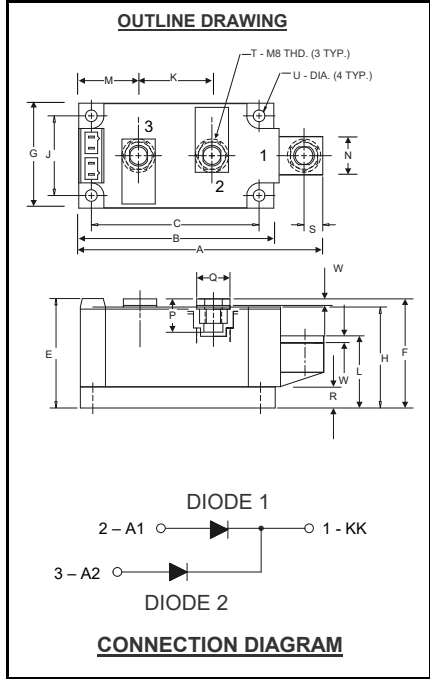


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www.pwr.com

POW-R-BLOK™
Dual Fast Diode Isolated Module
Common Cathode Configuration
250 Amperes / 1000 Volts / 1.0 μs



NC4410250H
Dual Fast Diode Isolated
POW-R-BLOK™ Module
250 Amperes / 1000 Volts / 1.0 μs

Description:

Powerex Dual Fast Diode Modules are designed for use in applications requiring rectification and isolated packaging. The modules are isolated for easy mounting with other components on a common heatsink. The POW-R-BLOK™ module design has been tested and recognized by the Underwriters Laboratories.

Features:

- Electrically Isolated Heatsinking
- Aluminum Nitride Isolator
- Compression Bonded Elements
- Metal Baseplate
- Low Thermal Impedance for Improved Current Capability

Benefits:

- No Additional Insulation Components Required
- Easy Installation
- No Clamping Components Required
- Reduce Engineering Time

Ordering Information:

Select the complete ten digit module part number from the table below.
Example: NC4410250H is a 1000Volt, 250 Ampere Dual Fast Diode Isolated POW-R-BLOK™ Module.

NC44 Outline Dimensions

Dimension	Inches	Millimeters
A	4.57	116
B	3.66	93
C	3.15	80.0
E	2.06	52.3
F	2.05	52.0
G	1.97	50.0
H	1.90	48.3
J	1.50	38.1
K	1.38	35.0
L	1.26	32.0
M	1.122	28.5
N	.71	18.0
P	.57	14.5
Q	.625	15.9
R	.394	10.00
S	.350	8.9
T	M8 Metric	M8
U	.250 Dia.	6.35 Dia.
W	.12	3.0

Note: Dimensions are for reference only.

Type	Voltage Volts (x100)	Current Amperes (x10)	Recovery Time Code (t _{rr})
NC44	10	25	0H
			1.0 μs

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Absolute Maximum Ratings

Characteristics	Conditions	Symbol		Units
Repetitive Peak Reverse Blocking Voltage		V_{RRM}	1000	V
Non-Repetitive Peak Reverse Blocking Voltage (t < 5 msec)		V_{RSM}	1200	V
RMS Forward Current	180° Conduction, $T_C=89^\circ\text{C}$	$I_{F(RMS)}$	392	A
Average Forward Current	180° Conduction, $T_C=89^\circ\text{C}$	$I_{F(AV)}$	250	A
Peak One Cycle Surge Current, Non-Repetitive	60 Hz, 100% V_{RRM} reapplied	I_{FSM}	4500	A
I^2t for Fusing for One Cycle, 8.3 milliseconds		I^2t	85,000	A ² sec
Operating Temperature		T_J	-40 to +150	°C
Storage Temperature		T_{stg}	-40 to +150	°C
Max. Mounting Torque, M6 Mounting Screw			45 5	in.-Lb. Nm
Max. Mounting Torque, M8 Terminal Screw			110 12	in.-Lb. Nm
Module Weight, Typical			840	g
			1.85	lb.
V Isolation @ 25C		V_{rms}	2500	V

Information presented is based upon manufacturers testing and projected capabilities.
This information is subject to change without notice.
The manufacturer makes no claim as to the suitability of use, reliability, capability,
or future availability of this product.

