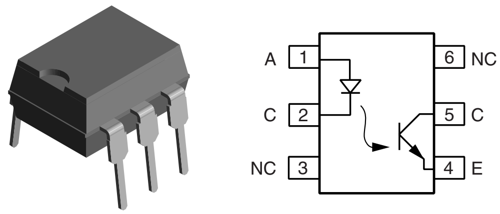
Optocoupler, Phototransistor Output, no Base Connection



18216

FEATURES

- Isolation test voltage, 5300 V_{RMS}
- No base terminal connection for improved common mode interface immunity
- Long term stability
- Industry standard dual-in-line package
- Lead (Pb)-free component
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC

AGENCY APPROVALS

- UL1577, file no. E52744 system code H or J, double protection
- DIN EN 60747-5-5 available with option 1
- BSI IEC 60950; IEC 60065
- FIMKO

DESCRIPTION

The CNY17F is an optocoupler consisting of a gallium arsenide infrared emitting diode optically coupled to a silicon planar phototransistor detector in a plastic plug-in DIP-6 package.
The coupling device is suitable for signal transmission between two electrically separated circuits. The potential difference between the circuits to be coupled is not allowed to exceed the maximum permissible reference voltages.
In contrast to the CNY17 series, the base terminal of the F type is not conected, resulting in a substantially improved common-mode interference immunity.

ORDER INFORMATION

PART	REMARKS
CNY17F-1	CTR 40 to 80 %, DIP-6
CNY17F-2	CTR 63 to 125 %, DIP-6
CNY17F-3	CTR 100 to 200 %, DIP-6
CNY17F-4	CTR 160 to 320 %, DIP-6
CNY17F-1X006	CTR 40 to 80 %, DIP-6 400 mil (option 6)
CNY17F-1X007	CTR 40 to 80 %, SMD-6 (option 7)
CNY17F-1X009	CTR 40 to 80 %, SMD-6 (option 9)
CNY17F-2X006	CTR 63 to 125 %, DIP-6 400 mil (option 6)
CNY17F-2X007	CTR 63 to 125 %, SMD-6 (option 7)
CNY17F-2X009	CTR 63 to 125 %, SMD-6 (option 9)
CNY17F-3X006	CTR 100 to 200 %, DIP-6 400 mil (option 6)
CNY17F-3X007	CTR 100 to 200 %, SMD-6 (option 7)
CNY17F-3X009	CTR 100 to 200 %, SMD-6 (option 9)
CNY17F-4X006	CTR 160 to 320 %, DIP-6 400 mil (option 6)
CNY17F-4X007	CTR 160 to 320 %, SMD-6 (option 7)
CNY17F-4X009	CTR 160 to 320 %, SMD-6 (option 9)

Note
For additional information on the available options refer to option information.

ABSOLUTE MAXIMUM RATINGS				
PARAMETER	**TEST CONDITION**	**SYMBOL**	**VALUE**	**UNIT**
INPUT				
Reverse voltage		V_R	6.0	V
DC forward current		I_F	60	mA
Surge forward current	t ≤ 10 µs	I_{FSM}	2.5	A
Power dissipation		P_{diss}	100	mW
OUTPUT				
Collector emitter breakdown voltage		BV_{CEO}	70	V
Collector current		I_C	50	mA
	t ≤ 1.0 ms	I_C	100	mA
Total power dissipation		P_{diss}	150	mW
COUPLER				
Isolation test voltage between emitter and detector referred to standard climate 23/50 DIN 50014		V_{ISO}	5300	V_{RMS}
Creepage			≥ 7.0	mm
Clearance			≥ 7.0	mm
Isolation thickness between emitter and detector			≥ 0.4	mm
Comparative tracking index per DIN IEC 112/VDE 0303, part 1			175	
Isolation resistance	V_{IO} = 500 V	R_{IO}	≥ 10^{11}	Ω
Storage temperature range		T_{stg}	- 55 to + 150	°C
Ambient temperature range		T_{amb}	- 55 to + 100	°C
Junction temperature		T_j	100	°C
Soldering temperature	max. 10 s, dip soldering: distance to seating plane ≥ 1.5 mm	T_{sld}	260	°C

Note

T_{amb} = 25 °C, unless otherwise specified.
Stresses in excess of the absolute maximum ratings can cause permanent damage to the device. Functional operation of the device is not implied at these or any other conditions in excess of those given in the operational sections of this document. Exposure to absolute maximum ratings for extended periods of the time can adversely affect reliability.

ELECTRICAL CHARACTERISTCS							
PARAMETER	**TEST CONDITION**	**PART**	**SYMBOL**	**MIN.**	**TYP.**	**MAX.**	**UNIT**
INPUT							
Forward voltage	I_F = 60 mA		V_F		1.25	1.65	V
Breakdown voltage	I_R = 10 µA		V_{BR}	6.0			V
Reverse current	V_R = 6.0 V		I_R		0.01	10	µA
Capacitance	V_R = 0 V, f = 1.0 MHz		C_O		25		pF
Thermal resistance			R_{th}		750		K/W
OUTPUT							
Collector emitter capacitance	V_{CE} = 5.0 V, f = 1.0 MHz		C_{CE}		5.2		pF
Base collector capacitance	V_{CE} = 5.0 V, f = 1.0 MHz		C_{BC}		6.5		pF
Emitter base capacitance	V_{CE} = 5.0 V, f = 1.0 MHz		C_{EB}		7.5		pF
Thermal resistance			R_{th}		500		K/W

ELECTRICAL CHARACTERISTCS

PARAMETER	TEST CONDITION	PART	SYMBOL	MIN.	TYP.	MAX.	UNIT
COUPLER							
Collector emitter, saturation voltage	I_F = 10 mA, I_C = 2.5 mA		V_{CEsat}		0.25	0.4	V
Coupling capacitance			C_C		0.6		pF
Collector emitter, leakage current	V_{CE} = 10 V	CNY17F-1	I_{CEO}		2.0	50	nA
		CNY17F-2	I_{CEO}		2.0	50	nA
		CNY17F-3	I_{CEO}		5.0	100	nA
		CNY17F-4	I_{CEO}		5.0	100	nA

Note

T_{amb} = 25 °C, unless otherwise specified.
Minimum and maximum values were tested requierements. Typical values are characteristics of the device and are the result of engineering evaluations. Typical values are for information only and are not part of the testing requirements.

