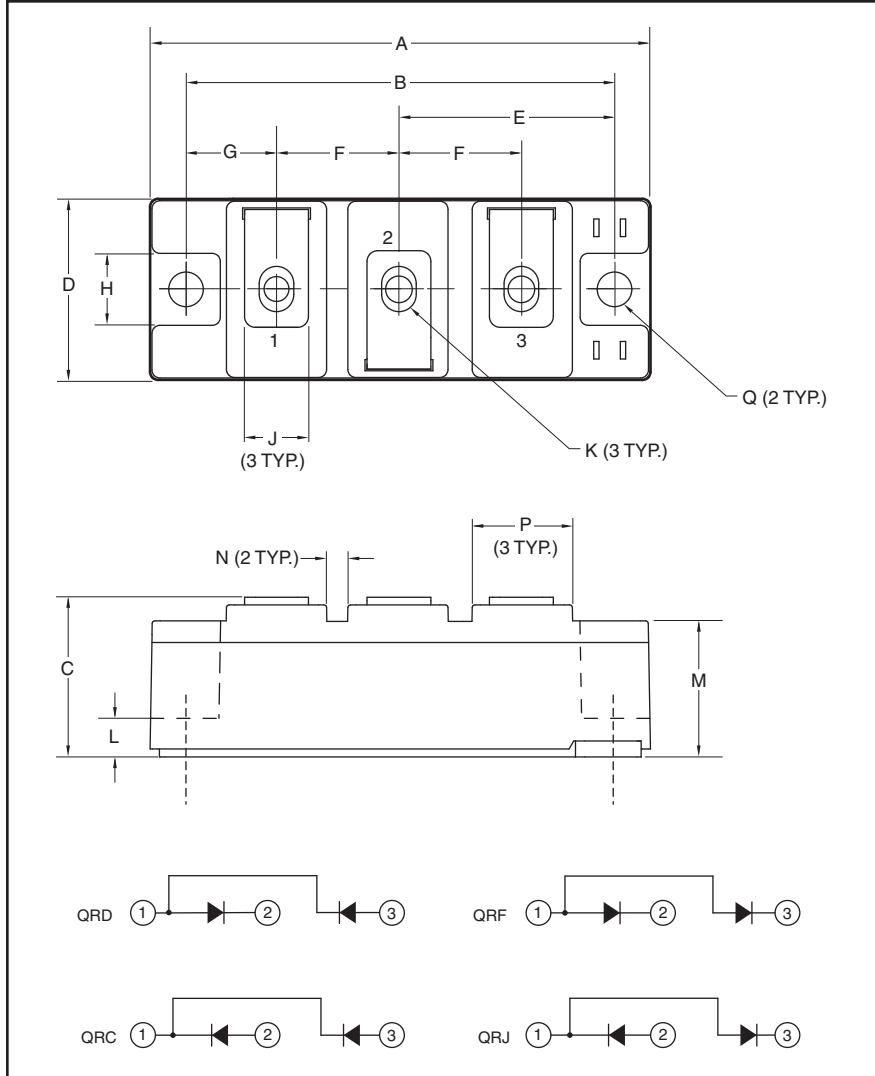


## Super Fast Recovery Diode Modules

### 280 Amperes/600 Volts


**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

**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.

**QR\_0640R30**  
**Super Fast Recovery Dual Diode Modules**  
 280 Amperes/600 Volts

**Absolute Maximum Ratings,  $T_j = 25\text{ }^\circ\text{C}$  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)	$I_{F(DC)}$	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	$\text{A}^2\text{sec}$
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,  $T_j = 25\text{ }^\circ\text{C}$  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	—	$\mu\text{C}$
Reverse Recovery Energy	$E_{rec}$	$T_j = 125^\circ\text{C}$	—	4.5	—	mJ/Pulse

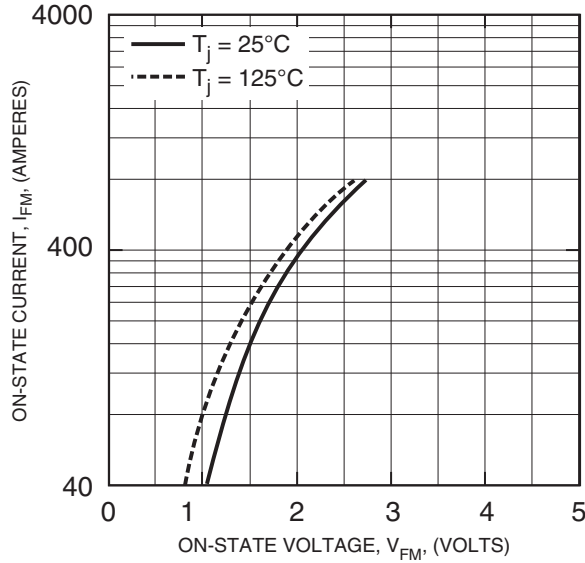
**Thermal and Mechanical Characteristics,  $T_j = 25\text{ }^\circ\text{C}$  unless otherwise specified**