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Electrical Characteristics, T_J=25°C unless otherwise specified

Characteristics	Symbol	Test Conditions	Min.	Max.	Units
Repetitive Peak Reverse Leakage Current	I _{RRM}	V _{RRM} = 1000 V, T _J =150°C		50	mA
Peak On-State Voltage	V _{FM}	I _{FM} =800A		2.0	V
Threshold Voltage, Low-level	V _{(TO)1}	T _J = 150°C, I = 15%I _{F(AV)} to πI _{F(AV)}		0.908	V
Slope Resistance, Low-level	r _{T1}			1.211	mΩ
Threshold Voltage, High-level	V _{(TO)2}	T _J = 150°C, I = πI _{F(AV)} to I _{FSM}		1.472	V
Slope Resistance, High-level	r _{T2}			0.649	mΩ
V _{TM} Coefficients, Full Range		T _J = 150°C, I = 15%I _{F(AV)} to I _{FSM} V _{FM} = A + B Ln I + C I + D Sqrt I	A = B = C = D =	1.277 -6.49 E-6 7.21 E-4 -1.65 E-6	
Diode Reverse Recovery Time	t _{rr}	I _{fm} = 785A, T _p = 100 μs di/dt = -25A/μs		1.0	μs

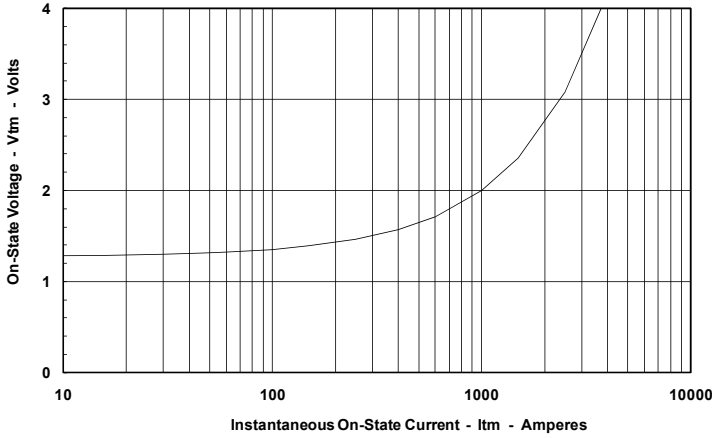
Thermal Characteristics

Characteristics	Symbol	Test Conditions	Max.	Units
Thermal Resistance, Junction to Case	R _{θJ-C}	Per Module, both conducting Per Junction both conducting	0.07 0.14	°C/W °C/W
Thermal Impedance Coefficients	Z _{θJ-C}	Z _{θJ-C} = K ₁ (1-exp(-t/τ ₁)) + K ₂ (1-exp(-t/τ ₂)) + K ₃ (1-exp(-t/τ ₃)) + K ₄ (1-exp(-t/τ ₄))	K ₁ = 5.27E-3 K ₂ = 1.17E-2 K ₃ = 5.26E-2 K ₄ = 6.97E-2	τ ₁ = 1.69E-4 τ ₂ = 2.07E-2 τ ₃ = 2.37E-1 τ ₄ = 2.46
Thermal Resistance, Case to Sink Lubricated	R _{θC-S}	Per Module	0.03	°C/W