CURRENT TRANSFER RATIO

PARAMETER	TEST CONDITION	PART	SYMBOL	MIN.	TYP.	MAX.	UNIT
Current transfer ratio	I_F = 10 mA	CNY17F-1	CTR	40		80	%
		CNY17F-2	CTR	63		125	%
		CNY17F-3	CTR	100		200	%
		CNY17F-4	CTR	160		320	%
	I_F = 1.0 mA	CNY17F-1	CTR	13	30		%
		CNY17F-2	CTR	22	45		%
		CNY17F-3	CTR	34	70		%
		CNY17F-4	CTR	56	90		%

Note

Current transfer ratio I_C/I_F at V_{CE} = 5.0 V, 25 °C and collector emitter leakage current by dash number.

SWITCHING CHARACTERISTICS

PARAMETER	TEST CONDITION	PART	SYMBOL	MIN.	TYP.	MAX.	UNIT
LINEAR OPERATION (WITHOUT SATURATION)							
Turn-on time	I_F = 10 mA, V_{CC} = 5.0 V, R_L = 75 Ω		t_{on}		3.0		µs
Rise time	I_F = 10 mA, V_{CC} = 5.0 V, R_L = 75 Ω		t_r		2.0		µs
Turn-off time	I_F = 10 mA, V_{CC} = 5.0 V, R_L = 75 Ω		t_{off}		2.3		µs
Fall time	I_F = 10 mA, V_{CC} = 5.0 V, R_L = 75 Ω		t_f		2.0		µs
Cut-off frequency	I_F = 10 mA, V_{CC} = 5.0 V, R_L = 75 Ω		f_{CO}		250		kHz

SWITCHING CHARACTERISTICS							
PARAMETER	**TEST CONDITION**	**PART**	**SYMBOL**	**MIN.**	**TYP.**	**MAX.**	**UNIT**
SWITCHING OPERATION (WITH SATURATION)							
Turn-on time	I_F = 20 mA	CNY17F-1	t_{on}		3.0		µs
	I_F = 10 mA	CNY17F-2	t_{on}		4.2		µs
		CNY17F-3	t_{on}		4.2		µs
	I_F = 5 mA	CNY17F-4	t_{on}		6.0		µs
Rise time	I_F = 20 mA	CNY17F-1	t_r		2.0		µs
	I_F = 10 mA	CNY17F-2	t_r		3.0		µs
		CNY17F-3	t_r		3.0		µs
	I_F = 5 mA	CNY17F-4	t_r		4.6		µs
Turn-off time	I_F = 20 mA	CNY17F-1	t_{off}		18		µs
	I_F = 10 mA	CNY17F-2	t_{off}		23		µs
		CNY17F-3	t_{off}		23		µs
	I_F = 5 mA	CNY17F-4	t_{off}		25		µs
Fall time	I_F = 20 mA	CNY17F-1	t_f		11		µs
	I_F = 10 mA	CNY17F-2	t_f		14		µs
		CNY17F-3	t_f		14		µs
	I_F = 5 mA	CNY17F-4	t_f		15		µs

TYPICAL CHARACTERISTICS

T_{amb} = 25 °C, unless otherwise specified

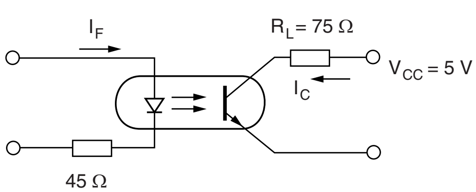


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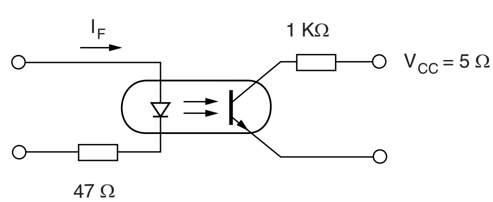
Fig. 1 - Linear Operation (without Saturation)



icny17f_02

Fig. 2 - Switching Operation (with Saturation)

