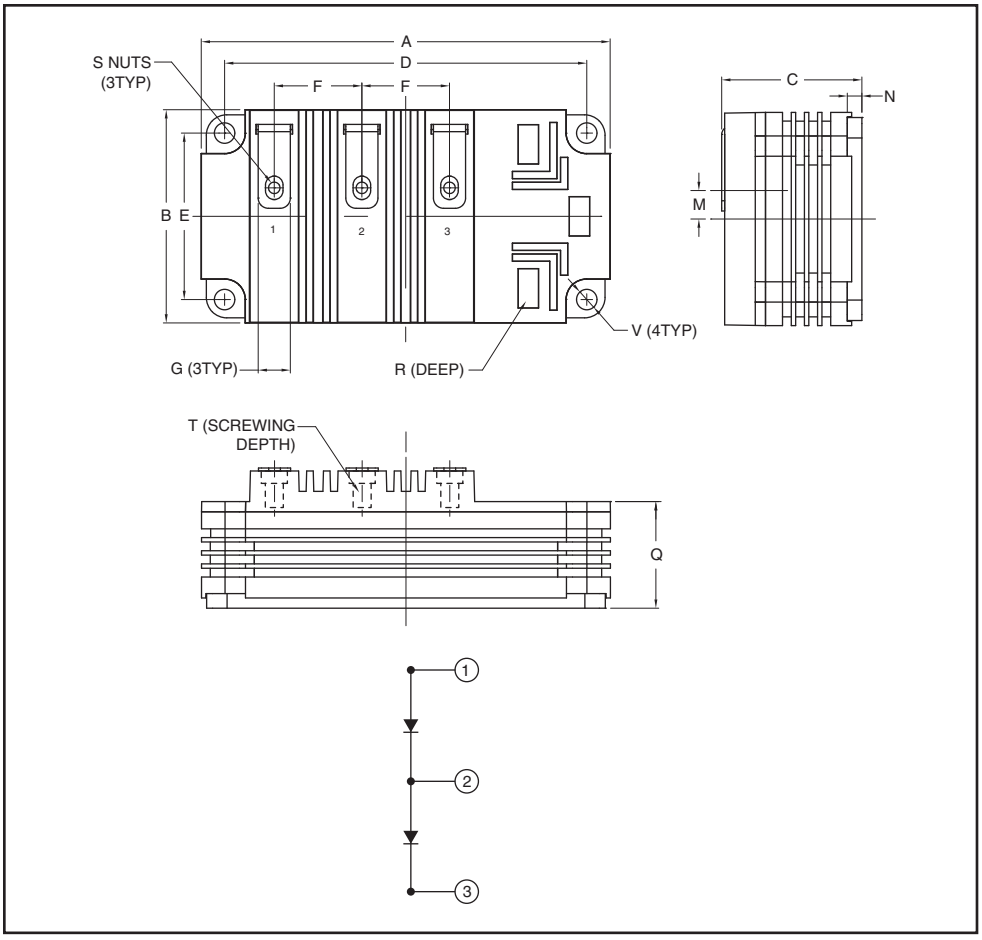
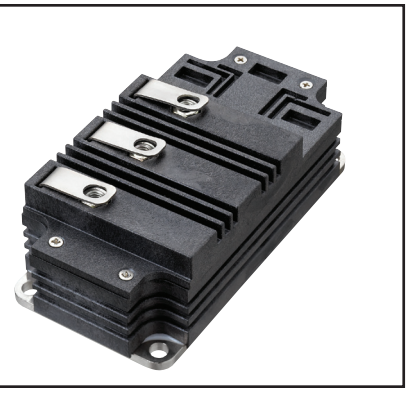
Powerex, Inc., 173 Pavilion Lane, Youngwood, Pennsylvania 15697 (724) 925-7272
www.pwrx.com

Dual Diode Isolated Module
160 Amperes/6500 Volts



Outline Drawing and Circuit Diagram



Dimensions	Inches	Millimeters
A	5.51	140.0
B	2.87	73.0
C	1.89	48.0
D	4.88±0.01	124.0±0.25
E	2.24±0.01	57.0±0.25
F	1.18	30.0
G	0.43	11.0

Dimensions	Inches	Millimeters
M	0.38	9.75
N	0.20	5.0
Q	1.44	36.5
R	0.16	4.0
S	M6 Metric	M6
T	0.63 Min.	16.0 Min.
V	0.28 Dia.	7.0 Dia.

