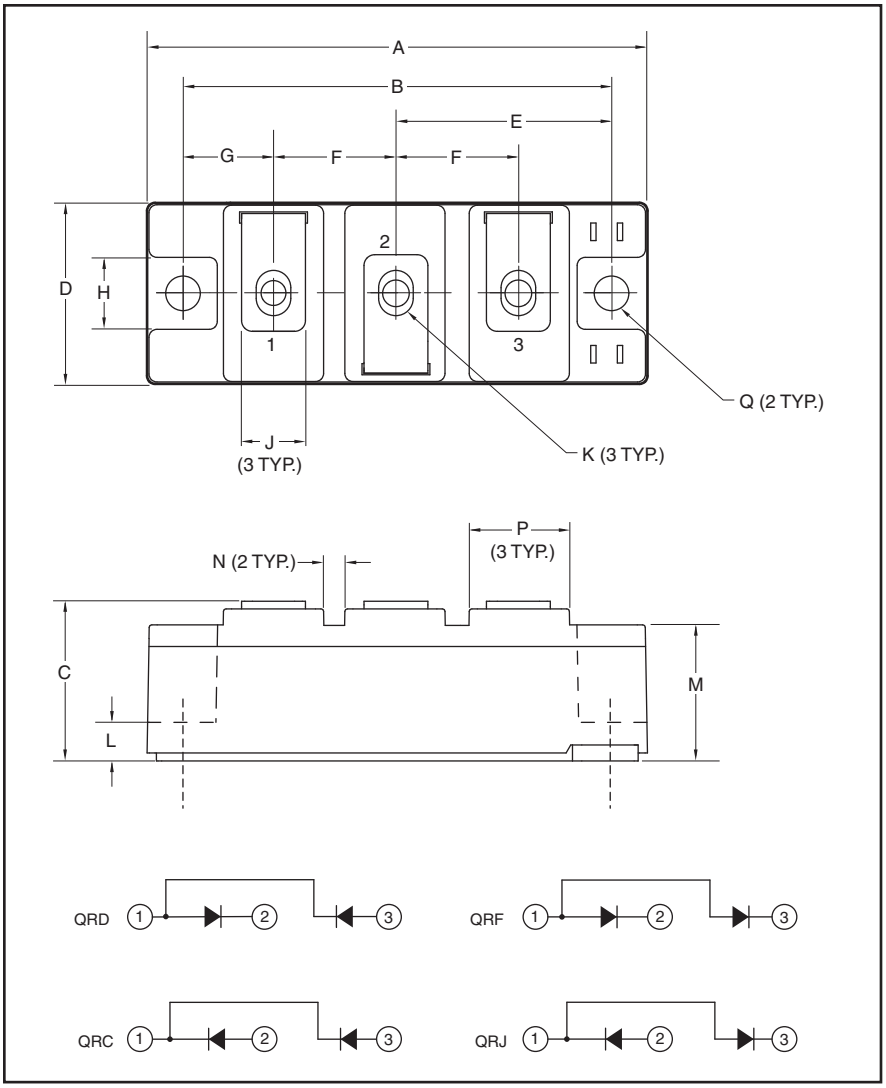
Powerex, Inc., 173 Pavilion Lane, Youngwood, Pennsylvania 15697 (724) 925-7272
www.pwrx.com

Super Fast Recovery Diode Modules
210 Amperes/1200 Volts



Outline Drawing and Circuit Diagram

Dimensions	Millimeters
A	94
B	80
C	30
D	34
E	40
F	23
G	17
H	13

Dimensions	Millimeters
J	12
K	M6
L	7.5
M	25.4
N	4
P	19
Q	6.5 Dia.

Description:

Powerex Super Fast Recovery Dual Diode Modules are designed for use in applications requiring fast switching. The modules are isolated for easy mounting with other components on common heatsinks.

