UL, VDE
4N38	DIP-6	20 mA		20		70	60	-55 to +110	5300	1	≥7	UL, cUL, VDE, BSI, FIMKO, CQC
4N35-X	DIP-6	10 mA		100		70	60	-55 to +110	5300	1	≥7; ≥8	UL, cUL, VDE, BSI, FIMKO, CQC
4N36-X	DIP-6	10 mA		100		70	60	-55 to +110	5300	1	≥7	UL, cUL, VDE, BSI, FIMKO, CQC
4N37-X	DIP-6	10 mA		100		70	60	-55 to +110	5300	1	≥7	UL, cUL, VDE, BSI, FIMKO, CQC
CNY17 >>>>	DIP-6	10 mA	CNY17-1	40	80	70	60	-55 to +100	5000	1	≥7; ≥8	UL, cUL, VDE, BSI, FIMKO, CQC
	DIP-6	10 mA	CNY17-2	63	125	70	60	-55 to +100	5000	1	≥7; ≥8	UL, cUL, VDE, BSI, FIMKO, CQC
	DIP-6	10 mA	CNY17-3	100	200	70	60	-55 to +100	5000	1	≥7; ≥8	UL, cUL, VDE, BSI, FIMKO, CQC

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Base Part Number	Package	Forward Current I_F	Part Number	CTR min (%)	CTR max (%)	V_{CEO} (V)	Forward Current I_F max. (mA)	Operating Temperature max. (°C)	Isolation Voltage V_{ISO} (V_{RMS})	Ch(s)	Creepage distance (mm)	Safety Standard(s)
CNY17 (cont)	DIP-6	10 mA	CNY17-4	160	320	70	60	-55 to +100	5000	1	≥7; ≥8	UL, cUL, VDE, BSI, FIMKO, CQC
	DIP-6	10 mA	CNY17.-1	40	80	70	60	-55 to +100	5000	1	≥7	UL, cUL, BSI, VDE, FIMKO, CQC
	DIP-6	10 mA	CNY17.-2	63	125	70	60	-55 to +100	5000	1	≥7	UL, cUL, BSI, VDE, FIMKO, CQC
	DIP-6	10 mA	CNY17.-3	100	200	70	60	-55 to +100	5000	1	≥7	UL, cUL, BSI, VDE, FIMKO, CQC
	DIP-6	10 mA	CNY17.-4	160	320	70	60	-55 to +100	5000	1	≥7	UL, cUL, BSI, VDE, FIMKO, CQC
CNY17G	DIP-6	10 mA	CNY17G-1	40	80	70	60	-55 to +100	5000	1	≥8	UL, cUL, BSI, VDE, FIMKO, CQC
	DIP-6	10 mA	CNY17G-2	63	125	70	60	-55 to +100	5000	1	≥8	UL, cUL, BSI, VDE, FIMKO, CQC
	DIP-6	10 mA	CNY17G-3	100	200	70	60	-55 to +100	5000	1	≥8	UL, cUL, BSI, VDE, FIMKO, CQC
	DIP-6	10 mA	CNY17G-4	160	320	70	60	-55 to +100	5000	1	≥8	UL, cUL, BSI, VDE, FIMKO, CQC
CNY17F	DIP-6	10 mA	CNY17F-1	40	80	70	60	-55 to +110	5300	1	≥7; ≥8	UL, cUL, BSI, VDE, FIMKO, CQC
	DIP-6	10 mA	CNY17F-2	63	125	70	60	-55 to +110	5300	1	≥7; ≥8	UL, cUL, BSI, VDE, FIMKO, CQC
	DIP-6	10 mA	CNY17F-3	100	200	70	60	-55 to +110	5300	1	≥7; ≥8	UL, cUL, BSI, VDE, FIMKO, CQC
	DIP-6	10 mA	CNY17F-4	160	320	70	60	-55 to +110	5300	1	≥7; ≥8	UL, cUL, BSI, VDE, FIMKO, CQC
CNY75	DIP-6	10 mA	CNY75A	63	125	70	60	-55 to +110	5000	1	≥7	UL, cUL, BSI, VDE, FIMKO, CQC
	DIP-6	10 mA	CNY75GA	63	125	70		-55 to +110	5000	1	≥8	UL, cUL, BSI, VDE, FIMKO, CQC
	DIP-6	10 mA	CNY74B	100	200	70		-55 to +110	5000	1	≥7	UL, cUL, BSI, VDE, FIMKO, CQC
	DIP-6	10 mA	CNY75GB	100	200	70		-55 to +110	5000	1	≥8	UL, cUL, BSI, VDE, FIMKO, CQC
	DIP-6	10 mA	CNY75C	160	320	70		-55 to +110	5000	1	≥7	UL, cUL, BSI, VDE, FIMKO, CQC
	DIP-6	10 mA	CNY75GC	160	320	70		-55 to +110	5000	1	≥8	UL, cUL, BSI, VDE, FIMKO, CQC
H11A	DIP-6	10 mA	H11A1	50		70	60	-55 to +100	5300	1	≥7; ≥8	UL, cUL, BSI, VDE, FIMKO
	DIP-6	10 mA	H11A2	20		70	60	-55 to +100	5300	1	≥7	UL, cUL, BSI, VDE, FIMKO
	DIP-6	10 mA	H11A3	20		70	60	-55 to +100	5300	1	≥7	UL, cUL, BSI, VDE, FIMKO
	DIP-6	10 mA	H11A4	10		70	60	-55 to +100	5300	1	≥7	UL, cUL, BSI, VDE, FIMKO
	DIP-6	10 mA	H11A5	30		70	60	-55 to +100	5300	1	≥7	UL, cUL, BSI, VDE, FIMKO

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Base Part Number	Package	Forward Current I_F	Part Number	CTR min (%)	CTR max (%)	V_{CE0} (V)	Forward Current I_F max. (mA)	Operating Temperature max. (°C)	Isolation Voltage V_{ISO} (V_{RMS})	Ch(s)	Creepage distance (mm)	Safety Standard(s)
H11D	DIP-6	10 mA	H11D1	20		300	60	-55 to +100	5300	1	≥7	UL, cUL, BSI, VDE, FIMKO, CQC
	DIP-6	10 mA	H11D2	20		300	60	-55 to +100	5300	1	≥7	UL, cUL, BSI, VDE, FIMKO, CQC
	DIP-6	10 mA	H11D3	20		200	60	-55 to +100	5300	1	≥7	UL, cUL, BSI, VDE, FIMKO, CQC
	DIP-6	10 mA	H11D4	20		200	60	-55 to +100	5300	1	≥7	UL, cUL, BSI, VDE, FIMKO, CQC
IL1	DIP-6	10 mA		20	300	50	60	-40 to +100	5300	1	≥7	UL, cUL, BSI, VDE
IL2	DIP-6	10 mA		100	500	70	60	-40 to +100	5300	1	≥7	UL, cUL, BSI, VDE
IL5	DIP-6	10 mA		50	400	70	60	-40 to +100	5300	1	≥7	UL, cUL, BSI, VDE
IL202	DIP-6	10 mA		125	250	70	60	-55 to +100	5300	1	≥7	UL, cUL, BSI, FIMKO
IL203	DIP-6	10 mA		225	450	70	60	-55 to +100	5300	1	≥7	UL, cUL, BSI, FIMKO
4N25-X	DIP-6	10 mA		20		70		-55 to +100	5000	1	≥7; ≥8	UL, cUL, BSI, VDE, FIMKO, CQC
4N26-X	DIP-6	10 mA		20		70		-55 to +100	5000	1	≥7; ≥8	UL, cUL, BSI, VDE, FIMKO, CQC
4N27-X	DIP-6	10 mA		10		70		-55 to +100	5000	1	≥7	UL, cUL, BSI, VDE, FIMKO, CQC
4N28-X	DIP-6	10 mA		10		70		-55 to +100	5000	1	≥7	UL, cUL, BSI, VDE, FIMKO, CQC
TCET2200	DIP-8	5 mA		50	600	70	60	-55 to +100	5300	2	≥7	UL, cUL, VDE, VDE, FIMKO
ILD1	DIP-8	10 mA		20	300	50	60	-55 to +100	5300	2	≥7; ≥8	UL, BSI, cUL, VDE, FIMKO
ILD1615	DIP-8	10 mA	ILD1615-4	160	320	70	60	-55 to +110	5300	2	≥7	UL, BSI, cUL, VDE
ILD2	DIP-8	10 mA		100	500	70	60	-55 to +100	5300	2	≥7; ≥8	UL, BSI, cUL, VDE, FIMKO
ILD5	DIP-8	10 mA		50	400	70	60	-55 to +100	5300	2	≥7; ≥8	UL, BSI, cUL, VDE, FIMKO
ILD610	DIP-8	10 mA	ILD610-1	40	80	70	1.5	-55 to +100	5300	2	≥7	UL, BSI, cUL, VDE
	DIP-8	10 mA	ILD610-2	63	125	70	1.5	-55 to +100	5300	2	≥7	UL, BSI, cUL, VDE
	DIP-8	10 mA	ILD610-3	100	200	70	1.5	-55 to +100	5300	2	≥8	UL, BSI, cUL, VDE
	DIP-8	10 mA	ILD610-4	160	320	70	1.5	-55 to +100	5300	2	≥7	UL, BSI, cUL, VDE
ILD621	DIP-8	5 mA	ILD621	50	600	70	1.5	-55 to +100	5300	2	≥7; ≥8	UL, BSI, VDE, FIMKO
	DIP-8	5 mA	ILD621GB	100	600	70	1.5	-55 to +100	5300	2	≥7; ≥8	UL, BSI, VDE, FIMKO
TCET2100	DIP-8	5 mA		50	600	70	60	-55 to +100	5300	2	≥7	UL, BSI, cUL, VDE, FIMKO
TCET2200	DIP-8	5 mA		50	600	70	60	-55 to +100	5300	2	≥7	UL, BSI, cUL, VDE, FIMKO

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Base Part Number	Package	Forward Current I _F	Part Number	CTR min (%)	CTR max (%)	V _{CEO} (V)	Forward Current I _F max. (mA)	Operating Temperature max. (°C)	Isolation Voltage V _{ISO} (V _{RMS})	Ch(s)	Creepage distance (mm)	Safety Standard(s)
ILD615	DIP-8	10 mA	ILD615-1	40	80	70	60	-55 to +100	5300	2	≥7; ≥8	UL, cUL, VDE, FIMKO
	DIP-8	10 mA	ILD615-2	63	125	70	60	-55 to +100	5300	2	≥7; ≥8	UL, cUL, VDE, FIMKO
	DIP-8	10 mA	ILD615-3	100	200	70	60	-55 to +100	5300	2	≥7; ≥8	UL, cUL, VDE, FIMKO
	DIP-8	10 mA	ILD615-4	160	320	70	60	-55 to +100	5300	2	≥7; ≥8	UL, cUL, VDE, FIMKO
CNY74	DIP-8	5 mA	CNY74-2H	50	600	70	60	-55 to +100	5300	2	≥7	UL, cUL
ILD74	SMD-8	16 mA		12.5		70	60	-55 to +100	5300	2	≥7; ≥8	UL, BSI, cUL, VDE, FIMKO
ILD205	SOIC-8	10 mA		40	80	70	30	-55 to +100	4000	2	≥4	UL, cUL
ILD206	SOIC-8	10 mA		63	125	70	30	-55 to +100	4000	2	≥4	UL, cUL
ILD207	SOIC-8	10 mA		100	200	70	30	-55 to +100	4000	2	≥4	UL, cUL
ILD211	SOIC-8	10 mA		20		70	30	-55 to +100	4000	2	≥4	UL, cUL
ILD213	SOIC-8	10 mA		100		70	30	-55 to +100	4000	2	≥4	UL, cUL
ILD217	SOIC-8	1 mA		100		70	30	-55 to +100	4000	2	≥4	UL, cUL
VOD205	SOIC-8	10 mA		40	80	70	30	-40 to +100	4000	2	≥4	UL, cUL, VDE
VOD206	SOIC-8	10 mA		63	125	70	30	-40 to +100	4000	2	≥4	UL, cUL, VDE
VOD207	SOIC-8	10 mA		100	200	70	30	-40 to +100	4000	2	≥4	UL, cUL, VDE
VOD211	SOIC-8	10 mA		20		70	30	-40 to +100	4000	2	≥4	UL, cUL, VDE
VOD213	SOIC-8	10 mA		100		70	30	-40 to +100	4000	2	≥4	UL, cUL, VDE
VOD217	SOIC-8	1 mA		100		70	30	-40 to +100	4000	2	≥4	UL, cUL, VDE
IL1205A	SOIC-8	10 mA		40	80	70	60	-55 to +110	4000	1	≥4	UL, cUL, FIMKO
IL1206A	SOIC-8	10 mA		63	125	70	60	-55 to +110	4000	1	≥4	UL, cUL, FIMKO
IL1207A	SOIC-8	10 mA		100	200	70	60	-55 to +110	4000	1	≥4	UL, cUL, FIMKO
IL1208A	SOIC-8	10 mA		160	320	70	60	-55 to +110	4000	1	≥4	UL, cUL, FIMKO
IL205A	SOIC-8	10 mA		40	80	70	60	-55 to +100	4000	1	≥4	UL, cUL, FIMKO
IL206A	SOIC-8	10 mA		63	125	70	60	-55 to +100	4000	1	≥4	UL, cUL, FIMKO
IL207A	SOIC-8	10 mA		100	200	70	60	-55 to +100	4000	1	≥4	UL, cUL, FIMKO
IL208A	SOIC-8	10 mA		160	320	70	60	-55 to +100	4000	1	≥4	UL, cUL, FIMKO
IL211A	SOIC-8	10 mA		20		30	60	-55 to +100	4000	1	≥4	UL, cUL, FIMKO
IL212A	SOIC-8	10 mA		50		30	60	-55 to +100	4000	1	≥4	UL, cUL, FIMKO
IL213A	SOIC-8	10 mA		100		30	60	-55 to +100	4000	1	≥4	UL, cUL, FIMKO
IL215A	SOIC-8	1 mA		20		30	60	-55 to +100	4000	1	≥4	UL, cUL, FIMKO

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OPTOCOUPERS

Complete Product Portfolio









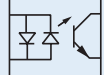
Phototransistor cont'd

Base Part Number	Package	Forward Current I_F	Part Number	CTR min (%)	CTR max (%)	V_{CE0} (V)	Forward Current I_F max. (mA)	Operating Temperature max. (°C)	Isolation Voltage V_{ISO} (V_{RMS})	Ch(s)	Creepage distance (mm)	Safety Standard(s)
IL216A	SOIC-8	1 mA		50		30	60	-55 to +100	4000	1	≥4	UL, cUL, FIMKO
IL217A	SOIC-8	1 mA		100		30	60	-55 to +100	4000	1	≥4	UL, cUL, FIMKO
ILD1205T	SOIC-8	10 mA		40	80			-55 to +110	4000	2	≥4	UL, cUL, VDE
ILD1206T	SOIC-8	10 mA		63	125			-55 to +110	4000	2	≥4	UL, cUL, VDE
ILD1207T	SOIC-8	10 mA		100	200			-55 to +110	4000	2	≥4	UL, cUL, VDE
VO205A	SOIC-8	10 mA		40	80	70	60	-40 to +100	4000	1	≥4	UL, cUL, VDE
VO206A	SOIC-8	10 mA		63	125	70	60	-40 to +100	4000	1	≥4	UL, cUL, VDE
VO207A	SOIC-8	10 mA		100	200	70	60	-40 to +100	4000	1	≥4	UL, cUL, VDE
VO208A	SOIC-8	10 mA		160	320	70	60	-40 to +100	4000	1	≥4	UL, cUL, VDE
VO211A	SOIC-8	10 mA		20		30	1	-40 to +100	4000	1	≥4	UL, cUL, VDE
VO212A	SOIC-8	10 mA		50		30	1	-40 to +100	4000	1	≥4	UL, cUL, VDE
VO213A	SOIC-8	10 mA		100		30	1	-40 to +100	4000	1	≥4	UL, cUL, VDE
VO215A	SOIC-8	1 mA		20		30	1	-40 to +100	4000	1	≥4	UL, cUL, VDE
VO216A	SOIC-8	1 mA		50		30	1	-40 to +100	4000	1	≥4	UL, cUL, VDE
VO217A	SOIC-8	1 mA		100		30	1	-40 to +100	4000	1	≥4	UL, cUL, VDE
ILQ1	DIP-16	10 mA		20	300	50	60	-55 to +100	5300	4	≥7; ≥8	UL, BSI, cUL, VDE, FIMKO
ILQ1615	DIP-16	10 mA	ILD1615-4	160	320	70	60	-55 to +110	5300	4	≥7	UL, BSI, cUL, VDE
ILQ2	DIP-16	10 mA		100	500	70	60	-55 to +100	5300	4	≥7; ≥8	UL, BSI, cUL, VDE, FIMKO
ILQ5	DIP-16	10 mA		50	400	70	60	-55 to +100	5300	4	≥7; ≥8	UL, BSI, cUL, VDE, FIMKO

OPTOCOUPERS

Complete Product Portfolio

Optocouplers / Isolators - AC Input

AC Input		SSOP-4	SOP-4	SOP-8	DIP-4	LSOP-4	DIP-6	DIP-8 (2-ch)	DIP-16 (4-ch)
									
V_{ISO}		3750 V_{RMS}		4000 V_{RMS}	5300 V_{RMS}				
AC input 	$\pm 1\text{ mA}$	VOS628A	-	-	-	VOL628A	-	-	-
	$\pm 5\text{ mA}$	VOS627A	SFH691	ILD256 (2)	SFH620A, SFH628A, TCET1600	-	IL25x	ILD250, ILD620	ILQ620

Features

- High CTR with low input current
- High collector emitter voltage V
- Isolation test voltage up to 5300 V_{RMS}
- Low coupling capacitance
- High common mode transient immunity

Applications

- Telecommunication
- PLCs
- Industrial controls
- Office machines

Resources:

AC input

www.vishay.com/optocouplers/opto-ac-in/

Optocouplers / Isolators - AC Input

Base Part number	Package	I_F	Part number	CTR min ¹ (%)	CTR max ¹ (%)	V_{CEO} (V)	Forward Current I_F max. (mA)	Operating Temperature max. (°C)	Isolation Voltage V_{ISO} (V_{RMS})	Channels	Safety Standards
K814P	DIP-4	$\pm 5\text{ mA}$		20	300	70	± 60	-40 to +100	5000	1	UL, CSA
SFH620AA	DIP-4	$\pm 5\text{ mA}$	SFH620AA	50	600	70	± 60	-55 to +100	5300	1	UL, CSA, BSI,
	DIP-4	$\pm 5\text{ mA}$	SFH620AGB	100	600	70	± 60	-55 to +100	5300	1	UL, CSA, BSI,
TCET1600	DIP-4	$\pm 5\text{ mA}$		20	300	70	± 60	-55 to +100	5300	1	UL, CSA, VDE, VDE, FIMKO
SFH620A	DIP-4 / SMD-4	$\pm 10\text{ mA}$	SFH620-1	40	125	70	± 60	-55 to +100	5300	1	UL, CSA, BSI, VDE
	DIP-4 / SMD-4	$\pm 10\text{ mA}$	SFH620-2	63	200	70	± 60	-55 to +100	5301	1	UL, CSA, BSI, VDE
	DIP-4 / SMD-4	$\pm 10\text{ mA}$	SFH620-3	100	320	70	± 60	-55 to +100	5302	1	UL, CSA, BSI, VDE
SFH6206	DIP-4 / SMD-4	$\pm 10\text{ mA}$	SFH6206-1	40	125	70	± 60	-55 to +100	5300	1	UL, CSA, BSI, VDE
	DIP-4 / SMD-4	$\pm 10\text{ mA}$	SFH6206-2	63	200	70	± 60	-55 to +100	5300	1	UL, CSA, BSI, VDE
	DIP-4 / SMD-4	$\pm 10\text{ mA}$	SFH6206-3	100	320	70	± 60	-55 to +100	5300	1	UL, CSA, BSI, VDE



OPTOCOUPLEDERS

Complete Product Portfolio

Optocouplers / Isolators - AC Input cont'd

Base Part number	Package	I _F	Part number	CTR min ¹ (%)	CTR max ¹ (%)	V _{CEO} (V)	Forward Current I _F max. (mA)	Operating Temperature max. (°C)	Isolation Voltage V _{ISO} (V _{RMS})	Channels	Safety Standards
SFH628A	DIP-4 / SMD-4	± 1 mA	SFH628A-2	63	200	55	± 50	-55 to +100	5300	1	UL, VDE, BSI
	DIP-4 / SMD-4	± 1 mA	SFH628A-3	100	320	55	± 50	-55 to +100	5300	1	UL, VDE, BSI
	DIP-4 / SMD-4	± 1 mA	SFH628A-4	160	500	55	± 50	-55 to +100	5300	1	UL, VDE, BSI
SFH6286	DIP-4 / SMD-4	± 1 mA	SFH6286-2	63	200	55	± 50	-55 to +100	5300	1	UL, VDE, BSI
	DIP-4 / SMD-4	± 1 mA	SFH6286-3	100	320	55	± 50	-55 to +100	5300	1	UL, VDE, BSI
	DIP-4 / SMD-4	± 1 mA	SFH6286-4	160	500	55	± 50	-55 to +100	5300	1	UL, VDE, BSI
SFH691A	SOP-4	± 5 mA		50	300	70	± 50	-55 to +100	3750	1	UL, cUL, FIMKO, VDE,
TCMT1600	SOP-4	± 5 mA		80	300	70	± 60	-40 to +100	3750	1	UL, cUL, VDE, FIMKO, BSI
VOS627A	SSOP-4	± 5 mA	VOS627A	50	600	80	50	-55 to +110	3750	1	UL, cUL, VDE, FIMKO, CQC
	SSOP-4	± 5 mA	VOS627A-2	63	125	80	50	-55 to +110	3750	1	UL, cUL, VDE, FIMKO, CQC
	SSOP-4	± 5 mA	VOS627A-3	100	200	80	50	-55 to +110	3750	1	UL, cUL, VDE, FIMKO, CQC
	SSOP-4	± 5 mA	VOS627A-4	160	320	80	50	-55 to +110	3750	1	UL, cUL, VDE, FIMKO, CQC
VOS628A	SSOP-4	± 1mA	VOS628A	50	600	80	50	-55 to +110	3750	1	UL, cUL, VDE, FIMKO, CQC
	SSOP-4	± 1mA	VOS628A-2	63	125	80	50	-55 to +110	3750	1	UL, cUL, VDE, FIMKO, CQC
	SSOP-4	± 1mA	VOS628A-3	100	200	80	50	-55 to +110	3750	1	UL, cUL, VDE, FIMKO, CQC
	SSOP-4	± 1mA	VOS628A-4	160	320	80	50	-55 to +110	3750	1	UL, cUL, VDE, FIMKO, CQC
	LSOP-4	± 1mA	VOL628A	50	600	80	± 60	-55 to +110	5000	1	UL, cUL, VDE, BSI, FIMKO, CQC
	LSOP-4	± 1mA	VOL628A-1	40	80	80	± 60	-55 to +110	5000	1	UL, cUL, VDE, BSI, FIMKO, CQC
	LSOP-4	± 1mA	VOL628A-2	63	125	80	± 60	-55 to +110	5000	1	UL, cUL, VDE, BSI, FIMKO, CQC
	LSOP-4	± 1mA	VOL628A-3	100	200	80	± 60	-55 to +110	5000	1	UL, cUL, VDE, BSI, FIMKO, CQC
IL766B	DIP-6					60	60		5300	1	UL, BSI
H11AA1	DIP-6 / SMD-6	± 10mA		20		30	± 60	-55 to +100	5300	1	UL, CSA, BSI, VDE, FIMKO
IL255	DIP-6 / SMD-6	± 10 mA	IL255	0.33	3	30	130	-55 to +100	5300	1	UL, cUL, BSI
	DIP-6 / SMD-6	± 10 mA	IL255-2	0.33	3	30	130	-55 to +100	5300	1	UL, cUL, BSI



OPTOCOUPERS

Complete Product Portfolio

Optocouplers / Isolators - AC Input cont'd

Base Part number	Package	I _F	Part number	CTR min ¹ (%)	CTR max ¹ (%)	V _{CEO} (V)	Forward Current I _F max. (mA)	Operating Temperature max. (°C)	Isolation Voltage V _{ISO} (V _{RMS})	Channels	Safety Standards
K824P	DIP-8	± 5 mA		20	300	70	± 60	-40 to +100	5000	2	UL, CSA
TCET2600	DIP-8	± 5 mA		20	300	70	± 60	-55 to +100	5300	2	UL, CSA, VDE, FIMKO
ILD620	DIP-8 / SMD-8	± 5 mA	ILD620	50	600	70	± 60	-55 to +100	5300	2	UL, cUL, VDE, FIMKO, CQC
	DIP-8 / SMD-8	± 5 mA	ILD620GB	100	600	70	± 60	-55 to +100	5300	2	UL, cUL, VDE, FIMKO, CQC
IL256A	SOIC-8	± 10 mA		20		30	60	-55 to +100	4000	1	UL, CSA, VDE
ILD256T	SOIC-8	± 10 mA		20		70	30	-55 to +100	4000	2	UL, VDE
TCMT4600	SOP-16	± 5 mA		80	300	70	± 60	-40 to +100	3750	4	UL, cUL, VDE, FIMKO, BSI
TCMT4606	SOP-16	± 5 mA		100	300	70	± 60	-40 to +100	3750	4	UL, cUL, VDE, FIMKO, BSI
K844P	DIP-16	± 5 mA		20	300	70	± 60	-40 to +100	5000	4	UL, CSA
TCET4600	DIP-16	± 5 mA		20	300	70	± 60	-55 to +100	5300	4	UL, CSA, VDE, FIMKO
ILQ620	DIP-16 / SMD-16	± 5 mA	ILQ620	50	600	70	± 60	-55 to +100	5300	4	UL, cUL, VDE, FIMKO, CQC
	DIP-16 / SMD-16	± 5 mA	ILQ620GB	100	600	70	± 60	-55 to +100	5300	4	UL, cUL, VDE, FIMKO, CQC



OPTOCOUPLEDERS

Complete Product Portfolio

Darlington

Darlington	SSOP-4	SSOP-16 (4-Ch)	SOIC-8	DIP-4	LSOP-4	DIP-6	DIP-8 (2-Ch)	DIP-16 (4-Ch)
V_{ISO}	3750 V_{RMS}		4000 V_{RMS}	5300 V_{RMS}				
DC input 	TCMD1000	TCMD4000	IL221/222/223 ILD223 (2-Ch) VO221/222/223 VOD223 (2-Ch)	K815P SFH655A SFH619A (HV)	TCLD1000	4N32 4N33 H11B IL66 MCA231	ILD55 ILD66 K825P TCED2100	ILQ30 ILQ31 ILQ55 ILQ66 K845P TCED4100
AC input 						IL766B		

Features

- High CTR with low input current
- High collector emitter voltage V
- Isolation test voltage up to 5300 V_{RMS}
- Certified to UL, CSA, VDE, Fimko, and CQC safety standards
- RoHS-compliant, lead (Pb)-free, and eco-friendly “green” compound

Applications

- Programmable logic controls
- Modems
- Office equipment

**OPTOCOUPLERS****Complete Product Portfolio****Darlington**


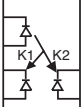
Part number	Package	V _{CEO} (V)	CTR min ¹ (%)	Forward Current I _F max. (mA)	Operating Temperature max. (°C)	Isolation Voltage V _{ISO} (VRMS)	Safety Standards
K815P	DIP-4	35	600	60	-40 to +100	5	UL, CSA, CQC
SFH619A	DIP-4 / SMD-4	300	1000	60	-55 to +100	5300	UL, BSI, FIMKO
SFH655A	DIP-4 / SMD-4	55	600	60	-55 to +100	5300	UL, VDE, VDE, BSI
TCMD1000	SOP-4	35	600	60	-40 to +100	3750	UL, CSA, VDE, FIMKO, BSI
TCLD1000	LSOP-4	35	600	60	-55 to +100	5000	UL, CSA, BSI, VDE
IL66	DIP-6 / SMD-6	60	100	60	-55 to +100	5300	UL, cUL, VDE, BSI
MCA231	DIP-6 / SMD-6	30	200	60	-55 to +100	5300	UL, CSA, BSI
4N32	DIP-6 / SMD-6	30	500	60	-55 to +100	5300	UL, VDE, BSI, FIMKO
4N33	DIP-6 / SMD-6	30	500	60	-55 to +100	5300	UL, VDE, BSI, FIMKO
IL66	DIP-8	60	100	60	-55 to +100	5300	UL, cUL, VDE, BSI
K825P	DIP-8	35	600	60	-40 to +100	5300	UL, CSA,
TCED2100	DIP-8	35		60	-40 to +100	5000	UL, BSI, CSA, Nordic
ILD66	DIP-8 / SMD-8	55	100	60	-55 to +100	5300	UL, cUL, VDE, BSI
ILD55	DIP-8 / SMD-8	55	100	60	-55 to +100	5300	UL, cUL, VDE, BSI, FIMKO
ILQ30	DIP-8 / SMD-8	30	100	60	-55 to +100	5300	UL, cUL, VDE, BSI, FIMKO
IL221A	SOIC-8	30		60	-55 to +100	4000	UL, CSA
IL222A	SOIC-8	30		60	-55 to +100	4000	UL, CSA
IL223A	SOIC-8	30		60	-55 to +100	4000	UL, CSA
ILD223	SOIC-8	30			-55 to +100	4000	UL, CSA, VDE
VO221A	SOIC-8	30	100	60	-40 to +100	4000	UL, cUL, VDE
VO222A	SOIC-8	30	100	60	-40 to +100	4000	UL, cUL, VDE
VO223A	SOIC-8	30	100	60	-40 to +100	4000	UL, cUL, VDE
VOD223	SOIC-8	30	500	30	-40 to +100	4000	UL, cUL, VDE
ILQ66	DIP-16	60	100	60	-55 to +100	5300	UL, cUL, VDE, BSI
ILQ32	DIP-16	30	500	60	-55 to +100	5300	UL, cUL, VDE, BSI
K845P	DIP-16	35	600	60	-40 to +100	5300	UL, CSA,
TCED4100	DIP-16	35		60	-40 to +100	5000	UL, BSI, CSA, Nordic
ILQ66	DIP-16 / SMD-16	60	100	60	-55 to +100	5300	UL, cUL, VDE, BSI
ILQ55	DIP-16 / SMD-16	55	100	60	-55 to +100	5300	UL, cUL, VDE, BSI, FIMKO
ILQ31	DIP-16 / SMD-16	30	100	60	-55 to +100	5300	UL, cUL, VDE, BSI, FIMKO
TCMD4000	SOP-16	35	600	60	-40 to +100	3750	UL, CSA, VDE, FIMKO, BSI



OPTOCOUPERS

Complete Product Portfolio

Linear Optocoupler

Linear	DIP-8 (2-ch) 
	IL300

Description

Linear optocouplers consist of an AlGaAs IRLED irradiating an isolated feedback and an output PIN photodiode in a bifurcated arrangement. The feedback photodiode captures a percentage of the LED's flux and generates a control signal (IP1) that can be used to servo the LED drive current. This technique compensates for the LED's non-linear time and temperature characteristics.

The output PIN photodiode produces an output signal (IP2) that is linearly related to the servo optical flux created by the LED.

Features

- Couples AC and DC signals
- 0.01 % servo linearity
- High gain stability, ± 0.005 %/°C typically
- Low input-output capacitance
- Low power consumption, < 15 mW
- Isolation test voltage, 5300 V_{RMS}, 1 s
- Distance through insulation > 0.4 mm

Applications

- Power supply feedback voltage/current
- Medical sensor isolation
- Audio signal interfacing
- Isolated process control transducers
- Digital telephone isolation

Linear Optocoupler

Part number	Package	K3 Transfer Gain ² (%)	Transfer Gain ¹ Linearity typ. (\pm %)	Bandwidth, typ. (kHz)	Isolation Voltage V _{ISO} (V _{RMS})	Safety standards
IL300	DIP-8 / SMD-8	0.557 to 1.618	0.25	200	5300	UL, VDE, VDE, BSI, FIMKO



OPTOCOUPERS

Complete Product Portfolio

High-Speed Optocouplers

Features

- JEDEC-compatible
- Reinforced insulation
- High-voltage isolation
- Up to 30 kV/ μ s common mode transient immunity
- Isolation test voltages up to 5300 V_{RMS}

Applications

- Industrial communication buses
- High-speed A/D and D/A converters
- Digital control and switch mode power supplies
- Industrial controller I/O interfaces
- Scan driver IC interfaces for high output voltage devices (plasma display panels)
- Signal isolation transformer replacement
- AC motor drives
- IPM drivers

Resources

- Analog
www.vishay.com/optocouplers/opto-high-analog/
- Digital
www.vishay.com/optocouplers/opto-high-digital/

High-Speed Optocouplers (Analog)

Part number	Package	Data Rate (MBd)	CTRmin (%)	tPLH typ. (μ s)	tPHL typ. (μ s)	CMTI typ (V/ μ sec)	Operating Temperature ($^{\circ}$ C)	Isolation Voltage VISO (VRMS)	Ch(s)	Creepage distance (mm)	Safety Standard(s)
6N1135	DIP-8; DIP-8, 400 mil; SMD-8	1	7	0.2	0.2	1000	-55 to + 110	5300	1	>7, >8	UL, VDE, cUL
6N1136	DIP-8; DIP-8, 400 mil; SMD-8	1	19	0.2	0.2	1000	-55 to + 110	5300	1	>7, >8	UL, VDE, cUL
6N135	DIP-8; SMD-8	1	7	0.2	0.2	1000	-55 to + 100	5300	1	>7	UL, VDE, cUL
6N136	DIP-8; DIP-8, 400 mil; SMD-8	1	19	0.2	0.2	1000	-55 to + 100	5300	1	>7, >8	UL, VDE, cUL
6N138	DIP-8; SMD-8	0.1	300	1	0.6	500	-55 to + 100	5300	1	>7	UL, VDE, cUL
6N139	DIP-8; SMD-8	0.1	500	1	0.6	500	-55 to + 100	5300	1	>7	UL, VDE, cUL
SFH6135	DIP-8; DIP-8, 400 mil; SMD-8	1	7	0.2	0.2	1000	-55 to + 100	5300	1	>7, >8	UL, VDE, cUL
SFH6136	DIP-8; DIP-8, 400 mil; SMD-8	1	19	0.2	0.2	1000	-55 to + 100	5300	1	>7, >8	UL, VDE, cUL
SFH6138	DIP-8	0.1	300	1	0.6	500	-55 to + 100	5300	1	>7	UL, VDE
SFH6139	DIP-8; DIP-8, 400 mil; SMD-8	0.1	500	1	0.6	500	-55 to + 100	5300	1	>7, >8	UL, VDE
SFH6315	SOIC-8	1	7	0.5	0.25	1000	-55 to + 100	4000	1	>4	UL, VDE, cUL

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**OPTOCOUPERS****Complete Product Portfolio****High-Speed Optocouplers (Analog) cont'd**





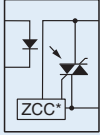
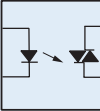
Part number	Package	Data Rate (MBd)	CTRmin (%)	tPLH typ. (μs)	tPHL typ. (μs)	CMTI typ (V/μsec)	Operating Temperature (°C)	Isolation Voltage VISO (VRMS)	Ch(s)	Creepage distance (mm)	Safety Standard(s)
SFH6316	SOIC-8	1	19	0.5	0.25	1000	-55 to + 100	4000	1	>4	UL, VDE, cUL
SFH6318	SOIC-8	0.1	300	2	2	1000	-55 to + 100	4000	1	>4	UL, VDE, cUL
SFH6319	SOIC-8	0.1	500	0.6	1.5	1000	-55 to + 100	4000	1	>4	UL, VDE, cUL
SFH6319	SOIC-8	0.1	500	0.6	1.5	1000	-55 to + 100	4000	1	>4	UL, VDE, cUL
SFH6325	DIP-8; SMD-8	1	7	0.5	0.25	15000 ¹	-55 to + 100	5300	2	>7	UL, VDE, cUL
SFH6326	DIP-8; DIP-8, 400 mil; SMD-8	1	19	0.5	0.25	15000 ¹	-55 to + 100	5300	2	>7, >8	UL, VDE, cUL
SFH6343	SOIC-8	1	19	0.5	0.25	15000 ¹	-55 to + 100	4000	1	>4	UL, VDE, cUL
SFH6345	DIP-8; DIP-8, 400 mil; SMD-8	1	19	0.3	0.3	15000 ¹	-55 to + 100	5300	1	>7, >8	UL, VDE
SFH636	DIP-6; DIP-6, 400 mil; SMD-6	1	19	0.3	0.3	10000 ¹	-55 to + 100	5300	1	>7, >8	
VOM452	SOP-4, 100 mil	1	15	0.2	0.5	1000 ¹	-55 to + 100	3750	1	>5	UL, VDE
VOM453	SOP-4, 100 mil	1	15	0.2	0.5	15000 ¹	-55 to + 100	3750	1	>5	UL, VDE
VOW135	DIP-8, 400mil Wide Body	1	7	1.3	0.2	1000 ¹	-40 to + 100	5300	1	>10	UL, VDE, cUL, CQC
VOW136	DIP-8, 400mil Wide Body	1	19	6	0.2	1000 ¹	-40 to + 100	5300	1	>10	UL, VDE, cUL, CQC

