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NTE6238
Powerblock Module

Description:
The NTE6238 uses 2 high voltage power diodes in series and the semiconductors are electrically isolated from the metal base, allowing common heatsinks and compact assemblies to be built. This device is intended for general purpose applications such as battery chargers, welders and plating equipment and where high voltage and high current are required.

Features:
- High Voltage
- Electrically Isolated Base Plate
- 3000V_{RMS} Isolating Voltage
- High Surge Capability
- Large Creepage Distances

Ratings and Characteristics:
Average Forward Current (T_C = +100°C, 180° Conduction, Half Sine Wave), $I_{F(AV)}$ 320A
Maximum RMS Forward Current (As AC Switch), $I_{T(RMS)}$ 502A
Maximum Repetitive Peak Reverse Voltage, V_{RRM} 1600V
Maximum Non−Repetitive Peak Reverse Voltage, V_{RSM} 1700V
Maximum Peak Reverse Current (T_J = +150°C), I_{RRM} 50mA
RMS Isolation Voltage (50Hz, Circuit to Base, All Terminals Shorted, t = 1s), V_{ISO} 3000V
Operating Junction Temperature Range, T_J . . . . . −40° to +150°C
Storage Temperature Range, T_{stg} . . . . . −40° to +150°C
Thermal Resistance, Junction−to−Case (Per Module, DC Operation), R_{thJC} . . . . . 0.125°C/W
Thermal Resistance, Case−to−Sink (Per Module, Note 1), R_{thCS} . . . . . 0.02°C/W

Note 1. Mounting surface flat, smooth and greased.

Electrical Specifications:

Parameter	Symbol	Test Conditions		Rating	Unit
Maximum Peak One−Cycle Non−Repetitive Surge Current	I_{FSM}	t = 10ms	Sinusoidal Half Wave, 100% V_{RRM} Reapplied, Initial T_J = +150°C	8500	A
		t = 8.3ms		8900	A
		t = 10ms	Sinusoidal Half Wave, No Voltage Reapplied, Initial T_J = +150°C	10110	A
		t = 8.3ms		10580	A

Electrical Specifications (Cont'd):

Parameter	Symbol	Test Conditions		Rating	Unit
Maximum I^2t for Fusing	I^2t	t = 10ms	Sinusoidal Half Wave, 100% V_{RRM} Reapplied, Initial T_J = +150°C	361	kA^2s
		t = 8.3ms		330	kA^2s
		t = 10ms	Sinusoidal Half Wave, No Voltage Reapplied, Initial T_J = +150°C	511	kA^2s
		t = 8.3ms		466	kA^2s
Maximum $I^2\sqrt{t}$	$I^2\sqrt{t}$	t = 0.1 to 10ms, no voltage reapplied		5110	$kA^2\sqrt{t}$
Threshold Voltage, Low level	$V_{F(TO)1}$	T_J = +150°C, (16.7% x π x $I_{T(AV)}$ < I < π x $I_{T(AV)}$)		0.69	V
Threshold Voltage, High level	$V_{F(TO)2}$	T_J = +150°C, (π x $I_{T(AV)}$ < I < 20 x π x $I_{T(AV)}$)		0.86	V
Forward Slope Resistance, Low Level	r_{f1}	T_J = +150°C, (16.7% x π x $I_{T(AV)}$ < I < π x $I_{T(AV)}$)		0.59	mΩ
Forward Slope Resistance, High Level	r_{f2}	T_J = +150°C, (π x $I_{T(AV)}$ < I < 20 x π x $I_{T(AV)}$)		0.44	mΩ
Maximum Forward Voltage Drop	V_{FM}	T_J = +25°C, I_{FM} = π x $I_{F(AV)}$, Av. Power = $V_{F(TO)}$ x $I_{T(AV)}$ + r_f x $(I_{F(RMS)})^2$		1.28	V

Circuit Diagram