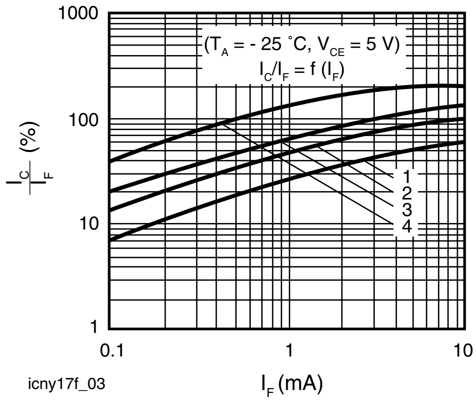


Fig. 3 - Current Transfer Ratio vs. Diode Current

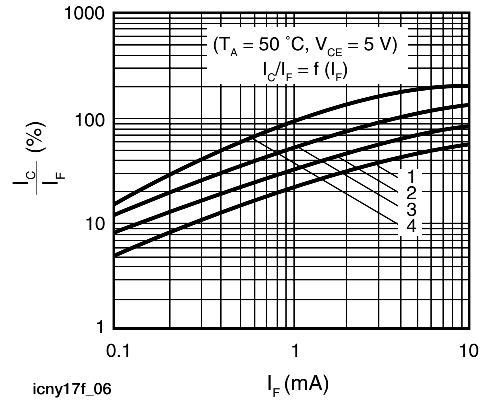


Fig. 6 - Current Transfer Ratio vs. Diode Current

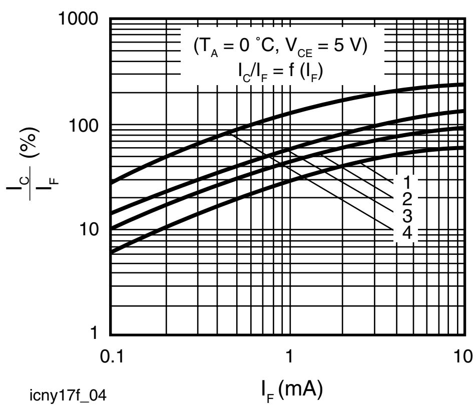


Fig. 4 - Current Transfer Ratio vs. Diode Current

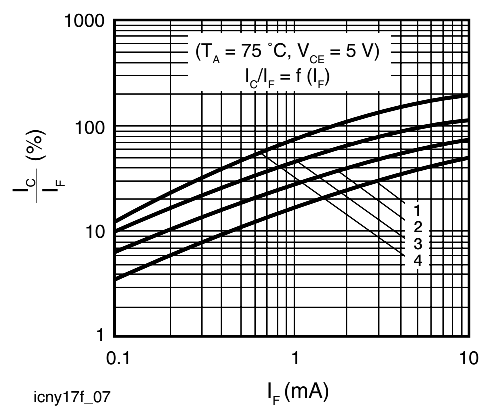


Fig. 7 - Current Transfer Ratio vs. Diode Current

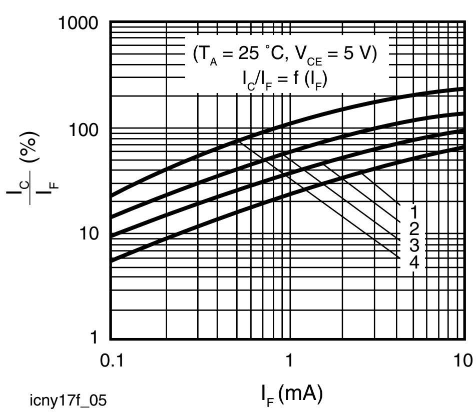


Fig. 5 - Current Transfer Ratio vs. Diode Current

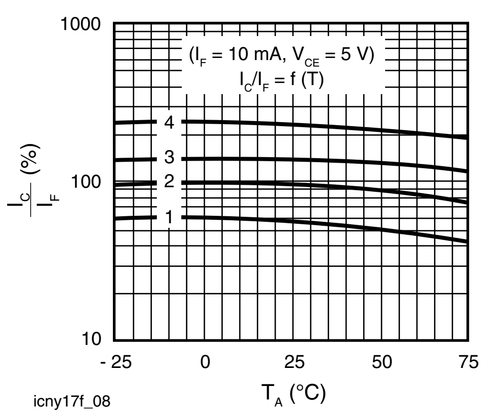


Fig. 8 - Current Transfer Ratio (CTR) vs. Temperature

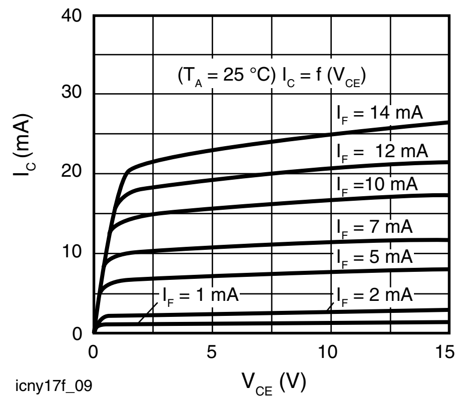


Fig. 9 - Output Characteristics CNY17F-2, -3

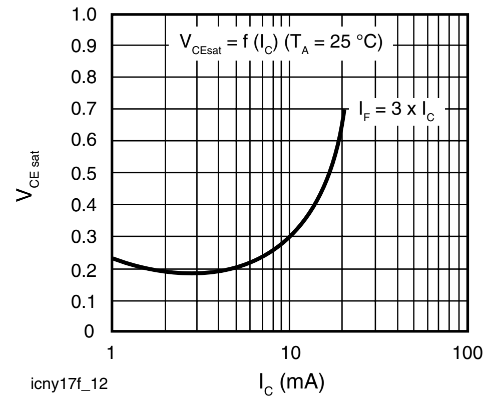


Fig. 12 - Saturation Voltage vs. Collector Current and Modulation Depth CNY17F-1

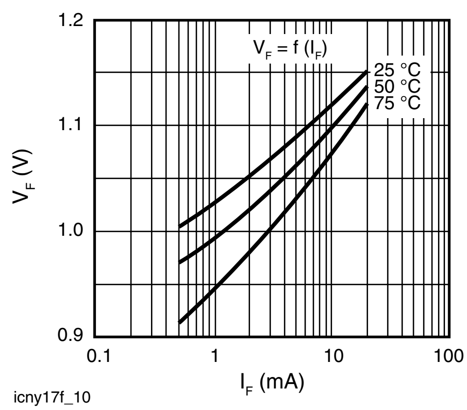


Fig. 10 - Forward Voltage

