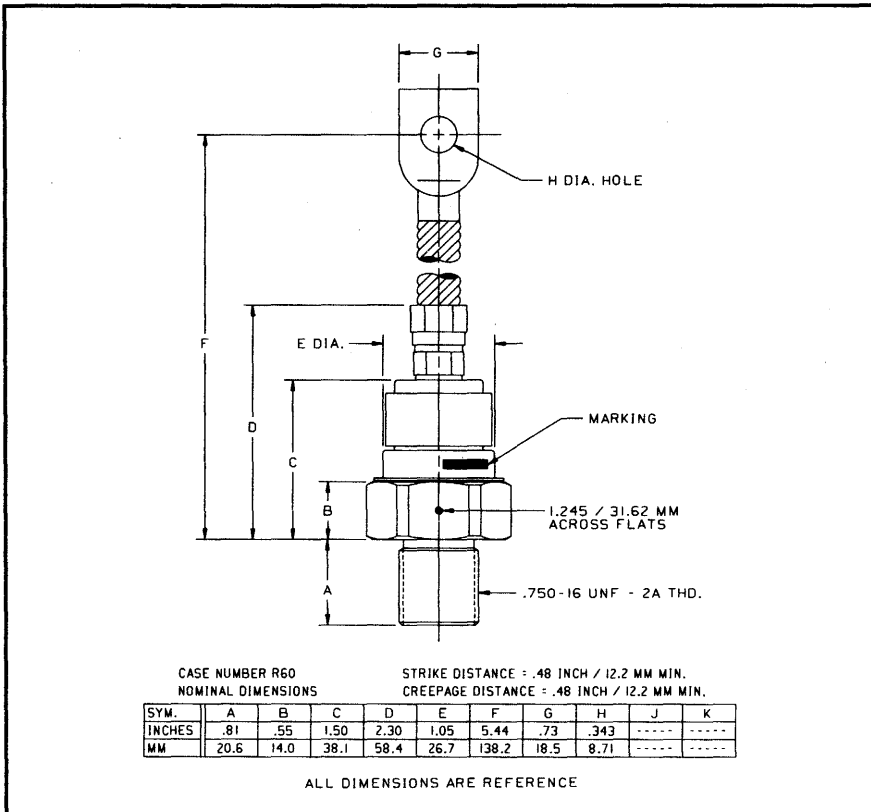
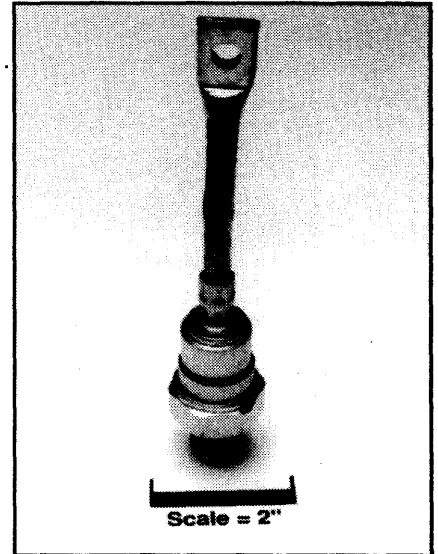


Powerex, Inc., 200 Hillis Street, Youngwood, Pennsylvania 15697-1800 (412) 925-7272  
Powerex, Europe, S.A. 428 Avenue G. Durand, BP107, 72003 Le Mans, France (43) 41.14.14

**Fast Recovery Rectifier**  
220 Amperes Average  
1600 Volts



R602\_\_22/R603\_\_22 (Outline Drawing)



R602\_\_22/R603\_\_22  
Fast Recovery Rectifier  
220 Amperes Average, 1600 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
- Special Selection of Recovery Characteristics Available

**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
R602 (Standard Polarity)	400	04	220	22	500	PS	DO-9	YA
	600	06			See Below			
	800	08			For			
	1000	10			Alternatives			
R603 (Reverse Polarity)	1200	12						
	1400	14						
	1600	16						

**Example:** Type R602 rated at 220A average with V<sub>RRM</sub> = 1600V, Recovery Time = 500nsec, order as:

Type	Voltage		Current		Time	Leads	
R 6 0 2	1	6	2	2	PS	Y	A

**Applications:**

- Inverters
- Choppers
- Transmitters
- Free Wheeling Diode

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**R602\_22/R603\_22**  
**Fast Recovery Rectifier**  
 220 Amperes Average, 1600 Volts

