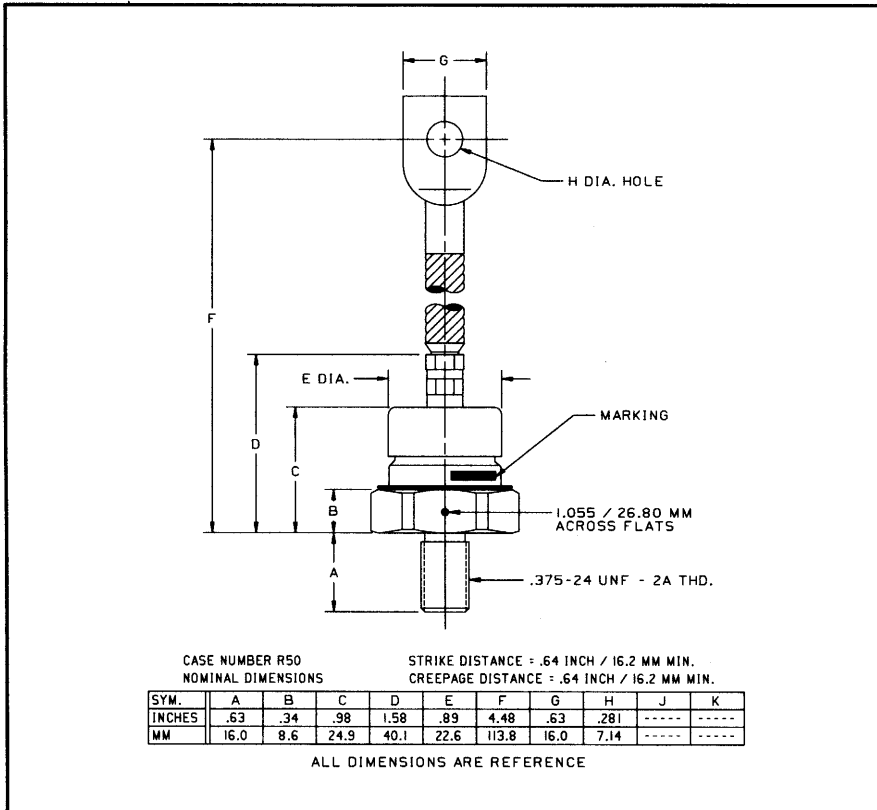


Powerex, Inc., 200 Hillis Street, Youngwood, Pennsylvania 15697-1800 (412) 925-7272  
Powerex, Europe, S.A. 428 Avenue G. Durand, BP107, 72003 Le Mans, France (43) 41.14.14

**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

**Ordering Information:**

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

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

**Example:** Type R502 rated at 100A average with V<sub>RRM</sub> = 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

**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

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	$I_{F(rms)}$	150	Amperes
Average Forward Current	$I_{F(av)}$	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	$A^2sec$
Storage Temperature	$T_{stg}$	-40 to +200	$^{\circ}C$
Operating Temperature	$T_j$	-40 to +150	$^{\circ}C$
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	$V_{FM}$	$T_j = 25^{\circ}C, I_{FM} = 450A$	4.5	Volts
Typical Forward Voltage Drop	$V_{FM}$	$T_j = 25^{\circ}C, I_{FM} = 100A$	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)	$V_{RSM}$	$V \leq 5.0msec$	1400	Volts
Reverse Leakage Current, mA peak	$I_{RRM}$	$T_j$ at max., $V_{RRM} = \text{Rated}$	45	mA

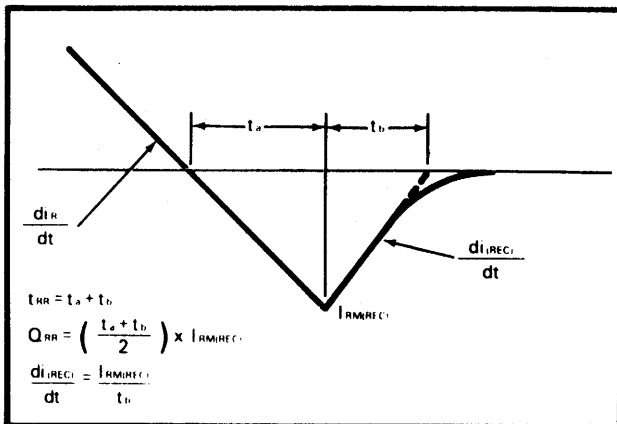
### Switching

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

### Thermal

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

Reverse Recovery Wave Form



Transient Thermal Impedance Vs. Time