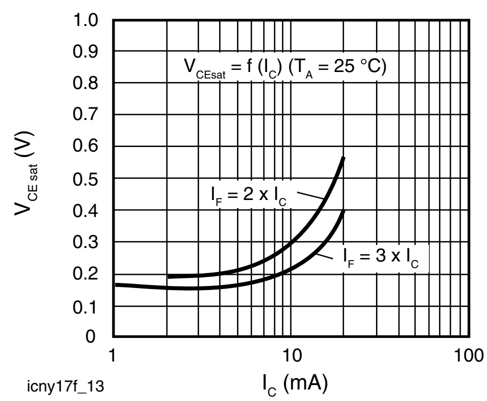


Fig. 13 - Saturation Voltage vs. Collector Current and Modulation Depth CNY17F-2

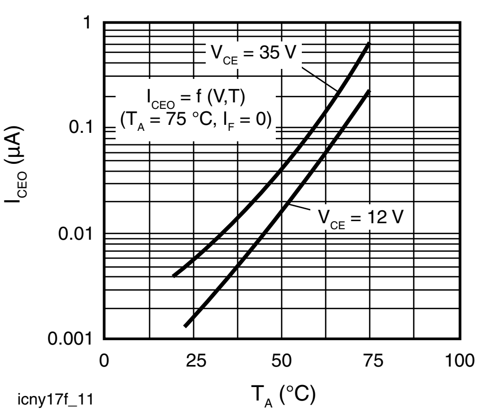


Fig. 11 - Collector Emitter Off-state Current

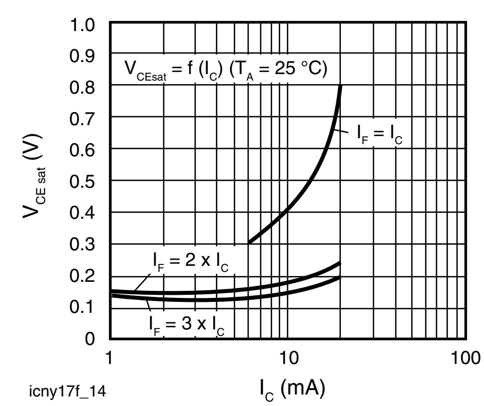


Fig. 14 - Saturation Voltage vs. Collector Current and Modulation Depth CNY17F-3

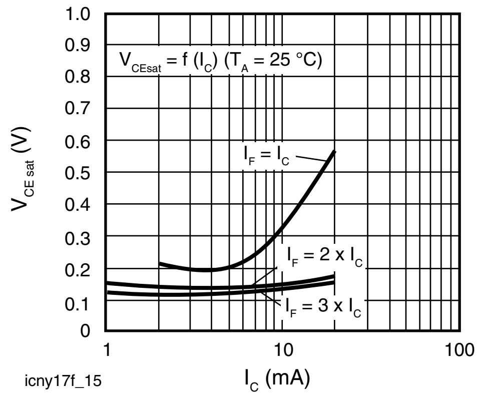


Fig. 15 - Saturation Voltage vs. Collector Current and Modulation Depth CNY17F-4

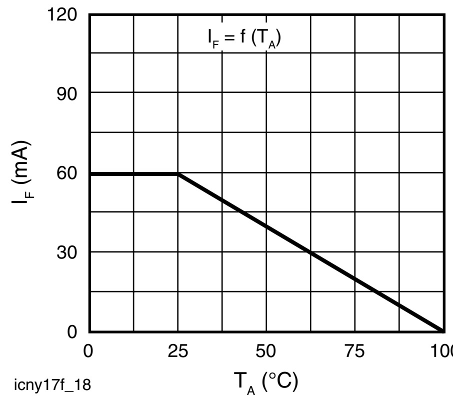


Fig. 18 - Permissible Forward Current Diode

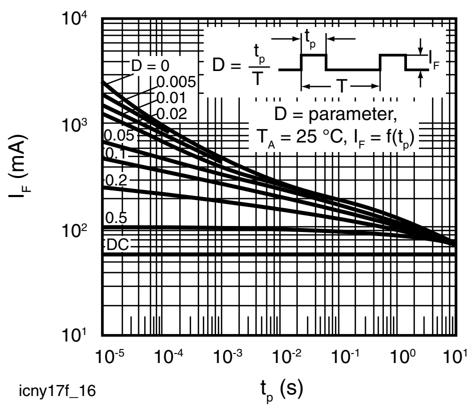


Fig. 16 - Permissible Pulse Load

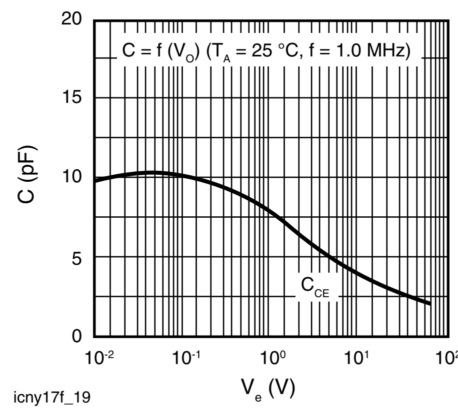


Fig. 19 - Transistor Capacitance

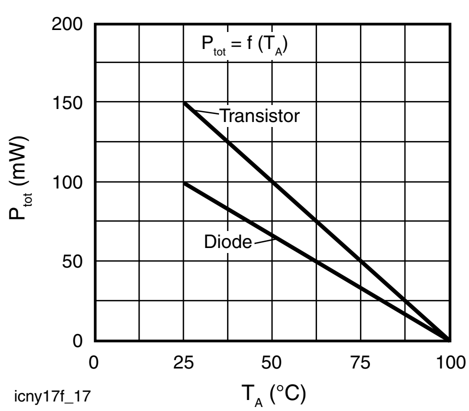
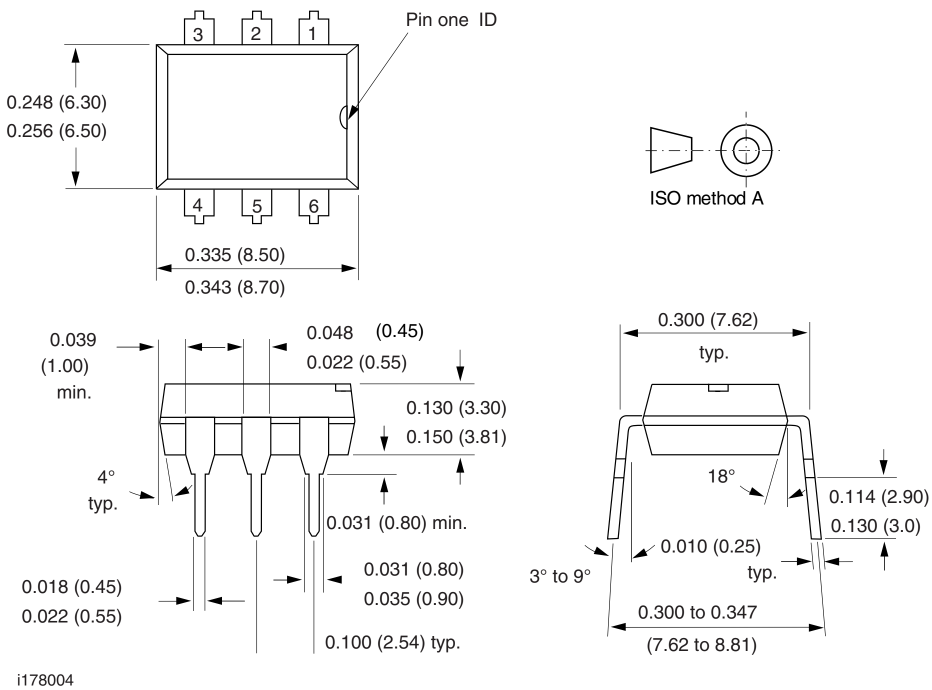
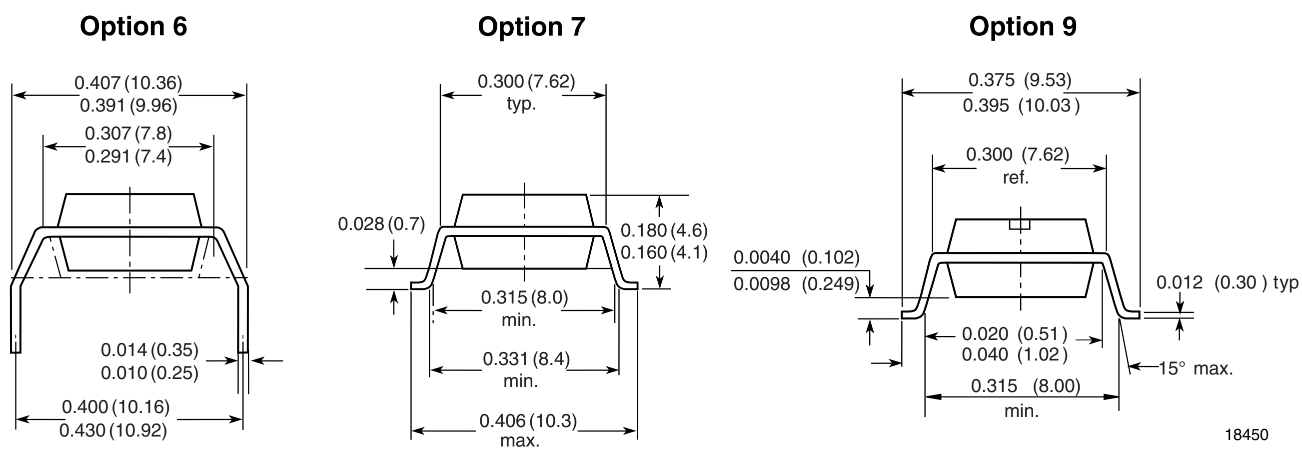