Note: ¹ = minimum value

**OPTOCOUPERS****Complete Product Portfolio****High-Speed Optocouplers (Digital)**

Part number	Package	Data Rate (MBd)	tPLH typ. (ns)	tPHL typ. (ns)	Pulse Width Distortion PWD (ns)	CMTI typ (V/μsec)	CMTI min (V/μsec)	Operating Temperature (°C)	Isolation Voltage VISO (VRMS)	Ch(s)	Creepage Distance (mm)\	Safety Standards
6N137	DIP-8; DIP-8, 400mil, SMD-8	10	48	50	2.9	25000		-40 to + 100	5300	1	>7, >8	UL, VDE, cUL
6N137A	DIP-8; SMD-8	10	45	32	2.9	25000		-40 to + 100		1	>7	UL, VDE, cUL
SFH6700	DIP-8; SMD-8	5	120	125			1000	-40 to + 85	5300	1	>7	UL, VDE
SFH6701	DIP-8; SMD-8	5	120	125			1000	-40 to + 85	5300	1	>7	UL, VDE
SFH6702	DIP-8; DIP-8, 400mil, SMD-8	5	120	125			1000	-40 to + 85	5300	1	>7, >8	UL, VDE
SFH6705	DIP-8; DIP-8, 400mil, SMD-8	5	120	125			1000	-40 to + 85	5300	1	>7, >8	UL, VDE
SFH6711	DIP-8; SMD-8	5	120	125			2500	-40 to + 85	5300	1	>7	UL, VDE
SFH6712	DIP-8; SMD-8	5	120	125			2500	-40 to + 85	5300	1	>7	UL, VDE
SFH6719	DIP-8	5	120	125			2500	-40 to + 85	5300	1	>7	UL, VDE
SFH6720	SOIC-8	5	120	125			1000	-40 to + 85	4000	1	>4	UL, VDE
SFH6721	SOIC-8	5	120	125			2500	-40 to + 85	4000	1	>4	UL, VDE
SFH6731	DIP-8; SMD-8	5	120	125			1000	-40 to + 85	5300	2	>7	UL, VDE
SFH6732	DIP-8; SMD-8	5	120	125			5000	-40 to + 85	5300	2	>7	UL, VDE
SFH6755	SOIC-8	10	48	50	2.9	10000		-40 to + 100	4000	2		
SFH6756	SOIC-8	10	48	50	2.9		5000	-40 to + 100	4000	2		
SFH6757	SOIC-8	10	48	50	2.9		10000	-40 to + 100	4000	2		
VO0600	SOIC-8	10	48	50	2.9		1000	-40 to + 100	4000	1		UL, VDE, cUL
VO0601	SOIC-8	10	48	50	2.9		5000	-40 to + 100	4000	1		UL, VDE, cUL
VO0611	SOIC-8	10	48	50	2.9		10000	-40 to + 100	4000	1		UL, VDE, cUL
vo0630	SOIC-8	10	48	50	2.9		1000	-40 to + 100	4000	2	>4	UL, VDE, cUL
vo0631	SOIC-8	10	48	50	2.9		5000	-40 to + 100	4000	2	>4	UL, VDE, cUL
vo0661	SOIC-8	10	48	50	2.9		10000	-40 to + 100	4000	2	>4	UL, VDE, cUL
VO2601	DIP-8; DIP-8, 400mil, SMD-8	10	48	50	2.9		5000	-40 to + 100	5300	1	>7, >8	UL, VDE, cUL
VO2611	DIP-8; DIP-8, 400mil, SMD-8	10	48	50	2.9		10000	-40 to + 100	5300	1	>7, >8	UL, VDE, cUL
VO2630	DIP-8; DIP-8, 400mil, SMD-8	10	48	50	2.9		1000	-40 to + 100	5300	2	>7, >8	UL, VDE, cUL
VO2631	DIP-8; DIP-8, 400mil, SMD-8	10	48	50	2.9		5000	-40 to + 100	5300	2	>7, >8	UL, VDE, cUL
VO4661	DIP-8; DIP-8, 400mil, SMD-8	10	48	50	2.9		10000	-40 to + 100	5300	2	>7, >8	UL, VDE, cUL
VOW137	DIP-8, 400mil Wide Body	10	49	46	3.1		10000	-40 to + 100	5300	1	>10	UL, VDE, cUL, CQC
VOW2611	DIP-8, 400mil Wide Body	10	49	46	3.1		20000	-40 to + 100	5300	1	>10	UL, VDE, cUL, CQC

Phototriacs

Phototriac		DIP-6 / SMD-6			SOP-4	DIP-16	DIP-8 (6)
							
Min/ Dv/dt		10 000 V/μs	5000 V/μs	≤ 1500 V/μs	≤ 1500 V/μs	500 V/μs	10 V/μs
Zero Crossing 	400 V	BRT21	VO4154	-	-	-	-
	600 V	IL410 IL4116 IL4117 (700 V)	VO4156 VO3062 VO3063 VO4157 (700 V)	VO3062 VO3063	-	VO2223 VO2223A	-
	800 V	IL4108 IL4118	VO4158	-	-	-	-
Non-Zero Crossing 	250 V	-	-	K3010 K3011 K3012 K3013	-	-	-
	400 V	BRT11	VO4254	VO3020 VO3021 VO3022 VO3023 K3020 K3022 K3023	-	-	-
	600 V	IL420 IL4216 IL4217 (700 V)	VO4256 VO4257 (700 V)	VO3252 VO3253	VOM3052 VOM3053 VOM160	VO3526	-
	800 V	IL4208 IL4218	VO4258	-	-	-	-

Features

- Zero crossing or non-zero crossing
- dV/dt range: 10 kV/μs, 5 kV/μs, 1.5 kV/μs, 0.5 kV/μs, 10 V/μs
- V_{DRM} range: 250 V, 400 V, 600 V, 700 V, 800 V
Isolation test voltage up to 5300 V_{RMS}
- Worldwide safety agency certifications: UL, cUL, CSA, CQC, VDE, DIN EN (60747-5-5), FIMKO
- DIP, SMD, SOP with leadbend options available

Applications

- AC Solid-state relays
- Lighting controls
- AC motor starters and drives
- Utilities metering over AC lines
- Solenoid/valve controls
- Temperature controls
- Electromechanical contactors

Resources

- www.vishay.com/optocouplers/opto-triac/

**OPTOCOUPERS****Complete Product Portfolio****Non-Zero Crossing Phototriacs**

Part number	Zero or Non-zero crossing	Package	Trigger Current IFT (mA) MAX.	Blocking Voltage VDRM (V)	Static dv / dt (V/μs)	On-state Current (mA)	Commutating dv / dt (V/μs) TYP.	Operating Temperature (°C)	Isolation Voltage VISO VRMS	Ch(s)	Creepage distance (mm)	Safety standard
K3012P	Non-Zero	DIP-6	5	250	10	100	0.2	-55 to +100	5300	1	≥7	UL, BSI, VDE
K3012PG	Non-Zero	DIP-6	5	250	10	100	0.2	-55 to +100	5300	1	≥8	UL, BSI, VDE
K3011P	Non-Zero	DIP-6	10	250	10	100	0.2	-55 to +100	5300	1	≥7	UL, BSI, VDE
K3011PG	Non-Zero	DIP-6	10	250	10	100	0.2	-55 to +100	5300	1	≥8	UL, BSI, VDE
K3010P	Non-Zero	DIP-6	15	250	10	100	0.2	-55 to +100	5300	1	≥7	UL, BSI, VDE
K3010PG	Non-Zero	DIP-6	15	250	10	100	0.2	-55 to +100	5300	1	≥8	UL, BSI, VDE
K3036P	Non-Zero	DIP-6	3.6	400	10	100	0.15	-55 to +100	5300	1	≥7	UL, CSA, VDE, BSI
K3036PG	Non-Zero	DIP-6	3.6	400	10	100	0.15	-55 to +100	5300	1	≥8	UL, CSA, VDE, BSI
K3023P	Non-Zero	DIP-6	5	400	10	100	0.15	-55 to +100	5300	1	≥7	UL, CSA, VDE, BSI
K3023PG	Non-Zero	DIP-6	5	400	10	100	0.15	-55 to +100	5300	1	≥8	UL, CSA, VDE, BSI
VO3023	Non-Zero	DIP-6	5	400	100	1		-40 to +100	5000	1	≥7; ≥8	UL, cUL, VDE, FIMKO, CQC
K3022P	Non-Zero	DIP-6	10	400	10	100	0.15	-55 to +100	5300	1	≥7	UL, CSA, VDE, BSI
K3022PG	Non-Zero	DIP-6	10	400	10	100	0.15	-55 to +100	5300	1	≥8	UL, CSA, VDE, BSI
VO3022	Non-Zero	DIP-6	10	400	100	1		-40 to +100	5000	1	≥7; ≥8	UL, cUL, VDE, FIMKO, CQC
K3021P	Non-Zero	DIP-6	15	400	10	100	0.15	-55 to +100	5300	1	≥7	UL, CSA, VDE, BSI
K3021PG	Non-Zero	DIP-6	15	400	10	100	0.15	-55 to +100	5300	1	≥8	UL, CSA, VDE, BSI
VO3021	Non-Zero	DIP-6	15	400	100	1		-40 to +100	5000	1	≥7; ≥8	UL, cUL, VDE, FIMKO, CQC
K3020P	Non-Zero	DIP-6	30	400	10	100	0.15	-55 to +100	5300	1	≥7	UL, CSA, VDE, BSI
K3020PG	Non-Zero	DIP-6	30	400	10	100	0.15	-55 to +100	5300	1	≥8	UL, CSA, VDE, BSI
VO3020	Non-Zero	DIP-6	30	400	100	1		-40 to +100	5000	1	≥7; ≥8	UL, cUL, VDE, FIMKO, CQC
VO4254D	Non-Zero	DIP-6	1.6	400	5000	300		-55 to +100	5300	1	≥7; ≥8	UL, cUL, VDE, FIMKO
VO4256D	Non-Zero	DIP-6	1.6	600	5000	300		-55 to +100	5300	1	≥7; ≥8	UL, cUL, VDE, FIMKO
IL420	Non-Zero	DIP-6	2	600	10000	300	8	-55 to +100	5300	1	≥7; ≥8	UL, CSA, VDE, CQC
VO4254H	Non-Zero	DIP-6	2	400	5000	300		-55 to +100	5300	1	≥7; ≥8	UL, cUL, VDE, FIMKO
VO4256H	Non-Zero	DIP-6	2	600	5000	300		-55 to +100	5300	1	≥7; ≥8	UL, cUL, VDE, FIMKO
VO4254M	Non-Zero	DIP-6	3	400	5000	300		-55 to +100	5300	1	≥7; ≥8	UL, cUL, VDE, FIMKO
VO4256M	Non-Zero	DIP-6	3	600	5000	300		-55 to +100	5300	1	≥7; ≥8	UL, cUL, VDE, FIMKO
VO3052	Non-Zero	DIP-6	5	600	1500	100		-55 to +100	5300	1	≥7; ≥8	UL, cUL, VDE
VO3053	Non-Zero	DIP-6	10	600	1500	100		-55 to +100	5300	1	≥7; ≥8	UL, cUL, VDE
IL4216	Non-Zero	DIP-6	1.3	600	10000	300	8	-55 to +100	5300	1	≥7; ≥8	UL, CSA, VDE, BSI, FIMKO
IL4217	Non-Zero	DIP-6	1.3	700	10000	300	8	-55 to +100	5300	1	≥7	UL, CSA, VDE, BSI, FIMKO



OPTOCOUPERS

Complete Product Portfolio

Non-Zero Crossing Phototriacs cont'd

Part number	Zero or Non-zero crossing	Package	Trigger Current IFT (mA) MAX.	Blocking Voltage VDRM (V)	Static dv / dt (V/ μ s)	On-state Current (mA)	Commutating dv / dt (V/ μ s) TYP.	Operating Temperature (°C)	Isolation Voltage VISO VRMS	Ch(s)	Creepage distance (mm)	Safety standard
VO4257D	Non-Zero	DIP-6	1.6	700	5000	300		-55 to +100	5300	1	≥7; ≥8	UL, cUL, VDE
VO4258D	Non-Zero	DIP-6	1.6	800	5000	300		-55 to +100	5300	1	≥7; ≥8	UL, cUL, VDE
IL4208	Non-Zero	DIP-6	2	800	10000	300	8	-55 to +100	5300	1	≥7	UL, CSA, VDE, CQC
VO4257H	Non-Zero	DIP-6	2	700	5000	300		-55 to +100	5300	1	≥7; ≥8	UL, cUL, VDE
VO4258H	Non-Zero	DIP-6	2	800	5000	300		-55 to +100	5300	1	≥7; ≥8	UL, cUL, VDE
VO4257M	Non-Zero	DIP-6	3	700	5000	300		-55 to +100	5300	1	≥7; ≥8	UL, cUL, VDE
VO4258M	Non-Zero	DIP-6	3	800	5000	300		-55 to +100	5300	1	≥7; ≥8	UL, cUL, VDE
IL4218	Non-Zero	DIP-6	1.3	800	10000	300	8	-55 to +100	5300	1	≥7; ≥8	UL, CSA, VDE, BSI, FIMKO
VOM160N	Non-Zero	SOP-4	5	600	500	70	0.13	-40 to +100	3750	1	≥5	UL, cUL, CQC
VOM160P	Non-Zero	SOP-4	7	600	500	70	0.13	-40 to +100	3750	1	≥5	UL, cUL, CQC
VOM160R	Non-Zero	SOP-4	10	600	500	70	0.13	-40 to +100	3750	1	≥5	UL, cUL, CQC
VOM3052	Non-Zero	SOP-4	5	600	1500	70	0.13	-40 to +100	3750	1	≥5	UL, cUL, CQC
VOM3053	Non-Zero	SOP-4	10	600	1500	70	0.13	-40 to +100	3750	1	≥5	UL, cUL, CQC
VO2223	Non-Zero	DIP-6	10	600		1	0.7	-40 to +85	5300	1	≥7	UL, cUL
VO2223A	Non-Zero	DIP-6	10	600		1	0.7	-40 to +85	5300	1	≥7	UL, cUL
VO3526	Non-Zero	DIP-10	10	600		1	0.9	-40 to +85	5300	1	≥7	UL, cUL

**OPTOCOUPLERS****Complete Product Portfolio****Zero Crossing Phototriacs**

Part number	Zero or Non-zero crossing	Package	Trigger Current IFT (mA) MAX.	Blocking Voltage VDRM (V)	Static dv / dt (V/ μ s)	On-state Current (mA)	Commutating dv / dt (V/ μ s) TYP.	Operating Temperature (°C)	Isolation Voltage VISO VRMS	Ch(s)	Creepage distance (mm)	Safety standard
VO3062	Zero	DIP-6	5	600	1500	100		-55 to +100	5300	1	≥ 7 ; ≥ 8	UL, cUL, VDE
VO3063	Zero	DIP-6	10	600	1500	100		-55 to +100	5300	1	≥ 7 ; ≥ 8	UL, cUL, VDE
VO4154D	Zero	DIP-6	1.6	400	5000	300		-55 to +100	5300	1	≥ 7 ; ≥ 8	UL, cUL, VDE
VO4156D	Zero	DIP-6	1.6	600	5000	300		-55 to +100	5300	1	≥ 7 ; ≥ 8	UL, cUL, VDE
VO4154H	Zero	DIP-6	2	400	5000	300		-55 to +100	5300	1	≥ 7 ; ≥ 8	UL, cUL, VDE
VO4156H	Zero	DIP-6	2	600	5000	300		-55 to +100	5300	1	≥ 7 ; ≥ 8	UL, cUL, VDE
VO4154M	Zero	DIP-6	3	400	5000	300		-55 to +100	5300	1	≥ 7 ; ≥ 8	UL, cUL, VDE
VO4156M	Zero	DIP-6	3	600	5000	300		-55 to +100	5300	1	≥ 7 ; ≥ 8	UL, cUL, VDE
IL4116	Zero	DIP-6	1.3	600	10000	300	8	-55 to +100	5300	1	≥ 7 ; ≥ 8	UL, CSA, BSI, VDE, FIMKO
IL410	Zero	DIP-6	2 to +6	600	10000	300	8	-55 to +100	5300	1	≥ 7 ; ≥ 8	UL, CSA, VDE
IL4117	Zero	DIP-6	1.3	700	10000	300	8	-55 to +100	5300	1	≥ 7 ; ≥ 8	UL, CSA, BSI, VDE, FIMKO
VO4157D	Zero	DIP-6	1.6	800	5000	300		-55 to +100	5300	1	≥ 7 ; ≥ 8	UL, cUL, VDE, FIMKO
VO4158D	Zero	DIP-6	1.6	800	5000	300		-55 to +100	5300	1	≥ 7 ; ≥ 8	UL, cUL, VDE, FIMKO
VO4157H	Zero	DIP-6	2	800	5000	300		-55 to +100	5300	1	≥ 7 ; ≥ 8	UL, cUL, VDE, FIMKO
VO4158H	Zero	DIP-6	2	800	5000	300		-55 to +100	5300	1	≥ 7 ; ≥ 8	UL, cUL, VDE, FIMKO
VO4157M	Zero	DIP-6	3	800	5000	300		-55 to +100	5300	1	≥ 7 ; ≥ 8	UL, cUL, VDE, FIMKO
VO4158M	Zero	DIP-6	3	800	5000	300		-55 to +100	5300	1	≥ 7 ; ≥ 8	UL, cUL, VDE, FIMKO
IL4118	Zero	DIP-6	1.3	800	10000	300	8	-55 to +100	5300	1	≥ 7	UL, CSA, BSI, VDE, FIMKO
IL4108	Zero	DIP-6	2 to +6	800	10000	300	8	-55 to +100	5300	1	≥ 7 ; ≥ 8	UL, CSA, VDE

Solid-State Relays

Solid State Relays (SSRs)		SSOP-8	SOP-8	SOP-4	DIP-6	DIP-8 (1-Ch)	DIP-8 (2-Ch)
Types	V _{ISO}	2500 V _{RMS}	3000 V _{RMS}	3750 V _{RMS}	5300 V _{RMS}		
	Off state voltage						
1 Form A	60 V	-	-	VO1400AEFTR	VO14642A	-	-
	200 V	-	-	-	LH1510A	-	LH1522A LH1544A
	250 V	-	-	-	LH1518A	-	LH1505A
	350 V	LH1540ACD	LH1532 LH1529	LH1546AEF	LH1500A LH1546A LH1550A	LH1529A (with Optocoupler)	LH1520A LH1532A LH1533A LH1556A
	400 V	-	-	-	LH1525A	-	LH1526A
	200 V	-	-	-	LH1511B	-	LH1523B
	350 V	-	-	-	LH1501B	-	LH1521B
1 Form A/B, C	200 V	-	-	-	-	LH1512B	-
	350 V	-	-	-	-	LH1502B	-
2 Form A	200 V	-	-	-	-	LH1513A	-
	350 V	-	-	-	-	LH1503A	-
MOSFET Driver		-	-	VOM1271	-	LH1262C VO1263A	-

Introduction

Vishay's solid-state relays (SSRs) deliver fast switching while optically isolating and protecting equipment from damaging external high-voltage spikes. By eliminating the majority of wire bonds found in other SSRs, Vishay's monolithic structure has set the performance standard. With no moving parts, our SSRs relays are noiseless, bounce-free, and reliable, commonly replacing electromechanical relays. Used in industrial, automotive, and communication applications, all of our SSRs feature low power consumption, small packaging, and low turn-on current. Exceeding industry standards, they are approved by VDE, UL, CSA and other safety regulatory agencies.

