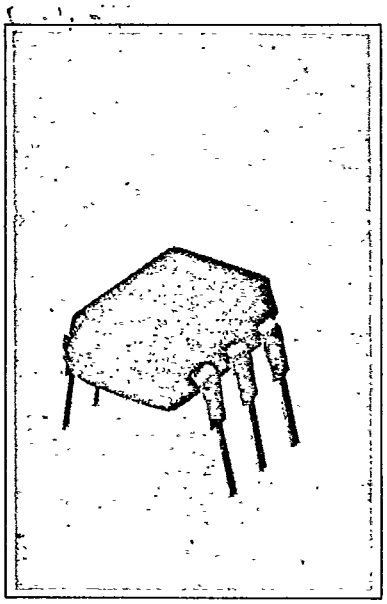
SIEMENS

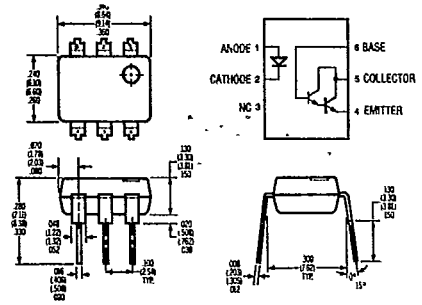
4N32/4N33

T-41-85

PHOTODARLINGTON OPTOCOUPLER



Package Dimensions in Inches (mm)



FEATURES

- Very High Current Transfer Ratio (500% Min.)
- High Isolation Resistance (10^{11} Ω Typical)
- Low Coupling Capacitance
- Standard Plastic Dip Package
- Underwriters Lab Approval #E52744
- VDE Approvals 0883/6.80, 0804/1.83

DESCRIPTION

The 4N32 and 4N33 are optically coupled isolators employing a gallium arsenide infrared emitter and a silicon photo darlington sensor. Switching can be accomplished while maintaining a high degree of isolation between driving and load circuits. They can be used to replace reed and mercury relays with advantages of long life, high speed switching and elimination of magnetic fields.

Maximum Ratings

Gallium Arsenide LED (Drive Circuit)
- Power Dissipation at 25°C ..... 150 mW
- Derate Linearly from 55°C ..... 2 mW/°C
- Continuous Forward Current ..... 80 mA
- Peak Reverse Voltage ..... 3 V

Photodarlington Sensor (Load Circuit)
- Power Dissipation at 25°C Ambient ..... 150 mW
- Derate Linearly from 25°C ..... 2.0 mW/°C
- Collector (load) Current ..... 125 mA
- Collector-Emitter Breakdown Voltage (BV_{CEO}) ..... 30 V
- Collector Base Breakdown Voltage (BV_{CBO}) ..... 50 V
- Emitter-Base Breakdown Voltage (BV_{EBO}) ..... 8 V
- Emitter-Collector Breakdown Voltage (BV_{ECO}) ..... 5 V

Package
- Total Dissipation at 25°C ..... 250 mW
- Derate Linearly from 25°C* ..... 3.3 mW/°C
- Isolation Test Voltage in Accordance with DIN57883/6.80 ..... 3750 VAC/5300 VDC
- Creepage Path ..... 8 mm min.
- Clearance Path ..... 7 mm min.
- Tracking Index According to VDE 0303 ..... KB100/A

Storage Temperature ..... −55 to +150°C
Operating Temperature ..... −55 to +100°C
Lead Soldering Time at 260 °C ..... 10 sec

Optocouplers (Optoisolators)

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

	Min	Typ	Max	Unit	Conditions
GaAS Emitter					
Forward Voltage*		1.25	1.5	V	I_F = 50 mA
Reverse Current*		0.1	100	µA	V_R = 3.0 V
Capacitance		100		pF	V_R = 0 V
Sensor					
H_{FE}		13K		V	V_{CE} = 5 V, I_C = 0.5 mA
BV_{CEO}*	30			V	I_C = 100 µA, I_F = 0
BV_{CBO}*	50			V	I_C = 100 µA, I_F = 0
BV_{EBO}*	8			V	I_C = 100 µA, I_F = 0
BV_{ECO}*	5			V	I_E = 100 µA
I_{CEO}*		1.0	100	nA	V_{CE} = 10 V, I_F = 0
Coupled Characteristics					
Current Transfer Ratio*	500			%	I_F = 10 mA, V_{CE} = 10 V
$V_{CE\ (SAT)}$		1.0		V	I_C = 2 mA, I_F = 8 mA
Isolation Resistance*		10^{11}		Ω	V_{IO} = 500 V
Isolation Capacitance		1.5		pF	
Turn-on Time			5	µs	V_{CC} = 10 V, I_C = 50 mA
Turn-off Time			100	µs	I_F = 200 mA, R_L = 180 Ω
Isolation Voltage					Pulse Width = 8ms
4N32*	1500			V	Peak, 60 Hz
4N33*	6000			V	Peak, 60 Hz
4N32/33 UL Qualified for	7500			VDC	

*Indicates JEDEC registered data.