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NTE3104
Opto Interrupter Module
Photo Reflector, NPN Transistor Output

Description:

The NTE3104 is a subminiature photo reflector whose GaAs infrared emitting diode and silicon transistor are assembled in the same package allowing for easy installation and handling.

The NTE3104 has an excellent S/N ratio (more than 40dB) and contains a built–in filter for cutting visible light.

Typical applications for the NTE3104 include strobe detection in audio turntables, tape end detection, automatic vending machines, and various other automatic control units.

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

Emitter

Forward Current, I_F
- Continuous 50mA
- Pulse (Note 1) 500mA

Continuous Reverse Voltage, V_R 6V
Power Dissipation, P_D 75mW

Detector

Collector–Emitter Voltage, V_{CEO} 25V
Emitter–Collector Voltage, V_{ECO} 6V
Collector Current, I_C 20mA
Collector Power Dissipation, P_C 75mW

Coupled

Total Power Dissipation, P_{tot} 100mW
Isolation Voltage (Note 2), V_{iso} 1000V
Operating Temperature Range, T_{opr} . . . . . –20° to +90°C
Storage Temperature Range, T_{stg} . . . . . –30° to +100°C

Note 1. Pulse Width ≤ 10μs, Duty Ratio: 0.01

Note 2. R.H. = 40% to 60% for one minute.

Electro–Optical Characteristics:

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Emitter						
Forward Voltage	V_F	I_F = 4mA	–	1.08	1.15	V
Pulse Forward Voltage	V_{FP}	I_{FP} = 500mA	–	1.4	–	V
Reverse Current	I_R	V_R = 6V	–	–	1	µA
Peak Wavelength	λ	I_F = 50mA, T_A = +25°C	–	940	–	nm
Spectral Half Bandwidth	$\Delta\lambda$	I_F = 50mA, T_A = +25°C	–	50	–	nm
Capacitance	C_t	V_R = 0, f = 1MHz	–	35	–	pF
Detector						
Dark Current	I_{CEO}	V_{CE} = 2V	–	–	20	nA
Collector–Emitter Voltage	$V_{(BR)CEO}$	i_C = 100µA	25	–	–	V
Emitter–Collector Voltage	$V_{(BR)ECO}$	i_C = 100µA	6	–	–	V
Coupled						
Output Current	I_O	I_F = 4mA, V_{CE} = 2V, d = 1mm	12	–	125	µA
Collector Dark Current	I_{CEOD}	I_F = 4mA, V_{CE} = 2V	–	–	50	nA
Rise Time	t_r	V_{CE} = 2V, I_F = 4mA, R_L = 1kΩ, d = 1mm	–	70	500	µs
Fall Time	t_f		–	50	500	µs
Isolation Resistance	R_{iso}	R.H. = 40% to 60%, 250V at E–D	–	1000	–	MΩ