



**ELECTRONICS, INC.**  
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## NTE5906, NTE5907, NTE5980 thru NTE6005 Silicon Power Rectifier Diode, 40 Amp

**Features:**

- High Surge Current Capability
- High Voltage Available
- Designed for a Wide Range of Applications
- Available in Anode-to-Case or Cathode-to-Case Style

**Ratings and Characteristics:**

Average Forward Current ( $T_C = +140^\circ\text{C Max}$ ),  $I_{F(AV)}$  ..... 40A  
 Maximum Forward Surge Current,  $I_{FSM}$   
     50Hz ..... 480A  
     60Hz ..... 500A  
 Fusing Current,  $I^2t$   
     50Hz ..... 1150A<sup>2</sup>s  
     60Hz ..... 1050A<sup>2</sup>s  
 Fusing Current,  $I^2\sqrt{t}$  ..... 16000A<sup>2</sup> $\sqrt{s}$   
 Maximum Reverse Recovery Voltage Range,  $V_{RRM}$  ..... 50 to 1600V

**Voltage Ratings:**

NTE Type Number		$V_{RRM}$ -Max Repetitive Peak Reverse Volt. (V) $T_J = -65^\circ \text{ to } +150^\circ\text{C}$	$V_{RSM}$ -Max Non-Repetitive Peak Reverse Voltage (V) $t_p < 5\text{ms}$ $T_J = +25^\circ \text{ to } +150^\circ\text{C}$	$V_R$ -Max. Direct Reverse Voltage (V) $T_J = -65^\circ \text{ to } +150^\circ\text{C}$	$V_{R(SR)}$ Minimum Avalanche Voltage (V) $T_J = +25^\circ\text{C}$	$I_{RM}$ -Max Reverse Current Rated $V_{RRM}$ (mA) $T_J = +150^\circ\text{C}$
Cathode to Case	Anode to Case					
5980	5981	50	100	50	—	15
5982	5983	100	200	100	—	15
5986	5987	200	300	200	—	15
5988	5989	300	450	300	—	15
5990	5991	400	500	400	500	15
5992	5993	500	600	500	600	9
5994	5995	600	720	600	725	9
5998	5999	800	960	800	960	9
6002	6003	1000	1200	1000	1150	9
5906	5907	1200	1400	1200	1350	9
6004	6005	1600	1700	1600	1700	9

### Electrical Specifications:

Parameter	Symbol	Test Conditions		Rating	Unit
Maximum Average Forward Current	$I_F (AV)$	180° sinusoidal condition, $T_C = +140^\circ\text{C}$ Max		40	A
Maximum Peak One–Cycle Non–Repetitive Surge Current	$I_{FSM}$	Half cycle 50Hz sine wave or 8ms rectangular pulse	Following any rated load condition and with rated $V_{RRM}$ applied	480	A
		Half cycle 60Hz sine wave at 5ms rectangular pulse		500	A
		Half cycle 50Hz sine wave or 6ms rectangular pulse	Following any rated load condition and with $V_{RRM}$ applied following surge = 0	570	A
		Half cycle 60Hz sine wave at 3ms rectangular pulse		586	A
Maximum $I^2t$ for Fusing	$I^2t$	$t = 10\text{ms}$	With rated $V_{RRM}$ applied following surge	1150	$\text{A}^2\text{s}$
		$t = 8.3\text{ms}$		1050	$\text{A}^2\text{s}$
Maximum $I^2t$ for Individual Device Fusing	$I^2t$	$t = 10\text{ms}$	With $V_{RRM} = 0$ following surge	1600	$\text{A}^2\text{s}$
		$t = 8.3\text{ms}$		1450	$\text{A}^2\text{s}$
Maximum $I^2\sqrt{t}$	$I^2\sqrt{t}$	$t = 0.1$ to $10\text{ms}$ , $V_{RRM} = 0$ following surge		16000	$\text{A}^2\sqrt{\text{t}}$
Maximum Peak Forward Voltage	$V_{FM}$	$I_F (AV) = 40\text{A}$ (125 peak), $T_J = +25^\circ\text{C}$		1.30	V
Maximum Value of Threshold Voltage	$V_{M(TO)}$	$T_J = +100^\circ\text{C}$		0.69	V
Maximum Value of Forward Slope Resistance	$r_t$	$T_J = +100^\circ\text{C}$		3.79	$\text{m}\Omega$

### Thermal–Mechanical Specifications:

Parameter	Symbol	Test Conditions	Rating	Unit
Maximum Operation Junction Temperature	$T_J$		–65 to + 190	$^\circ\text{C}$
Maximum Storage Temperature	$T_{stg}$		–65 to + 190	$^\circ\text{C}$
Maximum Internal Thermal Resistance Junction–to–Case	$R_{thJC}$	DC operation	1.00	K/W
Thermal Resistance, Case–to–Sink	$R_{thCS}$	Mounting surface flat, smooth and greased	0.25	K/W
Mounting Torque	T	Non–lubricated threads	2.3 – 3.4 (20 – 30)	$\text{m}\bullet\text{N}$ ( $\text{in}\bullet\text{lb}$ )
Approximate Weight	wt		17 (0.8)	g (oz)

