



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 ² s
60Hz	1050A ² s
Fusing Current, $I^2\sqrt{t}$	16000A ² \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	A^2s
		$t = 8.3\text{ms}$		1050	A^2s
Maximum I^2t for Individual Device Fusing	I^2t	$t = 10\text{ms}$	With $V_{RRM} = 0$ following surge	1600	A^2s
		$t = 8.3\text{ms}$		1450	A^2s
Maximum $I^2\sqrt{t}$	$I^2\sqrt{t}$	$t = 0.1$ to 10ms , $V_{RRM} = 0$ 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)

