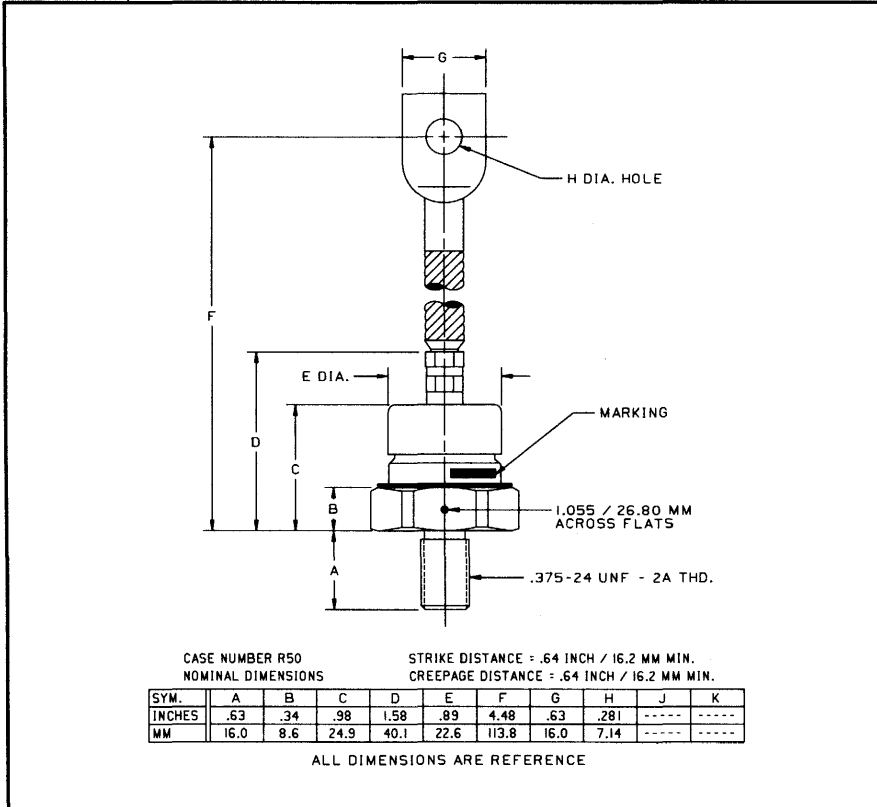


Powerex, Inc., 200 Hillis Street, Youngwood, Pennsylvania 15697-1800 (412) 925-7272
Powerex, Europe, S.A. 428 Avenue G. Durand, BP107, 72003 Le Mans, France (43) 41.14.14

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 _{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			See Below			
	600	06			For			
R503 (Reverse Polarity)	800	08			Alternates			
	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	

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

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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	$I_{F(rms)}$	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

