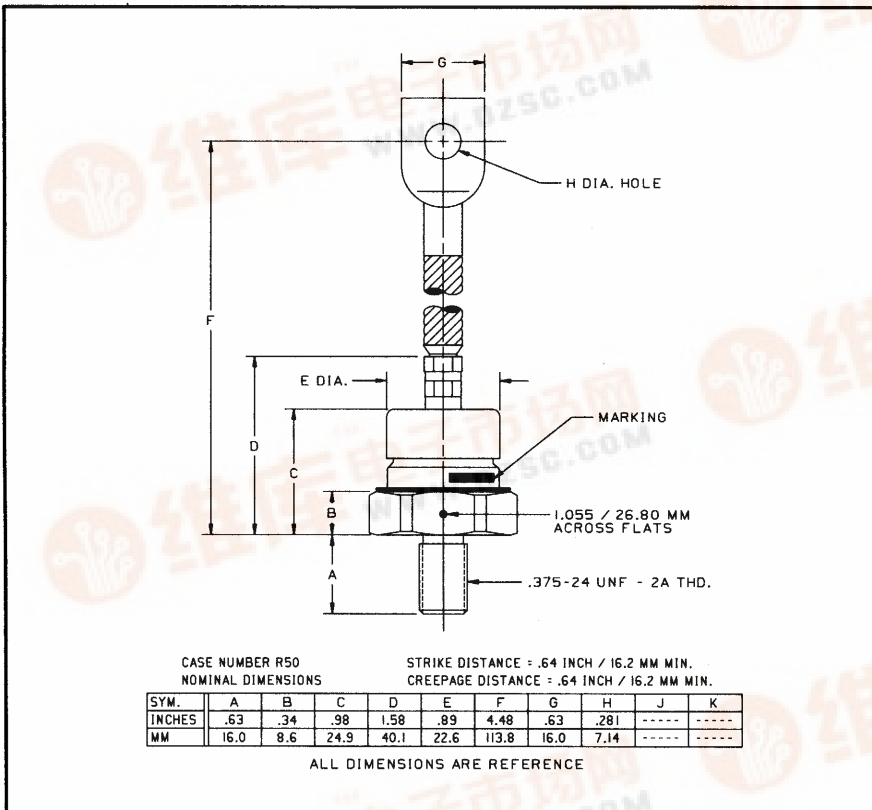


Powerex, Inc., 200 Hillis Street, Youngwood, Pennsylvania 15697-1800 (412) 925-7272
Powerex, Europe, S.A. 428 Avenue G. Durand, BP107, 72003 Le Mans, France (43) 41.14.14

Fast Recovery Rectifier
100 Amperes Average
1200 Volts



R502_10/R503_10 (Outline Drawing)



R502_10/R503_10
Fast Recovery Rectifier
100 Amperes Average, 1200 Volts

Features:

- ☐ Fast Recovery Times
- ☐ Soft Recovery Characteristics
- ☐ Standard and Reverse Polarities
- ☐ Flag Lead and Stud Top Terminals Available
- ☐ High Surge Current Ratings
- ☐ High Rated Blocking Voltages
- ☐ Special Electrical Selection for Parallel and Series Operation
- ☐ Glazed Ceramic Seal Gives High Voltage Creepage and Strike Paths

Applications:

- ☐ Inverters
- ☐ Choppers
- ☐ Transmitters
- ☐ Free Wheeling Diode

Ordering Information:

Select the complete part number you desire from the following table:

Type	Voltage		Current		Recovery Time		Leads	
	V _{RRM} (Volts)	Code	I _{F(av)} (A)	Code	t _{rr} (nsec)	Code	Case	Code
R502 (Standard Polarity)	200	02	100	10	300	RS	DO-8	WA
	400	04						
	600	06						
R503 (Reverse Polarity)	800	08						
	1000	10						
	1200	12						

