

NTE3091 Optoisolator SCR Output

Description:

The NTE3091 is a gallium arsenide, infrared emitting diode coupled with a light activated silicon controlled rectifier in a 6-Lead DIP type package.

Absolute Maximum Rating: ($T_A = +25^\circ\text{C}$ unless otherwise specified)

Infrared Emitting Diode

Reverse Voltage	6V
Forward Current	
Continuous	60mA
Peak (Pulse Width = 1 μ s PPs)	3A
LED Power Dissipation	100mW
Derate Above 25 $^\circ\text{C}$	1.33mW/ $^\circ\text{C}$

Photo-SCR

Peak Forward Voltage	400V
RMS Forward Current	300mA
Peak Forward Current (Pulse Width = 100 μ s, Duty Cycle = 1%)	10A
Surge Current (10ms)	5A
Reverse Gate Voltage	6V
Power Dissipation ($T_A = +25^\circ\text{C}$)	400mW
Derate Above 25 $^\circ\text{C}$	5.3mW/ $^\circ\text{C}$
Power Dissipation ($T_C = +25^\circ\text{C}$)	1000mW
Derate Above 25 $^\circ\text{C}$	13.3mW/ $^\circ\text{C}$

Total Device

Isolation Surge Voltage (Input-to-Output)	
Peak	3535V
RMS	2500V
Steady-State Isolation Voltage (Input-to-Output)	
Peak	2100V
RMS	1500V
Operating Temperature Range	-55 $^\circ$ to +100 $^\circ\text{C}$
Storage Temperature Range	-55 $^\circ$ to +150 $^\circ\text{C}$
Lead Temperature (During Soldering, 10sec)	+260 $^\circ\text{C}$

Electrical Characteristics: ($T_A = +25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Infrared Emitting Diode						
Forward Voltage	V_F	$I_F = 10\text{mA}$	—	1.2	1.5	V
Reverse Leakage Current	I_R	$V_R = 3\text{V}$	—	—	10	μA
Capacitance	C_J	$V = 0, f = 1\text{MHz}$	—	50	—	pF

Electrical Characteristics (Cont'd): ($T_A = +25^{\circ}\text{C}$ unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Photo-SCR						
Off-State Voltage	V_{DM}	$I_D = 150\mu\text{A}$, $R_{GK} = 10\text{k}\Omega$, $T_A = +100^{\circ}\text{C}$	400	–	–	V
Reverse Voltage	V_{RM}		400	–	–	V
On-State Voltage	V_{TM}	$I_{TM} = 0.3\text{A}$	–	1.1	1.3	V
Off-State Current	I_{DM}	$V_{DM} = 400\text{V}$, $R_{GK} = 10\text{k}\Omega$, $T_A = +100^{\circ}\text{C}$	–	–	150	mA
Reverse Current	I_{RM}	$V_{RM} = 400\text{V}$, $R_{GK} = 10\text{k}\Omega$, $T_A = +100^{\circ}\text{C}$	–	20	–	mA
Capacitance (Anode–Gate)		$V = 0$, $f = 1\text{MHz}$ (Gate–Cathode)	–	350	–	pF
Coupled						
Input Current to Trigger		$V_{AK} = 50\text{V}$, $R_{GK} = 10\text{k}\Omega$	–	–	20	mA
		$V_{AK} = 100\text{V}$, $R_{GK} = 27\text{k}\Omega$	–	–	11	mA
Isolation Resistance		Input-to-Output Voltage = 500V_{DC}	100	–	–	$\text{G}\Omega$
Input-to-Output Capacitance		Input-to-Output Voltage = 0, $f = 1\text{MHz}$	–	–	2	pF
Coupled dv/dt, Input-to-Output			500	–	–	V/s

Pin Connection Diagram