Fig. 17 - Permissible Power Dissipation for Transistor and Diode

PACKAGE DIMENSIONS in inches (millimeters)





OZONE DEPLETING SUBSTANCES POLICY STATEMENT

It is the policy of Vishay Semiconductor GmbH to

1. Meet all present and future national and international statutory requirements.
2. Regularly and continuously improve the performance of our products, processes, distribution and operating systems with respect to their impact on the health and safety of our employees and the public, as well as their impact on the environment.

It is particular concern to control or eliminate releases of those substances into the atmosphere which are known as ozone depleting substances (ODSs).

The Montreal Protocol (1987) and its London Amendments (1990) intend to severely restrict the use of ODSs and forbid their use within the next ten years. Various national and international initiatives are pressing for an earlier ban on these substances.

Vishay Semiconductor GmbH has been able to use its policy of continuous improvements to eliminate the use of ODSs listed in the following documents.

1. Annex A, B and list of transitional substances of the Montreal Protocol and the London Amendments respectively.
2. Class I and II ozone depleting substances in the Clean Air Act Amendments of 1990 by the Environmental Protection Agency (EPA) in the USA
3. Council Decision 88/540/EEC and 91/690/EEC Annex A, B and C (transitional substances) respectively.

Vishay Semiconductor GmbH can certify that our semiconductors are not manufactured with ozone depleting substances and do not contain such substances.

Vishay Semiconductor GmbH, P.O.B. 3535, D-74025 Heilbronn, Germany

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The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications. Customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify Vishay for any damages resulting from such improper use or sale.

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

Option 6 400 mil (10.16 mm) lead spread DIP configuration

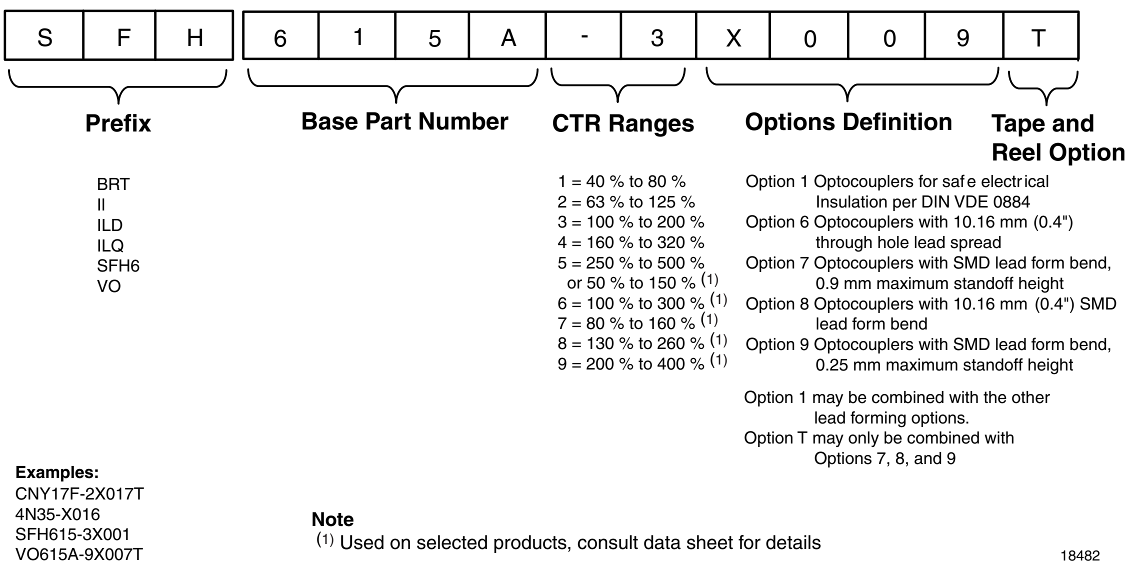
Option 7 Surface mount, gull wing DIP configuration with standoff

Option 8 Surface mount, gull wing DIP configuration with increased clearance

Option 9 Surface mount, gull wing DIP configuration

ORDERING OPTIONS

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:



This field is always 4 characters long and commences with the character X. In the case of surface mounted products in Tape and Reel format, the tape and reel option character "T" will follow this field. The possible combinations for these Fields (1) are:

X001, X006, X007, X008, X009, X001T[2], X007T, X008T, X009T, X016, X017, X018, X019, X017T, X018T, X019T

Notes

(1) Not all options are available for all product types.

(2) The X001T option is only available on products that are available on the following SMD products SFH6106, SFH6156, SFH6186, SFH6206 and SFH6286 series, e.g. SFH6106-3X001T .

OPTION 1
OPTOCOUPLERS FOR SAFE ELECTRICAL INSULATION PER DIN EN 60747-5-2 (VDE 0884)/DIN EN 60747-5-5 PENDING (1)

The optocoupler listed are suitable for safe electrical insulation only within the safety maximum ratings. Compliance with the safety maximum ratings must be ensured by protective circuits.

The partial discharge measurement ensures that no partial discharge occurs during operation at maximum permissible operating insulation voltage (V_{IORM}). Permanent partial discharge affects the insulating materials and can result in a high voltage breakdown.

