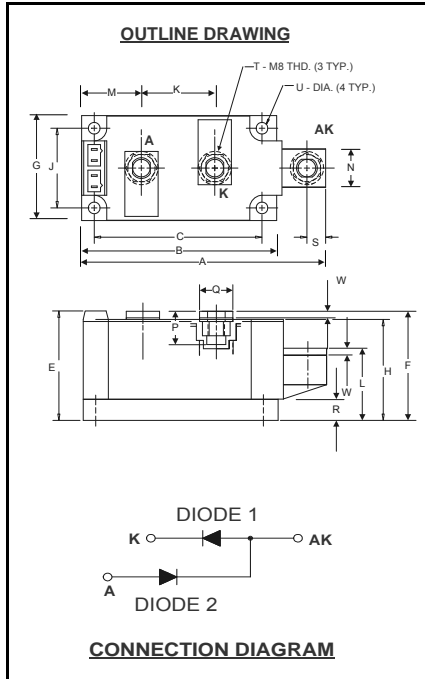


Powerex, Inc., 173 Pavilion Lane, Youngwood, Pennsylvania 15697 (724) 925-7272
www.pwr.com

POW-R-BLOK™
Dual Diode Isolated Module
250 Amperes / Up to 3400 Volts



ND413425
Dual Diode Isolated
POW-R-BLOK™ Module
250 Amperes / 2600 - 3400 Volts

Description:

Powerex Dual 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. *POW-R-BLOK™* 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
- UL Recognized

Benefits:

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

Applications:

- Bridge Circuits
- AC & DC Motor Drives
- Battery Supplies
- Power Supplies
- Large IGBT Circuit Front Ends

ND41 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.

Ordering Information:

Select the complete eight digit module part number from the table below.

Example: ND413425 is a 3400 Volt, 250 Ampere Dual Diode Isolated *POW-R-BLOK™* Module

Type	Voltage Volts (x100)	Current Amperes (x10)
ND41	26	25
	28	
	30	
	32	
	34	

Absolute Maximum Ratings

Characteristics	Conditions	Symbol		Units
Repetitive Peak Reverse Blocking Voltage		V_{RRM}	up to 3400	V
Non-Repetitive Peak Reverse Blocking Voltage ($t < 5$ msec)		V_{RSM}	$V_{RRM} + 100$	V
RMS Forward Current	180° Conduction, $T_C=112^\circ\text{C}$	$I_{F(RMS)}$	314	A
	180° Conduction, $T_C=101^\circ\text{C}$	$I_{F(RMS)}$	392	A
	180° Conduction, $T_C=89^\circ\text{C}$	$I_{F(RMS)}$	470	A
Average Forward Current	180° Conduction, $T_C=112^\circ\text{C}$	$I_{F(AV)}$	200	A
	180° Conduction, $T_C=101^\circ\text{C}$	$I_{F(AV)}$	250	A
	180° Conduction, $T_C=89^\circ\text{C}$	$I_{F(AV)}$	300	A
Peak One Cycle Surge Current, Non-Repetitive T_j initial = 150C	60 Hz, 100% V_{RRM} reapplied	I_{FSM}	5000	A
	50 Hz, 100% V_{RRM} reapplied	I_{FSM}	4750	A
	60 Hz, 0V reapplied	I_{FSM}	7500	A
	50 Hz, 0V reapplied	I_{FSM}	7125	A
Peak Three Cycle Surge Current, Non-Repetitive T_j initial = 150C	60 Hz, 100% V_{RRM} reapplied	I_{FSM}	4015	A
	50 Hz, 100% V_{RRM} reapplied	I_{FSM}	3815	A
	60 Hz, 0V reapplied	I_{FSM}	6020	A
	50 Hz, 0V reapplied	I_{FSM}	5720	A
Peak Ten Cycle Surge Current, Non-Repetitive T_j initial = 150C	60 Hz, 100% V_{RRM} reapplied	I_{FSM}	3155	A
	50 Hz, 100% V_{RRM} reapplied	I_{FSM}	2995	A
	60 Hz, 0V reapplied	I_{FSM}	4730	A
	50 Hz, 0V reapplied	I_{FSM}	4495	A
I^2t for Fusing for One Cycle T_j initial = 150C	8.3 msec, 100% V_{RRM} reapplied	I^2t	104,000	$\text{A}^2 \text{ sec}$
	10 msec, 100% V_{RRM} reapplied	I^2t	113,000	$\text{A}^2 \text{ sec}$
	8.3 msec, 0V reapplied	I^2t	233,000	$\text{A}^2 \text{ sec}$
	10 msec, 0V reapplied	I^2t	254,000	$\text{A}^2 \text{ sec}$
Operating Temperature		T_J	-40 to +150	$^\circ\text{C}$
Storage Temperature		T_{stg}	-40 to +150	$^\circ\text{C}$
Max. Mounting Torque, M6 Mounting Screw			45	in.-Lb.
			5	Nm
Max. Mounting Torque, M8 Terminal Screw			110	in.-Lb.
			12	Nm
Module Weight, Typical			840	g
			1.85	lb.
V Isolation @ 25C, 60Hz 1 sec		V_{rms}	3600	V
V Isolation @ 25C, 60Hz 60 sec		V_{rms}	3000	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.

Electrical Characteristics, T_J=25°C unless otherwise specified

Characteristics	Symbol	Test Conditions	Min.	Max.	Units
Repetitive Peak Reverse Leakage Current	I _{RRM}	Up to 3400V, T _J =150°C		50	mA
Peak On-State Voltage	V _{FM}	I _{FM} =1500A		1.80	V
Threshold Voltage, Low-level	V _{(TO)1}	T _J = 150°C, I = 15%I _{F(AV)} to πI _{F(AV)}		1.095	V
Slope Resistance, Low-level	r _{T1}			0.482	mΩ
Threshold Voltage, High-level	V _{(TO)2}	T _J = 150°C, I = πI _{F(AV)} to I _{FSM}		1.109	V
Slope Resistance, High-level	r _{T2}			0.471	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 =	1.1227 -1.08 E-2 4.53 E-4 2.42 E-2	
Diode Reverse Recovery Time (Typical)	t _{rr}	I _{fm} = 1500A, T _p = 190 μs di/dt = -25A/μs		20	μs

Thermal Characteristics

Characteristics	Symbol		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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