

# 6-Pin DIP High Voltage Photodarlington Optocouplers

## H11G1M, H11G2M

### Description

The H11G1M and H11G2M are photodarlington-type optically coupled optocouplers. These devices have a gallium arsenide infrared emitting diode coupled with a silicon darlington connected phototransistor which has an integral base-emitter resistor to optimize elevated temperature characteristics.

### Features

- High  $BV_{CEO}$ :
  - ◆ 100 V Minimum for H11G1M
  - ◆ 80 V Minimum for H11G2M
- High Sensitivity to Low Input Current  
(Minimum 500% CTR at  $I_F = 1$  mA)
- Low Leakage Current at Elevated Temperature  
(Maximum 100  $\mu$ A at 80°C)
- Safety and Regulatory Approvals:
  - ◆ UL1577, 4,170 VAC<sub>RMS</sub> for 1 Minute
  - ◆ DIN-EN/IEC60747-5-5, 850 V Peak W

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## SAFETY AND INSULATION RATINGS

(As per DIN EN/IEC 60747-5-5, this optocoupler is suitable for "safe electrical insulation" only within the safety limit data. Compliance with the safety ratings shall be ensured by means of protective circuits.)

Parameter		Characteristics
Installation Classifications per DIN VDE 0110/1.89 Table 1, For Rated Mains Voltage	<150 V <sub>RMS</sub>	I-IV
	<300 V <sub>RMS</sub>	I-IV
Climatic Classification		55/100/21
Pollution Degree (DIN VDE 0110/1.89)		2
Comparative Tracking Index		175

Symbol	Parameter	Value	Unit
V <sub>PR</sub>	Input-to-Output Test Voltage, Method A, V <sub>IORM</sub> × 1.6 = V <sub>PR</sub> , Type and Sample Test with t <sub>m</sub> = 10 s, Partial Discharge < 5 pC	1360	V <sub>peak</sub>
	Input-to-Output Test Voltage, Method B, V <sub>IORM</sub> × 1.875 = V <sub>PR</sub> , 100% Production Test with t <sub>m</sub> = 1 s, Partial Discharge < 5 pC	1594	V <sub>peak</sub>
V <sub>IORM</sub>	Maximum Working Insulation Voltage	850	V <sub>peak</sub>
V <sub>IOTM</sub>	Highest Allowable Over-Voltage	6000	V <sub>peak</sub>
	External Creepage	≥7	mm
	External Clearance	≥7	mm

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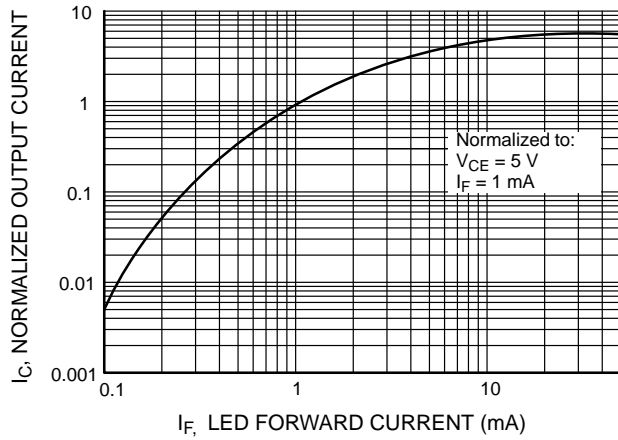
## ELECTRICAL CHARACTERISTICS – INDIVIDUAL COMPONENT CHARACTERISTICS

(T<sub>A</sub> = 25°C unless otherwise noted)