It is recommended that tests with the insulation test voltage (V_{ISOL}) should not be made, otherwise partial discharge may occur impairing the insulation characteristics. Thus partial discharges also may occur at the maximum permissible operating insulation voltage.

The insulation test per DIN EN 60747-5-2 (VDE 0884)/ DIN EN 60747-5-5 pending is carried out after all the other tests

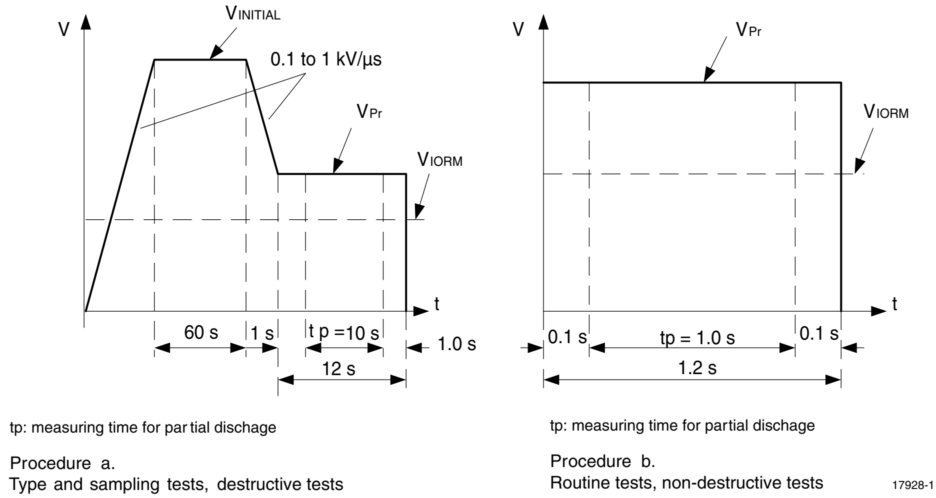


Fig. 3 - Time Voltage Diagram per DIN EN 60747-5-2 (VDE 0884)/DIN EN 60747-5-5 pending [1]

Note

[1] DIN EN 60747-5-2 (VDE 0884)/ DIN EN 60747-5-5 pending. Edition January 2003

DESCRIPTION	SYMBOL	SYSTEM 1			UNIT
		DIP4	DIP8	DIP16	
		SFH610A-..	ILCT6	ILQ1/2/5/74	
		SFH615A-..	ILD1/2/5/74	ILQ30/31/55	
		SFH615AA-..	ILD30/31/55	ILQ32	
		SFH615AGB-..	ILD32	ILQ66-..	
		SFH615AGR-..	ILD66-..	ILQ615-..	
		SFH617A-..	ILD250/1/2	ILQ620-..	
		SFH618A-..	ILD255	ILQ620GB-..	
		SFH620A-..	ILD621GB-..	ILQ621-..	
		SFH620AA-..	ILD621-..	ILQ621GB-..	
		SFH620AGB-..	ILD621GB-..		
		SFH628A-..	ILD755-..		
		SFH6106-..	ILD766-..		
		SFH6116-..	MCT6		
		SFH6156-..			
		SFH6186-..			
		SFH6206-..			
		SFH6286-..			
Installation category (DIN VDE 0110)					
For rated line voltages ≤ 300 V_{RMS}		I - IV			
For rated line voltages ≤ 600 V_{RMS}		I - IV			
For rated line voltages ≤ 1000 V_{RMS}					
IEC climatic category (DIN IEC 60068 Part 1/9.80)		55/100/21			
Pollution degree (DIN VDE 0110 Part 1/1.89)		2			
Maximum operation insulating voltage [1]	V_{IORM}	890			V
Test voltage input/output, procedure b [1] V_{Pr} = 1.875 x V_{IORM}, routine 100 % test, t_p = 1 s, partial discharge < 5 pC	V_{Pr}	1669			V

For technical questions, contact: optocoupler.answers@vishay.com

DESCRIPTION	SYMBOL	SYSTEM 1	UNIT
Test voltage input/output, procedure a (1) V_{Pr} = 1.5 x V_{IORM}, type and sampling test t_p = 60 s, partial discharge < 5 pC	V_{Pr}	1335	V
Maximum permissible overvoltage (transient overvoltage)	V_{IOTM}	8000	V
Partial discharge test voltage (1)	$V_{INITIAL}$	8000	V
Safety maximum ratings (maximum permissible ratings in case of a fault, also refer to dDiagram) Package temperature Current (input current I_F, P_{Si} = 0, T_A = 25 °C) Derating with higher ambient temperature Power (output or total power dissipation, T_A = 25 °C) Derating with higher ambient temperature	 T_{si} I_{si} DI_{Si} P_{Si} ΔP_{Si}	 175 275 - 1.83 400 - 2.67	 °C mA mA/K mW mW/K
Insulation resistance at T_{Si} $V_{I/O}$ = 500 V	R_{IS}	> 10 ^{9}	W

DESCRIPTION	SYMBOL	SYSTEM 2			UNIT
		4N25/26/27/28	IL250	MCT5210	
		4N35/36/37/38/39	IL251	MCT5211	
		4N32/33	IL252	SFH600-..	
		CNY17-..	IL255-..	SFH601-..	
		CNY17F-..	IL400	SFH608-..	
		H11A-..	IL755-..	SFH640-..	
		H11AA1-..	IL755B-..	MOC8050	
		H11B-..	IL766-..	IL56B-..	
		H11B1-..	IL766B-..	MOC8021	
		H11C-..	MCA230/231	MOC8112	
		H11D-..	MCA255	MOC8102/03/04/05	
		IL1/2/5/74	MCT2/2E		
		IL2B-..	MCT270/271		
		IL30/31/55	MCT272		
		IL55B-..	MCT273/274		
		IL66-..	MCT275		
		IL66B-..	MCT276/277		
		IL201/202/203			
Installation category (DIN VDE 0110)					
For rated line voltages ≤ 300 V_{RMS}		I - IV			
For rated line voltages ≤ 600 V_{RMS}		I - IV			
For rated line voltages ≤ 1000 V_{RMS}					
IEC climatic category (DIN IEC 60068 Part 1/9.80)		55/100/21			
Pollution degree (DIN VDE 0110 Part 1/1.89)		2			
Maximum operation insulating voltage (1)	V_{IORM}	890			V
Test voltage input/output, procedure b (1) V_{Pr} = 1.875 x V_{IORM}, routine 100 % test, t_p = 1 s, partial discharge < 5 pC	V_{Pr}	1669			V
Test voltage input/output, procedure a (1) V_{Pr} = 1.5 x V_{IORM}, type and sampling test t_p = 60 s, partial discharge < 5 pC	V_{Pr}	1335			V

