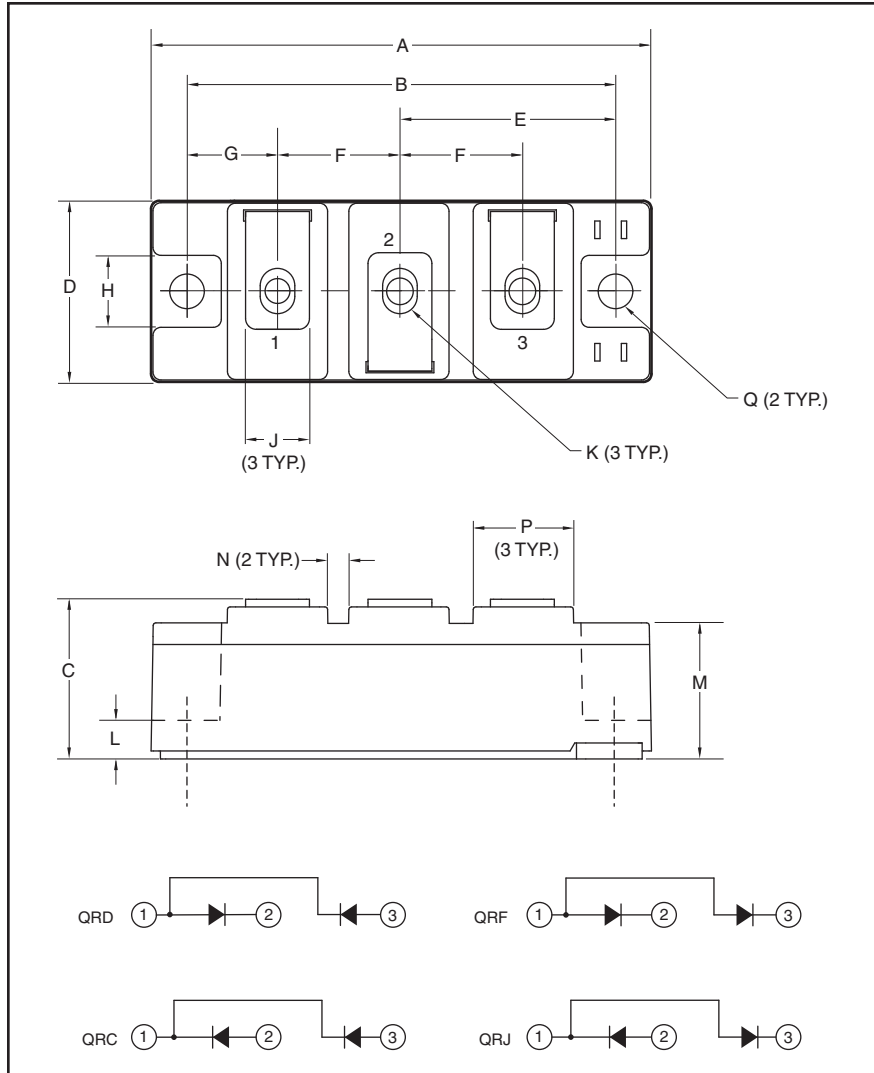


Powerex, Inc., 173 Pavilion Lane, Youngwood, Pennsylvania 15697 (724) 925-7272
www.pwrx.com

Super Fast Recovery Diode Modules 280 Amperes/600 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

QR_0640R30
Super Fast Recovery Dual Diode Modules
280 Amperes/600 Volts

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

Ratings	Symbol	QRD0640R30 QRC0640R30 QRF0640R30 QRJ0640R30	Units
Repetitive Peak Reverse Blocking Voltage	V_{RRM}	600	Volts
Non-Repetitive Peak Reverse Blocking Voltage	V_{RSM}	$V_{RRM} + 100$	Volts
DC Current, $T_C = 80^\circ\text{C}$ (Resistive Load)	$I_F(\text{DC})$	280	Amperes
Peak Half Cycle Non-repetitive Surge Current ($t = 8.3\text{ms}$, 100% V_{RRM} Reapplied)	I_{FSM}	TBD	Amperes
I^2t for Fusing for One Cycle ($t = 8.3\text{ms}$, 100% V_{RRM} Reapplied)	I^2t	TBD	A^2sec
Operating Junction Temperature	T_j	-40 to 150	$^\circ\text{C}$
Storage Temperature	T_{stg}	-40 to 150	$^\circ\text{C}$
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, $t = 60\text{ sec}$)	V_{RMS}	2500	Volts

Electrical Characteristics, $T_j = 25^\circ\text{C}$ 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}	$I_F = 200\text{A}$	—	1.5	2.2	Volts
		$I_F = 280\text{A}$	—	1.8	2.5	Volts
Threshold Voltage	V_{TO}	$T_j = 125^\circ\text{C}$	—	1.21	—	Volts
Slope Resistance	r_T	$T_j = 125^\circ\text{C}$	—	3.62	—	$\text{m}\Omega$
Reverse Recovery Time	t_{rr}	$V_{RM} = 300\text{V}$,	—	95	—	ns
Reverse Recovery Charge	Q_{rr}	$I_F = 280\text{A}$, $di/dt = -800\text{ A}/\mu\text{s}$	—	6.2	—	μC
Reverse Recovery Energy	E_{rec}	$T_j = 125^\circ\text{C}$	—	4.5	—	mJ/Pulse