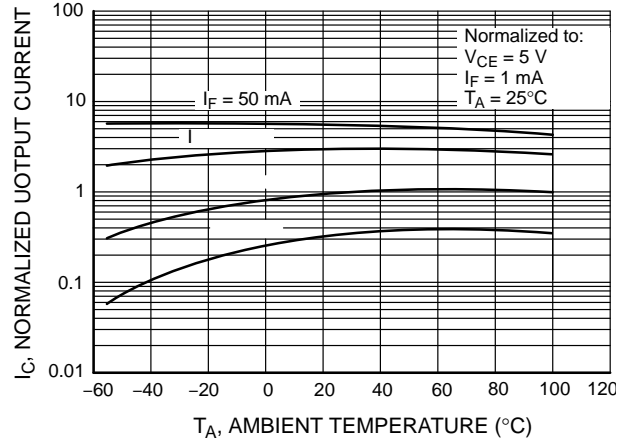
Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
<b>EMITTER</b>						
V <sub>F</sub>	Forward Voltage	I <sub>F</sub> = 10 mA	-	1.3	1.5	V
ΔV <sub>F</sub> /ΔT <sub>A</sub>	Forward Voltage Temperature Coefficient		-	-1.8	-	mV/°C
BV <sub>R</sub>						

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## TYPICAL PERFORMANCE CURVES



**Figure 1. Output Current vs. Input Current**



**Figure 2. Normalized Output Current vs. Temperature**

$I_C$ , NORMALIZED CURRENT

$V_{CE}$ , COLLECTOR-EMITTER VOLTAGE (V)

**Figure 3. Output Current vs. Collector-Emitter Voltage**

$I_{CE0}$ , DARK CURRENT (nA)

$T_A$ , AMBIENT TEMPERATURE ( $^\circ\text{C}$ )

**Figure 4. Collector-Emitter Dark Current vs. Ambient Temperature**

$I_F$ , FORWARD CURRENT (mA)

$t_{on} + t_{off}$ , TOTAL SWITCHING SPEED (NORMALIZED)

**Figure 5. Input Current vs. Total Switching Speed (Typical Values)**

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## REFLOW PROFILE

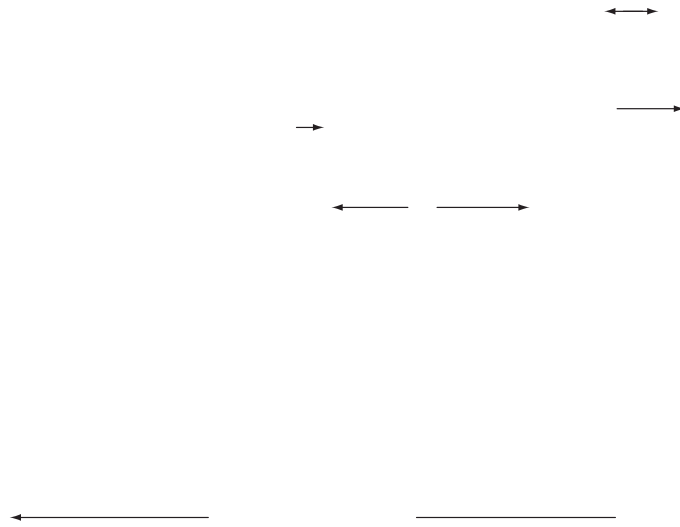
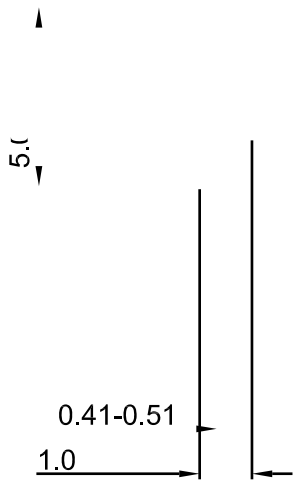


Figure 6. Reflow Profile



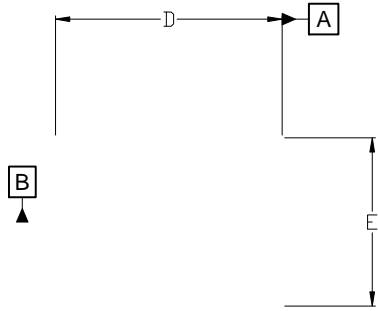


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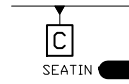


PDIP6 8.51x6.35, 2.54P  
CASE 646BY  
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TOP VIEW





ALL DIMENSIONS ARE IN MILLIMETERS.  
C) DIM ■

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