Features

- Reliable, long life, no noise, contact bounce or arcing
- Low power consumption at 75 % lower than EMR
- Low capacitance SSRs (3.5 pF)
- High-frequency SSRs (< 50 mhz)

Applications

- Telecom switches
- ATE test equipment
- Alarm control systems

Resources

- Datasheets:
www.vishay.com/solid-state-relays/
- SSR application notes:
www.vishay.com/solid-state-relays/related/#appnot



OPTOCOUPLEDERS

Complete Product Portfolio

Solid-State Relays

Part number	Type	Package	Load Voltage Max (V)	Load Current Max. Recommended (mA) - AC/DC	Load Current Max. Recommended (mA) -DC	On-Resistance Max. at 25 °C (Ω) -AC/DC	On-Resistance Max. at 25 °C (Ω) -DC	Current Limit (mA), Typ. at 25 °C, IF = 5 mA -AC/DC	t _{on}	t _{off}	Isolation Voltage VISO VRMS	CH(s)
LH1546AEF	1 Form A	SOP-4	350	120	—	35	—	—	3	3	5300	1
VO1400AEFTR		DIP-4	60	100	—	5	—	—	0.5	0.5	5300	1
LH15109		DIP-6	200	200	350	15	3.75	360	2.0*	2.0*	5300	1
LH1518		DIP-6	250	155	300	20	5	28010	3	3	5300	1
LH1500		DIP-6	350	150	250	25	6.25	270	2	2	5300	1
LH1540		DIP-6	350	120	250	25	6.25	210	2	2	5300	1
LH1546A		DIP-6	350	120	—	35	—	200	3	3	5300	1
LH15501		DIP-6	350	100	—	50	—	200	3	3	5300	1
VO14642		DIP-6	60	1000	2000	0.25	0.07	—	0.8*	0.8*	5300	1
LH1513	2 Form A	DIP-8	200	140	—	15	—	360	2.5*	2.5*	5300	1
LH1503		DIP-8	350	110	—	25	—	270	2.5*	2.5*	5300	1
LH1522	1 Form A	DIP-8	200	140	—	15	—	360	2.0*	2.0*	5300	2
LH15441		DIP-8	200	40	—	160	—	—	0.5	0.5	5300	2
LH1505		DIP-8	250	120	—	20	—	200	4	4	5300	2
LH1520		DIP-8	350	110	—	25	—	270	2	2	5300	2
LH1526		DIP-8	400	100	—	36	—	210	1	1.5	5300	2
LH15325		DIP-8	350	110	—	25	—	210	2	2.5	5300	2
LH1533		DIP-8	350	70	—	50	—	200	3	3	5300	2
LH15565		DIP-8	350	120	—	35	—	210	3	3	5300	2
LH1511	1 Form B	DIP-6	200	200	300	15	3.75	—	3.0*	3.0*	5300	1
LH1501		DIP-6	350	150	200	25	6.25	—	3	3	5300	1
LH1521		DIP-8	350	110	—	25	—	—	3	3	5300	2
LH1523	1 Form A	DIP-8	200	140	—	15	—	—	3.0*	3.0*	5300	2
LH15022		DIP-8	350	150	—	25	—	290	6.0*	3.0*	5300	2
LH1512	1 Form A, B/C	DIP-8	200	200	—	15	—	360	3.0*	3.0*	5300	1
LH15295,6,7	1 Form A w/ Optocoupler	DIP-8	350	120	—	25	—	210	2.5	2.5	5300	1
LH15398	1 Form A w/ Darlington	DIP-8	400	120	—	33	—	210	2	0.5	5300	1
LH1262	MOSFET Driver		15	—	14 μA*	—	—	—	35 μs**	90 μs**	5300	1
VO1263		DIP-8	15	—	23 μA*	—	—	—	26 μs**	73 μs**	5300	1
VOM1271		SOP-4							53 μs	24 μs	3750	1

Notes:

* IF = 10 mA

** IF = 20 mA

1. Low capacitance SSR (3.5 pF)

2. Break-before-make operation

3. High-frequency SSR (< 50 MHz)

4. Current through both poles operating

simultaneously. Load current for individual pole ratios is higher

5. Surface mount Flat-Pack available

6. Current transfer ratio min. 33 %

7. Current transfer ratio min. 100 %

8. Current transfer ratio > 300 %

9. DC current limit 720 mA

10. AC Only



OPTOCOUPERS

Complete Product Portfolio

IGBT and MOSFET Drivers

Introduction

Optically isolated IGBT drivers are used to isolate the high-voltage stage of an DC/AC inverter from the low-voltage control circuitry. This high voltage must be isolated from the user accessible low-voltage circuitry. Optically isolated IGBT drivers also allow the designers to separate low-noise control circuitry from noisy high-voltage and high-current circuitry, which improves performance, shrinks product size, and simplifies the design process.

Features

- Wide operating voltages available
- High operating temperature
- Broad range of surface-mount and through-hole package types
- Single and dual channel products
- Low on resistance

Applications

- Isolated IGBT/MOSFET gate driver
- AC and brushless DC motor drives
- Induction stove tops
- Industrial inverters
- Switch mode power supplies (SMPS)
- Uninterruptible power supplies (UPS)

Resources

- Datasheets:
www.vishay.com/optocouplers/opto-driver/
- IGBT/MOSFET application notes:
www.vishay.com/optocouplers/opto-driver/related/#appnot

Base Part number	Package	Load Voltage Max (V)	Load Current Max. Recommended (mA) - AC/DC	Load Current Max. Recommended (mA) -DC	On-Resistance Max. at 25 °C (Ω) -AC/DC	On-Resistance Max. at 25 °C (Ω) -DC	Current Limit (mA), Typ. at 25 °C, IF = 5 mA -AC/DC	t _{on}	t _{off}	t _{PLH} Min (ns)	t _{PLH} Max (ns)	Pulse Width Distortion PWD (ns)	CMTI typ (V/msec)	Operating Temperature (°C)	Isolation Voltage VISO (VRMS)	Channel(s)	Safety Standards
LH1262	DIP-8	15	—	14 μA	—	—	—	35 μs	90 μs					-40 to 85	5300	1	UL, cUL, VDE, BSI, FIMKO
VO1263	DIP-8	15	—	23 μA	—	—	—	26 μs	73 μs					-40 to 100	5300	1	UL, cUL, VDE, BSI, FIMKO, CQC
VO3120	DIP-8							53 μs	24 μs	0.1	0.4	0.2	25	-40 to 110	5300	1	UL, cUL, VDE
VO3150A	DIP-8									0.1	0.4	0.2	25	-40 to 110	5300	1	UL, cUL, VDE
VOM1271	SOP-4													-40 to 100	4500	1	UL, cUL, FIMKO
VOW3120	Widebody									0.1	0.5	0.3	25	-40 to 100	5300	1	UL, cUL, VDE, CQC

OPTOCOUPLEDERS

Complete Product Portfolio

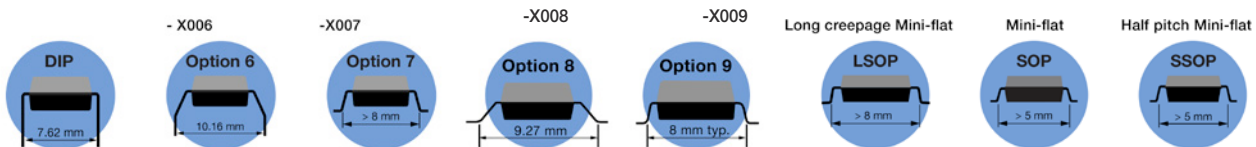
Part Number Coding

Option Information

Optocoupler lead-bend configurations are available as options. In addition, partial discharge testing as per VDE/IEC is also available as an option.

See the order information section in the data-sheet to determine if and which options are available to a specific product. Contact the Vishay sales office for other option configurations. The options are:

- Option 1: VDE option. Tested per DIN EN 60747-5-5 (VDE 0884-5)
- Option 6: 400 mil (10.16 mm) lead spread DIP configuration
 - Lead spacing 10.16 mm (0.4")
 - Creepage distance > 8 mm
 - Clearance > 8 mm
- Option 7: Surface-mount, gull-wing DIP configuration with standoff
 - Creepage distance > 8 mm
 - Clearance > 8 mm
- Option 8: Surface-mount, gull-wing DIP configuration with increased clearance
 - Creepage distance > 8 mm
 - Clearance > 8 mm
- Option 9: Surface-mount, gull-wing DIP configuration



Ordering Information

A specific option or combination of options can be ordered by add the options definition field following the base part number and CTR range (if applicable) as presented in the following example:

Optocouplers

Prefix	Base Part Number	CTR Ranges	Options Definition	Tape and Reel Option
V O L	6 1 7 A	- 3	X 0 0 9	T
VO VOM VOS VOL BRT II ILD ILQ SFH		1 = 40 % to 80 % 2 = 63 % to 125 % 3 = 100 % to 200 % 4 = 160 % to 320 % 5 = 250 % to 500 % or 50 % to 150 % ⁽¹⁾ 6 = 100 % to 300 % ⁽¹⁾ 7 = 80 % to 160 % ⁽¹⁾ 8 = 130 % to 260 % ⁽¹⁾ 9 = 200 % to 400 % ⁽¹⁾		
Examples: CNY17F-2X017T 4N35-X016 SFH615-3X001 VO615A-9X007T	Note ⁽¹⁾ Used on selected products, consult data sheet for details			

Solid-State Relays (SSRs)

Device Identifier	Electrical Variation	Package Configuration	1 or 2 Alpha Suffix designator
VO1400 LH1550	A AC	EF TR	1
	- A = No variation from test specification - B, C, etc. = Test specification variation	- TR = packaged in tape and reel configuration - 1 = No DC contact for 6-pin package, at Pin 5	
		- Package Configuration 1 or 2 Alpha Suffix designator - B = 8-pin DIP - D = 4-pin DIP - T = 6-pin DIP - AB = 6-pin Gull Wing - AC = 8-pin Gull Wing - CC = 8-pin "S" Bend Gull Wing - CD = 8-pin SOP - EF = 4-pin SOP - DF = 4-pin Gull Wing	



OPTOCOUPLERS

Complete Product Portfolio

CTR Options

To increase design flexibility, Vishay provides ten CTR values over a wide range from 40 % to 600 %. Please go to datasheets to see detailed information.

CTR SELECTION	CTR RANGE
(blank)	50 % to 600 %
- 1	40 % to 80 %
- 2	63 % to 125 %
- 3	100 % to 200 %
- 4	160 % to 320 %
- 5	50 % to 100 %
- 6	250 % to 500 %
- 7	80 % to 160 %
- 8	130 % to 260 %
- 9	200 % to 400 %

CTR availability varies based upon product. Please go to datasheets to see detailed information.

Assembly Instructions

GENERAL

Vishay offers a wide product selection of optocouplers and solid-state relays in a variety of packages. This document provides instructions on mounting for the different types of packages, specifically on the different methods of soldering. For DIP packages, they can be mounted in DIP sockets or directly on a pre-designed PCB with holes.

The preferred solder process for SMD packages is reflow soldering. Certain SMD families are also qualified for wave soldering; please see table 1. The moisture sensitivity level (MSL) = 1 for all couplers.

If the device is to be mounted near heat-generating components, consideration must be given to the resultant increase in ambient temperature.

SOLDERING INSTRUCTIONS

Protection against overheating is essential when a device is being soldered. Therefore, the connection wires or PCB traces should be left as long as possible. The maximum permissible soldering temperature is governed by the maximum permissible heat that may be applied to the package.

The maximum soldering iron (or solder bath) temperatures are given in the individual datasheets. During soldering, no forces must be transmitted from the pins to the case (e.g., by spreading the pins).

SOLDERING METHODS

There are several methods for soldering devices onto the substrate. The following is a partial list.

(a) Soldering in the vapor phase

Soldering in saturated vapor is also known as condensation soldering. This soldering process is used as a batch system (dual vapor system) or as a continuous single vapor system. Both systems may also include a pre-heating of the assemblies to prevent high-temperature shock and other undesired effects.

(b) Reflow soldering of lead (Pb)-free SMD devices

By using infrared (IR) reflow soldering, the heating is contact-free and the energy for heating the assembly is derived from direct infrared radiation and from convection. The heating rate in an IR furnace depends on the absorption coefficients of the material surfaces and on the ratio of the component's mass to an as-irradiated surface.

The temperature of parts in an IR furnace, with a mixture of radiation and convection, cannot be determined in advance. Temperature measurement may be performed by measuring the temperature of a certain component while it is being transported through the reflow oven.

Influencing parameters on the internal temperature of the component are as follows:

- Time and power
- Mass of the component
- Size of the component
- Size of the printed circuit board
- Absorption coefficient of the surfaces
- Packing density
- Wavelength spectrum of the radiation source
- Ratio of radiated and convected energy

Temperature/time profiles of the entire process and the influencing parameters are given. The IR reflow profile is shown in figure 1. Two cycles of reflow are allowed.

(c) Wave soldering

In wave soldering one or more continuously replenished waves of molten solder are generated, while the substrates to be soldered are moved in one direction across the crest of the wave. Maximum soldering temperature should not exceed 260 °C.

Temperature/time profiles of the entire process are given in figure 2.

For SMD devices which are qualified for wave soldering, the temperature profile under figure 2 is also valid. For wave soldering two cycles are allowed.

(d) Iron soldering

This process cannot be carried out in a controlled situation. It should therefore not be used in applications where reliability is important. There is no SMD classification for this process.

(e) Laser soldering

This is an excess heating soldering method. The energy absorbed may heat the device to a much higher temperature than desired. There is no SMD classification for this process at the moment.

(f) Resistance soldering

This is a soldering method which uses temperature-controlled tools (thermodes) for making solder joints. There is no SMD classification for this process at the moment.

**OPTOCOUPLERS****Complete Product Portfolio****Assembly Instructions cont'd****TABLE 1 - SOLDERING METHODES AND TEMPERATURE PROFILES FOR OPTOCOUPLER**

			REFLOW	WAVE SOLDERING 260 °C	
			SMD	SMD	THROUGH HOLE
				PACKAGE THROUGH WAVE	PACKAGE NOT THROUGH WAVE
PACKAGE	PART NUMBER EXAMPLES	ASSEMBLY METHOD	TEMP. PROFILE FIG. 1	TEMP. PROFILE FIG. 2	TEMP. PROFILE FIG. 2
DIP-6	IL1; IL2; H11; IL250; IL410	Through hole			X
DIP-8	IL300; SFH6700; 6N135	Through hole			X
DIP-4/8/16	SFH617A-2; SFH615	Through hole			X
DIP-6	CNY17; SFH615ABM	Through hole			X
DIP-4/8/16	TCET1104; TCET1104G	Through hole			X
DIP-4/8/16	VO615A	Through hole			X
DIP-6	CQY80NG; CNY75B; TCDT	Through hole			X
DIP-4/8/16	VO615A series	SMD bend.opt.	X	No	
DIP-4/8/16	SFH617A-2X007; 9; SFH6106	SMD bend.opt.	X	Yes	
DIP-8 high speed	SFH6700; 6N135; SFH6325	SMD bend.opt.	X	No	
DIP-6	Types with option 7, 8 or 9	SMD bend.opt.	X	No	
DIP-8; DIP-16	ILD2; ILQ2	SMD bend.opt.	X	No	
DIP-8	IL300	SMD bend.opt.	X	No	
SOP low profile	TCMT; TCLT series	SMD	X	Yes	
SOP-16 low profile	SFH6916	SMD	X	No	
SOP-4 (Miniflat)	SFH690	SMD	X	No	
SO8	IL205T; ILD207AT	SMD	X	Yes	
SO8	VO026..; VO46..; VO06..	SMD	X	Yes	
PCMCIA	IL388	SMD	X	No	
Minicoupler	SFH6943	SMD	X	No	
SSR's					
DIP-4	LH1546AD	Through hole			X
DIP-6	LH1500AT	Through hole			X
DIP-8	LH1526AB	Through hole			X
DIP-6	LHxxxBT	Through hole			X
DIP-8	LHxxxBB	Through hole			X
DIP-4	LH1546ADF	SMD bend.opt.	X	No	
DIP-6	LH1500AAB	SMD bend.opt.	X	No	
DIP-8	LH1526AAC	SMD bend.opt.	X	No	
Miniflat	LH1546AEF; VO14..	SMD	X	No	
Flatpak's	LH1556FP	SMD bend.opt.	X	No	
DIP-6	LHxxxBAB	SMD bend.opt.	X	No	
DIP-8	LHxxxBAC	SMD bend.opt.	X	No	

Assembly Instructions cont'd

TEMPERATURE-TIME PROFILES

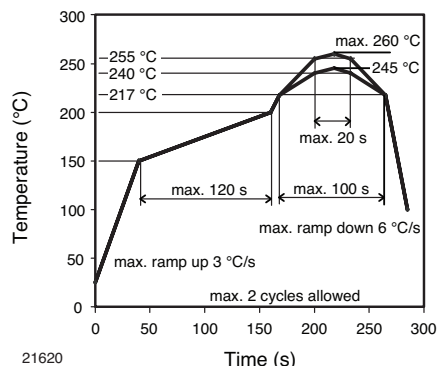


Fig. 1 - Temperature Profile for Lead (Pb)-free Opto Devices

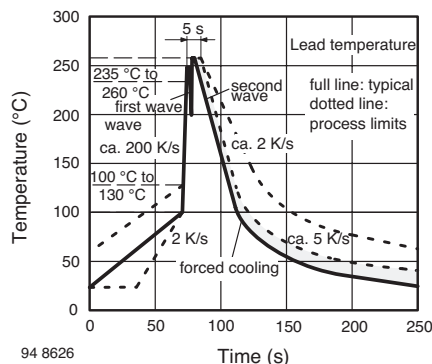


Fig. 2 - Wave Soldering Double Wave Opto Devices

HEAT REMOVAL

The heat generated in the semiconductor junction(s) must be moved to the ambient. In the case of low-power devices, the natural heat conductive path between case and surrounding air is usually adequate for this purpose.

