

## **Excellent Integrated System Limited**

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[Powerex Inc.](#)  
[QRS1450001](#)

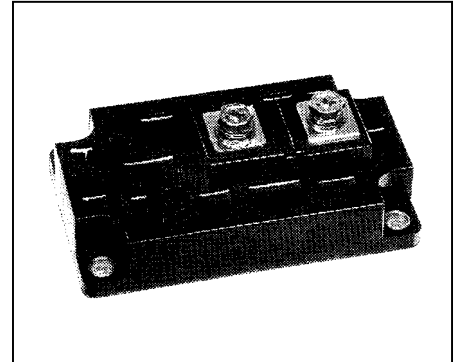
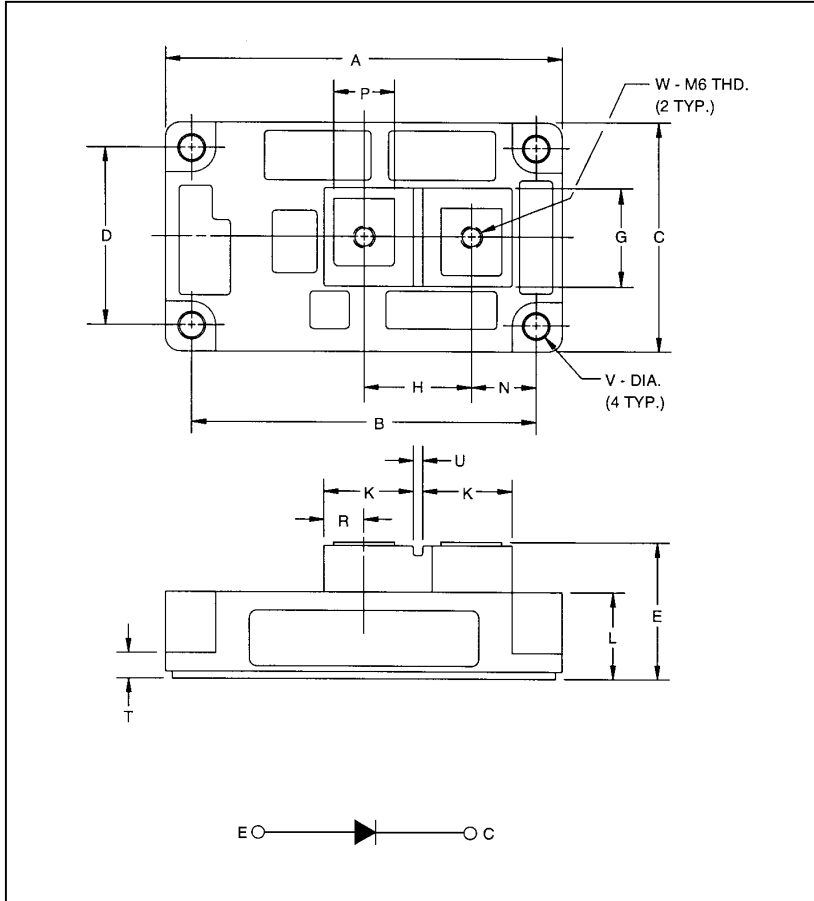
For any questions, you can email us directly:  
[sales@integrated-circuit.com](mailto:sales@integrated-circuit.com)



**QRS1450001**

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

**1400 Volts Fast Recovery Diode Module**  
**500 Amps Free Wheeling**  
**250 Amps Average**



**Description:**

Powerex Single Fast Recovery Diode Module features fast switching is specially designed for customer applications. The modules are isolated for easy mounting with other components on a common heatsink.

**Features:**

- Fast Recovery Time  $t_{rr} = 300$  ns Max.
- Isolated Mounting
- Metal Baseplate
- Low Thermal Impedance
- 3000 V Isolating Voltage

**Applications:**

- Switching Power Supplies
- Inverters
- Choppers
- Welding Power Supplies
- Free Wheeling Diode
- High Frequency Rectifiers

Dim	Inches	Millimeters
A	4.21	107.0
B	3.661±0.01	93.0±0.25
C	2.44	62.0
D	1.89±0.01	48.0±0.25
E	1.42 Max.	36.0 Max.
G	1.18	30.0
H	1.14	29.0
K	0.94	24.0

Dim	Inches	Millimeters
L	0.93	23.5
N	0.69	17.5
P	0.63	16.0
R	0.43	11.0
T	0.28	7.0
U	0.12	3.0
V	0.26 Dia.	6.5 Dia.
W	M6 Metric	M6



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

Characteristics	Conditions	Symbol	QRS1450001	Units
Repetitive Peak Reverse Blocking Voltage	-	$V_{RRM}$	1400	Volts
Non-Repetitive Peak Reverse Blocking Voltage	-	$V_{RSM}$	$V_{RRM} + 100$	Volts
Average Forward Current	Resistive Load, $T_C=90^\circ\text{C}$	$I_{F(AV)}$	250	Amperes
Peak Half Cycle Non-Repetitive Surge Current*	$t = 8.3\text{mS}$ , 100% $V_{RRM}$ Reapplied	$I_{FSM}$	3330	Amperes
$I^2t$ for Fusing for One Cycle	$t = 8.3\text{mS}$ , 100% $V_{RRM}$ Reapplied	$I^2t$	46200	$\text{A}^2\text{sec}$
Operating Junction Temperature	-	$T_J$	-40 to 150	$^\circ\text{C}$
Storage Temperature	-	$T_{STG}$	-40 to 125	$^\circ\text{C}$
Maximum Mounting Torque, M6 Mounting Screw	-	-	26	In.-lb.
Maximum Terminal Torque, M6 Terminal Screw	-	-	26	In.-lb.
Module Weight (Typical)	-	-	400	Grams
V Isolation	60 Hz, circuit to base, all terminals shorted, $t = 1 \text{ sec}$	$V_{RMS}$	3000	Volts

\* Pulse width and repetition rate should be such that the device junction temperature ( $T_J$ ) doesn't exceed  $T_J(\text{max})$  ratings

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

Characteristics	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Peak Reverse Leakage Current	$I_{RRM}$	Rated $V_{RRM}$	-	-	4	mA
Peak On-State Voltage*	$V_{FM}$	$I_F=500\text{A}$	-	2.8	3.8	Volts
		$I_F=250\text{A}$	-	2.2	3.2	
Reverse Recovery Time	$t_{rr}$	$I_F = 500\text{A}$ , $di/dt = -1000\text{A}/\mu\text{s}$	-	-	300	ns
Reverse Recovery Charge	$Q_{rr}$	$I_F = 500\text{A}$ , $di/dt = -1000\text{A}/\mu\text{s}$	-	5	-	$\mu\text{C}$

\* Pulse width and repetition rate should be such that the device junction temperature ( $T_J$ ) doesn't exceed  $T_J(\text{max})$  ratings

### Thermal Characteristics, $T_J=25^\circ\text{C}$ unless otherwise specified

Characteristics	Symbol	Min.	Typ.	Max.	Units
Thermal Resistance, Junction to Case	$R_{\theta JC}$	-	-	0.075	$^\circ\text{C}/\text{Watt}$
Contact Thermal Resistance	$R_{\theta CS}$	-	-	0.04	$^\circ\text{C}/\text{Watt}$