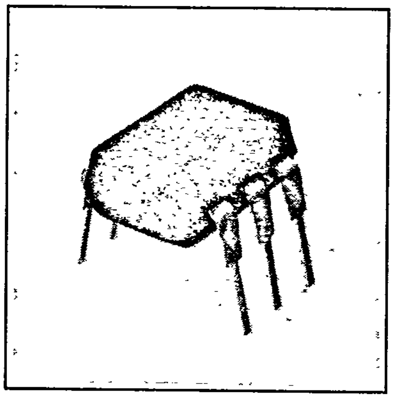
SIEMENS

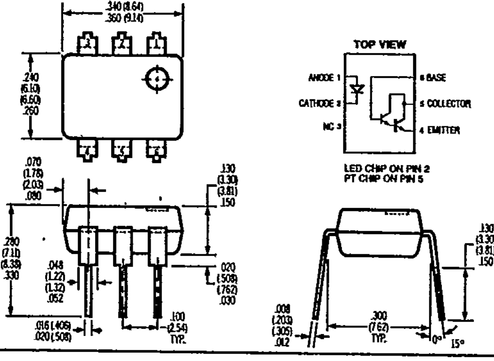
H11B1/H11B2/H11B3

PHOTODARLINGTON OPTOCOUPLER

T-41-85



Package Dimensions in Inches (mm)



FEATURES

- **7500 Volt Withstand Test Voltage**
- **0.5 pF Coupling Capacitance**
- **CTR Minimum at $I_F = 1$ mA:**
  - **H11B1 500%**
  - **H11B2 200%**
  - **H11B3 100%**
- **Underwriters Lab Approval #E52744**

DESCRIPTION

The H11B1/H11B2/H11B3 are industry standard optocouplers, consisting of a GaAs infrared LED and a silicon photodarlington transistor. These optocouplers are constructed with a high voltage insulation, double molded packaging process which offers 7.5 KV withstand test capability.

Maximum Ratings

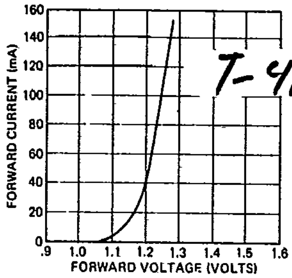
Gallium Arsenide LED	
Power Dissipation at 25°C	100 mW
Derate Linearly from 25°C	1.33 mW/°C
Continuous Forward Current	60 mA
Reverse Voltage	3 V
Detector Silicon Phototransistor	
Power Dissipation at 25°C	150 mW
Derate Linearly from 25°C	2.0 mW/°C
Collector-Emitter Breakdown	25 V
Emitter-Collector Breakdown	7 V
Collector-Base Breakdown	30 V
Collector-Current (Continuous)	100 mA
Package	
Total Package Dissipation at 25°C (LED plus Detector)	260 mW
Derate Linearly from 25°C	3.5 mW/°C
Storage Temperature	–55 to +150°C
Operating Temperature	–55 to +100°C
Lead Soldering Time at 260°C	10 sec

Electrical Characteristics ($T_{amb} = 25°C$)

	Min	Typ	Max	Unit	Conditions
Gallium Arsenide LED					
Forward Voltage					
H11B1, B2		1.1	1.5	V	$I_F = 10$ mA
H11B3		1.1	1.5	V	$I_F = 50$ mA
Reverse Current			10	µA	$V_F = 3$ V
Junction Capacitance		50		pF	$V_F = 0$ V, f = 1 MHz
Phototransistor Detector					
BV_{CEO}	25			V	$I_C = 1.0$ mA, $I_F = 0$ mA
BV_{ECO}	7			V	$I_E = 100$ µA, $I_F = 0$ mA
BV_{CBO}	30			V	$I_C = 100$ µA, $I_F = 0$ mA
I_{CEO}			100	nA	$V_{CE} = 10$ V, $I_F = 0$ mA
Coupled Characteristics					
$V_{CE(SAT)}$			1.0	V	$I_F = 1$ mA, $I_C = 1$ mA
DC Current Transfer Ratio					
H11B1	500			%	$V_{CE} = 5$ V, $I_F = 1$ mA
H11B2	200			%	$V_{CE} = 5$ V, $I_F = 1$ mA
H11B3	100			%	$V_{CE} = 5$ V, $I_F = 1$ mA
Capacitance Input to Output		0.5		pF	
Withstand Test Voltage	7500			VDC	t = 1 sec
	5300			VAC_{RMS}	t = 1 sec
Resistance Input to Output		100		GΩ	
Switching Times					
t_{on}		125		µs	$R_E = 100\ \Omega$, $V_{CE} = 10$ V,
t_{off}		100		µs	$I_C = 10$ mA

TYPICAL OPTOELECTRONIC CHARACTERISTIC CURVES

GaAs EMITTER: FORWARD CURRENT – VOLTAGE CHARACTERISTICS



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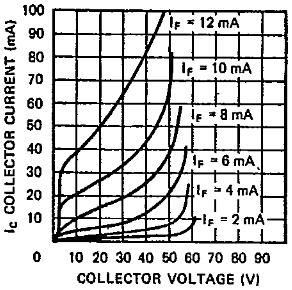
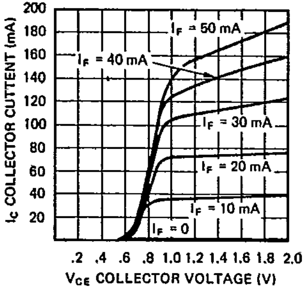
DARLINGTON TRANSISTOR CURRENT VS VOLTAGE



DARLINGTON TRANSISTOR OUTPUT CURRENT VS VOLTAGE



DARK CURRENT VS TEMPERATURE