In the case of medium-power devices, however, heat conduction may have to be improved by the use of star- or flag-shaped heat dissipators which increase the heat radiating surface.

The heat generated in the junction is conveyed to the case or header by conduction rather than convection; a measure of the effectiveness of heat conduction is the inner thermal resistance or junction-to-case thermal resistance, R_{thJC} , whose value is given by the construction of the device.

Any heat transfer from the case to the surrounding air involves radiation convection and conduction, the effectiveness of transfer being expressed in terms of an R_{thCA} value, i.e., the case-to-ambient thermal resistance. The total thermal resistance, junction-to-ambient is therefore:

$$R_{thJA} = R_{thJC} + R_{thCA}$$

The total maximum power dissipation, $P_{totmax.}$ of a semiconductor device can be expressed as follows:

$$P_{totmax.} = \frac{T_{jmax.} - T_{amb}}{R_{thJA}} = \frac{T_{jmax.} - T_{amb}}{R_{thJC} + R_{thCA}}$$

where:

$T_{jmax.}$ the maximum allowable junction temperature

T_{amb} the highest ambient temperature likely to be reached under the most unfavorable conditions

R_{thJC} the thermal resistance, junction-to-case

R_{thJA} the thermal resistance, junction-to-ambient

R_{thCA} the thermal resistance, case-to-ambient, depends on cooling conditions. If a heat dissipator or sink is used, then R_{thCA} depends on the thermal contact between case and heat sink, heat propagation conditions in the sink and the rate at which heat is transferred to the surrounding air.

Therefore, the maximum allowable total power dissipation for a given semiconductor device can be influenced only by changing T_{amb} and R_{thCA} . The value of R_{thCA} could be obtained either from the data of heat sink suppliers or through direct measurements.

In the case of cooling plates as heat sinks, the approach outlined in fig. 3 and 4 can be used as guidelines. The curves shown in both fig. 3 and 4 give the thermal resistance R_{thCA} of square plates of aluminium with edge length, a , and with different thicknesses. The case of the device should be mounted directly onto the cooling plate.

The edge length, a , derived from fig. 3 and 4 in order to obtain a given R_{thCA} value, must be multiplied

with α and β :

$$\alpha' = \alpha \times \beta$$

where

$$\alpha = 1.00 \text{ for vertical arrangement}$$

$$\alpha = 1.15 \text{ for horizontal arrangement}$$

$$\beta = 1.00 \text{ for bright surface}$$

$$\beta = 0.85 \text{ for dull black surface}$$

Example

For an IR emitter with $T_{jmax.} = 100^\circ\text{C}$ and $R_{thJC} = 100 \text{ K/W}$, calculate the edge length for a 2 mm thick aluminum square sheet having a dull black surface ($\beta = 0.85$) and vertical arrangement ($\alpha = 1$),

$$T_{amb} = 70^\circ\text{C} \text{ and } P_{totmax.} = 200 \text{ mW.}$$

$$P_{totmax.} = \frac{T_{jmax.} - T_{amb}}{R_{thJC} + R_{thCA}}$$

$$R_{thCA} = \frac{T_{jmax.} - T_{amb}}{P_{totmax.}} - R_{thJC}$$

$$R_{thCA} = \frac{100^\circ\text{C} - 70^\circ\text{C}}{0.2 \text{ W}} - 100 \text{ K/W}$$

Assembly Instructions cont'd

$$R_{thCA} = \frac{30}{0.2} = 150 \text{ K/W}$$

$$R_{thCA} = 50 \text{ K/W}$$

$$\Delta T = T_{case} - T_{amb}$$

can be calculated from the relationship:

$$P_{totmax.} = \frac{T_{jmax.} - T_{amb}}{R_{thJC} + R_{thCA}} = \frac{T_{case} - T_{amb}}{R_{thCA}}$$

$$\Delta T = T_{case} - T_{amb} = \frac{R_{thCA}(T_{jmax.} - T_{amb})}{R_{thJC} + R_{thCA}}$$

$$\Delta T = \frac{50 \text{ K/W} \times 100^\circ\text{C} - 70^\circ\text{C}}{150 \text{ K/W}}$$

$$\Delta T = \frac{50 \text{ K/W} \times 30^\circ\text{C}}{150 \text{ K/W}}$$

$$\Delta T = 10^\circ\text{C} = 10 \text{ K}$$

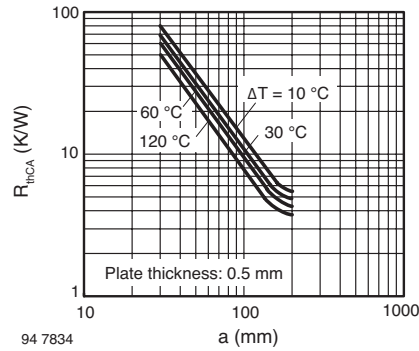


Fig. 3

With $R_{thCA} = 50 \text{ k/W}$ and $\Delta T = 10^\circ\text{C}$, a plate of 2 mm thickness has an edge length $a = 28 \mu$.

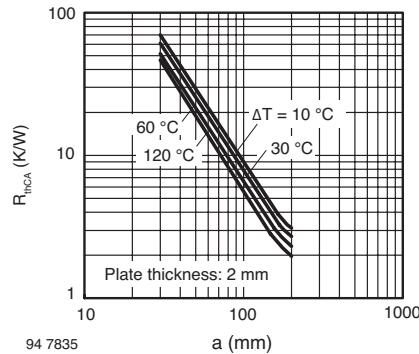


Fig. 4

However, equipment life and reliability have to be taken into consideration and therefore a larger sink would normally be used to avoid operating the devices continuously at their maximum permissible junction temperature.

Packaging Information

DESCRIPTION

Optocouplers are available in plastic dual-in-line packages (DIP), SOP packages, and in a surface-mount, gull-wing, lead bend configuration. Optocouplers purchased in the DIP configuration are shipped in tubes. Optocouplers purchased in a gull-wing configuration can be shipped in tubes or on carrier tape. This section provides stick specifications, tape and reel specifications, and component information.

TUBE SPECIFICATIONS

Figure 1 shows the physical dimensions of transparent, antistatic, plastic shipping tubes. Figure 2 shows tube safety agency labeling and orientation information.

The following table lists the number of parts per tube.

DEVICE PER TUBE			
TYPE	UNITS/TUBE	TUBES/BOX	UNITS/BOX
DIP-16	25	40	1000
DIP-4	100	40	4000
DIP-6	50	40	2000
DIP-8	50	40	2000
HV, CNY64	40	50	2000
HV, CNY65	30	35	1050
HV, CNY66	25	35	875

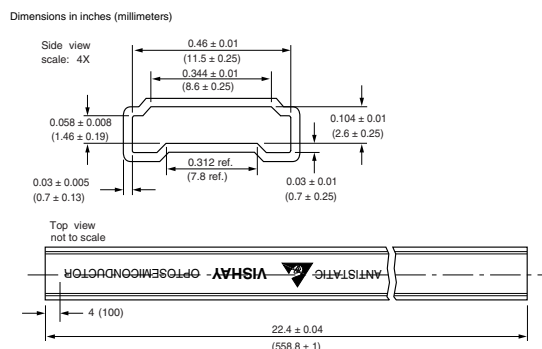
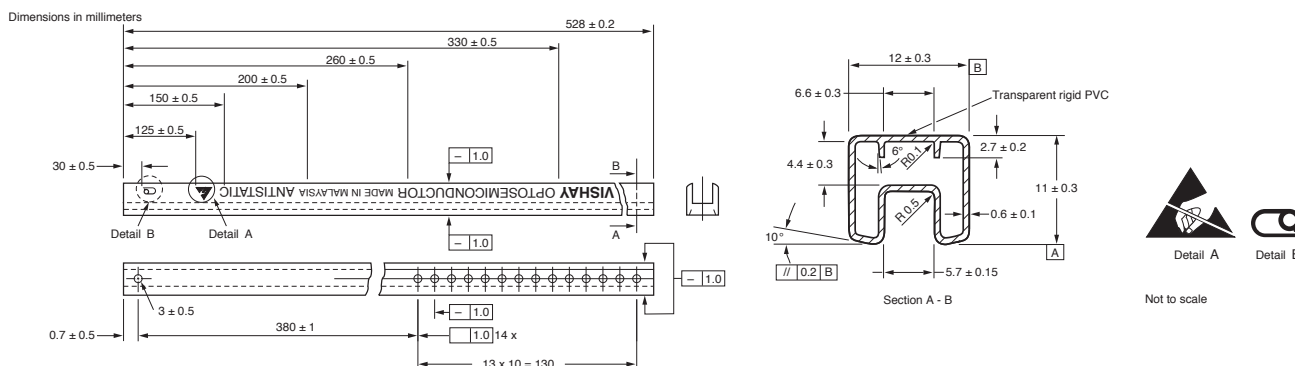


Fig. 2 - Shipping Tube Specifications for SOP Packages

TUBE SPECIFICATIONS FOR DIP AND HIGH ISOLATION VOLTAGE PACKAGES

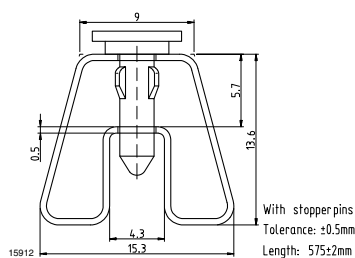


Fig. 3 - DIP-6 N, G

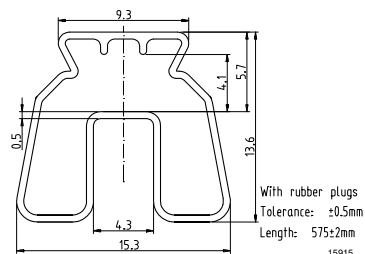


Fig. 4 - DIP-4, -2, -16 N, G

OPTOCOUPERS

Complete Product Portfolio

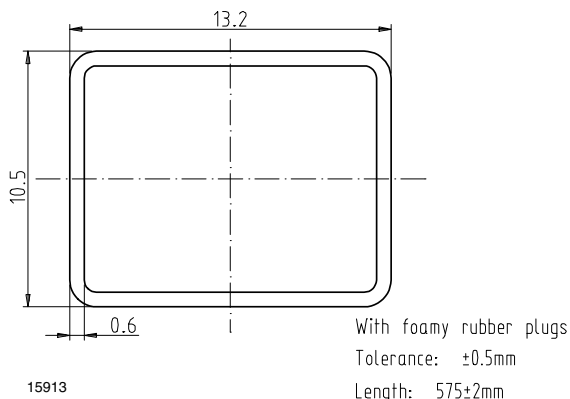


Fig. 5 - CNY64

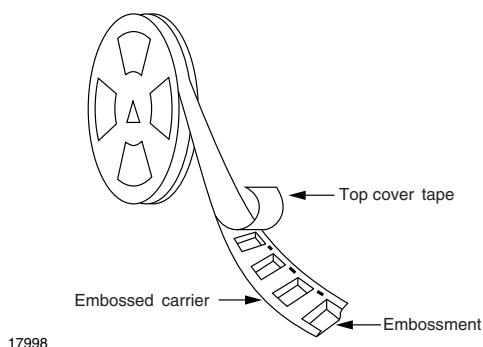


Fig. 7 - Tape and Reel Shipping Medium

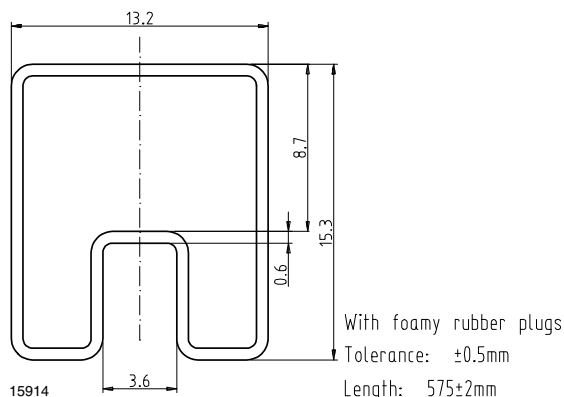


Fig. 6 - CNY65, 66

REELS

- As shown in figure 4, all reels contain standard areas for the placement of ESD stickers and labels. Each reel also has a tape slot in its core. The overall reel dimension is 13". Reels contain 1000 6 or 8 pin gullwing parts and could have up to three inspection lots

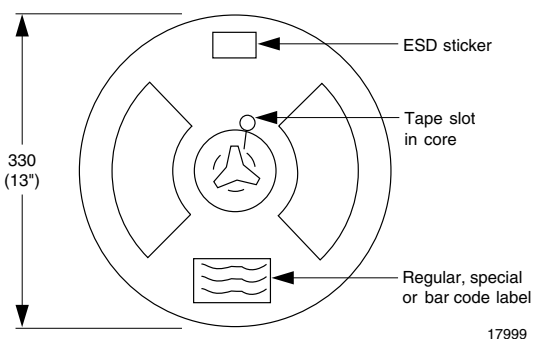


Fig. 8 - Tape and Reel Shipping Medium

TAPE AND REEL SPECIFICATIONS

Surface-mounted devices are packaged in embossed tape and wound onto 13" molded plastic reels for shipment, to comply with Electronics Industries Association Standard EIA-481, revision A, and International Electrotechnical Commission standard IEC 60286.

Leaders and Trailers

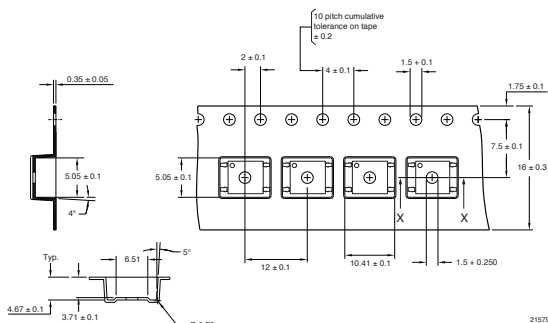
The carrier tape and cover tape are not spliced. Both tapes are one single uninterrupted piece from end to end, as shown in figure 2. Both ends of the tape have empty pockets meeting these requirements.

- Trailer end (inside hub of reel) is 200 mm minimum
- Leader end (outside of reel) is 400 mm minimum and 560 mm maximum
- Unfilled leader and trailer pockets are sealed
- Leaders and trailers are taped to tape and hub, respectively, with masking tape
- All materials are static-dissipative

Packaging Tape and Reel Information

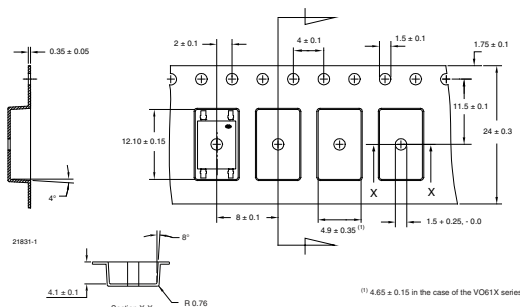
Dimensions in millimeters

SMD-4 Package, Option 7 (Factory code: 68)



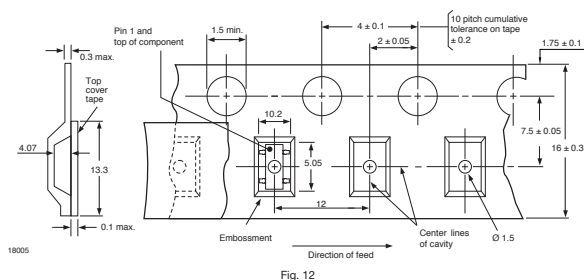
Note: 1000 parts per reel

SMD-4 Package, Option 8 (Factory code: 68)



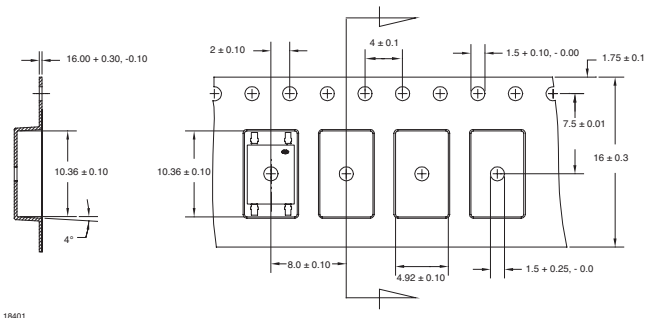
Note: 2000 parts per reel

SMD-4 Package, Option 9 (Factory code: 68)



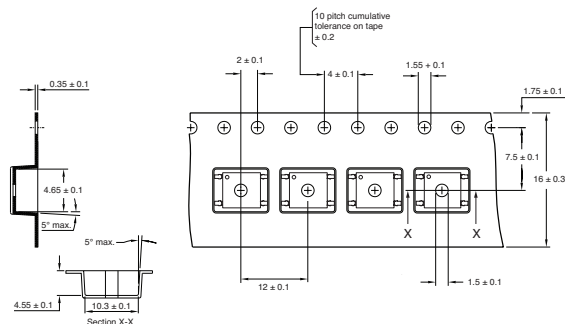
Note: 1000 parts per reel

SMD-4 Package, Option 9, 90° Rotation (Factory code: 68)



Note: 2000 parts per reel

SMD-4 Package, Option 7 and Option 9 (Factory Code 24)



Note: 1000 parts per reel

SMD-4 Package, Option 8 (Factory Code 24)