Characteristics	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Thermal Resistance, Junction to Case*	$R_{th(j-c)}$ 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	$^\circ\text{C}/\text{W}$

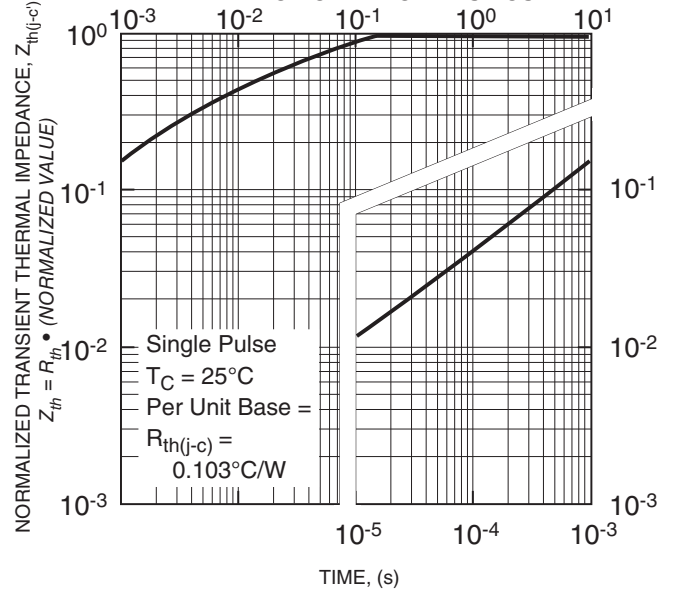
\* $T_C$ ,  $T_f$  measured point is just under the chip.

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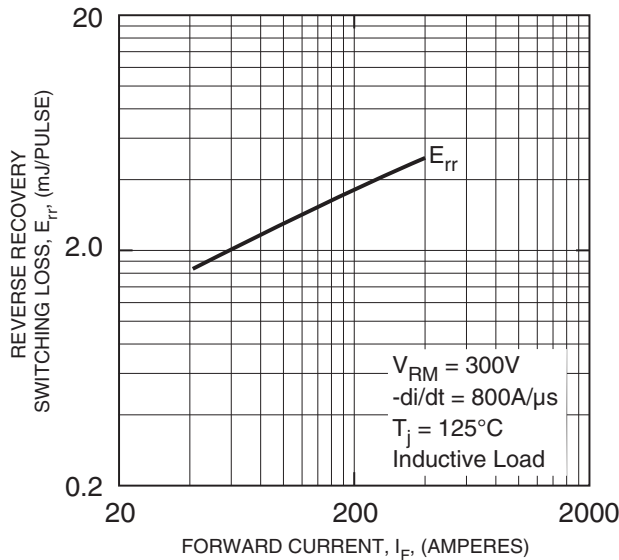
**ON-STATE CHARACTERISTICS (TYPICAL)**



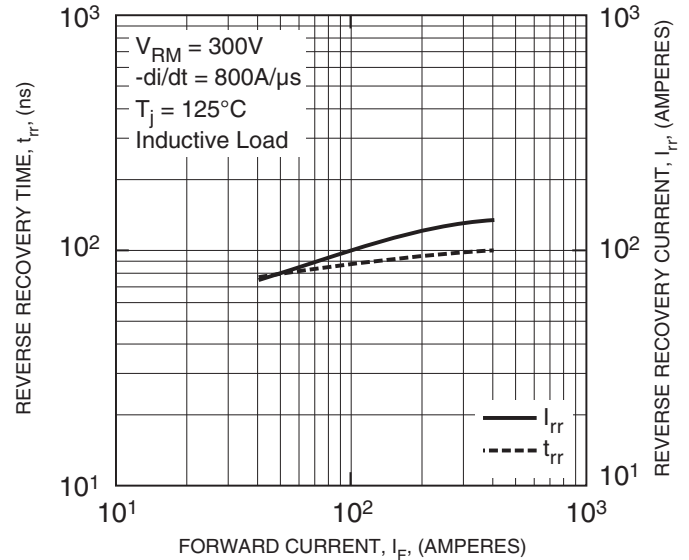
**TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS**



