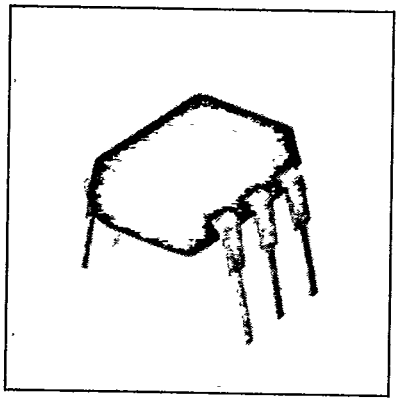
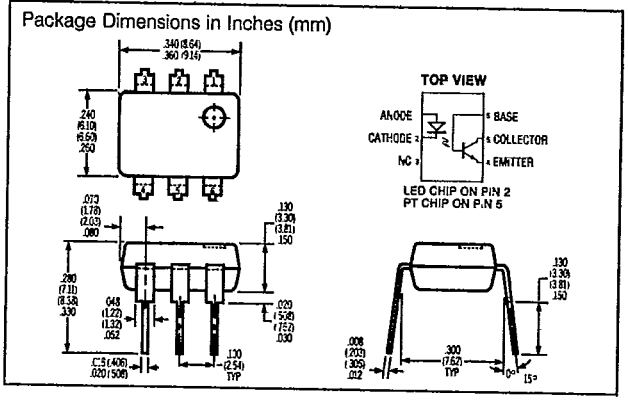
SIEMENS

H11A1 thru H11A5

PHOTOTRANSISTOR OPTOCOUPLER

T-41-83





FEATURES

- **7500 Volt Withstand Test Voltage**
- **0.5 pF Coupling Capacitance**
- **CTR Minimum: H11A1 – 50%**
  H11A2, H11A3 – 20%
  H11A4 – 10%
  H11A5 – 30%
- **Underwriters Lab Approval #E52744**

DESCRIPTION

The H11A1 thru H11A5 are industry standard optocouplers, consisting of a GaAs infrared LED and a silicon phototransistor. 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 ..... 3.3 mW/°C
- Collector-Emitter Breakdown ..... 30 V
- Emitter-Collector Breakdown ..... 7 V
- Collector-Base Breakdown ..... 70 V

Package
- Total Package Dissipation at 25°C (LED plus Detector) ..... 250 mW
- Derate Linearly from 25°C ..... 3.3 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		1.1	1.5	V	I_F = 10 mA
Forward Voltage (H11A5 only)		1.1	1.7	V	"
Reverse Current			10	µA	V_F = 3 V
Junction Capacitance		50		pF	V_F = 0 V, f = 1 MHz
Phototransistor Detector					
BV_{CEO}	30			V	I_C = 10 mA, I_F = 0 mA
BV_{ECO}	7			V	I_E = 100 µA, I_F = 0 mA
BV_{CBO}	70			V	I_C = 10 µA
I_{CEO}		5	50	nA	V_{CE} = 10 V, I_F = 0 mA
Collector-Emitter Capacitance		2		pF	V_{CE} = 0
Coupled Characteristics					
$V_{CE(sat)}$			0.4	V	I_{CE} = 0.5 mA, I_F = 10 mA
DC Current Transfer Ratio					
H11A1	50			%	V_{CE} = 10 V, I_F = 10 mA
H11A2, H11A3	20			%	"
H11A4	10			%	"
H11A5	30			%	"
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}		3.0		µs	R_E = 100 Ω, V_{CE} = 10 V
t_{off}		3.0		µs	I_C = 2 mA

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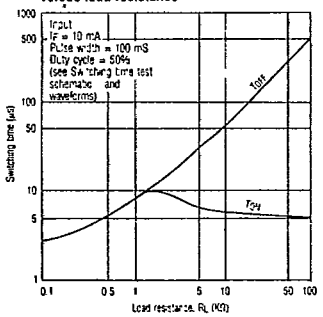
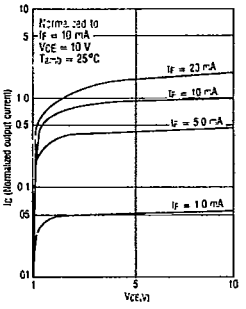
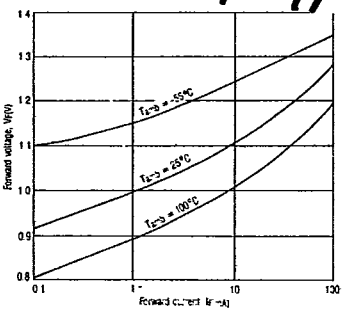
Typical switching times versus load resistance



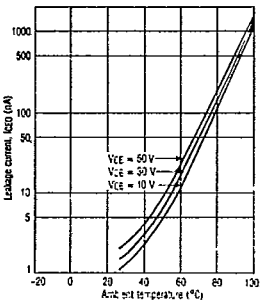
Collector current versus collector voltage



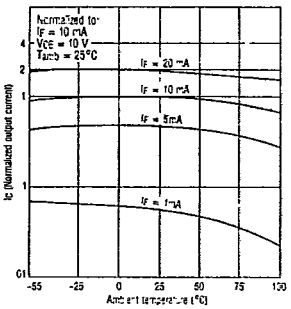
Typical forward voltage versus forward current



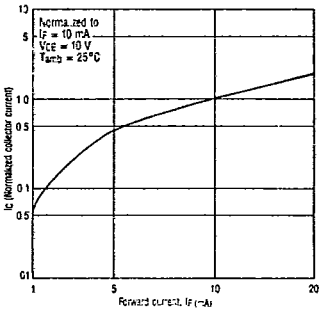
Typical leakage current versus ambient temperature



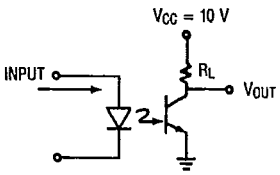
Output current versus temperature

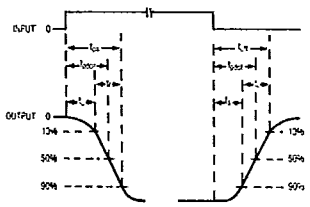


Collector current versus diode forward current



Switching time test schematic and waveforms





Optocouplers (Optoisolators)