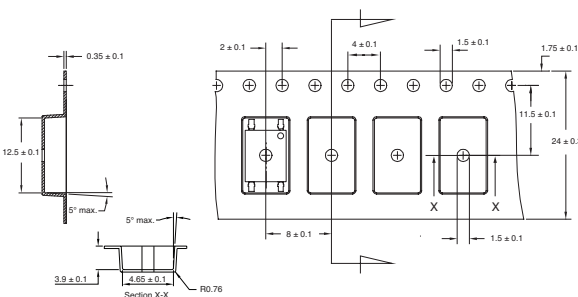


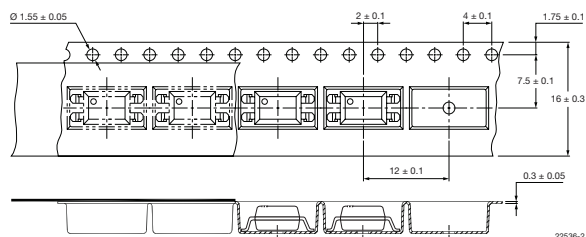
Fig. 19 - Tape and Reel Packing for Option 8 (2000 units per reel)

Note: 2000 parts per reel

OPTOCOUPERS

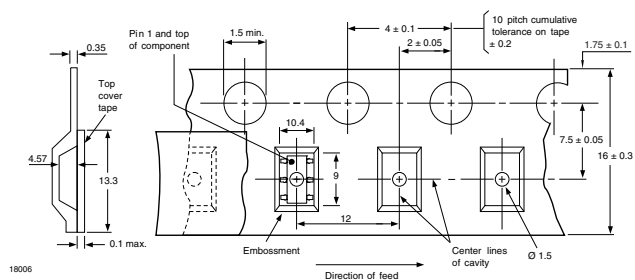
Complete Product Portfolio

SMD-4 Package, Option 7 and Option 9 (Factory Code 25)



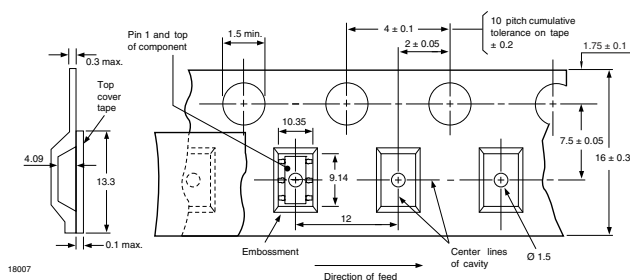
Note: 1000 parts per reel

SMD-6 Package, Option 7 (Factory code: 68)



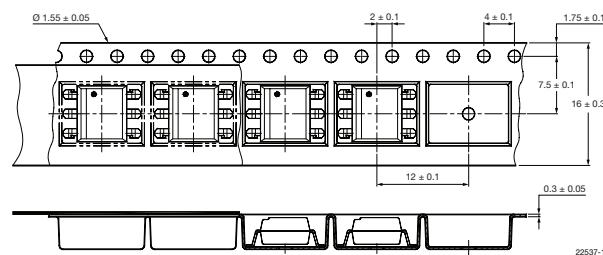
Note: 1000 parts per reel

SMD-6 Package, Option 9 (Factory code: 68)



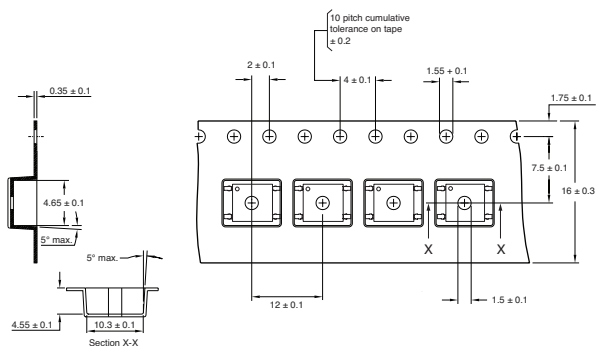
Note: 1000 parts per reel

SMD-6 Package, Option 7 and Option 9 (Factory Code 25)



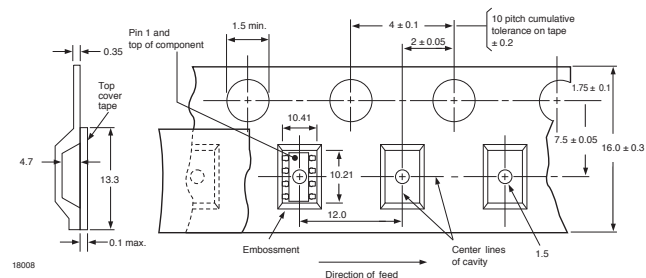
Note: 1000 parts per reel

SMD-4 Package, Option 7 and Option 9 (Factory Code 24)



Note: 1000 parts per reel

SMD-8 Package, Option 7 (Factory code: 68)

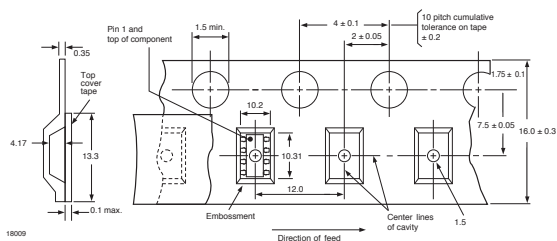


Note: 1000 parts per reel

OPTOCOUPLEDERS

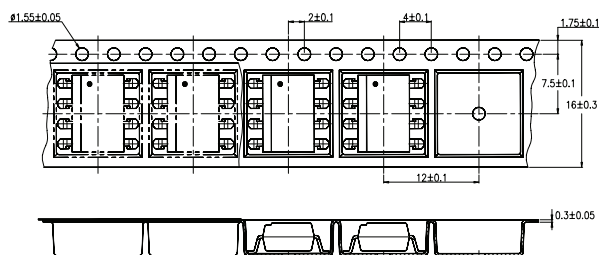
Complete Product Portfolio

SMD-8 Package, Option 7 and Option 9 (Factory code: 68)



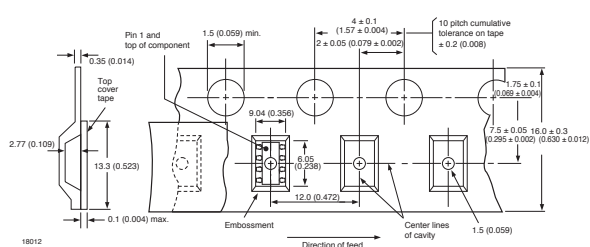
Note: 1000 parts per reel

SMD-8 Package, Option 7 (Factory Code 28)



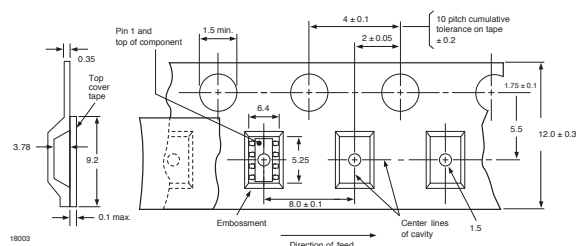
Note: 1000 parts per reel

SOP-8 Package



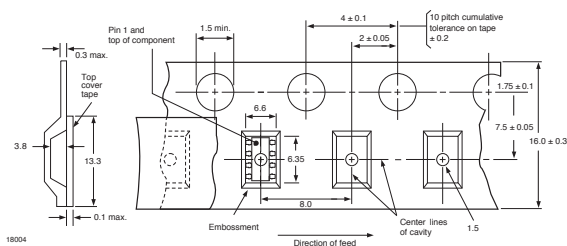
2000 parts per reel

SOIC-8 Package (Single Channel)



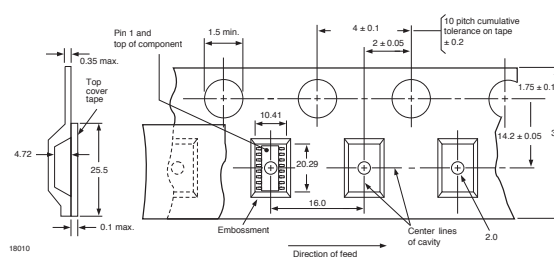
Note: 2000 parts per reel

SOIC-8 Package (Dual Channel)



Note: 2000 parts per reel

SMD-16 Package, Option 7

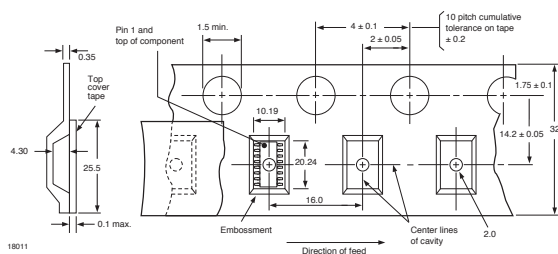


Note: 750 parts per reel

OPTOCOUPERS

Complete Product Portfolio

SMD-16 Package, Option 9



Note: 750 parts per reel

SOT223/10 Package

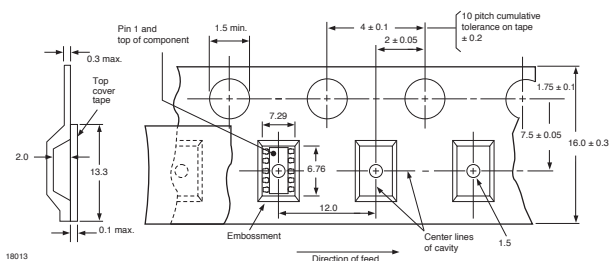
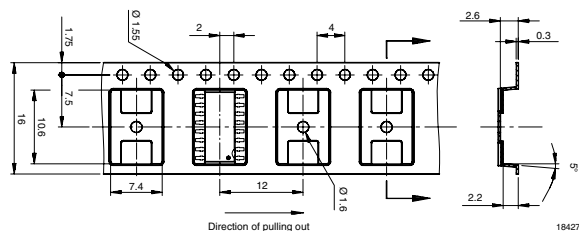


Fig. 22

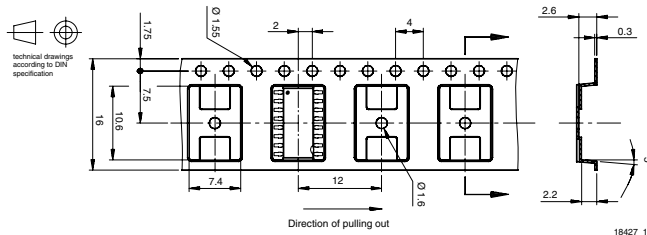
Note: 2000 parts per reel

SSOP-16 Package



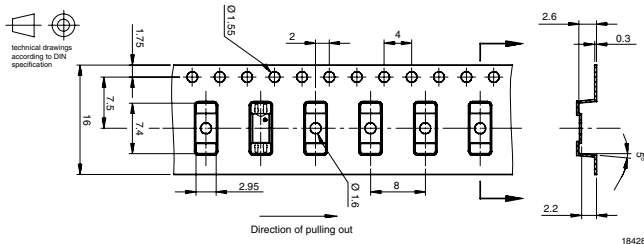
Note: 2000 parts per reel

SSOP-16 Package, 180° Degree Rotation



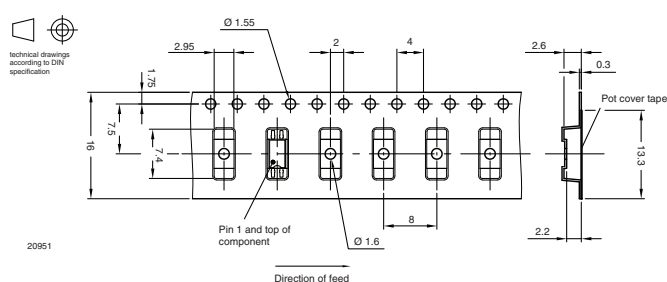
Note: 2000 parts per reel

SSOP-4 Package (Factory Code 68)



Note: 3000 parts per reel

SSOP-4 Package, 180° Degree Rotation (Factory Code 68)

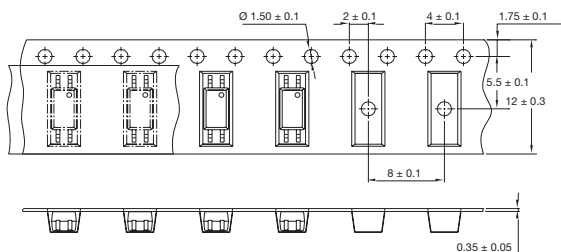


Note: 2000 parts per reel

OPTOCOUPERS

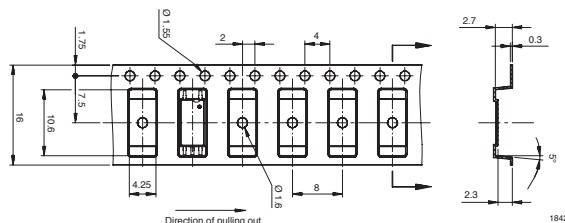
Complete Product Portfolio

SSOP-4 Package (Factory Code 25)



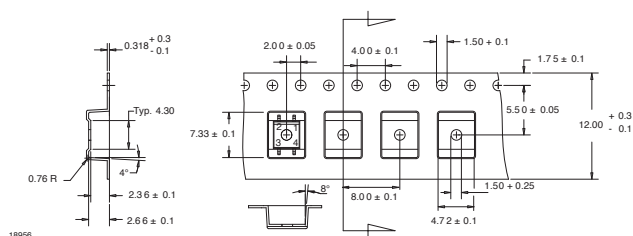
Note: 3000 parts per reel

LSOP-4 and LSOP-5 Package



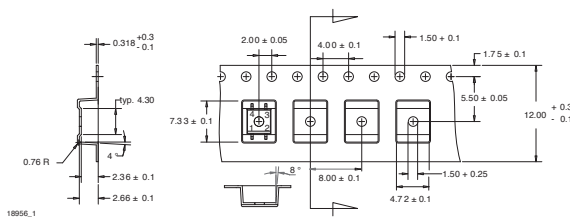
Note: 3000 parts per reel

SOP-4 Package (Factory Code 68)



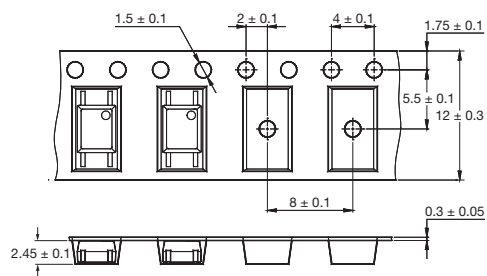
Note: 2000 parts per reel

SOP-4 Package, 180° Degree Rotation (Factory Code 68)



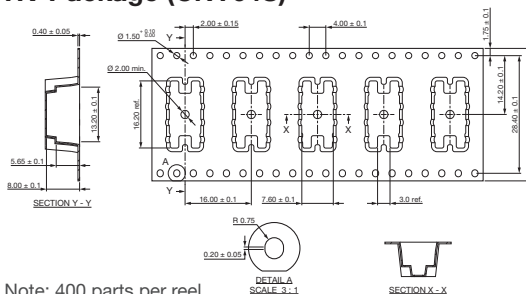
Note: 2000 parts per reel (T3 rotation)

SOP-4 Package (Factory Code 25)



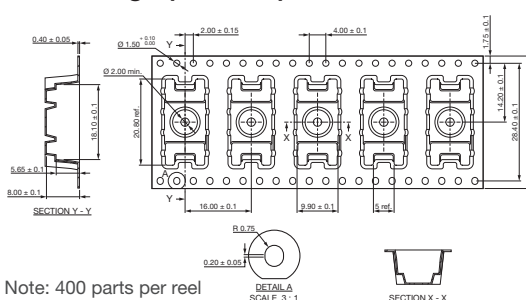
Note: 3000 parts per reel

HV Package (CNY64S)



Note: 400 parts per reel

HV Package (CNY65S)



Note: 400 parts per reel

OPTOCOUPLEDERS

Complete Product Portfolio

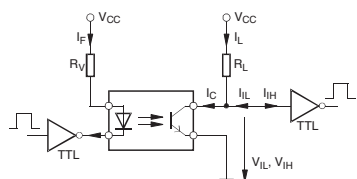
Product Marking

Consult datasheet for the marking details.