Features:

- ☐ Super Fast Recovery Time
- ☐ RoHS Compliant
- ☐ Isolated Mounting
- ☐ Metal Baseplate
- ☐ Low Thermal Impedance
- ☐ 2500V Isolating Voltage

Applications:

- ☐ Free Wheeling
- ☐ Welding and Plasma Cutting Machine

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QR_1230R30
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Absolute Maximum Ratings, T_j = 25 °C unless otherwise specified

Ratings	Symbol	QRD1230R30 QRC1230R30 QRF1230R30 QRJ1230R30	Units
Repetitive Peak Reverse Blocking Voltage	V_{RRM}	1200	Volts
Non-Repetitive Peak Reverse Blocking Voltage	V_{RSM}	V_{RRM} + 100	Volts
DC Current, T_C = 80°C (Resistive Load)	$I_{F(DC)}$	210	Amperes
Peak Half Cycle Non-repetitive Surge Current (t = 8.3mS, 100% V_{RRM} Reapplied)	I_{FSM}	2550	Amperes
I^2t for Fusing for One Cycle (t = 8.3mS, 100% V_{RRM} Reapplied)	I^2t	27,000	A^2sec
Operating Junction Temperature	T_j	-40 to 150	°C
Storage Temperature	T_{stg}	-40 to 150	°C
Maximum Mounting Torque, M6 Mounting Screw	—	26	in-lb
Maximum Mounting Torque, M6 Terminal Screw	—	26	in-lb
Module Weight (Typical)	—	180	Grams
V Isolation (60 Hz, Circuit to Base, All Terminals Shorted, t = 60 sec)	V_{RMS}	2500	Volts

Electrical Characteristics, T_j = 25 °C unless otherwise specified

Characteristics	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Reverse Leakage Current	I_{RRM}	Rated V_{RRM}	—	—	1.0	mA
On-State Voltage	V_{FM}	I_F = 150A	—	2.4	3.2	Volts
		I_F = 210A	—	2.7	3.5	Volts
Threshold Voltage	V_{TO}	T_j = 125°C	—	2.20	—	Volts
Slope Resistance	r_T	T_j = 125°C	—	5.02	—	mΩ
Reverse Recovery Time	t_{rr}	V_{RM} = 600V,	—	110	—	ns
Reverse Recovery Charge	Q_{rr}	I_F = 210A, di/dt = -600 A/µs	—	13.8	—	µC
Reverse Recovery Energy	E_{rec}	T_j = 125°C	—	23	—	mJ/Pulse

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

Characteristics	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Thermal Resistance, Junction to Case*	$R_{th(j-c)}$ Q	Per Diode	—	—	0.10	°C/W
Contact Thermal Resistance, Case to Sink (Lubricated)*	$R_{th(c-s)}$	Per Module	—	—	0.05	°C/W

*T_C, T_f measured point is just under the chip.