DESCRIPTION	SYMBOL	SYSTEM 2	UNIT
Maximum permissible overvoltage (transient overvoltage)	V_{IOTM}	8000	V
Partial discharge test voltage (1)	$V_{INITIAL}$	8000	V
Safety maximum ratings (maximum permissible ratings in case of a fault, also refer to diagram) Package temperature Current (input current I_F, P_{Si} = 0, T_A = 25 °C) Derating with higher ambient temperature Power (output or total power dissipation, T_A = 25 °C) Derating with higher ambient temperature	 T_{si} I_{si} DI_{Si} P_{Si} ΔP_{Si}	 175 400 - 2.67 700 - 4.67	 °C mA mA/K mW mW/K
Insulation resistance at T_{Si} $V_{I/O}$ = 500 V	R_{IS}	> 10^9	W

DESCRIPTION	SYMBOL	SYSTEM 4 (2)	SYSTEM 5	SYSTEM 7	UNIT
		IL410	6N135	IL300	
		IL420	6N136	IL300E	
		IL4116	SFH6135	IL300F	
		IL4117	SFH6136	IL300EF	
		IL4118	6N138	IL300DEFG	
		IL4216	SFH6138		
		IL4217	SFH6139		
		IL4218	6N139		
			SFH6345		
Installation category (DIN VDE 0110)					
For rated line voltages ≤ 300 V_{RMS}		I - IV	I - IV	I - IV	
For rated line voltages ≤ 600 V_{RMS}		I - III	I - IV	I - IV	
For rated line voltages ≤ 1000 V_{RMS}					
IEC climatic category (DIN IEC 60068 Part 1/9.80)		55/100/21	55/100/21	55/100/21	
Pollution degree (DIN VDE 0110 Part 1/1.89)		2	2	2	
Maximum operation insulating voltage (1)	V_{IORM}	850	630	890	V
Test voltage input/output, procedure b (1) V_{Pr} = 1.875 x V_{IORM}, routine 100 % test, t_p = 1 s, partial discharge < 5 pC	V_{Pr}	1594	1181	1669	V
Test voltage input/output, procedure a (1) V_{Pr} = 1.5 x V_{IORM}, type and sampling Test t_p = 60 s, partial discharge < 5 pC	V_{Pr}	1275	945	1335	V
Maximum permissible overvoltage (transient overvoltage)	V_{IOTM}	6000	8000	8000	V
Partial discharge test voltage (1)	$V_{INITIAL}$	6000	8000	8000	V
Safety maximum ratings (maximum permissible ratings in case of a fault, also refer to diagram) Package temperature Current (input current I_F, P_{Si} = 0, T_A = 25 °C) Derating with higher ambient temperature Power (output or total power dissipation, T_A = 25 °C) Derating with higher ambient temperature	 T_{si} I_{si} DI_{Si} P_{Si} ΔP_{Si}	 175 250 - 1.65 500 - 3.33	 175 300 - 2 500 - 3.33	 165 235 - 1.57 465 - 3.1	 °C mA mA/K mW mW/K
Insulation resistance at T_{Si} $V_{I/O}$ = 500 V	R_{IS}	> 10^9	> 10^9	> 10^9	W

Notes
All voltages referred to are peak values except otherwise specified.
(1) See time-test voltage diagram
(2) In preparation
Testing input/output voltage requires all input pins and all output pins to be shorted
Option 1: Tested per DIN EN 60747-5-2 (VDE 0884)/DIN EN 60747-5-5 pending
Option 6: Wide lead spacing (10.16 mm creepage/clearance distances > 8 mm)
Option 7: Surface mount leads (creepage/clearance distances > 8 mm)
Option 8: Surface mount leads
Option 9: Surface mount leads
See CECC 00802, edition 1, for soldering conditions for SMT devices (option 7 and 9).
"-.." means dash selections

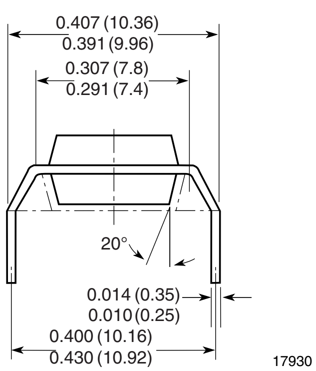
OPTION 6
DIP OPTOCOUPLERS WITH 0.4" (10.16 mm) LEAD SPREAD

The leads of the optocouplers are bent according to a spacing of 0.4" (10.16 mm). Dimensions deviating from the standard type are:

Lead spacing	10.16 mm (0.4")
Creepage distance	> 8.0 mm
Clearance	> 8.0 mm

This version additionally complies with the following standards:

- IEC 60950 DIN VDE 0805/05 90 (System 2 and 3 only) Reinforced insulation up to an operating voltage of 400 V_{RMS} or DC



Clearance-creepage distance = 8.0 min.
See standard version for pin configuration

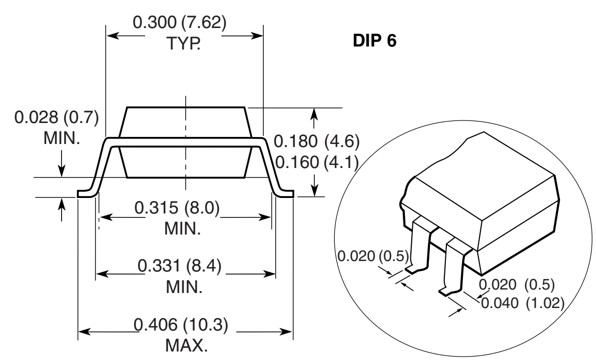
OPTION 7
LEAD BENDS FOR SURFACE MOUNT OPTOCOUPLERS

