

NTE5460 and NTE5460-12 Silicon Controlled Rectifier (SCR) 25 Amp, TO-220 Full Pack (Isolated)

Features:

- Thyristor for Frequencies up to 400Hz
- Long-Term Stability of Leakage Current and Blocking Voltage

Applications:

- Motor Control
- Power Converter
- AC Power Controller
- Light and Temperature Control
- SCR for Inrush Current Limiting in Power Supplies for AC Drive

Maximum Ratings and Electrical Characteristics:

Repetitive Peak Off-State Voltage, V_{DRM}	
NTE5460	800V
NTE5460-12	1200V
Non-Repetitive Peak Off-State Voltage, V_{DSM}	
NTE5460	800V
NTE5460-12	1200V
Repetitive Peak Reverse Voltage, V_{RRM}	
NTE5460	800V
NTE5460-12	1200V
Non-Repetitive Peak Reverse Blocking Voltage, V_{RSM}	
NTE5460	800V
NTE5460-12	1200V
On-State RMS Current (180° Sine Wave), $I_{T(AV)}$	
$T_C = +85^\circ\text{C}$, Note 1	16A
$T_A = +25^\circ\text{C}$, Note 2	2.5A
Peak Non-Repetitive Surge Current ($V_R = 0V$), I_{TSM}	
$T_{VJ} = +45^\circ\text{C}$	
t = 10ms (50Hz), Sine	300A
t = 8.3ms (60Hz), Sine	320A
$T_{VJ} = +150^\circ\text{C}$	
t = 10ms (50Hz), Sine	260A
t = 8.3ms (60Hz), Sine	280A

Note 1. Mounted on a heatsink.

Note 2. Without a heatsink.

Maximum Ratings and Electrical Characteristics (Cont'd):

Circuit Fusing, I^2t

$$T_{VJ} = +45^{\circ}\text{C}$$

$$t = 10\text{ms (50Hz), Sine} \dots\dots\dots 450\text{A}^2\text{s}$$

$$t = 8.3\text{ms (60Hz), Sine} \dots\dots\dots 430\text{A}^2\text{s}$$

$$T_{VJ} = +150^{\circ}\text{C}$$

$$t = 10\text{ms (50Hz), Sine} \dots\dots\dots 340\text{A}^2\text{s}$$

$$t = 8.3\text{ms (60Hz), Sine} \dots\dots\dots 330\text{A}^2\text{s}$$

Critical Rate of Rise of Off-State Current, di/dt

$$T_{VJ} = +150^{\circ}\text{C}, f = 50\text{Hz}, t_p = 200\mu\text{s}, V_D = 2/3 V_{\text{DRM}}, I_G = 0.08\text{A}, di_G/dt = 0.08\text{A}/\mu\text{s}$$

$$\text{Repetitive, } I_T = 20\text{A} \dots\dots\dots 150\text{A}/\mu\text{s}$$

$$\text{Non-Repetitive, } I_T = I_{T(\text{AV})} \dots\dots\dots 500\text{A}/\mu\text{s}$$

Critical Rate of Rise of Off-State Voltage, dv/dt

$$T_{VJ} = +150^{\circ}\text{C}, V_{\text{DR}} = 2/3 V_{\text{DRM}}, R_{\text{GK}} = , \text{Method 1 (Linear Voltage Rise)} \dots\dots\dots 500\text{V}/\mu\text{s}$$

Peak Gate Power ($T_{VJ} = +150^{\circ}\text{C}, I_T = I_{T(\text{AV})}$), P_{GM}

$$t_p = 30\mu\text{s} \dots\dots\dots 10\text{W}$$

$$t_p = 300\mu\text{s} \dots\dots\dots 5\text{W}$$

$$\text{Average Gate Power, } P_{\text{G(AV)}} \dots\dots\dots 0.5\text{W}$$

$$\text{Peak Gate Current (} T_C = +70^{\circ}\text{C, Pulse Width} = 10\mu\text{s}), I_{\text{GM}} \dots\dots\dots 2\text{A}$$

Maximum Peak Forward and Reverse Blocking Current, I_R, I_D

$$T_{VJ} = +150^{\circ}\text{C}, V_R = V_{\text{RRM}}, V_D = V_{\text{DRM}} \dots\dots\dots 4\text{mA}$$

$$\text{Maximum Forward "ON" Voltage (} I_T = 30\text{A, } T_{VJ} = +25^{\circ}\text{C}), V_T \dots\dots\dots 1.4\text{V}$$

Maximum DC Gate Trigger Voltage ($V_D = 6\text{V}$), V_{GT}

$$T_{VJ} = +25^{\circ}\text{C} \dots\dots\dots 2.5\text{V}$$

$$T_{VJ} = -40^{\circ}\text{C} \dots\dots\dots .5\text{V}$$

Maximum DC Gate Trigger Current ($V_D = 6\text{V}$), I_{GT}

$$T_{VJ} = +25^{\circ}\text{C} \dots\dots\dots 30\text{mA}$$

$$T_{VJ} = -40^{\circ}\text{C} \dots\dots\dots .50\text{mA}$$

$$\text{Maximum Gate Non-Trigger Voltage (} T_{VJ} = +150^{\circ}\text{C, } V_D = 2/3 V_{\text{DRM}}), V_{\text{GD}} \dots\dots\dots 0.2\text{V}$$

$$\text{Maximum Gate Non-Trigger Current (} T_{VJ} = +150^{\circ}\text{C, } V_D = 2/3 V_{\text{DRM}}), I_{\text{GD}} \dots\dots\dots 1\text{mA}$$

$$\text{Maximum Latching Current (} T_{VJ} = +25^{\circ}\text{C, } t_p = 10\mu\text{s, } I_G = 0.08\text{A, } di_G/dt = 0.08\text{A}/\mu\text{s}), I_L \dots\dots 100\text{mA}$$

$$\text{Maximum Holding Current (} T_{VJ} = +25^{\circ}\text{C, } V_D = 6\text{V, } R_{\text{GK}} = \infty), I_H \dots\dots\dots 80\text{mA}$$

$$\text{Maximum Turn-On Time (} T_{VJ} = +25^{\circ}\text{C, } V_D = 1/2 V_{\text{DRM}}, I_G = 0.08\text{A, } di_G/dt = 0.08\text{A}/\mu\text{s}), t_{\text{gd}} \dots 2\mu\text{s}$$

$$\text{Operating Junction Temperature Range, } T_{VJ} \dots\dots\dots -40^{\circ} \text{ to } +150^{\circ}\text{C}$$

$$\text{Maximum Junction Temperature, } T_{\text{VJM}} \dots\dots\dots +150^{\circ}\text{C}$$

$$\text{Storage Temperature Range, } T_{\text{stg}} \dots\dots\dots -40^{\circ} \text{ to } +125^{\circ}\text{C}$$

$$\text{Maximum Thermal Resistance, Junction-to-Case, } R_{\text{thJC}} \dots\dots\dots 2.5\text{K/W}$$

$$\text{Typical Thermal Resistance, Case-to-Sink, } R_{\text{thCS}} \dots\dots\dots 0.5\text{K/W}$$

$$\text{Maximum Thermal Resistance, Junction-to-Ambient, } R_{\text{thJA}} \dots\dots\dots 50\text{K/W}$$