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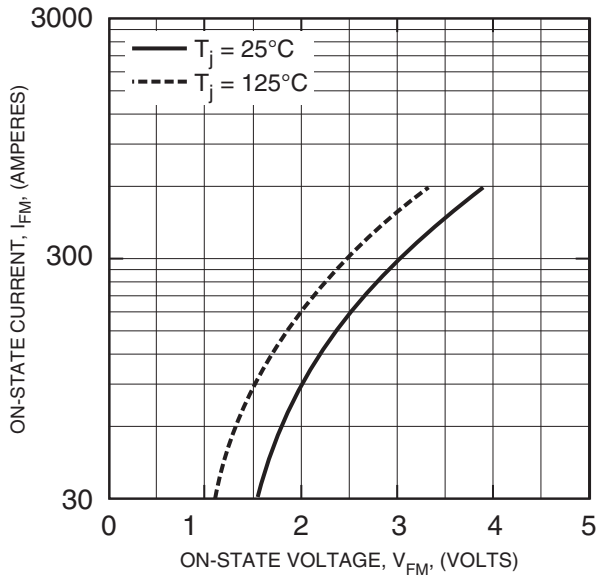
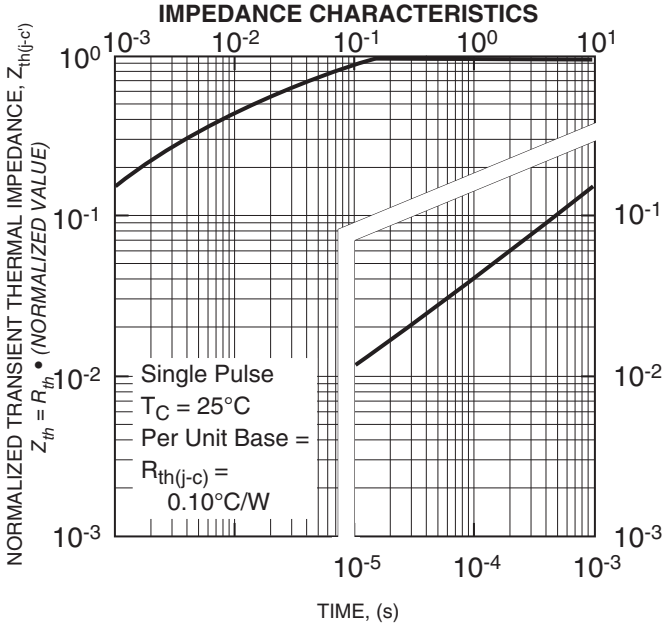
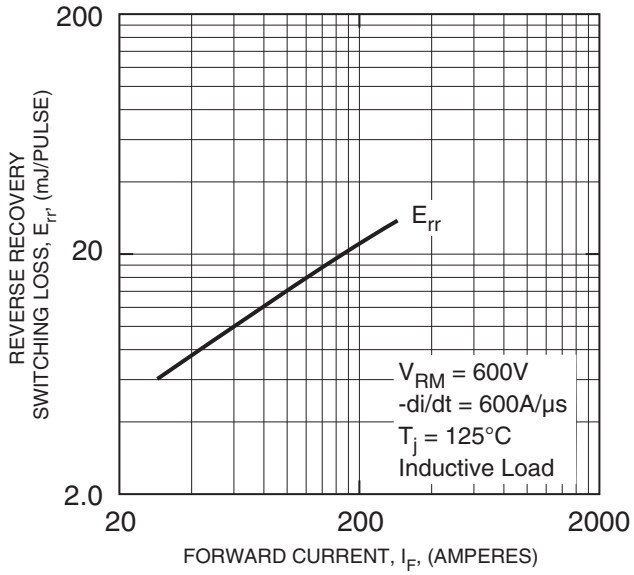
ON-STATE CHARACTERISTICS (TYPICAL)



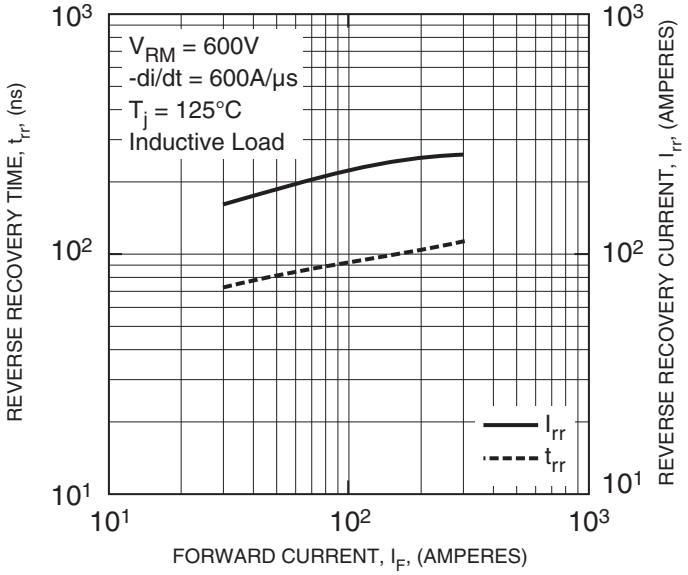
TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS



REVERSE RECOVERY SWITCHING LOSS CHARACTERISTICS (TYPICAL)



REVERSE RECOVERY CHARACTERISTICS (TYPICAL)



