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## NTE5538 Silicon Controlled Rectifier (SCR) 800V, 50 Amp, TO218 Isolated

**Description:**

The NTE5538 general purpose SCR is suited for power supplies up to 400Hz on resistive or inductive loads.

**Applications:**

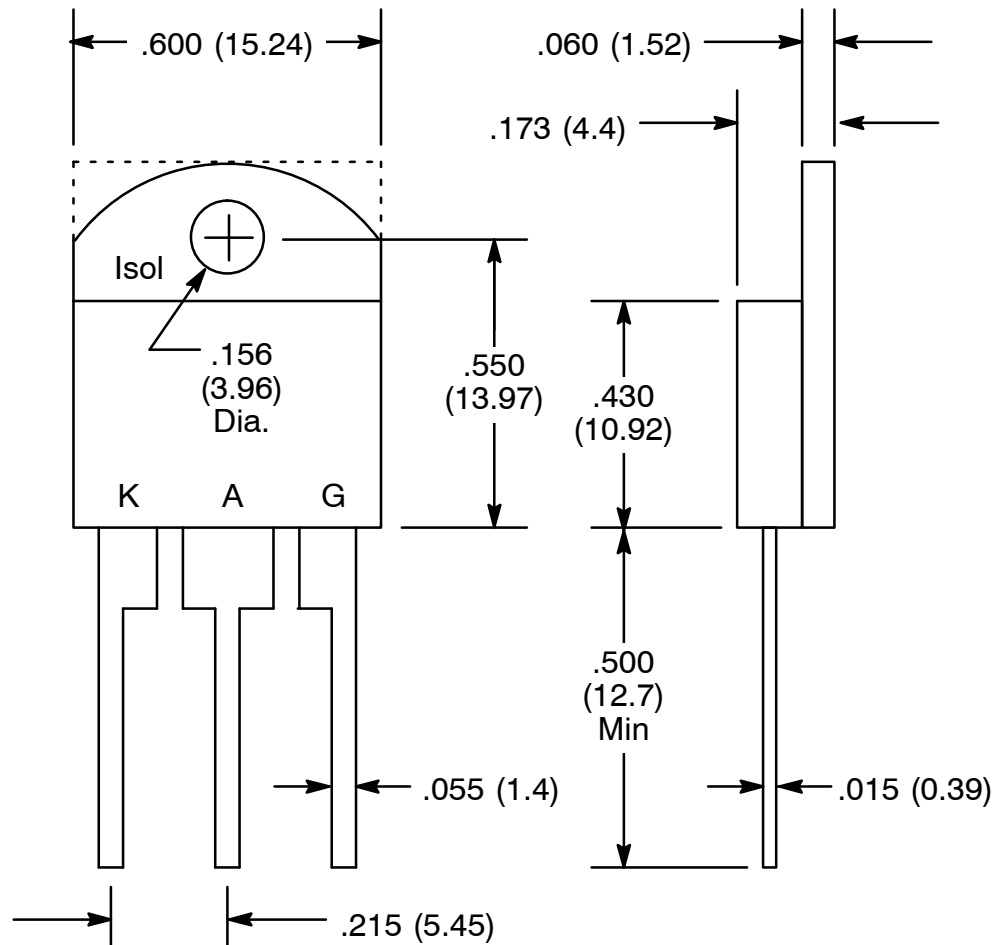
- Motor Control
- Overvoltage Crowbar Protection
- Capacitive Discharge Ignition
- Voltage Regulation
- Welding Equipment
- Capacitive Filter Soft Start (Inrush Current Control)

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

Peak Forward Blocking Voltage, $V_{DRM}$ .....	800V
Peak Reverse Blocking Voltage, $V_{RRM}$ .....	800V
RMS On-State Current (TFull Sine Wave, $T_C = +80^\circ\text{C}$ ), $I_T$ (RMS) .....	50A
Average On-State Current ( $T_C = +80^\circ\text{C}$ ), $I_{T(AV)}$ .....	32A
Non-Repetitive Surge Peak On-State Current (Full Cycle, $T_J$ initial = $+25^\circ\text{C}$ ), $I_{TSM}$	
(f = 50Hz) .....	500A
(f = 60Hz) .....	525A
$I^2t$ Value for Fusing ( $t_p = 10\text{ms}$ ), $I^2t$ .....	1250A <sup>2</sup> sec
Critical Rate of Rise of On-State Current ( $I_G = 2 \times I_{GT}$ , $t_r < 100\text{ns}$ , $T_J = +125^\circ\text{C}$ ), $di/dt$ ...	100A/ $\mu\text{s}$
Peak Gate Current ( $t_p = 20\text{ms}$ , $T_J = +125^\circ\text{C}$ ), $I_{GM}$ .....	4A
Average Gate Power Dissipation ( $T_J = +125^\circ\text{C}$ ), $P_G$ (AV) .....	1W
Maximum Peak Reverse Gate Voltage, $V_{RGM}$ .....	5V
Operating Junction Temperature Range, $T_J$ .....	$-40^\circ$ to $+125^\circ\text{C}$
Storage Temperature Range, $T_{stg}$ .....	$-40^\circ$ to $+150^\circ\text{C}$
Thermal Resistance, Junction-to-Case, $R_{thJC}$ .....	1.1 $^\circ\text{C}/\text{W}$
Thermal Resistance, Junction-to-Ambient, $R_{thJA}$ .....	50 $^\circ\text{C}/\text{W}$

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Gate Trigger Current	$I_{GT}$	$V_D = 12\text{V}, R_L = 30\Omega$	-	-	60	mA
Gate Trigger Voltage	$V_{GT}$		-	-	1.3	V
Gate Non-Trigger Voltage	$V_{GD}$	$T_J = +125^\circ\text{C}, V_D = 800\text{V}, R_L = 3.3\text{k}\Omega$	0.2	-	-	V
Holding Current	$I_H$	$I_T = 500\text{mA}, \text{Gate Open}$	-	-	180	mA
Latching Current	$I_L$	$I_G = 1.2I_{GT}$	-	-	90	mA
Critical Rate of Rise of Off-State Voltage	dv/dt	$T_J = +125^\circ\text{C}, V_{DRM} = 536\text{V}, \text{Gate Open}$	100 0	-	-	V/ $\mu\text{s}$
Peak On-State Voltage	$V_{TM}$	$I_{TM} = 150\text{A}, t_p = 380\mu\text{s}$	-	-	1.6	V
Forward Leakage Current	$I_{DRM}$	$V_{DRM} = 800\text{V}$	-	-	5	$\mu\text{A}$
Reverse Leakage Current	$I_{RRM}$	$V_{DRM} = 800\text{V}, T_J = +125^\circ\text{C}$	-	-	4	mA



**NOTE:** Dotted line indicates that case may have square corners.