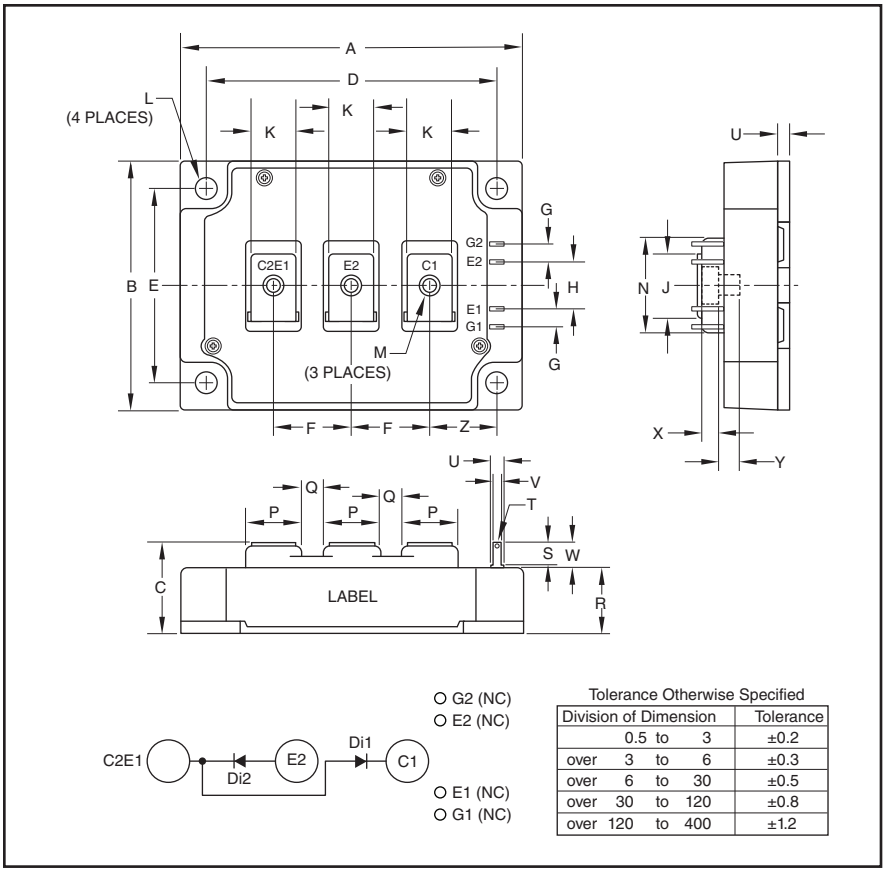
RM400DY-24S

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

Super Fast Recovery Dual Diode Module
400 Amperes/1200 Volts



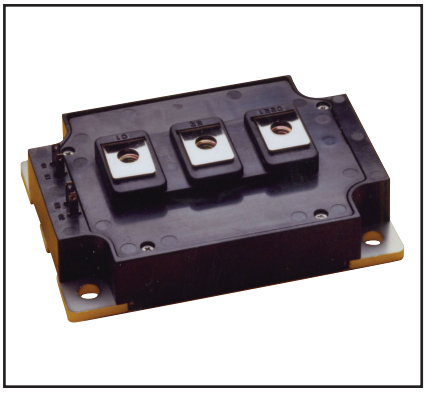
Tolerance Otherwise Specified

Division of Dimension	Tolerance
0.5 to 3	±0.2
over 3 to 6	±0.3
over 6 to 30	±0.5
over 30 to 120	±0.8
over 120 to 400	±1.2

Outline Drawing and Circuit Diagram

Dimensions	Inches	Millimeters
A	4.33	110.0
B	3.15	80.0
C	1.14+0.04/-0.02	29.0+1.0/-0.5
D	3.66±0.01	93.0±0.25
E	2.44±0.01	62.0±0.25
F	0.98	25.0
G	0.24	6.0
H	0.59	15.0
J	0.81	20.5
K	0.55	14.0
L	0.26 Dia.	Dia. 6.5
M	M6 Metric	M6

Dimensions	Inches	Millimeters
N	1.18	30.0
P	0.71	18.0
Q	0.28	7.0
R	0.83	21.2
S	0.30	7.5
T	0.02	0.5
U	0.16	4.0
V	0.11	2.8
W	0.33	8.5
X	0.21	5.3
Y	0.47	12.0
Z	0.85	21.5



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:
- ☐ Discrete Super-Fast Recovery Free-Wheel Diode
- ☐ Isolated Copper Baseplate for Easy Heat Sinking
- ☐ RoHS Compliant

Applications:
- ☐ AC Motor Control
- ☐ Motion/Servo Control
- ☐ UPS
- ☐ Welding Power Supplies
- ☐ Laser Power Supplies

Ordering Information:
Example: Select the complete module number you desire from the table - i.e. RM400DY-24S is a 1200V (V_{CES}), 400 Ampere Super Fast Recovery Dual Diode Power Module.

