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NTE5371 & NTE5372 Silicon Controlled Rectifier (SCR) for High Speed Switching 125 Amp, TO94

Features:

- All Diffused Design
- Center Amplifying Gate
- High Surge Current Capability
- Low Thermal Impedance
- High Speed Performance

Applications:

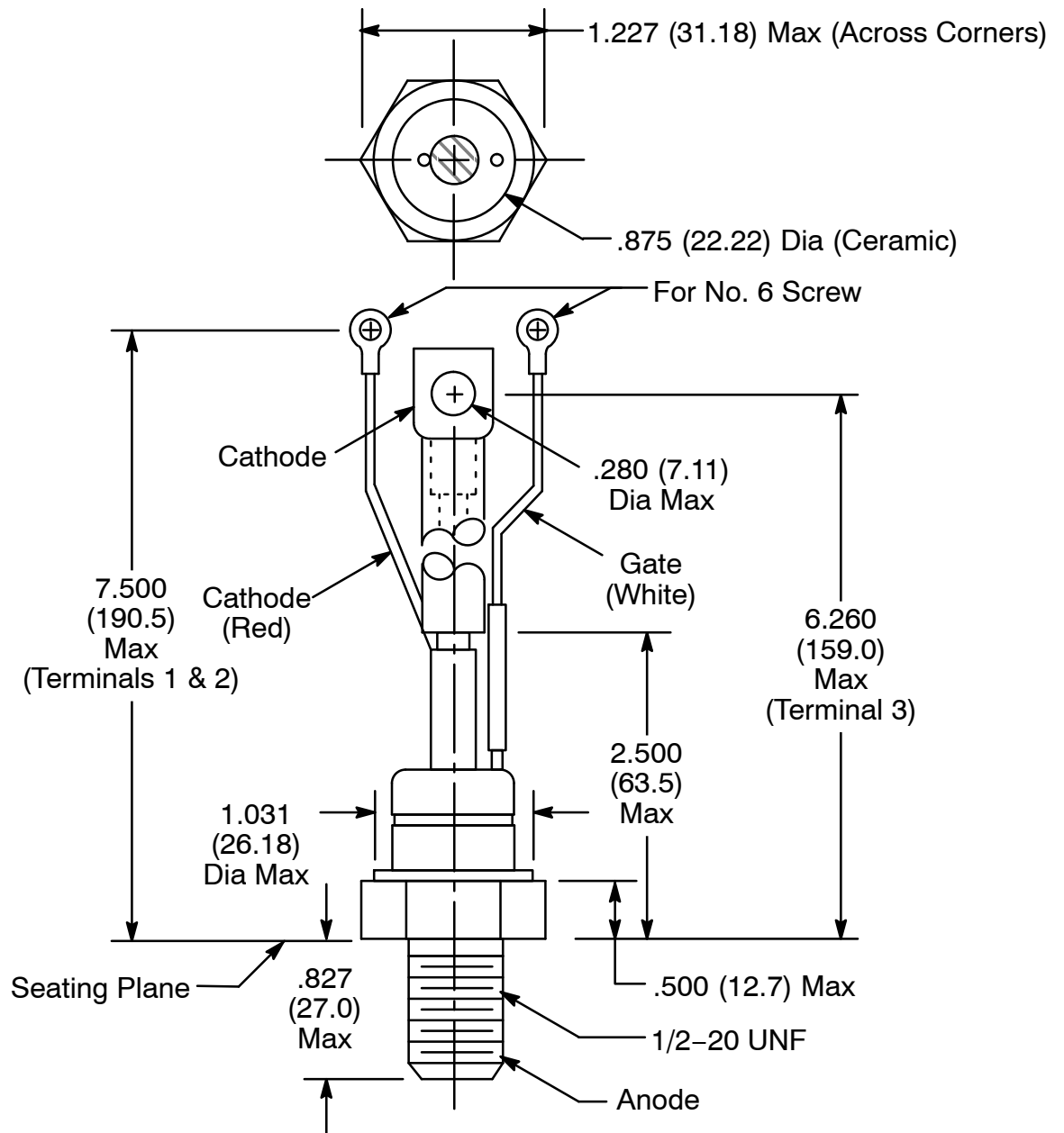
- Inverters
- Choppers
- Induction Heating
- All Types of Force-Commutated Converters

Maximum Ratings and Electrical Characteristics:

Max. Repetitive Peak Voltages, V_{RRM} , V_{DRM}	
NTE5371	600V
NTE5372	1200V
Max. Non-Repetitive Peak Voltage, V_{RSM}	
NTE5371	700V
NTE5372	1300V
Average On-State Current (180° Conduction, Half Sine Wave, $T_C = +85^\circ\text{C}$), $I_{T(AV)}$	85A
Max. RMS On-State Current (DC at $T_C = +77^\circ\text{C}$), $I_{T(RMS)}$	135A
Max. Peak One Half-Cycle Non-Repetitive Surge Current ($T_J = +125^\circ\text{C}$, Sinusoidal Half Wave), I_{TSM}	
(No Voltage Reapplied)	
(t = 10ms)	2450A
(t = 8.3ms)	2560A
(100% V_{RRM} Reapplied)	
(t = 10ms)	2060A
(t = 8.3ms)	2160A
Max. Permissible Surge Energy ($T_J = +125^\circ\text{C}$, Sinusoidal Half Wave), I^2t	
(No Voltage Reapplied)	
(t = 10ms)	30KA ² s
(t = 8.3ms)	27KA ² s
(100% V_{RRM} Reapplied)	
(t = 10ms)	21KA ² s
(t = 8.3ms)	19KA ² s

