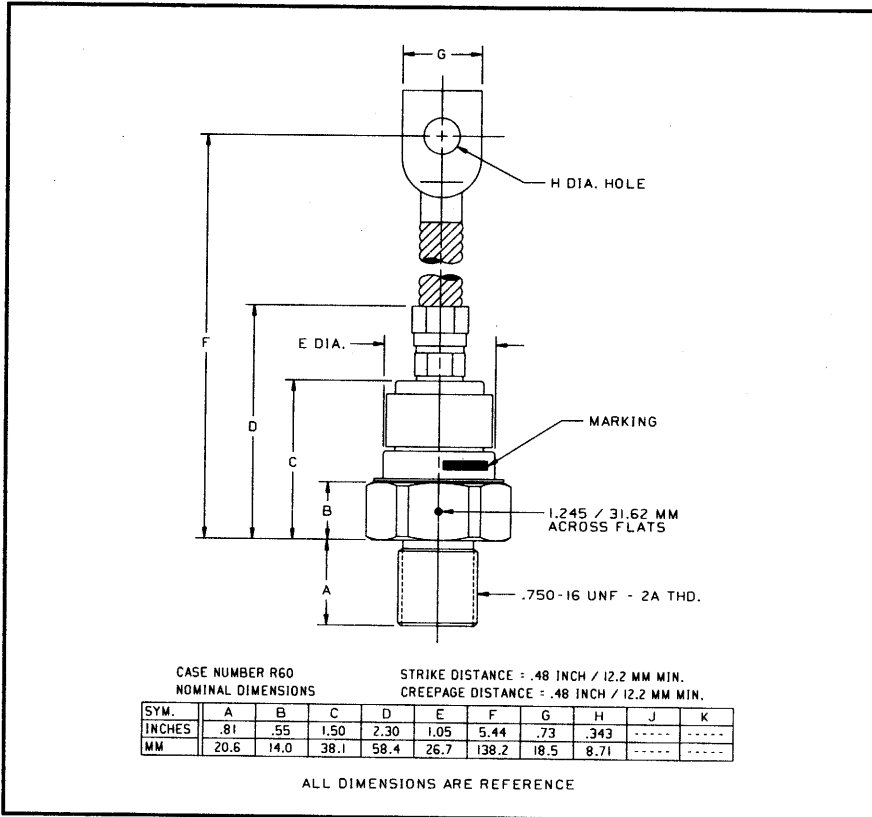


Powerex, Inc., 200 Hillis Street, Youngwood, Pennsylvania 15697-1800 (412) 925-7272  
 Powerex, Europe, S.A. 428 Avenue G. Durand, BP107, 72003 Le Mans, France (43) 41.14.14

**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

**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						
	800	08						
	1000	10						
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

**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

**Applications:**

- Inverters
- Choppers
- Transmitters
- Free Wheeling Diode

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

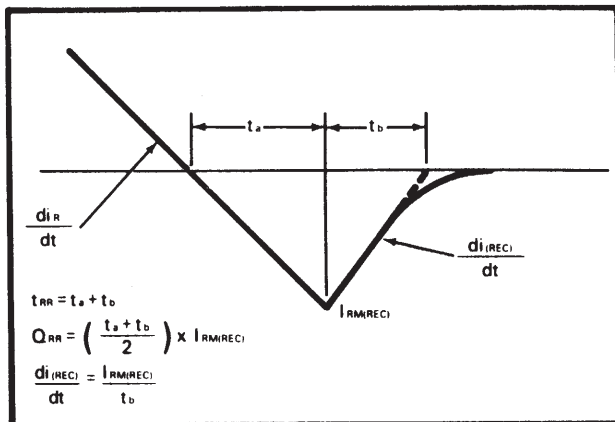
## Absolute Maximum Ratings

Characteristics	Symbol	R602_22/R603_22	Units
RMS Forward Current	$I_F(\text{rms})$	345	Amperes
Average Forward Current	$I_F(\text{av})$	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	$A^2\text{sec}$
Storage Temperature	$T_{\text{stg}}$	-40 to +190	$^{\circ}\text{C}$
Operating Temperature	$T_j$	-40 to +150	$^{\circ}\text{C}$
Mounting Torque		360	in-lb

## Electrical and Thermal Characteristics

Characteristics	Symbol	Test Conditions	R602_22/R603_22	Units
<b>Current - Conducting State Maximums</b>				
Forward Voltage Drop	$V_{FM}$	$T_j = 25^{\circ}\text{C}$ , $I_{FM} = 800\text{A}$	2.75	Volts
<b>Voltage - Blocking State Maximums</b>				
Repetitive Peak Reverse Voltage (Rated Limit)	$V_{RRM}$		1600	Volts
Non-rep. Trans. Peak Rev. Voltage (Rated Limit)	$V_{RSM}$	$t \leq 5.0\text{msec}$	1800	Volts
Reverse Leakage Current, mA peak	$I_{RRM}$	$T_j$ at max., $V_{RRM} = \text{Rated}$	50	mA
<b>Switching</b>				
Maximum Reverse Recovery Time	$t_{rr}$	$I_{FM} = 785\text{A}$ , $t_p = 100\mu\text{sec}$ , $di_p/dt = 25\text{A}/\mu\text{sec}$ , $T_C = 25^{\circ}\text{C}$	500	nsec
Maximum Reverse Recovery Time	$t_{rr}$	$I_{FM} = 785\text{A}$ , $t_p = 100\mu\text{sec}$ , $di_p/dt = 25\text{A}/\mu\text{sec}$ , $T_C = 150^{\circ}\text{C}$	1.1	$\mu\text{sec}$
<b>Thermal</b>				
Maximum Resistance, Junction to Case	$R_{\theta(j-c)}$		0.17	$^{\circ}\text{C}/\text{Watt}$
Maximum Resistance, Case to Sink (Lubricated)	$R_{\theta(c-s)}$		0.10	$^{\circ}\text{C}/\text{Watt}$

Reverse Recovery Wave Form



Transient Thermal Impedance Vs. Time