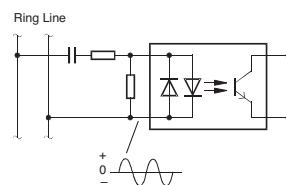
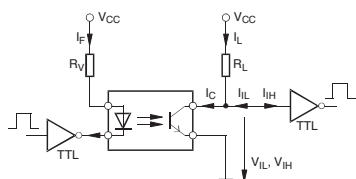
Application Examples

Optocoupler with Phototransistor Output

Phototransistor wired to a collector resistor

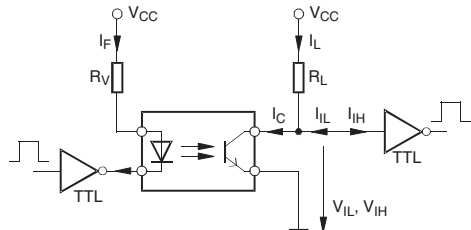


Phototransistor wired to a collector resistor

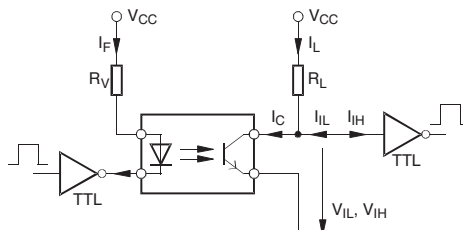


Optocoupler with AC input

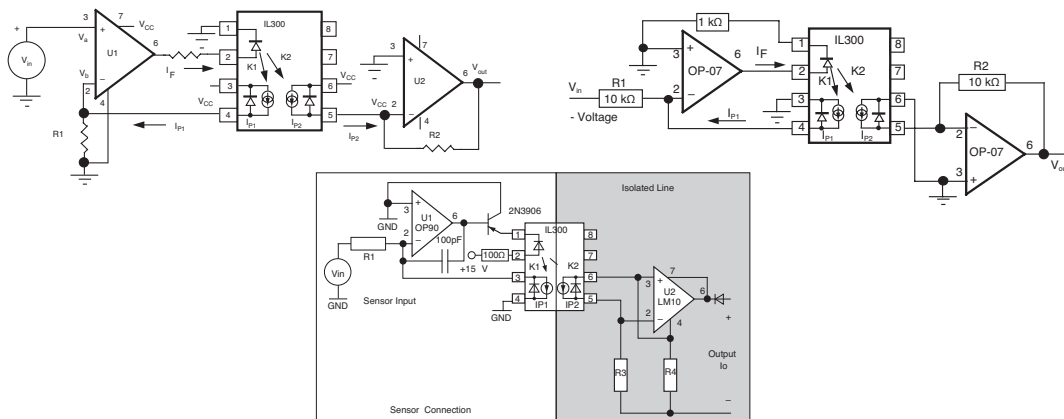
Phototransistor wired to a collector resistor



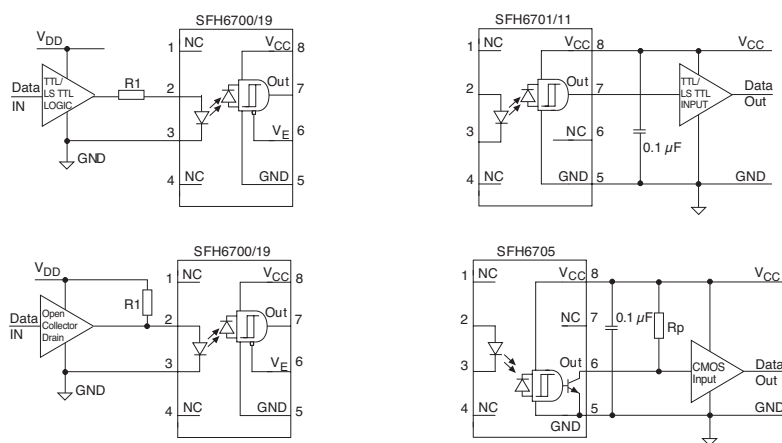
Phototransistor wired to a collector resistor



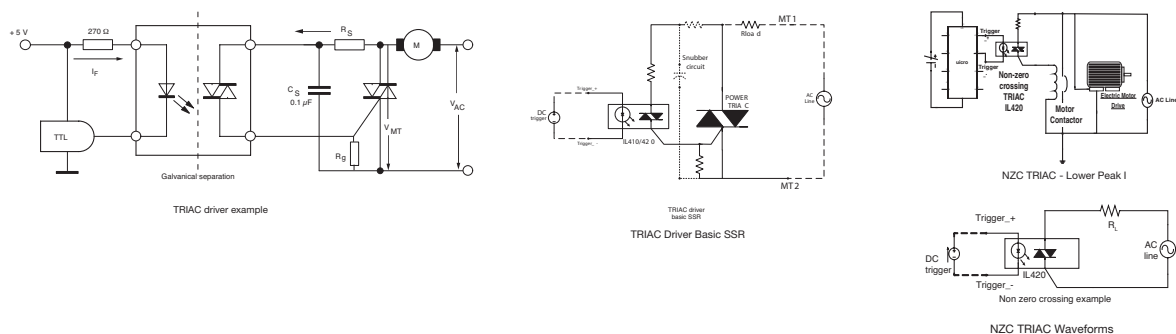
Linear



High Speed



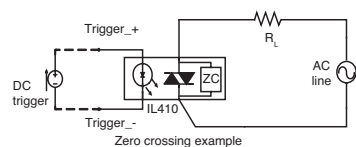
Phototriac Non-Zero Crossing



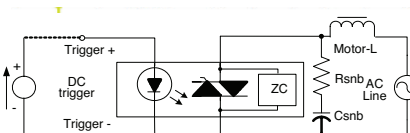
OPTOCOUPERS

Complete Product Portfolio

Phototriac Zero Crossing

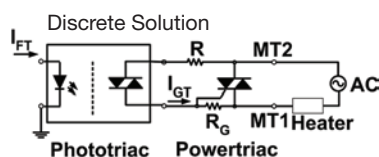


ZC TRIAC Waveforms

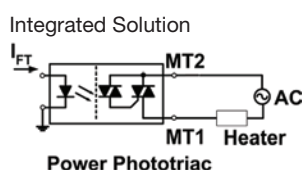


Inductive Load with Snubber

Powertriac

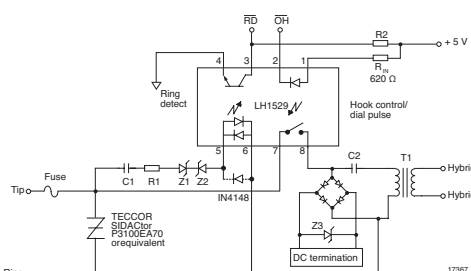
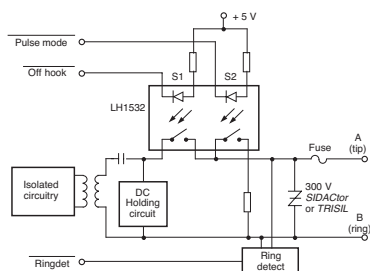


Phototriac Powertriac

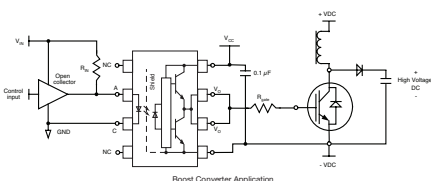


Power Phototriac

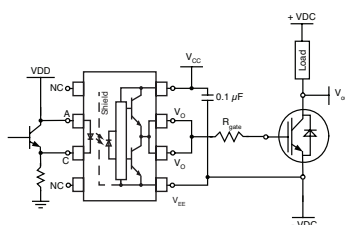
Solid-State Relay (SSR)



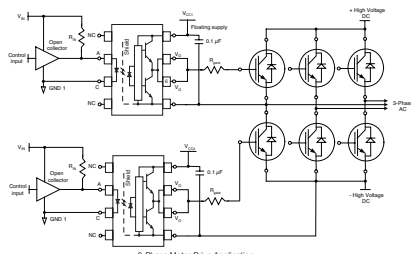
MOSFET Driver



Boost Converter Application

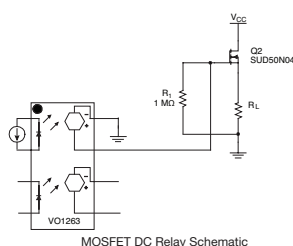


Recommended LED Drive Circuit for High CMTR Performance



3-Phase Motor Drive Application

Note: The value for R_L is dependent upon V_{DC} , the desired LED input current (I_L), and input forward voltage (V_f).

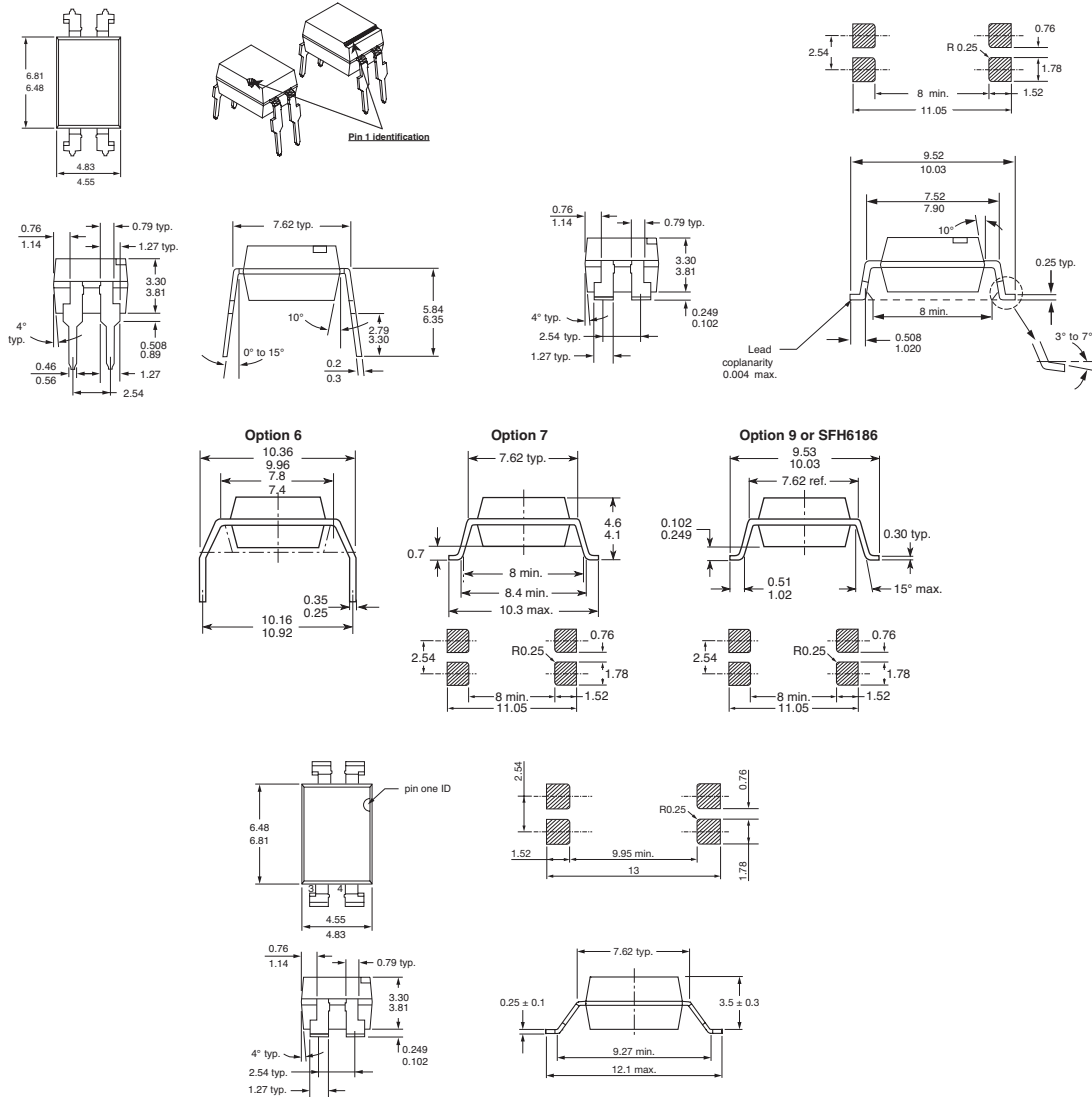


MOSFET DC Relay Schematic

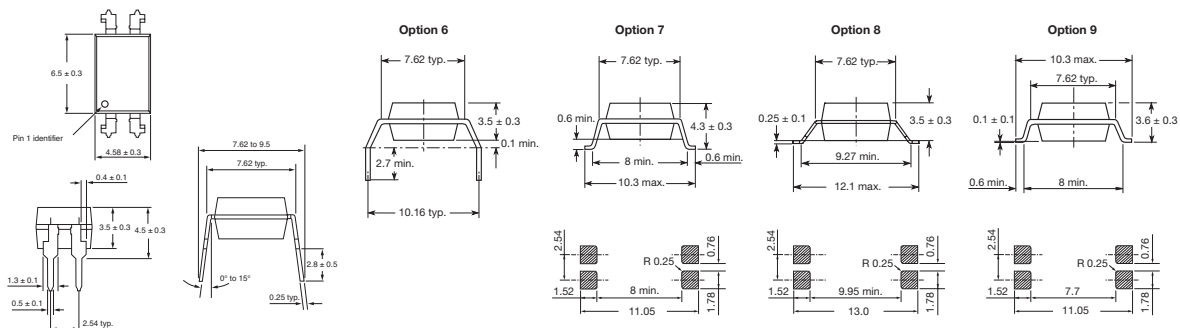
OPTOCOUPLEDERS

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DIP-4

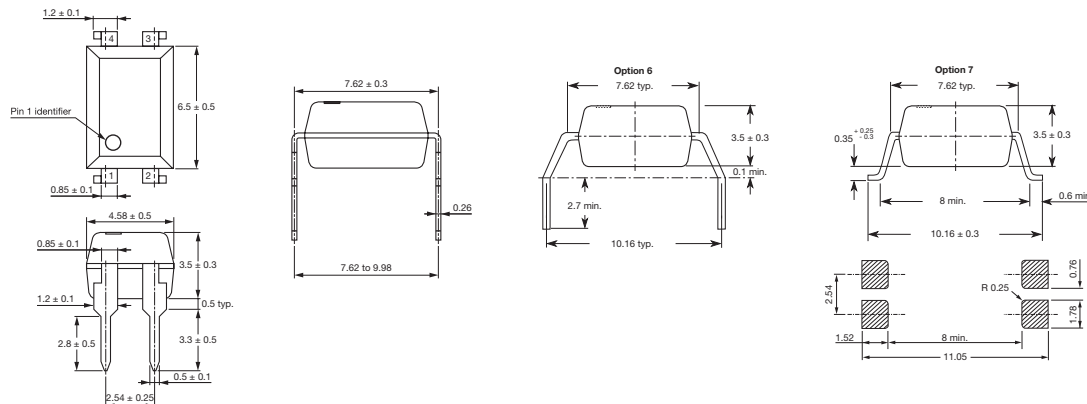


DIP-4 Alternative Package



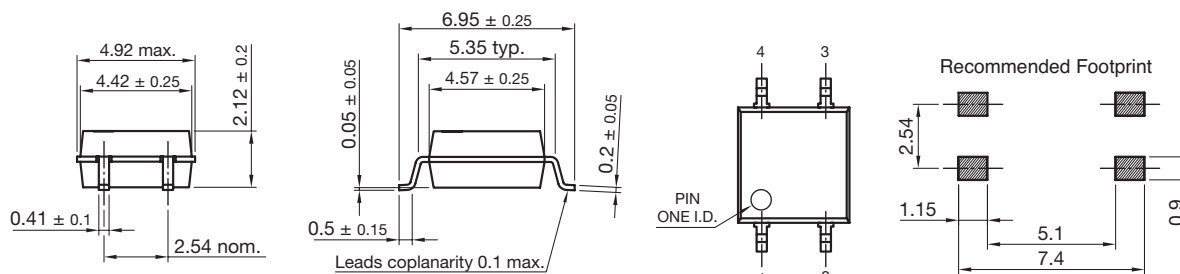
Factory code: 24

DIP-4 Alternative Package

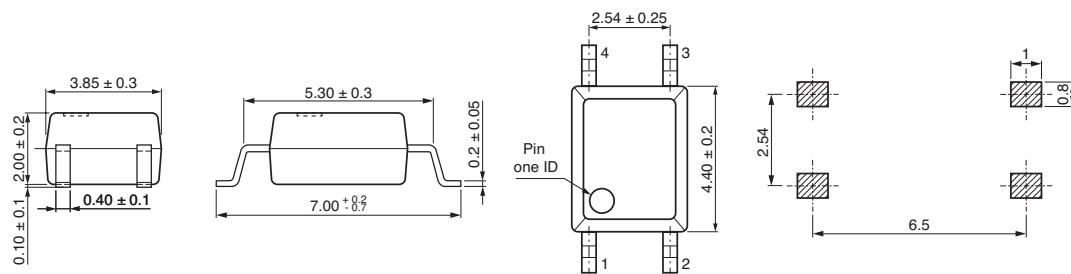


Factory code: 25

SOP-4



SOP-4

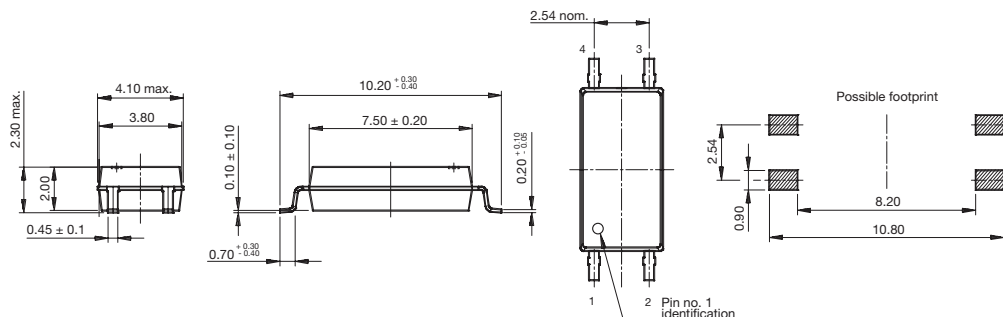


Factory code: 25

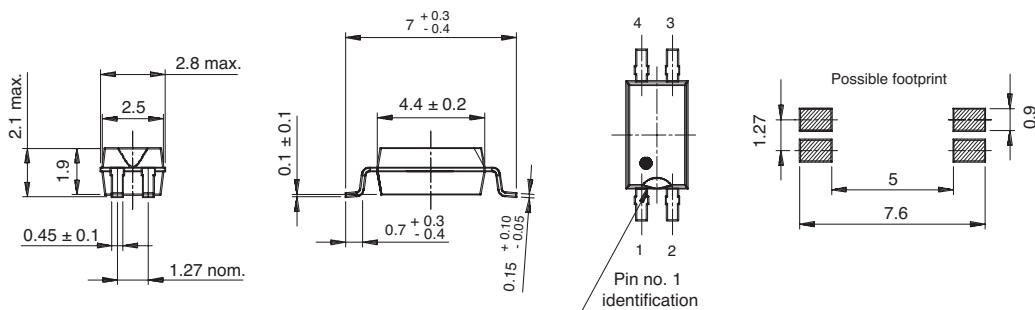
OPTOCOUPPLERS

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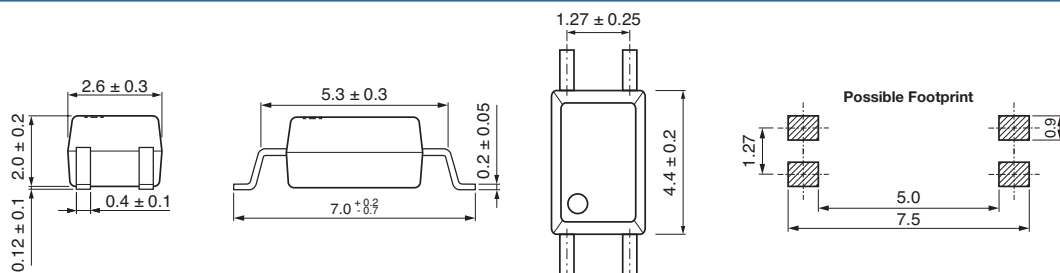
LSOP-4