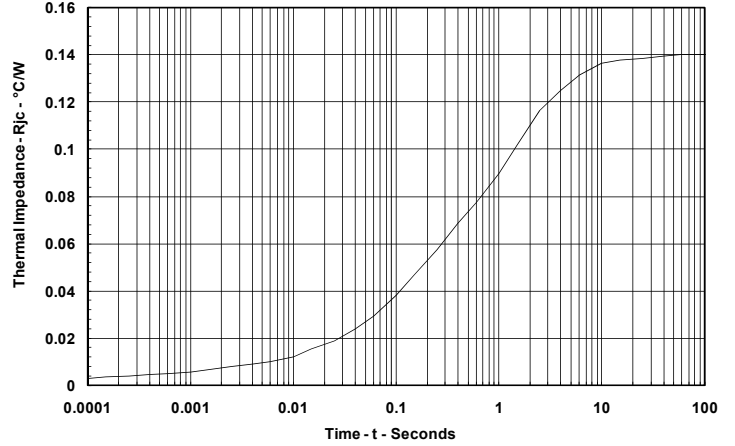
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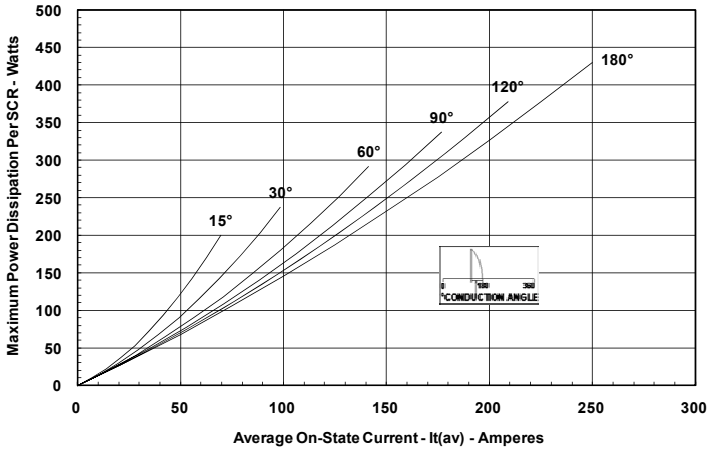
Maximum On-State Forward Voltage Drop
(T_j = 150 °C)



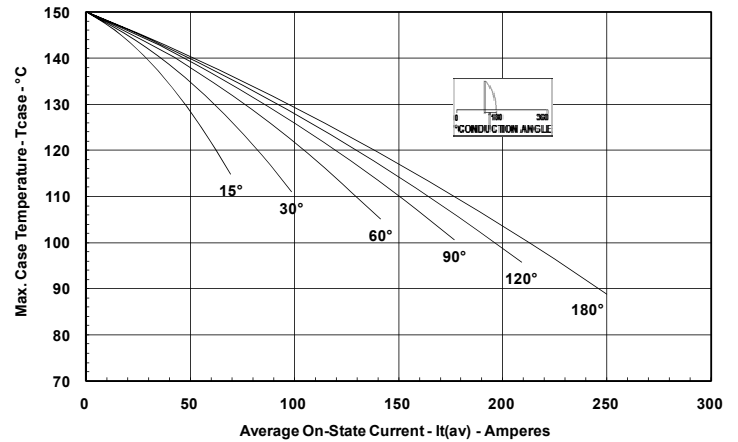
Maximum Transient Thermal Impedance
(Junction to Case)



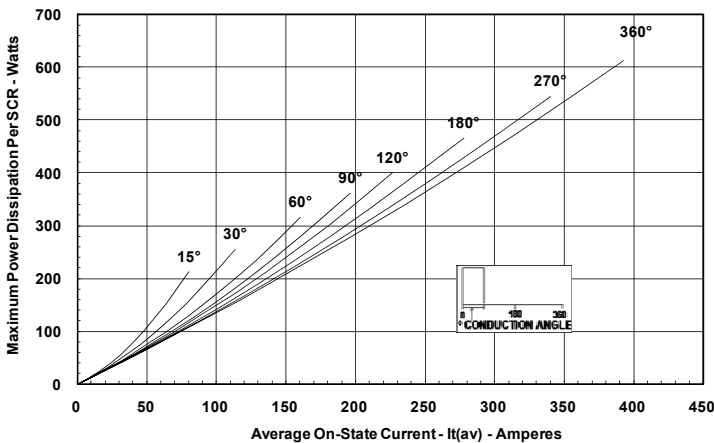
Maximum On-State Power Dissipation
(Sinusoidal Waveform)



