



## NTE6046 & NTE6047 Silicon Power Rectifier Diode 1000V, 85 Amp, DO5

### Features:

- Short Reverse Recovery Time
- Low Stored Charge
- Available in Cathode-to-Case (NTE6046) or Anode-to-Case (NTE6047) Style

### Ratings and Characteristics:

Average Forward Current ( $T_C = +75^\circ\text{C Max}$ ), $I_{F(AV)}$ .....	85A
Maximum Repetitive Peak Reverse Voltage ( $T_J = -40^\circ$ to $+125^\circ\text{C}$ ), $V_{RRM}$ .....	1000V
Maximum Non-Replicative Peak Reverse Voltage ( $T_J = +25^\circ$ to $+125^\circ\text{C}$ , $t_p \leq 5\text{ms}$ ), $V_{RSM}$ ..	1100V
Maximum Reverse Current (At Rated $V_R$ ), $I_R$	
$T_J = +25^\circ\text{C}$ .....	0.1mA
$T_J = +125^\circ\text{C}$ .....	20mA
Maximum Forward Surge Current, $I_{FSM}$	
50Hz .....	1100A
60Hz .....	1151A
Fusing Current, $I^2t$	
50Hz .....	6050A <sup>2</sup> s
60Hz .....	5523A <sup>2</sup> s
Fusing Current, $I^2\sqrt{t}$ .....	85560A <sup>2</sup> $\sqrt{s}$
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 (DC Operation), $R_{thJC}$ .....	0.30 $^\circ\text{C/W}$
Thermal Resistance, Case-to-Sink (Surface flat, smooth, and greased), $R_{thCS}$ .....	0.25 $^\circ\text{C/W}$
Maximum Mounting Torque (Non-lubricated threads), $T$ .....	22 (2.5) in•lb (m•N)

### Electrical Specifications:

Parameter	Symbol	Test Conditions		Rating	Unit
Maximum Average Forward Current	$I_F (AV)$	180° sinusoidal condition, $T_C = +75^\circ\text{C}$ Max		85	A
Maximum Peak One-Cycle Non-Repetitive Surge Current	$I_{FSM}$	$t = 10\text{ms}$	Half sinewave current, rated $V_{RRM}$ reapplied, initial $T_J = +125^\circ\text{C}$	1100	A
		$t = 8.3\text{ms}$		1151	A
		$t = 10\text{ms}$	Half sinewave current, no voltage reapplied, initial $T_J = +125^\circ\text{C}$	1308	A
		$t = 8.3\text{ms}$		1369	A
Maximum $I^2t$ for Fusing	$I^2t$	$t = 10\text{ms}$	Rated $V_{RRM}$ reapplied, initial $T_J = +125^\circ\text{C}$	6050	$\text{A}^2\text{s}$
		$t = 8.3\text{ms}$		5523	$\text{A}^2\text{s}$
Maximum $I^2t$ for Individual Device Fusing	$I^2t$	$t = 10\text{ms}$	No voltage reapplied, initial $T_J = +125^\circ\text{C}$	8556	$\text{A}^2\text{s}$
		$t = 8.3\text{ms}$		7810	$\text{A}^2\text{s}$
Maximum $I^2\sqrt{t}$	$I^2\sqrt{t}$	$t = 0.1$ to $10\text{ms}$ , no voltage reapplied, Note 1		85560	$\text{A}^2\sqrt{\text{t}}$
Maximum Peak Forward Voltage	$V_{FM}$	$T_J = +25^\circ\text{C}$ , $I_{FM} = 267\text{A}$		1.75	V
Maximum Reverse Recovery Time	$t_{rr}$	$T_J = +25^\circ\text{C}$ , $I_F = 1\text{A}$ to $V_R = 30\text{V}$ , $-di_F/dt = 100\text{A}/\mu\text{s}$		270	ns
		$T_J = +25^\circ\text{C}$ , $I_F = 267\text{A}$ , $-di_F/dt = 25\text{A}/\mu\text{s}$		1000	ns
Maximum Reverse Recovery Charge	$Q_{RR}$	$T_J = +25^\circ\text{C}$ , $I_F = 1\text{A}$ to $V_R = 30\text{V}$ , $-di_F/dt = 100\text{A}/\mu\text{s}$		1350	nC
		$T_J = +25^\circ\text{C}$ , $I_F = 267\text{A}$ , $-di_F/dt = 25\text{A}/\mu\text{s}$		6000	nC

Note 1.  $I^2t$  for time  $t_x = I^2\sqrt{t} \cdot \sqrt{t_x}$ .

