



ELECTRONICS, INC.  
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## NTE5906, NTE5907, NTE5980 thru NTE6005 Silicon Power Rectifier Diode, 40 Amp, DO5

### 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)	$V_{RSM}$ -Max Non-Replicative Peak Reverse Voltage (V) $t_p < 5ms$	$V_R$ -Max. Direct Reverse Voltage (V)	$V_{R(SR)}$ Minimum Avalanche Voltage (V)	$I_{RM}$ -Max Reverse Current Rated $V_{RRM}$ (mA)
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)