Description:

High voltage diodes feature highly insulating housings that offer enhanced protection by means of greater creepage and strike clearance distance for many demanding applications like medium voltage drives and auxiliary traction applications.

Features:

- ☐ Aluminum Nitride (AlN) Ceramic Substrate for Low Thermal Impedance
- ☐ Copper Baseplate
- ☐ Industry Standard Packages Allow Common Bus Work to Complementary High Isolation Diodes
- ☐ No Additional Insulation Components Required

Applications:

- ☐ Diodes for 18-24 Pulse Front End Rectifiers in 10.2 KV Isolation
- ☐ High Voltage Power Supplies
- ☐ Medium Voltage Drives
- ☐ Motor Drives
- ☐ Traction

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QRD6516001
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Absolute Maximum Ratings, T_j = 25 °C unless otherwise specified

Ratings		Symbol	QRD6516001	Units
Repetitive Peak Reverse Blocking Voltage		V_{RRM}	6500	Volts
Non-Repetitive Peak Reverse Blocking Voltage (t < 5 msec)		V_{RSM}	V_{RRM} + 100	Volts
RMS Forward Current		$I_{F(RMS)}$	251	Amperes
Average Forward Current (180° Conduction, T_C = 100°C)		$I_{F(AV)}$	160	Amperes
Peak One Cycle Surge Current, Non-Repetitive	60 Hz, 100% V_{RRM} Reapplied	I_{FSM}	TBD	Amperes
	50 Hz, 100% V_{RRM} Reapplied	I_{FSM}	TBD	Amperes
	60 Hz, No V_{RRM} Reapplied	I_{FSM}	TBD	Amperes
	50 Hz, No V_{RRM} Reapplied	I_{FSM}	TBD	Amperes
I^2t for Fusing for One Cycle	8.3 Milliseconds	I^2t	TBD	A^2sec
	10 Milliseconds	I^2t	TBD	A^2sec
Operating Temperature		T_j	-40 to 150	°C
Storage Temperature		T_{stg}	-40 to 150	°C
Maximum Mounting Torque, M6 Mounting Screws		—	44	in-lb
			5.0	Nm
Maximum Mounting Torque, M6 Terminal Screws		—	44	in-lb
			5.0	Nm
Module Weight (Typical)		—	900	Grams
			1.98	Pounds
Isolation Voltage (@ 25°C, 60Hz, 1 min.)		V_{rms}	10.2	kV

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Electrical Characteristics, T_j = 25 °C unless otherwise specified

Characteristics	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Repetitive Peak Reverse Leakage Current	I_{RRM}	V_{RRM} = 6500V, T_j = 25°C	—	3	—	mA
		V_{RRM} = 6500V, T_j = 150°C	—	10	—	mA
Peak On-State Voltage	VFM	T_j = 150°C, I_{FM} = 160A	—	1.25	—	Volts
Threshold Voltage (Low-Level)	$V_{(TO)1}$	T_j = 150°C, I = 15% $I_{F(AV)}$ to $\Pi I_{F(AV)}$	—	—	0.776	Volts
Slope Resistance (Low-Level)	r_{T1}		—	—	8.081	mΩ
Threshold Voltage (High-Level)	$V_{(TO)2}$	T_j = 150°C, I = $\Pi I_{F(AV)}$ to I_{FSM}				Volts
Slope Resistance (High-Level)	r_{T2}					mΩ
V_{TM} Coefficients (Full Range)		T_j = 150°C, I = 15% $I_{F(AV)}$ to I_{FSM}	A = 1.599			
			B = -0.499			
		V_{TM} = A + B Ln I + CI + D Sqrt I	C = 8.05E-03			
			D = 6.91E-02			