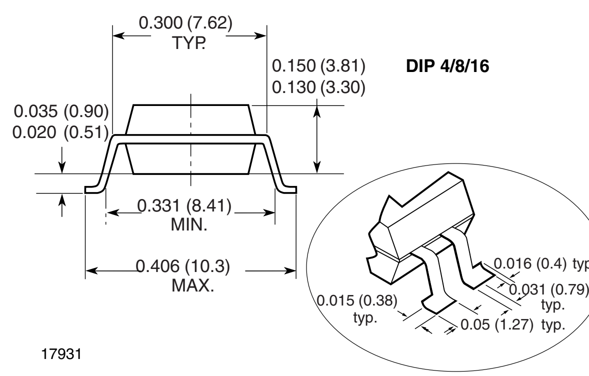
These optocouplers are suitable for surface mounting. Dimensions deviating from the standard type are:
Creepage distance > 8.0 mm
Clearance distance > 8.0 mm

This version additionally complies with the following standards:

- IEC 60950 DIN VDE 0805/05 90 (system 2 and 3 only) Reinforced insulation up to an operating voltage of 400 V_{RMS} or DC

During the soldering process, the package should not be wetted with tin-lead solder to prevent the impairment of the isolation features. Apart from iron soldering, only reflow soldering methods (vapor phase, infrared and hot gas) are permissible.
Permissible soldering conditions for SMD bending options: please see reflow soldering profile
The soldering process may be repeated two times at the most. Attention must be paid to the cooling down of the device to 25 °C between the soldering processes.





Clearance and creepage distances must be considered for the solder pad design.
Clearance-creepage distance = 8.0 min.
See standard version for pin configuration.

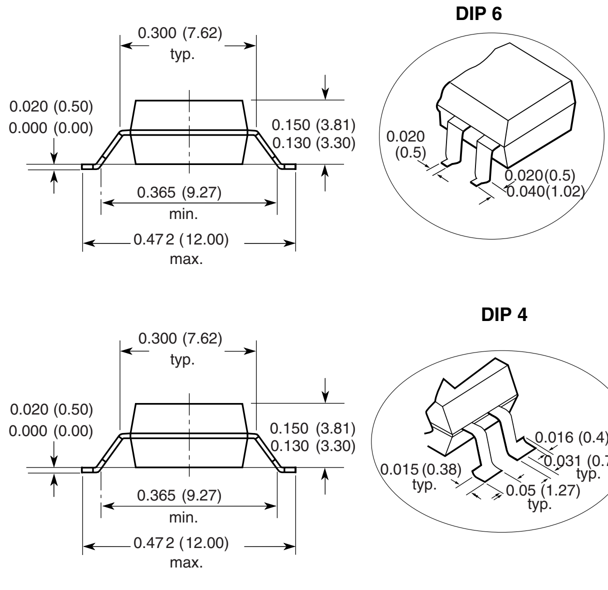
OPTION 8
LEAD BENDS FOR SURFACE MOUNT OPTOCOUPLERS

These optocouplers are suitable for surface mounting. Dimensions deviating from the standard type are:
Creepage distance > 8.0 mm
Clearance distance > 8.0 mm

This version additionally complies with the following standards:

- IEC 60950 DIN VDE 0805/05 90 (system 2 and 3 only) Reinforced insulation up to an operating voltage of 400 V_{RMS} or DC

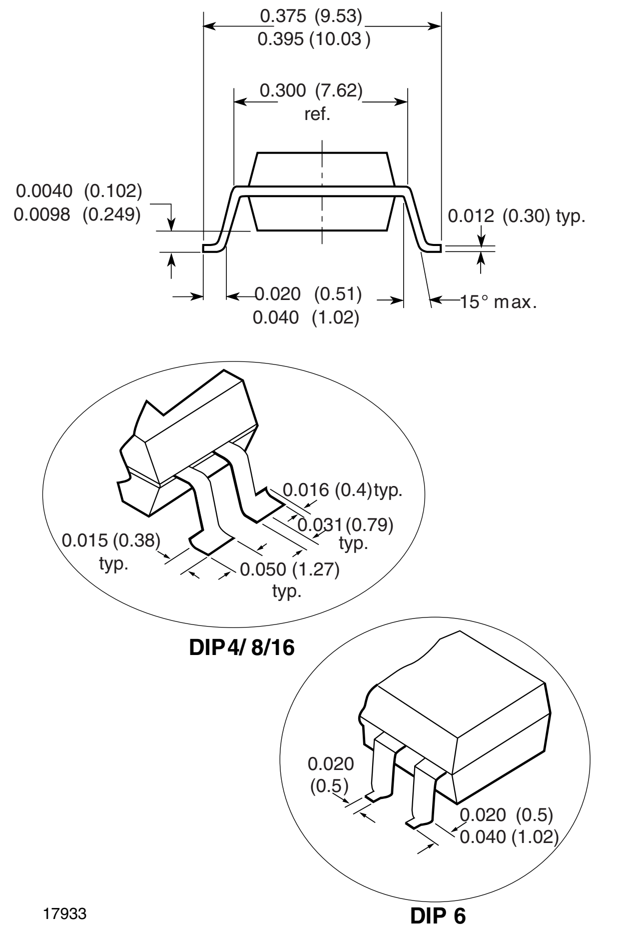
During the soldering process, the package should not be wetted with tin-lead solder to prevent the impairment of the isolation features. Apart from iron soldering, only reflow soldering methods (vapor phase, infrared and hot gas) are permissible.
Permissible soldering conditionsfor SMD bending options: please see reflow soldering profile
The soldering process may be repeated two times at the most. Attention must be paid to the cooling down of the device to 25 °C between the soldering processes



Clearance and creepage distances must be considered for the solder pad design.
Clearance-creepage distance = 8.0 min.
See standard version for pin configuration.

OPTION 9
LEAD BENDS FOR SURFACE MOUNT OPTOCOUPLERS

During the soldering process, the package should not be wetted with tin-lead solder to prevent the impairment of the isolation features. Apart from iron soldering, only reflow soldering methods (vapor phase, infrared and hot gas) are permissible.
Permissible soldering conditionsfor SMD bending options: please see reflow soldering profile
The soldering process may be repeated two times at the most. Attention must be paid to the cooling down of the device to 25 °C between the soldering processes.



MARKINGS

The following table defines the option information that is marked on the product.

OPTION TYPE	MARKING
X001, X001T	X001
X006	No mark
X007, X007T	X007
X008, X008T	X008
X009, X009T	No Mark
X016	X001
X017, X017T	X017
X018, X018T	X018
X019, X019T	X001