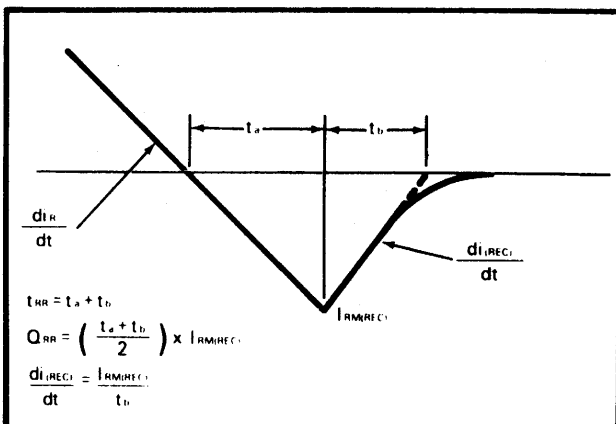
Switching

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

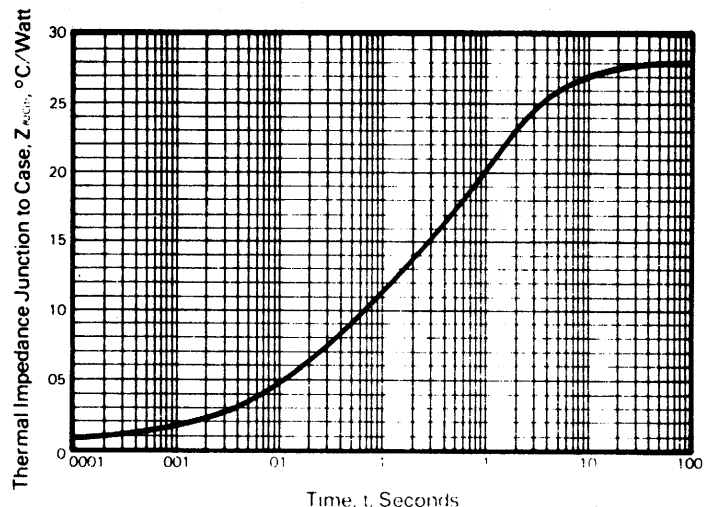
Thermal

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	$^{\circ}C/Watt$

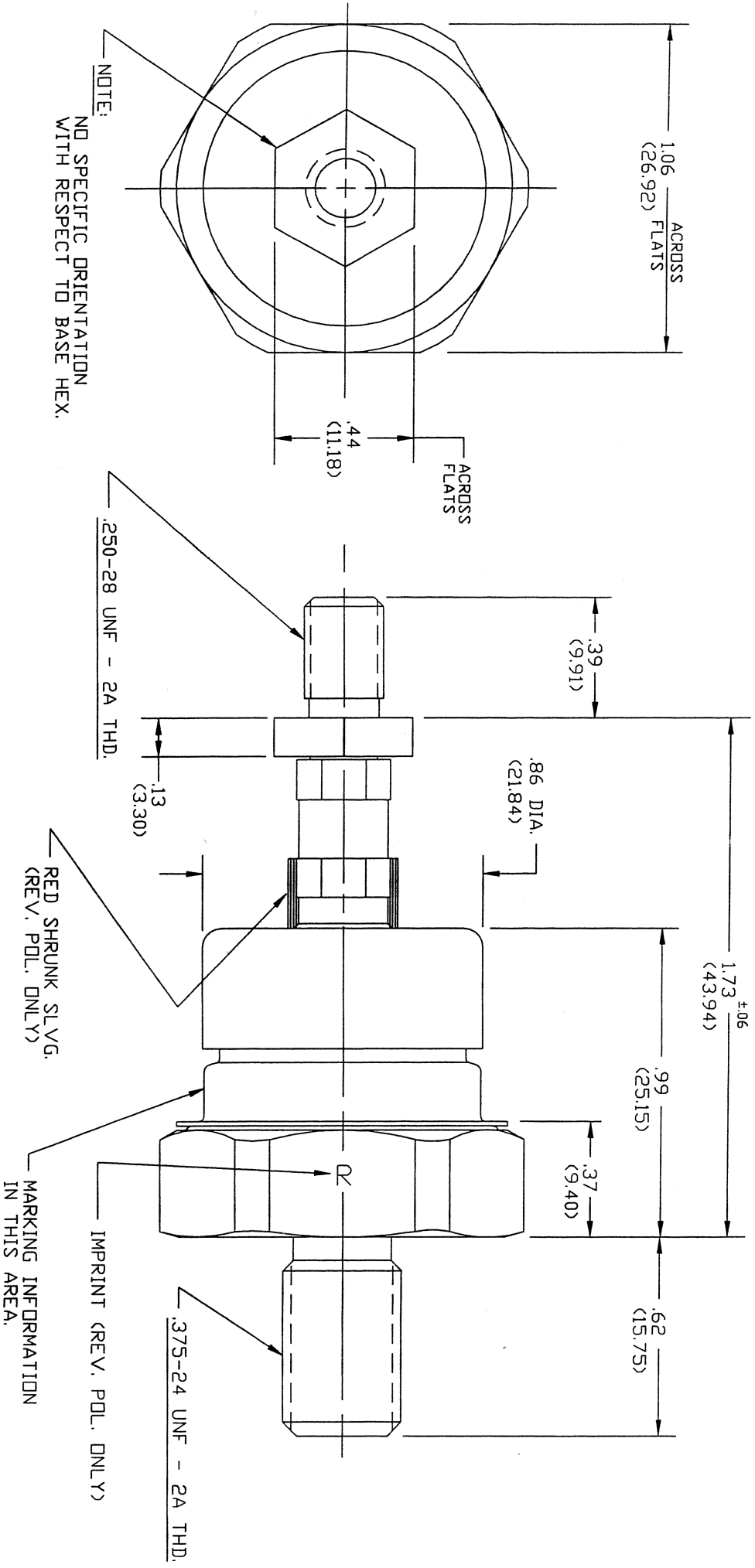
Reverse Recovery Wave Form



Transient Thermal Impedance Vs. Time

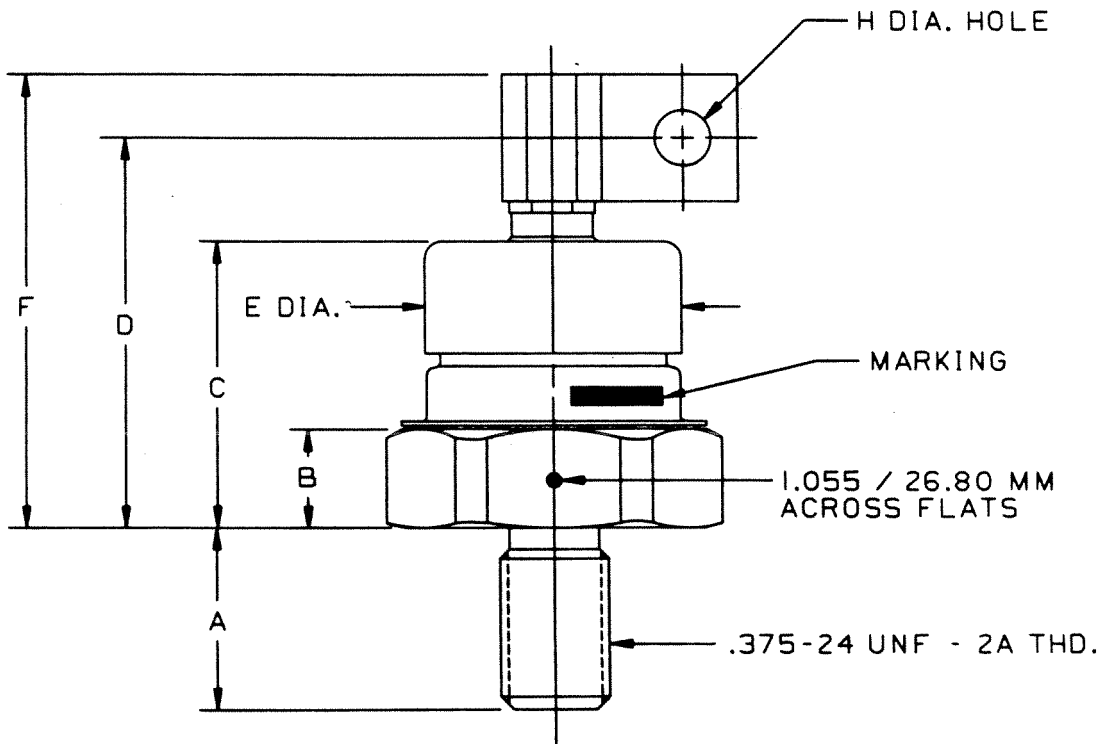
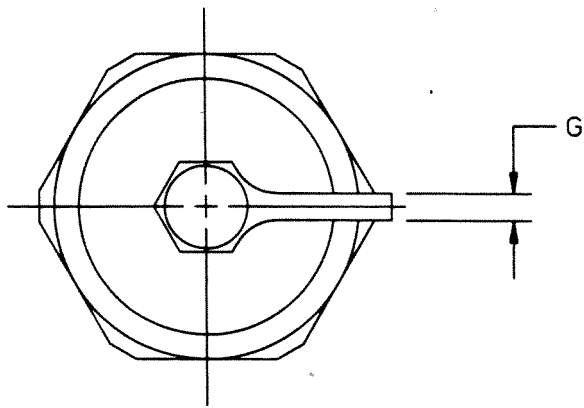


NOTE - DIM'S ON THIS DWG. ARE FOR REFERENCE ONLY.



(ALL DIM'S SHOWN IN PARENTHESIS ARE METRIC IN MILLIMETERS.)

ZT



CASE NUMBER R50-F
NOMINAL DIMENSIONS

STRIKE DISTANCE = .64 INCH / 16.2 MM MIN.
CREEPAGE DISTANCE = .64 INCH / 16.2 MM MIN.

SYM.	A	B	C	D	E	F	G	H	J	K
INCHES	.63	.34	.98	1.36	.89	1.58	.093	.193	-----	-----
MM	16.0	8.6	24.9	34.5	22.6	40.1	2.36	4.90	-----	-----

ALL DIMENSIONS ARE REFERENCE



Powerex, Inc., 200 Hillis Street, Youngwood, Pennsylvania 15697-1800 (724) 925-7272

Reverse recovery times for
'R' type devices.

TIME, (μ sec)	CODE
Std. Rec.	XX
5.0	AS
4.0	BS
3.0	CS
2.5	DS
2.0	ES
1.5	FS
1.25	GS
1.0	HS
0.9	JS
0.8	KS
0.7	LS
0.6	MS
0.5	PS
0.4	QS
0.3	RS