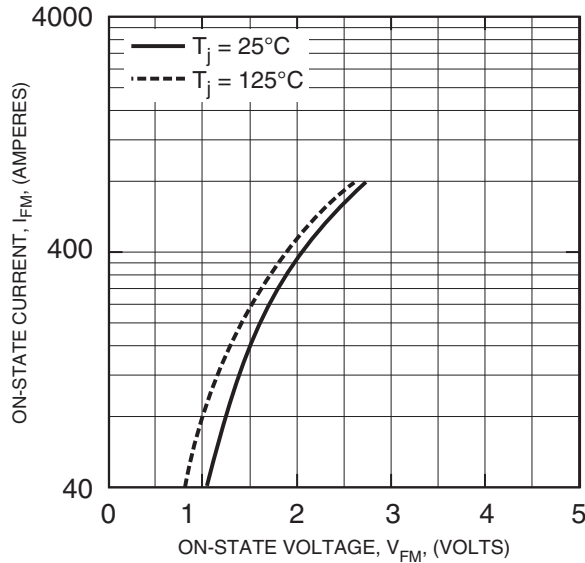
Thermal and Mechanical Characteristics, $T_j = 25^\circ\text{C}$ unless otherwise specified

Characteristics	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Thermal Resistance, Junction to Case*	$R_{th(j-c)}$ Q	Per Diode	—	—	0.103	$^\circ\text{C}/\text{W}$
Contact Thermal Resistance, Case to Sink (Lubricated)*	$R_{th(c-s)}$	Per Module	—	—	0.05	$^\circ\text{C}/\text{W}$

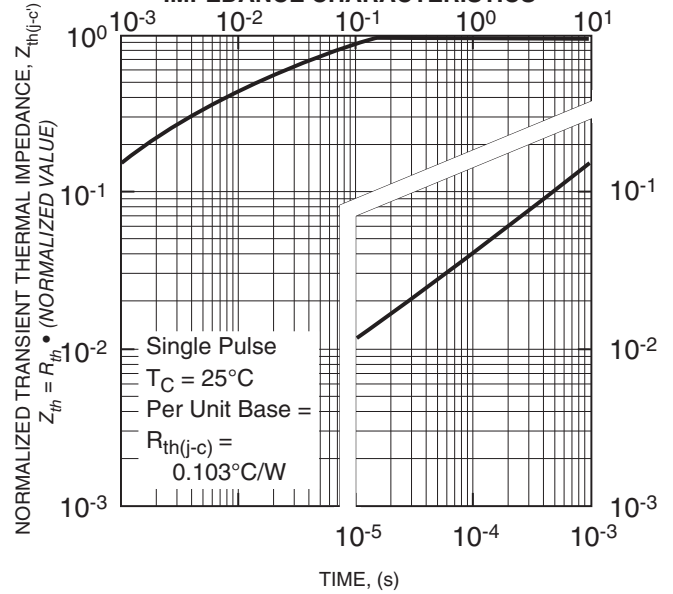
* T_C , T_f measured point is just under the chip.

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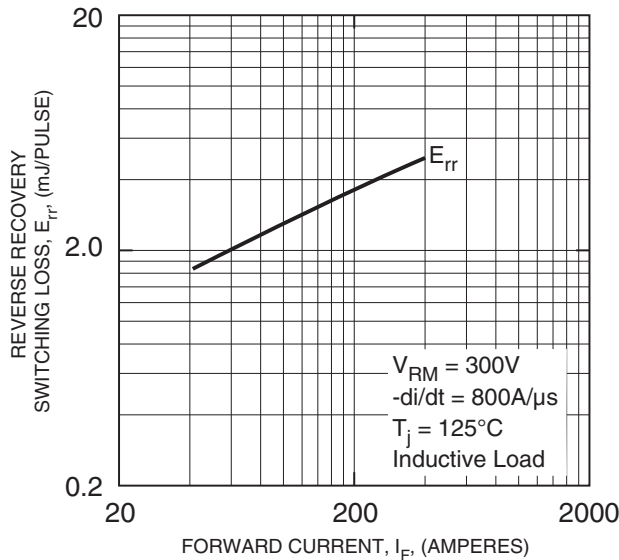
ON-STATE CHARACTERISTICS (TYPICAL)