Type	Current Rating Amperes	V_{CES} Volts (x 50)
RM	400	24

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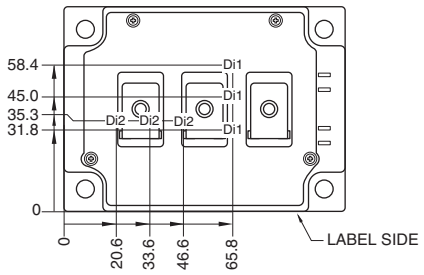
Absolute Maximum Ratings, T_j = 25°C unless otherwise specified

Characteristics	Symbol	Rating	Units
Repetitive Peak Reverse Voltage	V_{RRM}	1200	Volts
Non-repetitive Peak Reverse Voltage	V_{RSM}	1200	Volts
Reverse DC Blocking Voltage	$V_{R(DC)}$	960	Volts
DC Forward Current (DC, T_C = 68°C)*1,*2	I_{DC}	400	Amperes
Surge Non-repetitive Forward Current	I_{FSM}	2000	Amperes
(1 Cycle of Half Wave at 60Hz, Peak Value, T_j = 25°C Start, V_{RM} = 0V)			
Current Square Time for Fusing	I^2t	1.66 x 10^4	A^2s
(t_w = 8.3ms, T_j = 25°C Start, Value for One Cycle of Surge Current)			
Isolation Voltage (Terminals to Baseplate, RMS, f = 60Hz, AC 1 minute)	V_{ISO}	2500	Volts
Junction Temperature*1	T_j	-40 ~ +150	°C
Storage Temperature	T_{stg}	-40 ~ +125	°C

*1 Junction temperature (T_j) should not increase beyond $T_{j(max)}$ rating.
*2 Case temperature (T_C) and heatsink temperature (T_s) is measured on the surface (mounting side) of the baseplate and the heatsink side just under the chips. Refer to the figure to the right for chip location.
The heatsink thermal resistance should be measured just under the chips.



Di1 / Di2: FWDi
Each mark points to the center position of each chip.

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Electrical Characteristics, T_j = 25°C unless otherwise specified

Characteristics	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Reverse Current	I_{RRM}	$V_R = V_{RRM}$, T_j = 125°C	—	—	10	mA
Forward Voltage	V_F	I_F = 400A, T_j = 25°C*3	—	2.6	3.3	Volts
Reverse Recovery Time	t_{rr}	V_{RM} = 600V, I_F = 400A,	—	—	250	ns
Reverse Recovery Charge	Q_{rr}	di/dt = 3500 A/µs, Inductive Load	—	19	—	µC
Reverse Recovery Energy per Pulse	E_{rr}	T_j = 125°C, Inductive Load	—	34	—	mJ
Internal Lead Resistance	$R_{AA' + KK'}$	Main Terminals-Chip, Per Diode, T_C = 25°C	—	0.75	—	mΩ

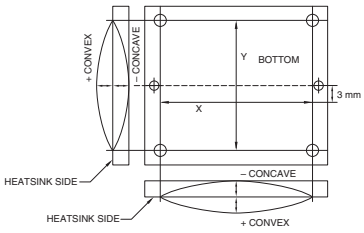
Thermal Resistance Characteristics, T_j = 25°C unless otherwise specified

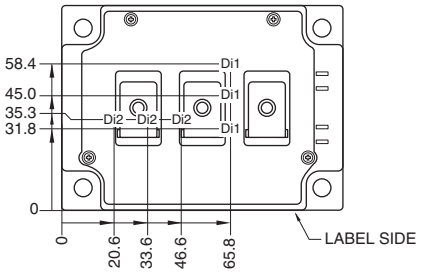
Thermal Resistance, Junction to Case*2	$R_{th(j-c)}D$	Per Diode	—	—	0.062	K/W
Contact Thermal Resistance, Case to Heatsink*2	$R_{th(c-s)}$	Thermal Grease Applied*4 (Per 1/2 Module)	—	0.018	—	K/W

Mechanical Characteristics

Mounting Torque	M_t	Main Terminals, M6 Screw	31	35	40	in-lb
	M_s	Mounting to Heatsink, M6 Screw	31	35	40	in-lb
Weight	m		—	580	—	Grams
Flatness of Baseplate	e_c	On Centerline X, Y*5	-100	—	+100	µm

*2 Case temperature (T_C) and heatsink temperature (T_s) is measured on the surface (mounting side) of the baseplate and the heatsink side just under the chips.
Refer to the figure to the right for chip location.
The heatsink thermal resistance should be measured just under the chips.
*3 Pulse width and repetition rate should be such as to cause negligible temperature rise.
*4 Typical value is measured by using thermally conductive grease of λ = 0.9 [W/(m • K)].
*5 Baseplate (mounting side) flatness measurement points (X, Y) are shown in the figure below.