## Absolute Maximum Ratings

Characteristics	Symbol	R602_22/R603_22	Units
RMS Forward Current	$I_{F(rms)}$	345	Amperes
Average Forward Current	$I_{F(av)}$	220	Amperes
One-half Cycle Surge Current	$I_{FSM}$	3500	Amperes
3 Cycle Surge Current	$I_{FSM}$	2700	Amperes
10 Cycle Surge Current	$I_{FSM}$	2100	Amperes
$I^2t$ (for Fusing), Times $\geq 8.3$ milliseconds	$I^2t$	51000	$A^2sec$
Storage Temperature	$T_{stg}$	-40 to +190	$^{\circ}C$
Operating Temperature	$T_j$	-40 to +150	$^{\circ}C$
Mounting Torque (Lubricated)		360	in-lb

## Electrical and Thermal Characteristics

Characteristics	Symbol	Test Conditions	R602_22/R603_22	Units
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### Current - Conducting State Maximums

Forward Voltage Drop	$V_{FM}$	$T_j = 25^{\circ}C, I_{FM} = 800A$	2.75	Volts
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### Voltage - Blocking State Maximums

Repetitive Peak Reverse Voltage (Rated Limit)	$V_{RRM}$		1600	Volts
Non-rep. Trans. Peak Rev. Voltage (Rated Limit)	$V_{RSM}$	$t \leq 5.0msec$	1800	Volts
Reverse Leakage Current, mA peak	$I_{RRM}$	$T_j$ at max., $V_{RRM} = \text{Rated}$	50	mA

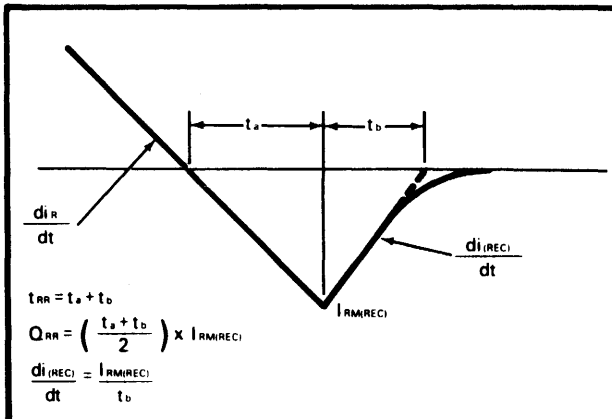
### Switching

Maximum Reverse Recovery Time	$t_{rr}$	$I_{FM} = 785A, t_p = 100\mu sec,$ $di_R/dt = 25A/\mu sec, T_C = 25^{\circ}C$	500	nsec
Maximum Reverse Recovery Time	$t_{rr}$	$I_{FM} = 785A, t_p = 100\mu sec,$ $di_R/dt = 25A/\mu sec, T_C = 150^{\circ}C$	1.1	$\mu sec$

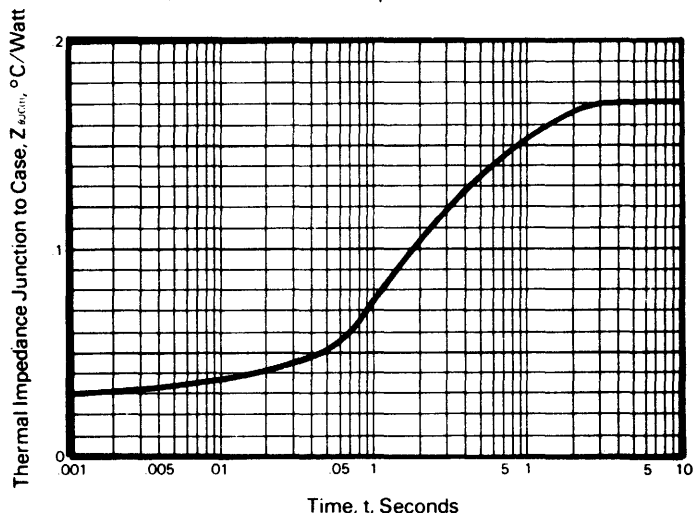
### Thermal

Maximum Resistance, Junction to Case	$R_{\theta(j-c)}$	0.17	$^{\circ}C/Watt$
Maximum Resistance, Case to Sink (Lubricated)	$R_{\theta(c-s)}$	0.10	$^{\circ}C/Watt$

Reverse Recovery Wave Form



Transient Thermal Impedance Vs. Time





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

Reverse recovery times for  
'R' type devices.

TIME, (µsec)	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