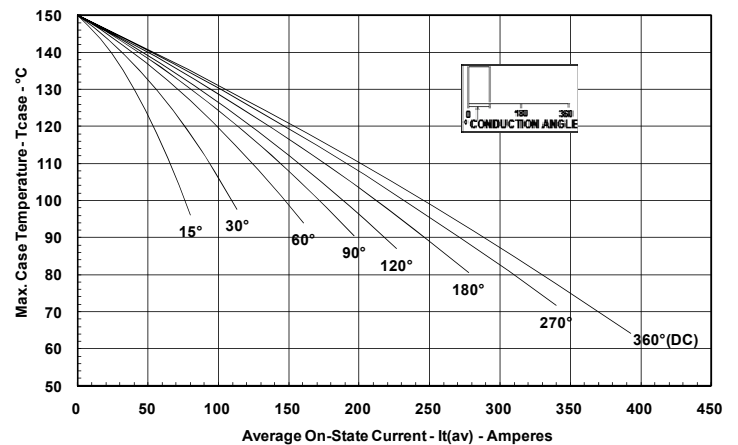
Maximum Allowable Case Temperature
(Sinusoidal Waveform)



Maximum On-State Power Dissipation
(Rectangular Waveform)

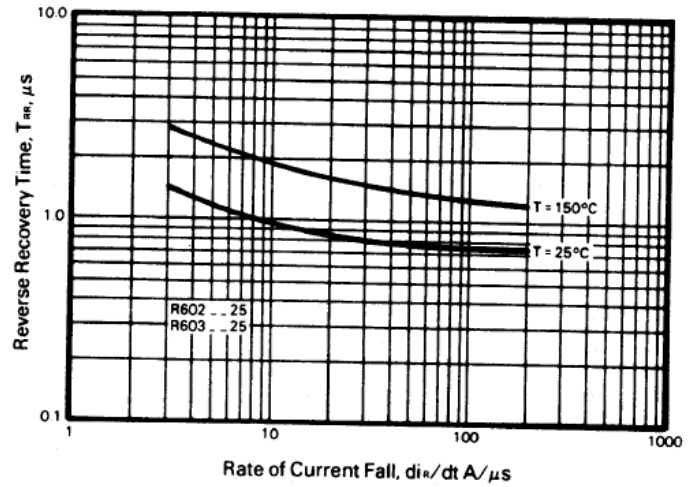
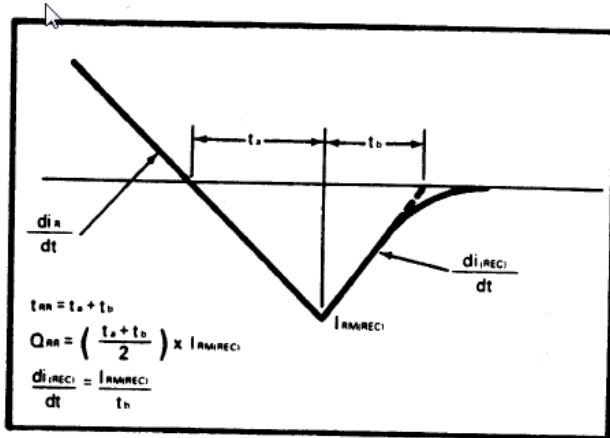


Maximum Allowable Case Temperature
(Rectangular Waveform)

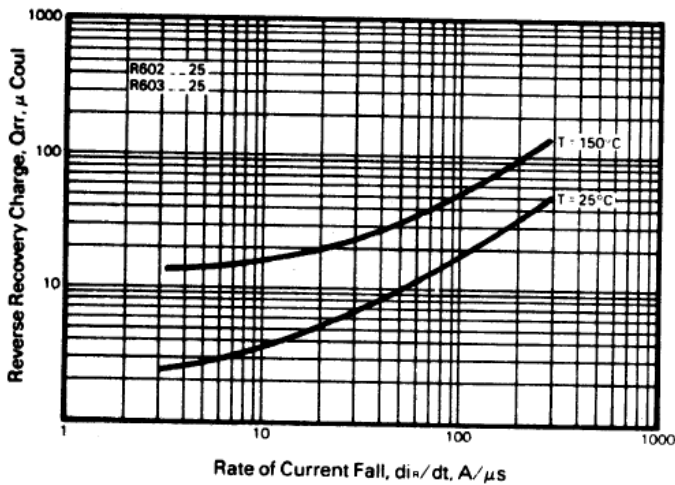


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Typical Reverse Recovery Charge Vs. Rate of Current Fall



Typical Ratio of Current Recovery to Rate of Current Fall

