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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 PNP devices in a TO220 type package designed for general purpose high current applications where moderate gate sensitivity is required.

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

Peak Repetitive Off-State Voltage ($T_J = -40^\circ$ to $+125^\circ\text{C}$, $R_{GK} = 1\text{k}\Omega$), V_{DRM} , V_{RRM}	
NTE5498	400V
NTE5499	800V
RMS On-State Current (All Conduction Angles, $T_C = +85^\circ\text{C}$), $I_{T(RMS)}$	12A
Average On-State Current (Half Cycle, 180° Conduction Angle, $T_C = +85^\circ\text{C}$), $I_{T(AV)}$	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, $t = 10\text{ms}$), I^2t	$72\text{A}^2\text{s}$
Peak Gate Current (10 μs Max), I_{GM}	4A
Peak Gate Dissipation (10 μs Max), P_{GM}	10W
Average Gate Dissipation (20ms Max), $P_{G(AV)}$	1W
Operating Junction Temperature Range, T_J	-40° to $+125^\circ\text{C}$
Storage Temperature Range, T_{stg}	-40° to $+125^\circ\text{C}$
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	$+250^\circ\text{C}$

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

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

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

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