Maximum Ratings and Electrical Characteristics (Cont'd):

Max. I^2t for Fusing ($t = 0.1$ to 10ms , No Voltage Reapplied), I^2t	$300\text{KA}^2\sqrt{\text{s}}$
Max. Peak On-State Voltage ($I_{\text{TM}} = 300\text{A}$, $T_{\text{J}} = +125^\circ\text{C}$, $t_{\text{p}} = 10\text{ms}$ Sine Wave Pulse), V_{TM} ..	2.15V
Threshold Voltage ($T_{\text{J}} = +125^\circ\text{C}$), $V_{\text{T(TO)}}$	
Low Level ($16.7\% \times \pi \times I_{\text{T(AV)}} < I < \pi \times I_{\text{T(AV)}}$)	1.46V
High Level ($I > \pi \times I_{\text{T(AV)}}$)	1.52V
Forward Slope Resistance ($T_{\text{J}} = +125^\circ\text{C}$), r_{f}	
Low Level ($16.7\% \times \pi \times I_{\text{T(AV)}} < I < \pi \times I_{\text{T(AV)}}$)	2.32Ω
High Level ($I > \pi \times I_{\text{T(AV)}}$)	2.34Ω
Max. Holding Current ($T_{\text{J}} = +25^\circ\text{C}$, $I_{\text{T}} > 30\text{A}$), I_{H}	600mA
Typical Latching Current ($T_{\text{J}} = +25^\circ\text{C}$, $V_{\text{A}} = 12\text{V}$, $R_{\text{a}} = 6\Omega$, $I_{\text{G}} = 1\text{A}$), I_{L}	1000mA
Max. Non-Repetitive Rate of Rise of On-State Current ($T_{\text{J}} = +25^\circ\text{C}$, $V_{\text{DRM}} = \text{Rated } V_{\text{DRM}}$), di/dt ($I_{\text{TM}} = I_{\text{TM}} = 2 \times di/dt$)	$1000\text{A}/\mu\text{s}$
Typical Delay Time ($T_{\text{J}} = +125^\circ\text{C}$, $V_{\text{DRM}} = \text{Rated } V_{\text{DRM}}$), t_{d} ($I_{\text{TM}} = 50\text{A DC}$, $t_{\text{p}} = 1\mu\text{s}$, Resistive Load, Gate Pulse: 10V , 5Ω Source)	$0.80\mu\text{s}$
Max. Turn-Off Time, t_{q} ($T_{\text{J}} = +125^\circ\text{C}$, $I_{\text{TM}} = 100\text{A}$, Commutating $di/dt = 10\text{A}/\mu\text{s}$, $V_{\text{R}} = 50\text{V}$, $t_{\text{p}} = 200\mu\text{s}$)	
NTE5371	10 to $20\mu\text{s}$
NTE5372	15 to $30\mu\text{s}$
Max. Critical Rate of Rise of Off-State Voltage, dv/dt ($T_{\text{J}} = +125^\circ\text{C}$, Linear To $80\% V_{\text{DRM}}$)	$500\text{V}/\mu\text{s}$
Max. Peak Reverse and Off-State Leakage Current, I_{RRM} , I_{DRM} ($T_{\text{J}} = +125^\circ\text{C}$, Rated $V_{\text{DRM}}/V_{\text{RRM}}$ Applied)	30mA
Max. Peak Gate Power ($T_{\text{J}} = +125^\circ\text{C}$, $f = 50\text{Hz}$, $d\% = 50$), P_{GM}	40W
Max. Average Gate Power ($T_{\text{J}} = +125^\circ\text{C}$, $f = 50\text{Hz}$, $d\% = 50$), $P_{\text{G(AV)}}$	5W
Max. Peak Positive Gate Current ($T_{\text{J}} = +125^\circ\text{C}$, $t_{\text{p}} \leq 5\text{ms}$), I_{GM}	5A
Max. Peak Gate Voltage ($T_{\text{J}} = +125^\circ\text{C}$, $t_{\text{p}} \leq 5\text{ms}$), V_{GM}	
Positive	20V
Negative	5V
Max. DC Gate Current Required to Trigger ($T_{\text{J}} = +25^\circ\text{C}$, $V_{\text{A}} = 12\text{V}$, $R_{\text{a}} = 6\Omega$), I_{GT}	200mA
Max. DC Gate Voltage Required to Trigger ($T_{\text{J}} = +25^\circ\text{C}$, $V_{\text{A}} = 12\text{V}$, $R_{\text{a}} = 6\Omega$), V_{GT}	3V
Max. DC Gate Current not to Trigger ($T_{\text{J}} = +125^\circ\text{C}$, Rated V_{DRM} Applied), I_{GD}	20mA
Max. DC Gate Voltage not to Trigger ($T_{\text{J}} = +125^\circ\text{C}$, Rated V_{DRM} Applied), V_{GD}	250mV
Maximum Operating Temperature Range, T_{J}	-40° to $+125^\circ\text{C}$
Maximum Storage Temperature Range, T_{stg}	-40° to $+150^\circ\text{C}$
Maximum Thermal Resistance, Junction-to-Case (DC Operation), R_{thJC}	0.195K/W
Maximum Thermal Resistance, Case-to-Heatsink, R_{thCS} (Mounting Surface Smooth, Flat and Greased)	0.08K/W



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