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NTE3036
Phototransistor
Silicon NPN Photo Darlington Light Detector

Description:

The NTE3036 is a silicon NPN photo Darlington light detector in a TO18 type package designed for use in applications such as industrial inspection, processing and control, counter, sorters, switching and logic circuit or any design requiring very high radiation sensitivity at low light levels.

Features:

- Popular TO18 Type Hermetic Package for Easy Handling and Mounting
- Sensitive Throughout Visible and Near Infrared Spectral Range for Wider Application
- Minimum Light Current: 12mA @ H = 0.5mW/cm^2
- External Base for Added Control

Absolute Maximum Ratings: (T_A = +25°C unless otherwise specified)

Collector–Base Voltage, V_{CBO} 50V
Collector–Emitter Voltage, V_{CEO} 40V
Emitter–Base Voltage, V_{EBO} 10V
Light Current, I_L 250mA
Total Device Dissipation (T_A = +25°C), P_D 250mW
Derate Above 25°C . . . . . 1.43mW/°C
Operating Junction Temperature Range, T_J . . . . . –65° to +200°C
Storage Temperature Range, T_{stg} . . . . . –65° to +200°C

Electrical Characteristics: (T_A = +25°C unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static Characteristics						
Collector Dark Current	I_{CEO}	V_{CE} = 10V, H ~ 0	–	10	100	nA
Collector–Base Breakdown Voltage	$V_{(BR)CBO}$	I_C = 100μA	50	100	–	V
Collector–Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C = 100μA	40	80	–	V
Emitter–Base Breakdwon Voltage	$V_{(BR)EBO}$	I_E = 100μA	10	15.5	–	V

Electrical Characteristics (Cont'd): (T_A = +25°C unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Optical Characteristics						
Light Current	I_L	V_{CC} = 5V, R_L = 10Ω, Note 1	12	20	–	mA
Collector–Emitter Saturation Voltage	$V_{CE(sat)}$	I_L = 10mA, H = 2mW/cm^2 at 2870°K	–	0.6	1.0	V
Photo Current Rise Time	t_r	R_L = 10Ω, I_L = 1mA Peak, Note 2	–	15	100	µs
Photo Current Fall Time	t_f	R_L = 10Ω, I_L = 1mA Peak, Note 2	–	65	150	µs

Note 1. Radiation flux density (H) is equal to 0.5mW/cm^2 emitted from a tungsten source at a color temperature of 2780°K.

Note 2. For unsaturated response time measurement, radiation is provided by pulse GaAs (gallium–arsenide) light emitting diode (λ 0.9µm) with a pulse width equal to or greater than 500µs, I_L = 1mA peak.