SSOP-4

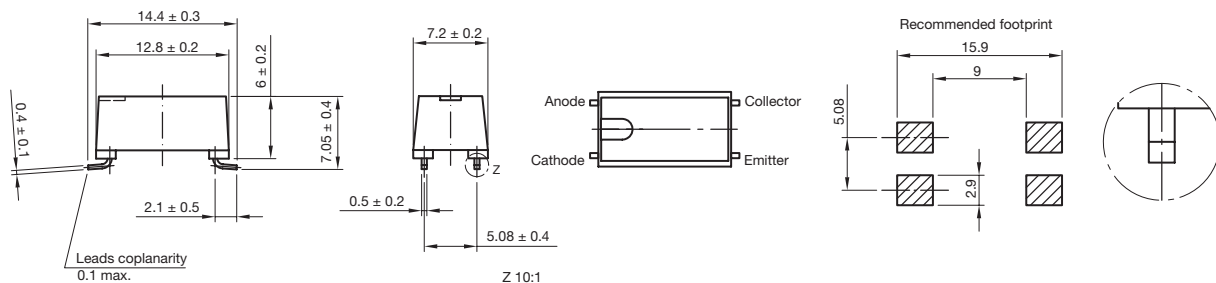


SSOP-4 Alternative Package



Factory code: 25

HV DIP-4

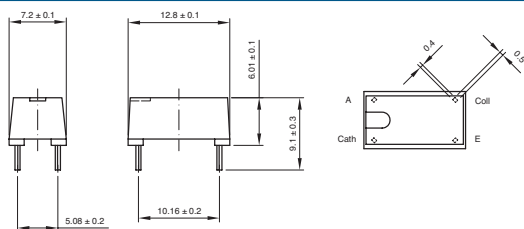


OPTOCOUPLEDERS

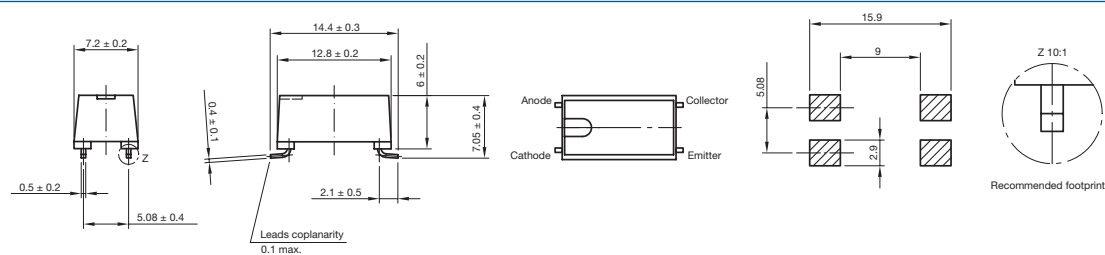
Complete Product Portfolio

HV DIP-4 (cont'd)

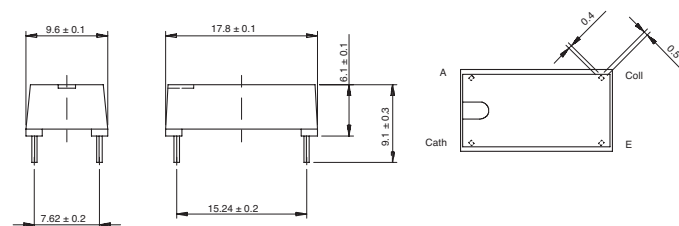
CNY64



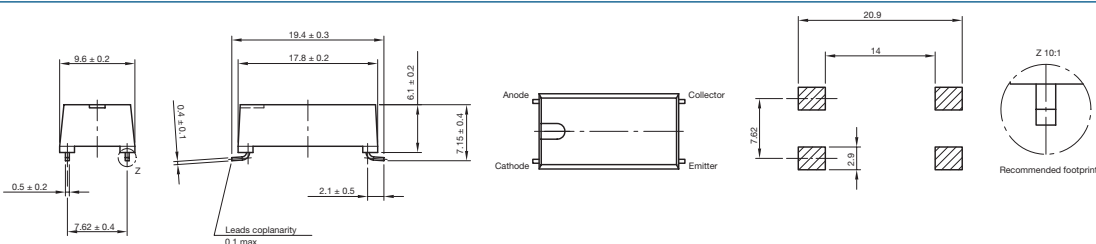
CNY64S



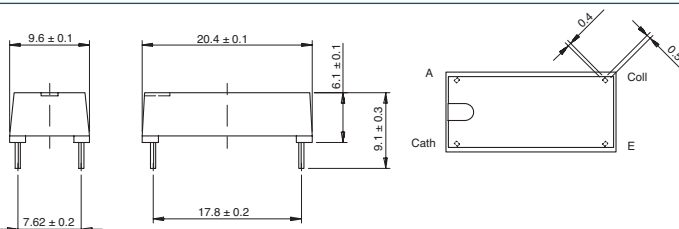
CNY65



CNY65S



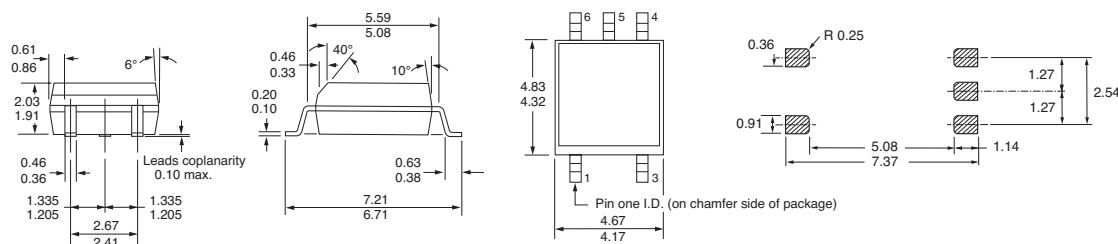
CNY66



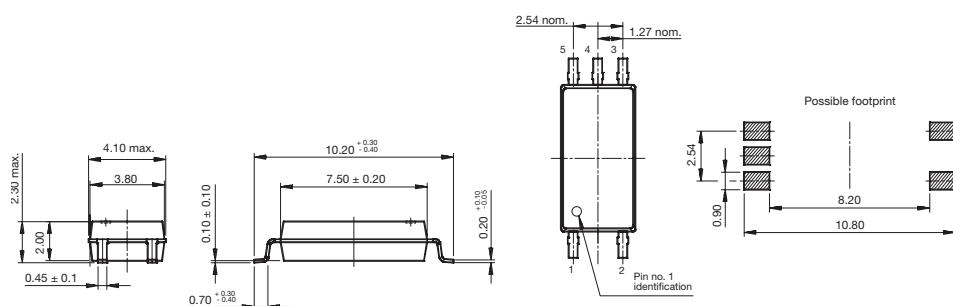
OPTOCOUPERS

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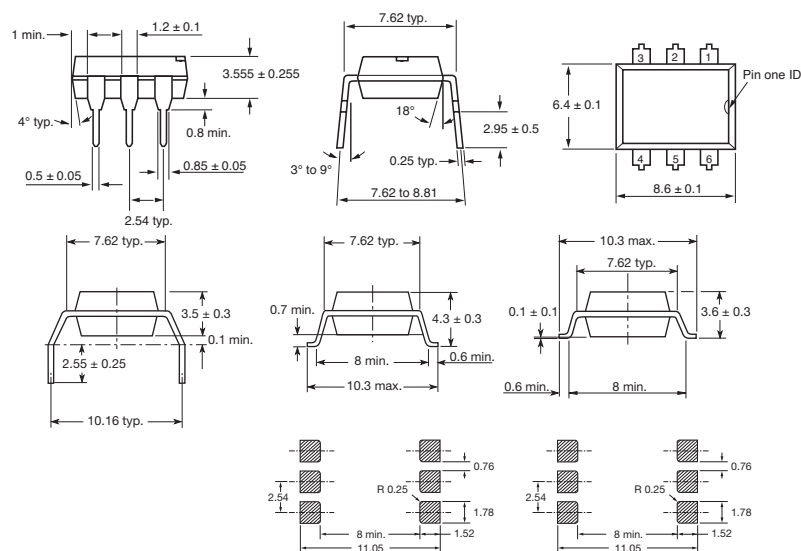
SOP-5



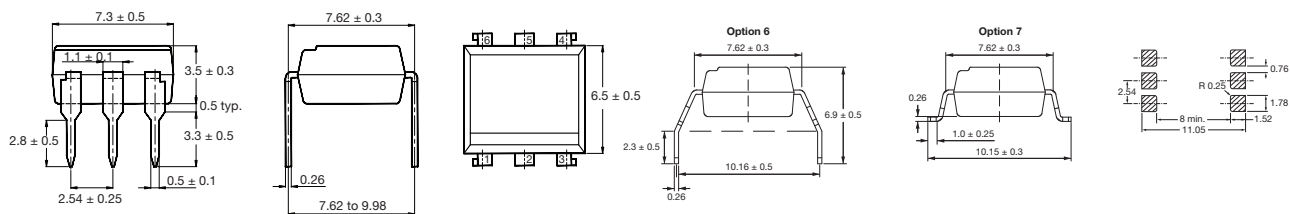
LSOP-5



DIP-6



DIP-6 Alternative Package

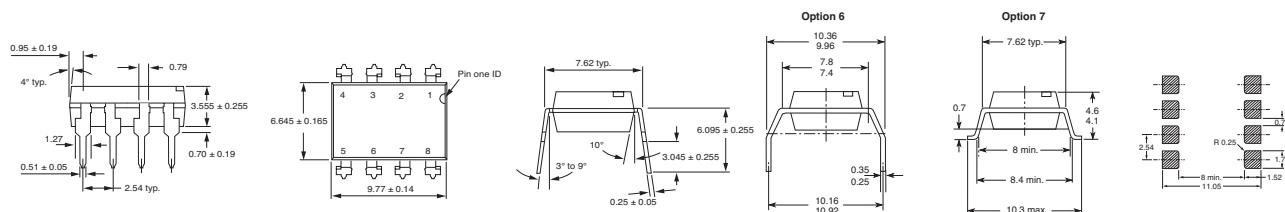


Factory code: 25

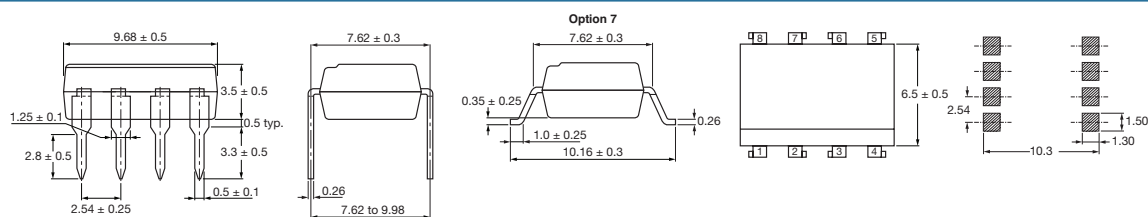
OPTOCOUPLEDERS

Complete Product Portfolio

DIP-8

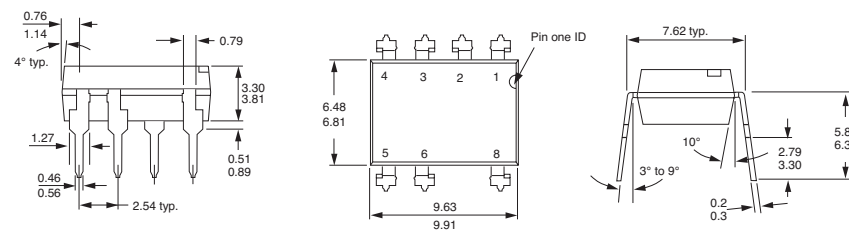


DIP-8 Alternative Package

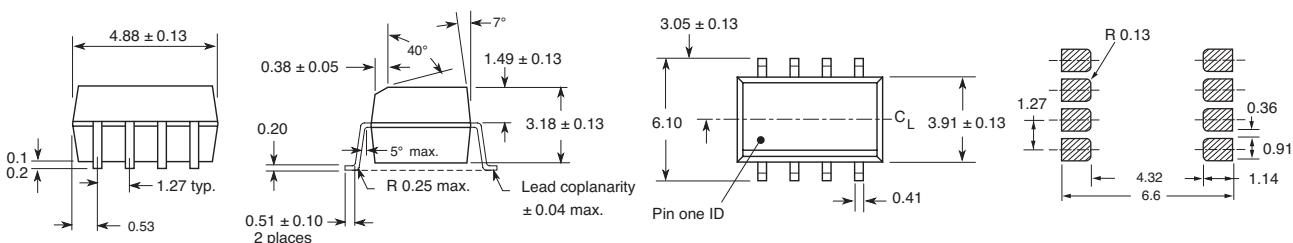


Factory code: 24

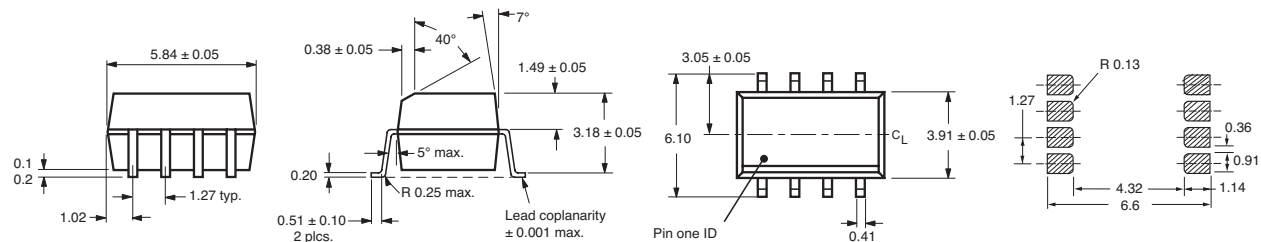
DIP-8 (6)



SOIC-8 (1 channel)



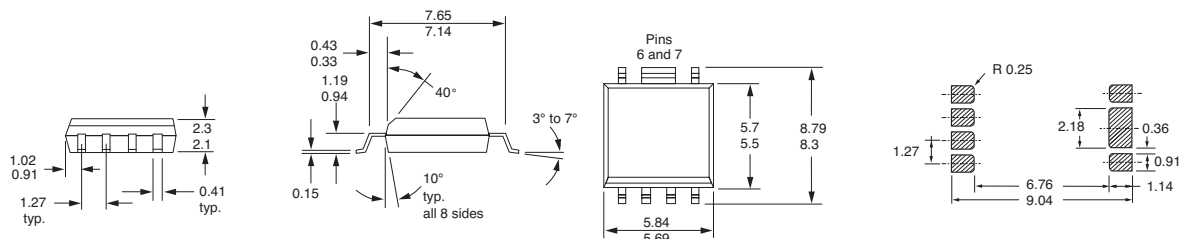
SOIC-8 (2 channel)



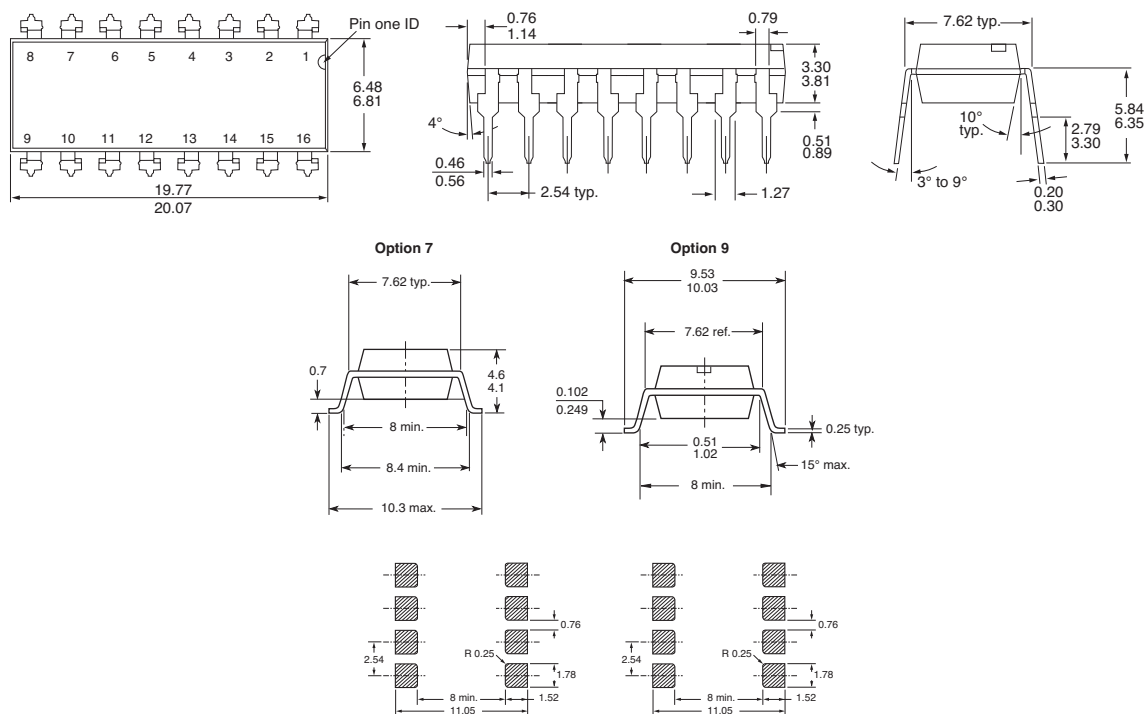
OPTOCOUPLEDERS

Complete Product Portfolio

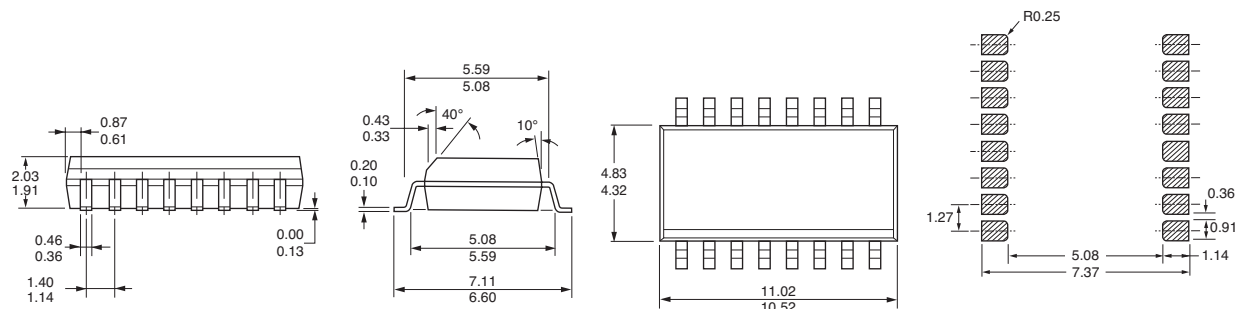
SOP-8



DIP-16



SSOP-16





OPTOCOUPLERS

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Reference Product Literature

- 4 Pin optocouplers with low input current product sheet
www.vishay.com/doc?49168
- Optical isolation for solar power applications guide
www.vishay.com/doc?49185
- Phototriac selector guide
www.vishay.com/doc?49828
- High-speed SSRs selector guide
www.vishay.com/doc?49444
- Solid state relays (SSR) selector guide
www.vishay.com/doc?49538
- Photovoltaic MOSFET driver with integrated fast turn-off selector guide
www.vishay.com/doc?49261
- Photovoltaic single-component/isolated MOSFET driver solutions guide
www.vishay.com/doc?49262

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