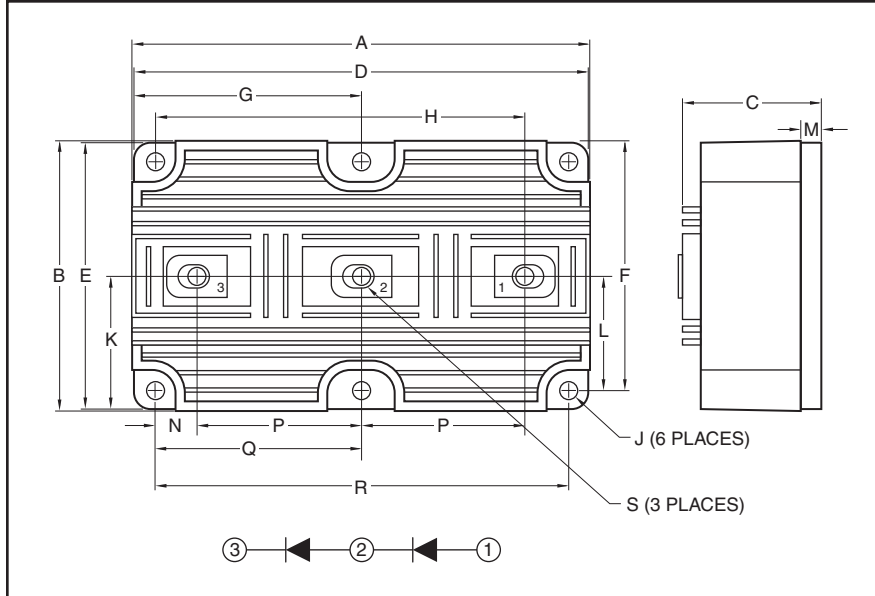


High Voltage Dual Diode Module 650 Amperes/6500 Volts



Outline Drawing and Circuit Diagram

Dimensions	Inches	Millimeters
A	6.40	162.6
B	4.31	109.5
C	1.90	48.1
D	6.21	157.7
E	4.20	106.6
F	3.70	93.7
G	3.10	78.9
H	5.17	131.3
J	0.28 Dia.	7.1 Dia.

Dimensions	Inches	Millimeters
K	2.10	53.3
L	1.84	46.9
M	0.28	7.1
N	0.61	15.5
P	2.28	57.9
Q	2.89	73.4
R	5.78	146.8
S	M8 Metric	M8



Description:

Powerex Dual Diode Modules are designed for use in applications requiring rectification and isolated packaging. All components and interconnects are isolated from the heatsink baseplate. This offers simplified baseplate assembly and thermal management.

Features:

- High Blocking Voltage
- Isolated Baseplate
- High Surge Current Rating
- Less than 10pC at 10KVDC
- Spherical Convex Baseplate for Lowest Thermal Resistance

Applications:

- DC Power Supplies
- Pulse Power Applications
- Front-end Converters
- Clamp Diode for Multi-level Inverters
- Laser Power Supplies



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

QRD6565001
High Voltage Dual Diode Module
 650 Amperes/6500 Volts

Absolute Maximum Ratings, $T_j = 25\text{ }^\circ\text{C}$ unless otherwise specified

Ratings	Symbol	QRD6565001	Units
Repetitive Peak Voltage	V_{RRM}	6500	Volts
Average On-state Current ($T_C = 80^\circ\text{C}$)	$I_{T(av)}$	650	Amperes
RMS On-state Current ($T_C = 70^\circ\text{C}$)	$I_{T(RMS)}$	1021	Amperes
Average On-state Current ($T_C = 40^\circ\text{C}$)	$I_{T(av)}$	760	Amperes
RMS On-state Current ($T_C = 40^\circ\text{C}$)	$I_{T(RMS)}$	1194	Amperes
Peak One Cycle Surge Current, 60Hz, $V_R = 0V$	I_{TSM}	6200	Amperes
Peak One Cycle Surge Current, 50Hz, $V_R = 0V$	I_{TSM}	6000	Amperes
Fuse Coordination I^2t , 60Hz	I^2t	1.60E+05	A^2s
Fuse Coordination I^2t , 50Hz	I^2t	1.80E+05	A^2s
Operating Temperature	T_j	-40 to 150	$^\circ\text{C}$
Storage Temperature	T_{stg}	-40 to 150	$^\circ\text{C}$
Module Weight (Typical)		3.74	lb
		1.7	kg
Mounting Torque, M6 Mounting Screws		9	in-lb
Mounting Torque, M8 Terminal Screws		84	in-lb
Isolation Voltage (25 $^\circ\text{C}$, 60Hz, 1 min.)	V_{RMS}	12,000	Volts

Electrical Characteristics, $T_j = 25\text{ }^\circ\text{C}$ unless otherwise specified

Characteristics	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Repetitive Peak Reverse Leakage Current	I_{RRM}	$T_j = 150^\circ\text{C}$, $V_{RRM} = 6500V$	—	—	150	mA
Peak On-state Voltage	V_{FM}	$T_j = 25^\circ\text{C}$, $I_{FM} = 500A$, Per Element	—	—	1.45	Volts
V_{TM} Model, Low Level	V_O	$T_j = 150^\circ\text{C}$, Per Element	—	—	0.788	Volts
$V_{TM} = V_O + r \cdot I_{TM}$	r	15% $I_{FM} - TT \cdot I_{FM}$	—	—	1.294	m Ω
V_{TM} Model, 4-Term	A	$T_j = 150^\circ\text{C}$, Per Element	—	—	-1.115	
$V_{TM} = A + B \cdot \ln(I_{TM}) +$	B	15% $I_{FM} - TT \cdot I_{FM}$	—	—	0.508	
$C \cdot (I_{TM}) + D \cdot (I_{TM})^{1/2}$	C		—	—	0.002	
	D		—	—	-0.063	

Thermal and Mechanical Characteristics, $T_j = 25\text{ }^\circ\text{C}$ unless otherwise specified

Characteristics	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Thermal Resistance, Junction to Case	$R_{th(j-c)}$	Per Element	—	—	0.037	$^\circ\text{C/W}$
		Per Module	—	—	0.0185	$^\circ\text{C/W}$
Thermal Resistance, Case to Sink	$R_{th(c-s)}$	Per Element	—	—	0.020	$^\circ\text{C/W}$
		Per Module	—	—	0.010	$^\circ\text{C/W}$

$$Z_{\Theta_{jc}}(t) = \sum(A_{(N)} \cdot (1 - \exp(-t / \text{Tau}_{(N)})))$$

Thermal Impedance Model $Z_{\Theta_{jc}}$ (Per Element)

where:	N =	1	2	3	4
	$A_{(N)} =$	1.42E-03	2.97E-03	1.10E-02	2.20E-02
Per Element:	$\text{Tau}_{(N)} =$	5.95E-05	2.76E-02	3.50E-01	3.10E+00

Information listed is based upon Powerex testing and projected ratings and is subject to change without notice. Powerex makes no implicit or explicit claim to reliability, capability, performance or suitability of this product for users application. Powerex makes no guarantee of future availability of this product.



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