ELECTRONICS, INC.
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NTE5498 & NTE5499
Silicon Controlled Rectifier (SCR)
12 Amp, TO220

Description:

The NTE5498 and NTE5499 silicon controlled rectifiers are high performance glass passivated PNPN devices in a TO220 type package designed for general purpose high current applications where moderate gate sensitivity is required.

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

Peak Repetitive Off–State Voltage (T_J = –40° to +125°C, R_{GK} = 1kΩ), V_{DRM}, V_{RRM}
- NTE5498 . . . . . 400V
- NTE5499 . . . . . 800V

RMS On–State Current (All Conduction Angles, T_C = +85°C), $I_{T(RMS)}$ 12A
Average On–State Current (Half Cycle, 180° Conduction Angle, T_C = +85°C), $I_{T(AV)}$ 7.6A
Non–Repetitive On–State Current (Half Cycle, 60Hz), I_{TSM} 132A
Non–Repetitive On–State Current (Half Cycle, 50Hz), I_{TSM} 120A
Circuit Fusing Considerations (Half Cycle, t = 10ms), I^2t . . . . . $72A^2s$
Peak Gate Current (10μs Max), I_{GM} 4A
Peak Gate Dissipation (10μs Max), P_{GM} 10W
Average Gate Dissipation (20ms Max), $P_{G(AV)}$ 1W
Operating Junction Temperature Range, T_J . . . . . –40° to +125°C
Storage Temperature Range, T_{stg} . . . . . –40° to +125°C
Thermal Resistance, Junction–to–Case, R_{thJC} 3K/W
Thermal Resistance, Junction–to–Ambient, R_{thJA} 60K/W
Lead Temperature (During Soldering, 1.6mm from case, 10sec max), T_L . . . . . +250°C

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

Parameter	Symbol	Test Conditions		Min	Typ	Max	Unit
Off–State Leakage Current	I_{DRM}, I_{RRM}	V_{DRM} + V_{RRM}, R_{GK} = 1kΩ	T_J = +125°C	–	–	1.5	mA
			T_J = +25°C	–	–	5.0	μA
On–State Voltage	V_T	I_T = 24A, T_J = +25°C		–	–	1.8	V
On–State Threshold Voltage	$V_{T(TO)}$	T_J = +125°C		–	–	1.0	V
On–State Slope Resistance	r_T	T_J = +125°C		–	–	36	mΩ
Gate–Trigger Current	I_{GT}	V_D = 7V		5	–	10	mA
Gate–Trigger Voltage	V_{GT}	V_D = 7V		–	–	2.0	V

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Holding Current	I_H	R_{GK} = 1kΩ	–	–	40	mA
Latching Current	I_L	R_{GK} = 1kΩ	–	–	30	mA
Critical Rate of Voltage Rise	dv/dt	V_D = .67 x V_{DRM}, R_{GK} = 1kΩ, T_J = +125°C	100	–	–	V/μs
Critical Rate of Current Rise	di/dt	I_G = 50mA, di_G/dt = 0.5A/μs, T_J = +125°C	100	–	–	A/μs
Gate Controlled Delay Time	t_{gd}	I_G = 50mA, di_G/dt = 0.5A/μs	–	–	500	ns
Commutated Turn−Off Time	t_q	V_D = .67 x V_{DRM}, V_R = 35V, I_T = $I_{T(AV)}$, T_C = +85°C	–	–	50	μs