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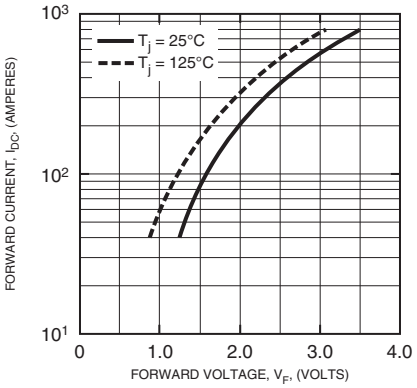
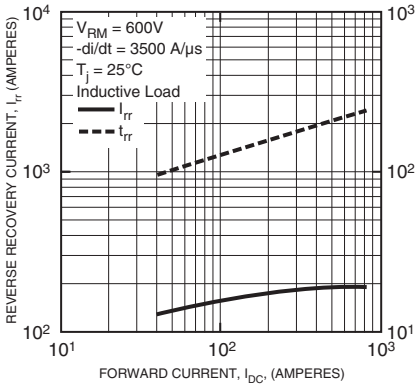
FREE-WHEEL DIODE FORWARD CHARACTERISTICS (CHIP - TYPICAL)



REVERSE RECOVERY CHARACTERISTICS (TYPICAL)



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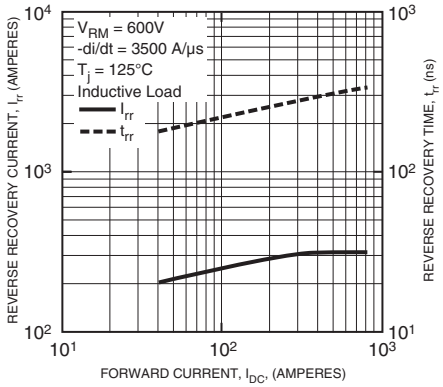

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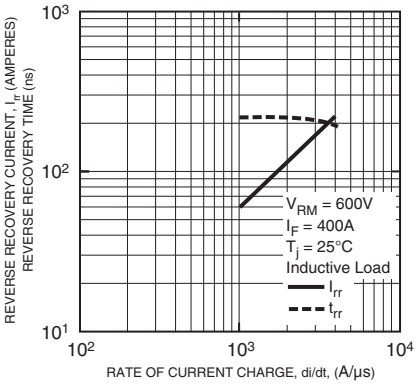

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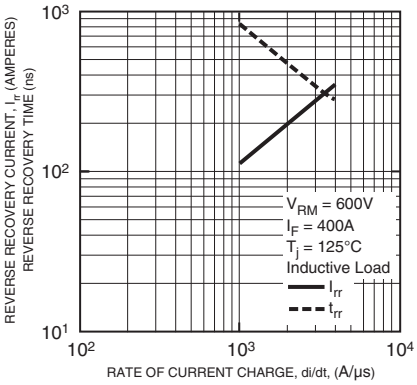
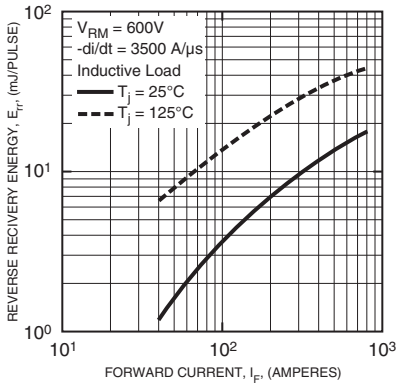


REVERSE RECOVERY ENERGY CHARACTERISTICS (TYPICAL)



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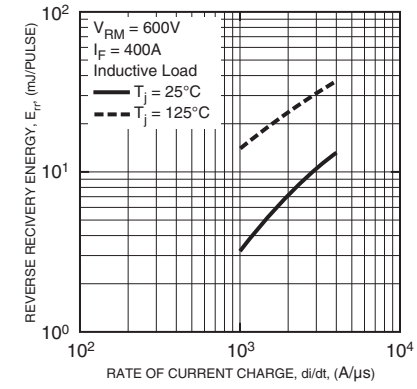

TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS (MAXIMUM)