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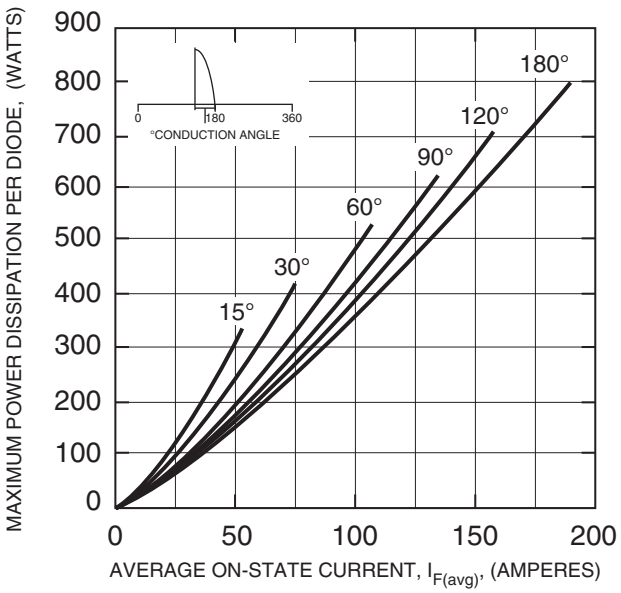
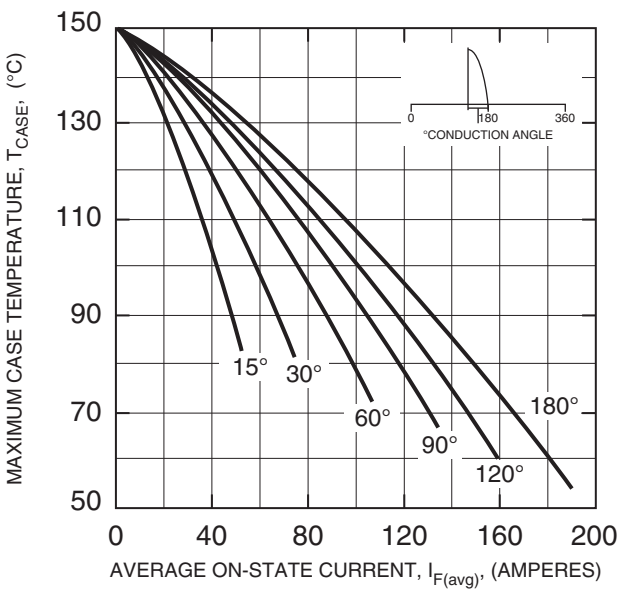
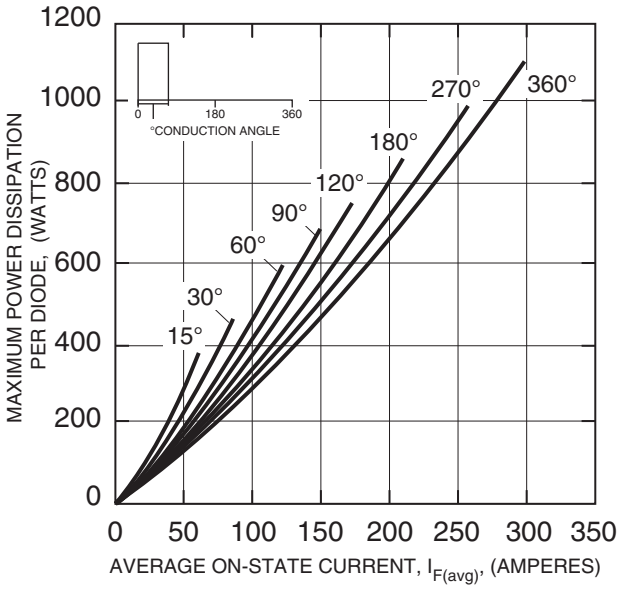
MAXIMUM ON-STATE POWER DISSIPATION (SINUSOIDAL WAVEFORM)



MAXIMUM ALLOWABLE CASE TEMPERATURE (SINUSOIDAL WAVEFORM)



MAXIMUM ON-STATE POWER DISSIPATION (RECTANGULAR WAVEFORM)



MAXIMUM ALLOWABLE CASE TEMPERATURE (RECTANGULAR WAVEFORM)