Thermal and Mechanical Characteristics, T_j = 25 °C unless otherwise specified

Characteristics	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Thermal Resistance, Junction to Case	$R_{th(j-c)}$	Per Module, Both Conducting	—	—		°C/W
		Per Junction, Both Conducting	—	—	0.095	°C/W
Thermal Impedance Coefficients	$Z_{th(j-c)}$	$Z_{th(j-c)} = K_1 (1-\exp(-t/\tau_1))$	K_1 = 3.44E-02		τ_1 = 4.79E-03	
		$+ K_2 (1-\exp(-t/\tau_2))$	K_2 = -2.70E-02		τ_2 = 4.45E-03	
		$+ K_3 (1-\exp(-t/\tau_3))$	K_3 = 1.28E-02		τ_3 = 4.92E-02	
		$+ K_4 (1-\exp(-t/\tau_4))$	K_4 = 7.48E-02		τ_4 = 0.229	
Thermal Resistance, Case to Sink Lubricated	$R_{th(c-s)}$	Per Module	—	—		°C/W

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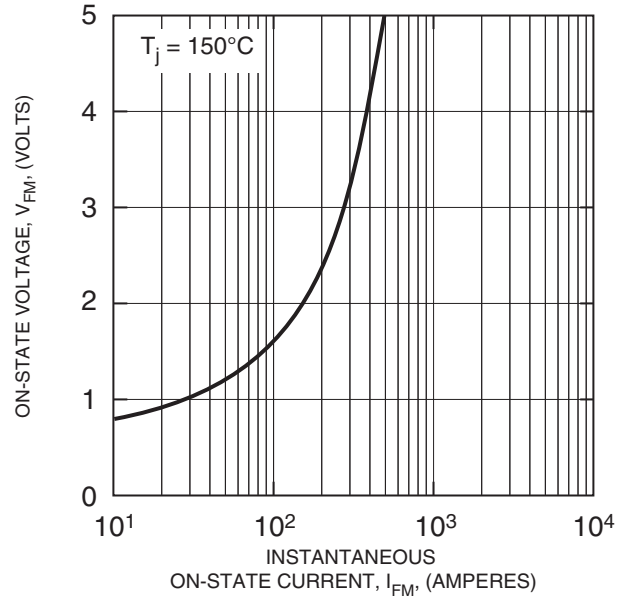
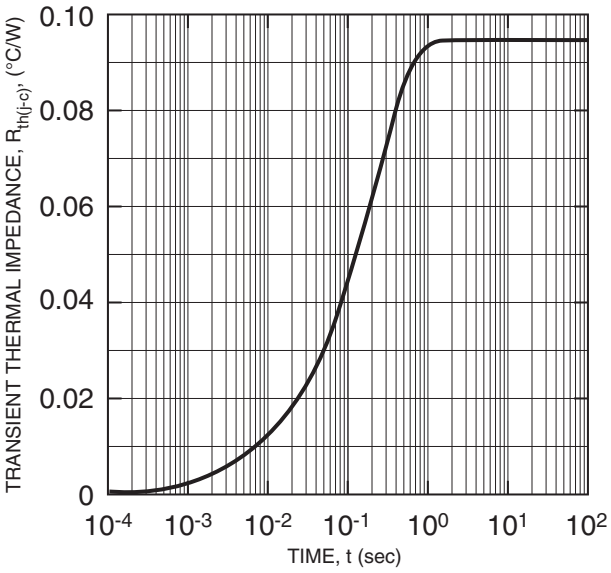
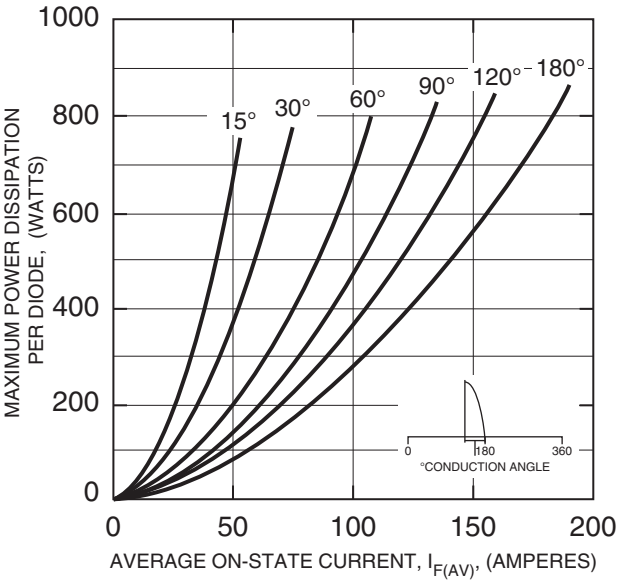
MAXIMUM ON-STATE FORWARD VOLTAGE DROP



