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NTE5411 thru NTE5416
Silicon Controlled Rectifier (SCR)
4 Amp, Sensitive Gate

Description:

The NTE5411 through NTE5416 are PNPN silicon controlled rectifier (SCR) devices designed for high volume consumer applications such as temperature, light, and speed control: process and remote control, and warning systems where reliability of operation is important.

Features:

- Passivated Surface for Reliability and Uniformity
- Power Rated at Economical Prices
- Practical Level Triggering and Holding Characteristics

Absolute Maximum Ratings: (T_C = +110°C unles otherwise specified)

Repetitive Peak Forward and Reverse Blocking Voltage, V_{DRM}, V_{RRM}
(1/2 Sine Wave, R_{GK} = 1000Ω, T_C = –40° to +110°C, Note 1)

NTE5411	30V
NTE5412	60V
NTE5413	100V
NTE5414	200V
NTE5415	400V
NTE5416	600V

Non–Repetitive Peak Reverse Blocking Voltage , V_{RSM}
(1/2 Sine Wave, R_{GK} = 1000Ω, T_C = –40° to +110°C)

NTE5411	100V
NTE5412	100V
NTE5413	150V
NTE5414	250V
NTE5415	450V
NTE5416	650V

Average On–State Current, $I_{T(AV)}$

T_C = –40° to +110°C	2.6A
T_C = +100°C	1.6A

Surge On–State Current (T_C = +90°C), I_{TSM}

1/2 Sine wave, 60Hz	25A
1/2 Sine wave, 1.5ms	35A

Circuit Fusing (t = 8.3ms), I^2t . . . . . $2.6A^2s$

Peak Gate Power (Pulse Width = 10μs, T_C = +90°C), P_{GM} 0.5W

Note 1. Ratings apply for zero or negative gate voltage. Devices shall not have a positive bias applied to the gate concurrently with a negative potential on the anode. Devices should not be tested with a constant current source for forward or reverse blocking capability such that the voltage applied exceeds the rated blocking voltage.

Absolute Maximum Ratings (Cont'd): (T_C = +110°C unles otherwise specified)

Average Gate Power (t = 8.2ms, T_C = +90°C), $P_{G(AV)}$ 0.1W
Peak Forward Gate Current, I_{GM} 0.2A
Peak Reverse Gate Voltage, V_{RGM} 6V
Operating Junction Temperature Range, T_J . . . . . –40° to +110°C
Storage Temperature Range, T_{stg} . . . . . –40° to +150°C
Thermal Resistance, Junction–to–Case, R_{thJC} . . . . . 3°C/W
Thermal Resistance, Junction–to–Ambient, R_{thJA} . . . . . 75°C/W
Mounting Torque (Note 2) . . . . . 6 in. lb.

Note 2. Torque rating applies with the use of a compression washer. Mounting torque in excess of 6 in. lb. does not appreciably lower case–to–sink thermal resistance. Anode lead and heat-sink contact pad are common.

Electrical Characteristics: (T_C = +25°C, R_{GK} = 1000Ω unles otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Peak Forward or Reverse Blocking Current	I_{DRM}, I_{RRM}	Rated V_{DRM} or V_{RRM}, T_C = +25°C	–	–	10	µA
		Rated V_{DRM} or V_{RRM}, T_C = +110°C	–	–	200	µA
Peak Forward "ON" Voltage	V_{TM}	I_{TM} = 8.2A Peak, Note 3	–	–	2.2	V
Gate Trigger Current (Continuous DC, Note 4)	I_{GT}	V_{AK} = 12V, R_L = 24Ω	–	–	200	µA
		V_{AK} = 12V, R_L = 24Ω, T_C = –40°C	–	–	500	µA
Gate Trigger Voltage (Continuous DC)	V_{GT}	Source Voltage = 12V, R_S = 50Ω, V_{AK} = 12V, R_L = 24Ω, T_C = –40°C	–	–	1	V
Gate Non–Trigger Voltage	V_{GD}	V_{AK} = Rated V_{DRM}, R_L = 100Ω, T_C = +110°C	0.2	–	–	V
Holding Current	I_H	V_{AK} = 12V, I_{GT} = 2mA, T_C = +25°C	–	–	5	mA
		Initiating On–State Current = 200mA, T_C = –40°C	–	–	10	mA
Total Turn–On Time	t_{gt}	Source Voltage = 12V, R_S = 6kΩ, I_{TM} = 8.2A, I_{GT} = 2mA, Rated V_{DRM}, Rise Time = 20ns, Pulse Width = 10µs	–	2	–	µs
Forward Voltage Application Rate	dv/dt	V_D = Rated V_{DRM}, T_C = +110°C	–	10	–	V/µs

Note 3. Pulse Width = 1ms to 2ms, Duty Cycle = 2%.
Note 4. Measurement does not include R_{GK} current.