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

## Super Fast Recovery Diode Modules 140 Amperes/1200 Volts



| Outline Drawing and Circuit Diagram |  |
| :---: | :---: |
| Dimensions |  |
| A | Millimeters |
| B | 93.5 |
| C | 80 |
| D | 30 |
| E | 26 |
| F | 40.5 |
| G | 23 |
| H | 16.5 |


| Dimensions | Millimeters |
| :---: | :---: |
| J | 12 |
| K | M5 |
| 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 TimeRoHS Compliantsolated MountingMetal Baseplate
$\square$ Low Thermal Impedance
$\square 2500 \mathrm{~V}$ Isolating Voltage

## Applications:

$\square$ Free Wheeling
$\square$ Welding and Plasma Cutting Machine

Preliminary

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QR_1220R30
Super Fast Recovery Dual Diode Modules
140 Amperes/1200 Volts

Absolute Maximum Ratings, $\mathrm{T}_{\mathrm{j}}=25^{\circ} \mathrm{C}$ unless otherwise specified

|  | Symbol | QRD1220R30 | Units |
| :---: | :---: | :---: | :---: |
|  |  | QRC1220R30 |  |
|  |  | QRF1220R30 |  |
| Ratings |  | QRJ1220R30 |  |
| Repetitive Peak Reverse Blocking Voltage | $\mathrm{V}_{\text {RRM }}$ | 1200 | Volts |
| Non-Repetitive Peak Reverse Blocking Voltage | $V_{\text {RSM }}$ | $\mathrm{V}_{\text {RRM }}+100$ | Volts |
| DC Current, $\mathrm{T}_{\mathrm{C}}=80^{\circ} \mathrm{C}$ (Resistive Load) | $\mathrm{I}_{\text {F (DC) }}$ | 140 | Amperes |
| Peak Half Cycle Non-repetitive Surge Current ( $\mathrm{t}=8.3 \mathrm{mS}, 100 \% \mathrm{~V}_{\text {RRM }}$ Reapplied) | $\mathrm{I}_{\text {FSM }}$ | 1700 | Amperes |
| ${ }^{2} \mathrm{t}$ for Fusing for One Cycle ( $\mathrm{t}=8.3 \mathrm{mS}, 100 \% \mathrm{~V}_{\text {RRM }}$ Reapplied) | $1^{2} \mathrm{t}$ | 12,000 | $\mathrm{A}^{2} \mathrm{sec}$ |
| Operating Junction Temperature | $\mathrm{T}_{\mathrm{j}}$ | -40 to 150 | ${ }^{\circ} \mathrm{C}$ |
| Storage Temperature | $\mathrm{T}_{\text {stg }}$ | -40 to 125 | ${ }^{\circ} \mathrm{C}$ |
| Maximum Mounting Torque, M6 Mounting Screw | - | 26 | in-lb |
| Maximum Mounting Torque, M5 Terminal Screw | - | 17 | in-lb |
| Module Weight (Typical) | - | 150 | Grams |
| V Isolation ( 60 Hz , Circuit to Base, All Terminals Shorted, $\mathrm{t}=60 \mathrm{sec}$ ) | $\mathrm{V}_{\text {RMS }}$ | 2500 | Volts |

Electrical Characteristics, $\mathrm{T}_{\mathrm{j}}=25^{\circ} \mathrm{C}$ unless otherwise specified

| Characteristics | Symbol | Test Conditions | Min. | Typ. | Max. |
| :--- | :---: | :---: | :---: | :---: | :---: |
| Reverse Leakage Current | $\mathrm{I}_{\mathrm{RRM}}$ | Rated $\mathrm{V}_{\text {RRM }}$ | - | - | 1.0 |
| On-State Voltage | $\mathrm{V}_{\mathrm{FM}}$ | $\mathrm{I}_{\mathrm{F}}=100 \mathrm{~A}$ | mA |  |  |
|  |  | $\mathrm{I}_{\mathrm{F}}=140 \mathrm{~A}$ | - | 2.4 | 3.2 |
| Volts |  |  |  |  |  |
| Threshold Voltage | $\mathrm{V}_{\mathrm{TO}}$ | $\mathrm{T}_{\mathrm{j}}=125^{\circ} \mathrm{C}$ | - | 2.7 | 3.5 |
| Slope Resistance | $\mathrm{r}_{\mathrm{T}}$ | $\mathrm{T}_{\mathrm{j}}=125^{\circ} \mathrm{C}$ | - | 2.44 | - |
| Veverse Recovery Time | $\mathrm{t}_{\mathrm{rr}}$ | $\mathrm{I}_{\mathrm{f}}=100 \mathrm{~A}, \mathrm{di} / \mathrm{dt}=\mathrm{TBD}$ | Volts |  |  |
| Reverse Recovery Charge | $\mathrm{Q}_{\mathrm{rr}}$ | $\mathrm{I}_{\mathrm{f}}=100 \mathrm{~A}, \mathrm{di} / \mathrm{dt}=\mathrm{TBD}$ | - | 5.99 | - |

Thermal and Mechanical Characteristics, $\mathrm{T}_{\mathrm{j}}=25^{\circ} \mathrm{C}$ unless otherwise specified

| Characteristics | Symbol | Test Conditions | Min. | Typ. | Max. |
| :--- | :---: | :---: | :---: | :---: | :---: |
| Thermal Resistance, Junction to Case* | $\mathrm{R}_{\mathrm{th}(\mathrm{j}-\mathrm{c})} \mathrm{Q}$ | Per Diode | - | - | 0.15 |
| Contact Thermal Resistance, Case to Sink <br>  <br> (Lubricated) | $\mathrm{R}_{\mathrm{th}(\mathrm{c}-\mathrm{s})} \mathrm{C} / \mathrm{W}$ |  |  |  |  |

${ }^{*} T_{C}, T_{f}$ measured point is just under the chip.

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