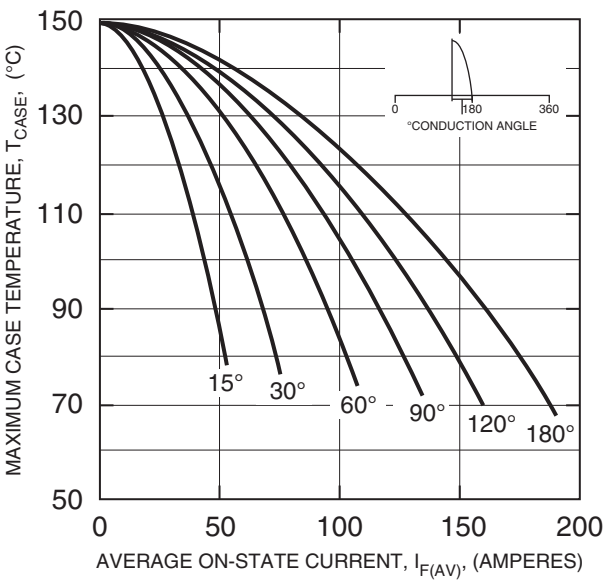
TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS (JUNCTION TO CASE)



MAXIMUM ON-STATE POWER DISSIPATION (SINUSOIDAL WAVEFORM)



MAXIMUM ALLOWABLE CASE TEMPERATURE (SINUSOIDAL WAVEFORM)



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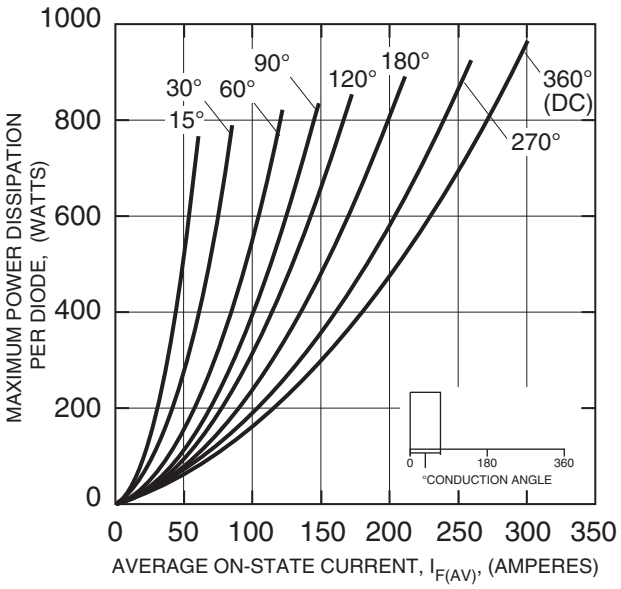
MAXIMUM ON-STATE POWER DISSIPATION (RECTANGULAR WAVEFORM)



MAXIMUM ALLOWABLE CASE TEMPERATURE (RECTANGULAR WAVEFORM)