**REVERSE RECOVERY SWITCHING LOSS CHARACTERISTICS (TYPICAL)**



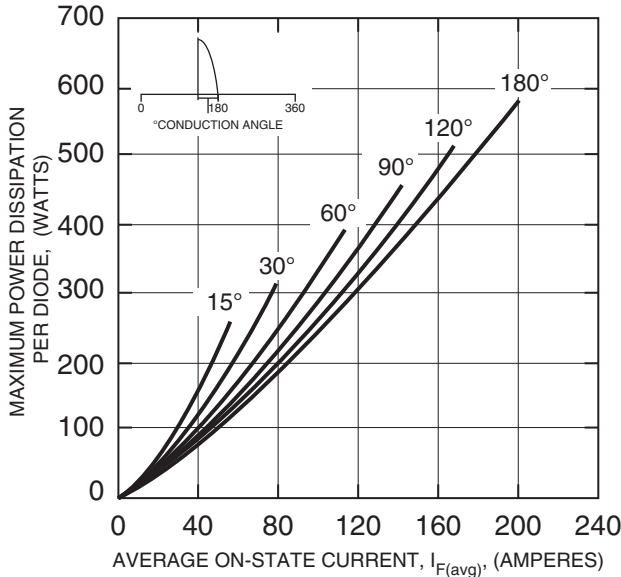
**REVERSE RECOVERY CHARACTERISTICS (TYPICAL)**



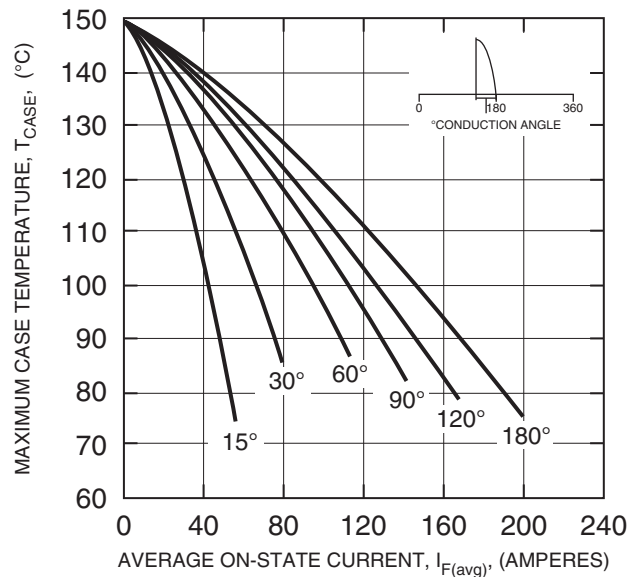
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**Super Fast Recovery Dual Diode Modules**  
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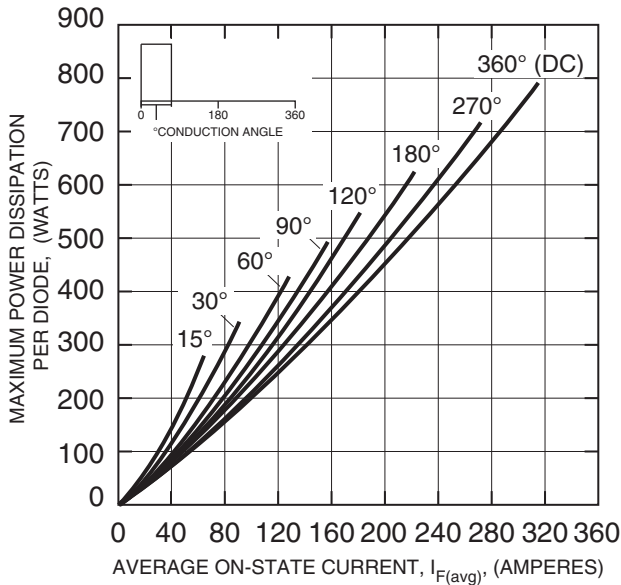
**MAXIMUM ON-STATE POWER DISSIPATION (SINUSOIDAL WAVEFORM)**



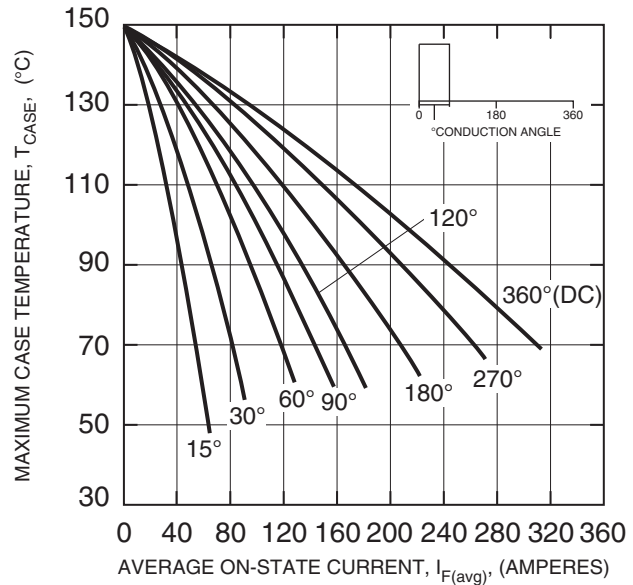
**MAXIMUM ALLOWABLE CASE TEMPERATURE (SINUSOIDAL WAVEFORM)**



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



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



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