Agilent Technologies
Innovating the HP Way

VDE 0884
Option for Plastic Optocoupler

Technical Data

Option 060

Description

Optocouplers are frequently used to provide high voltage insulation. Because optocouplers perform this safety function, they are regulated by many country safety agencies, both at the component level and the equipment level.

Standard 8 Pin DIP optocouplers with Option 060, are tested according to VDE 0884 (June 1992 Revision) at V_{IORM} = 630 Vpeak.

Surface Mount SO8 optocouplers with Option 060, are tested at V_{IORM} = 560 Vpeak.

Agilent also offers other various VDE 0884 approved products at different levels of V_{IORM} such as V_{IORM} = 1414 Vpeak (HCNWxxxx series) and V_{IORM} = 891 Vpeak (HCPL-Jxxx series).

Refer to the front of the optocoupler section of the **Isolation and Control Component Designer's Catalog**, under Product Safety Regulations section, for a detailed description of VDE 0884 and the partial discharge tests for production and type testing.

Option 060 is available on the following products:

Standard 8 Pin DIP Product (V_{IORM} = 630 Vpeak) (VDE File 6591.23-4880-1005)

HCPL-2211	HCPL-2212
HCPL-2219	HCPL-2300
HCPL-2400	HCPL-2611
HCPL-261A	HCPL-261N
HCPL-3120	HCPL-3150
HCPL-4503	HCPL-4504
HCPL-4506	HCPL-4701
HCPL-7840	

Surface Mount SO8 Product (TUV Certificate R9650938: V_{IORM} = 560 Vpeak)

HCPL-0211	HCPL-0454
HCPL-0466	HCPL-0611
HCPL-061A	HCPL-061N
HCPL-070A	

Contact your local Agilent Sales Representative concerning availability of this option for optocouplers not listed.

Ordering Information

Specify Part Number followed by Option Number.

Example:
HCPL-3120#060

This option may also be combined with Option #300 (gullwing surface mount) or #500 (gullwing in tape and reel).

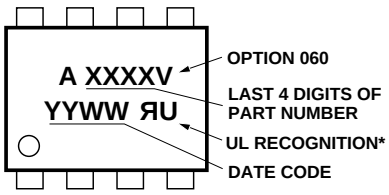
To obtain these combinations, order Option #360 or #560 respectively.

Examples:
HCPL-3120 #360 (gullwing surface mount and VDE0884 approved)

HCPL-3120 #560 (gullwing surface mount and VDE0884 approved in tape and reel)

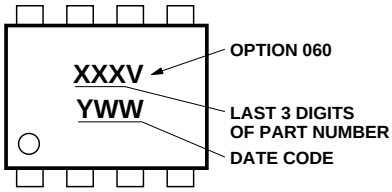
Marking Information

8 PIN DIP PACKAGE



* NO UL MARKING ON HCPL-261A/261N/ 3120/3150/4701/7840.

SO8 PACKAGE



Insulation Related Specifications

Parameter	Symbol	Value		Units	Conditions
		DIP	SO8		
Minimum External Air Gap (External Clearance)	L(101)	7.1	4.9	mm	Measured from input terminals to output terminals, shortest distance through air.
Minimum External Tracking (External Creepage)	L(102)	7.4	4.8	mm	Measured from input terminals to output terminals, shortest distance path along body.
Minimum Internal Plastic Gap		0.08	0.08	mm	Through insulation distance, conductor to conductor, usually the direct distance between (Internal Clearance) the photoemitter and photodetector inside the optocoupler cavity.
Tracking Resistance (Comparative Tracking Index)	CTI	175	175	V	DIN IEC 112/VDE 0303 Part 1
Isolation Group		IIIa	IIIa		Material Group (DIN VDE 0110, 1/89, Table 1)

All Agilent data sheets report the creepage and clearance inherent to the optocoupler component itself. These dimensions are needed as a starting point for the equipment designer when determining the circuit insulation requirements. However, once mounted on a printed circuit board, minimum creepage and clearance requirements must be met as specified for individual equipment standards. For creepage, the shortest distance path along the surface of a printed circuit board between the solder fillets of the input and output leads must be considered. There are recommended techniques such as grooves and ribs which may be used on a printed circuit board to achieve desired creepage and clearances. Creepage and clearance distances will also change depending on factors such as pollution degree and insulation level.