Example: Type R502 rated at 100A average with V_{RRM} = 1200V,
Recovery Time = 300nsec and standard flexible lead, order as:

Type	Voltage		Current		Time	Leads	
R 5 0 2	1	2	1	0	RS	W	A



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R502_10/R503_10
Fast Recovery Rectifier
100 Amperes Average, 1200 Volts

Absolute Maximum Ratings

Characteristics	Symbol	R502_10/R503_10	Units
RMS Forward Current	$I_F(\text{rms})$	150	Amperes
Average Forward Current	$I_F(\text{av})$	100	Amperes
One-half Cycle Surge Current	I_{FSM}	2200	Amperes
3 Cycle Surge Current	I_{FSM}	1800	Amperes
10 Cycle Surge Current	I_{FSM}	1350	Amperes
I^2t (for Fusing), Times = 8.3 milliseconds	I^2t	20000	$A^2\text{sec}$
Storage Temperature	T_{stg}	-40 to +200	$^{\circ}\text{C}$
Operating Temperature	T_j	-40 to +150	$^{\circ}\text{C}$
Mounting Torque (Lubricated)		120	in-lb

Electrical and Thermal Characteristics

Characteristics	Symbol	Test Conditions	R502_10/R503_10	Units
Current - Conducting State Maximums				
Forward Voltage Drop	V_{FM}	$T_j = 25^{\circ}\text{C}$, $I_{FM} = 450\text{A}$	4.5	Volts
Typical Forward Voltage Drop	V_{FM}	$T_j = 25^{\circ}\text{C}$, $I_{FM} = 100\text{A}$	2.7	Volts

Voltage - Blocking State Maximums

Repetitive Peak Reverse Voltage (Rated Limit)	V_{RRM}		1200	Volts
Non-rep. Trans. Peak Rev. Voltage (Rated Limit)	V_{RSM}	$V \leq 5.0\text{msec}$	1400	Volts
Reverse Leakage Current, mA peak	I_{RRM}	T_j at max., $V_{RRM} = \text{Rated}$	45	mA

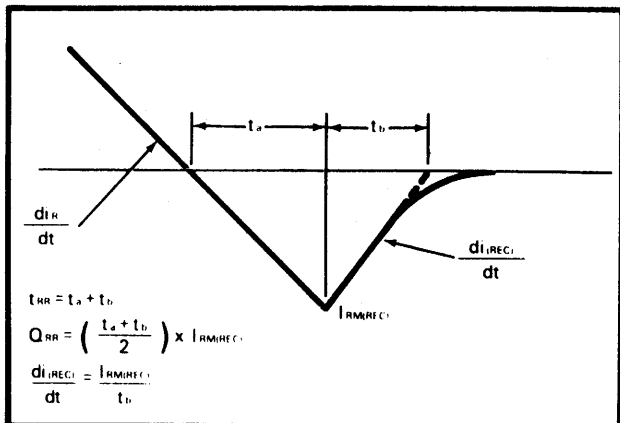
Switching

Maximum Reverse Recovery Time	t_{rr}	$I_{FM} = 314\text{A}$, $t_p = 40\mu\text{sec}$, $di_F/dt = 25\text{A}/\mu\text{sec}$, $T_C = 25^{\circ}\text{C}$	300	nsec
Maximum Reverse Recovery Time	t_{rr}	$I_{FM} = 314\text{A}$, $t_p = 40\mu\text{sec}$, $di_F/dt = 25\text{A}/\mu\text{sec}$, $T_C = 150^{\circ}\text{C}$	650	nsec

Thermal

Maximum Resistance, Junction to Case	$R_{\theta(j-c)}$	0.28	$^{\circ}\text{C}/\text{Watt}$
Maximum Resistance, Case to Sink (Lubricated)	$R_{\theta(c-s)}$	0.12	$^{\circ}\text{C}/\text{Watt}$

Reverse Recovery Wave Form



Transient Thermal Impedance Vs. Time