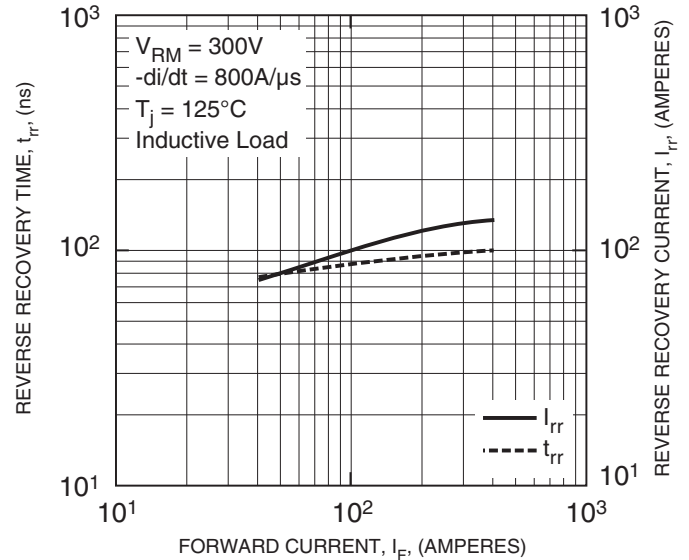
TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS



REVERSE RECOVERY SWITCHING LOSS CHARACTERISTICS (TYPICAL)



REVERSE RECOVERY CHARACTERISTICS (TYPICAL)

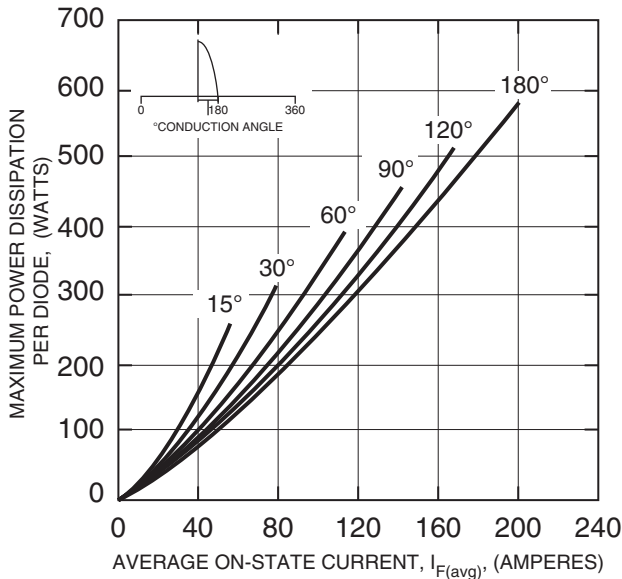


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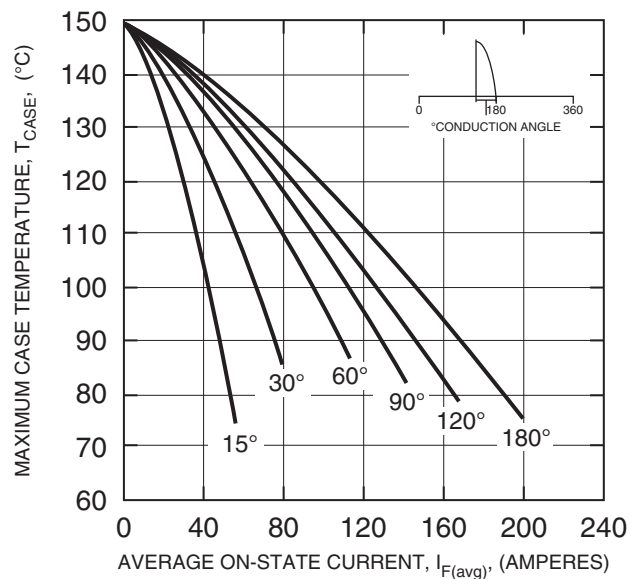
Super Fast Recovery Dual Diode Modules

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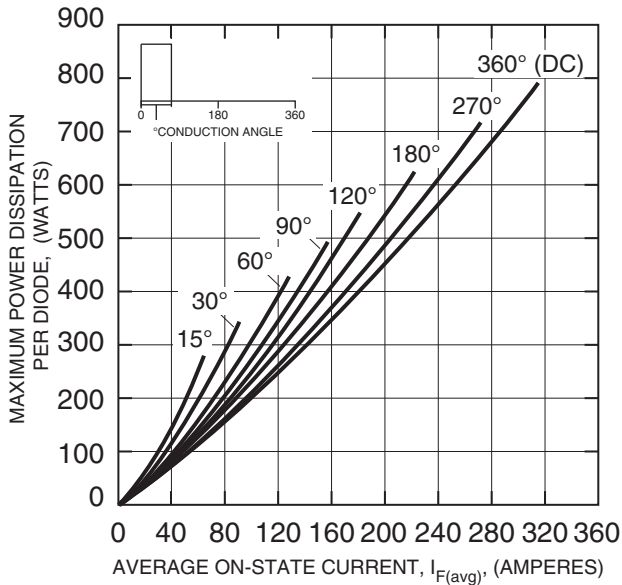
**MAXIMUM ON-STATE
POWER DISSIPATION
(SINUSOIDAL WAVEFORM)**



**MAXIMUM ALLOWABLE
CASE TEMPERATURE
(SINUSOIDAL WAVEFORM)**



**MAXIMUM ON-STATE
POWER DISSIPATION
(RECTANGULAR WAVEFORM)**



**MAXIMUM ALLOWABLE
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