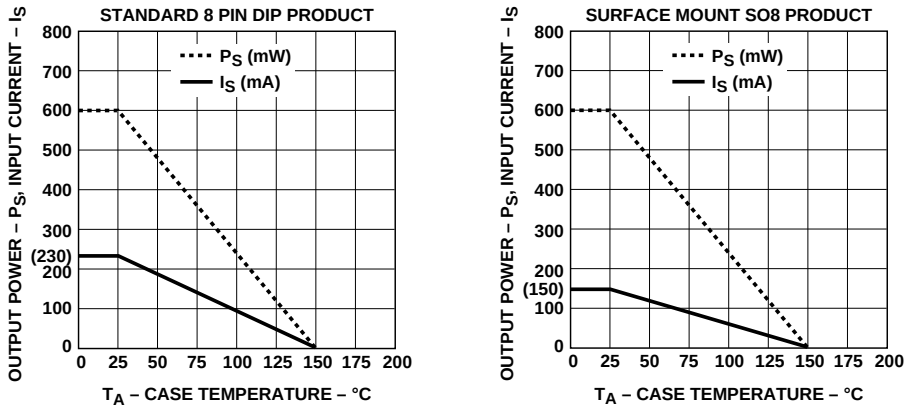


Figure 1. Thermal Derating Curve, Dependence of Safety Limiting Value with Case Temperature per VDE 0884.

VDE 0884 Insulation Related Characteristics (Option 060)

Standard 8 Pin DIP Package

*85°C: HCPL-2211, HCPL-2212, HCPL-2219, HCPL-2300, HCPL-2400, HCPL-2611, HCPL-261A, HCPL-261N, HCPL-4701, HCPL-7840.

**100°C: HCPL-3120, HCPL-3150, HCPL-4503, HCPL-4504, HCPL-4506.

SO8 Package

*85°C: HCPL-0211, HCPL-0611, HCPL-061A, HCPL-061N, HCPL-070A.

**100°C: HCPL-0454, HCPL-0466.

Description	Symbol	Std. 8 Pin DIP	SO8	Units
Installation classification per DIN VDE 0110/1.89, Table 1 for rated mains voltage ≤ 150 V rms for rated mains voltage ≤ 300 V rms for rated mains voltage ≤ 450 V rms		 I-IV I-IV I-III	 I-IV I-III	
Climatic Classification		55/85/21* 55/100/21**	55/85/21* 55/100/21**	
Pollution Degree (DIN VDE 0110/1.89)		2	2	
Maximum Working Insulation Voltage	V_{IORM}	630	560	V peak
Input to Output Test Voltage, Method b† V_{IORM} x 1.875 = V_{PR}, 100% Production Test with t_m = 1 sec, Partial Discharge < 5 pC	V_{PR}	1181	1050	V peak
Input to Output Test Voltage, Method a† V_{IORM} x 1.5 = V_{PR}, Type and Sample Test, t_m = 60 sec, Partial Discharge < 5 pC	V_{PR}	945	840	V peak
Highest Allowable Overvoltage† (Transient Overvoltage, t_{ini} = 10 sec)	V_{IOTM}	6000	4000	V peak
Safety Limiting Values (Maximum values allowed in the event of a failure, also see Thermal Derating curve, Figure 1.) Case Temperature Input Current Output Power	 T_S $I_{S,INPUT}$ $P_{S,OUTPUT}$	 175 230 600	 150 150 600	 °C mA mW
Insulation Resistance at T_S, V_{10} = 500 V	R_{IO}	≥ 10^9	≥ 10^9	Ω

†Refer to the front of the optocoupler section of the *Isolation and Control Component Designer's Catalog*, under Product Safety Regulations section (VDE 0884), for a detailed description.

Note: These optocouplers are suitable for "safe electrical isolation" only within the safety limit data. Maintenance of the safety data shall be ensured by means of protective circuits.

Note: The surface mount classification is Class A in accordance with CECC 00802.

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Data subject to change.

Obsoletes 5965-8101E
5968-1307E (11/99)