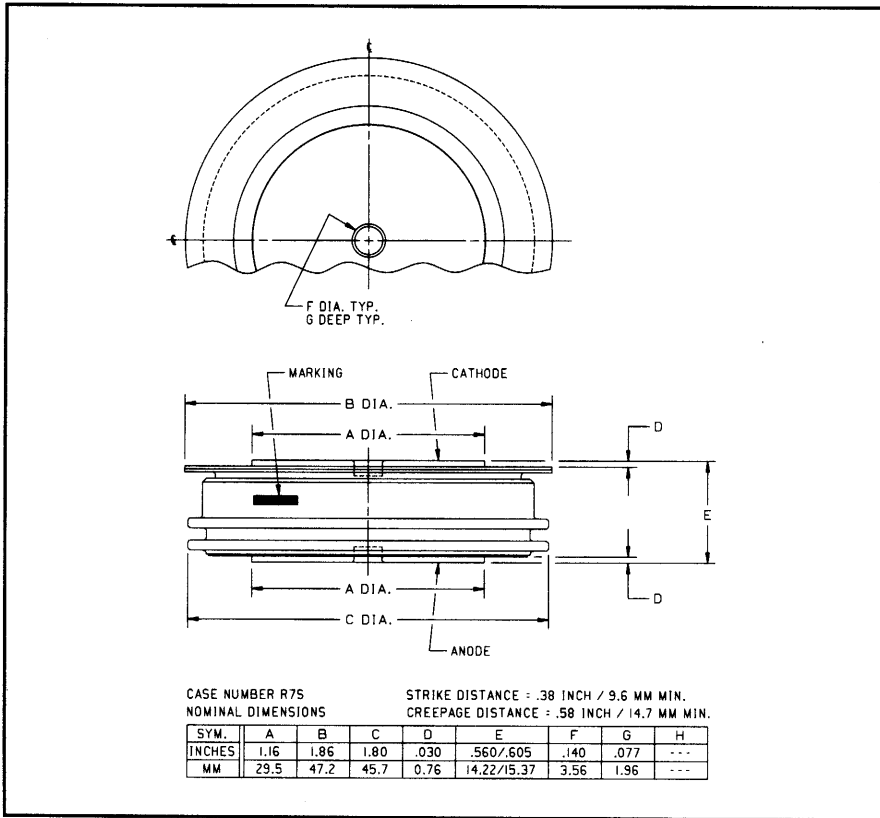


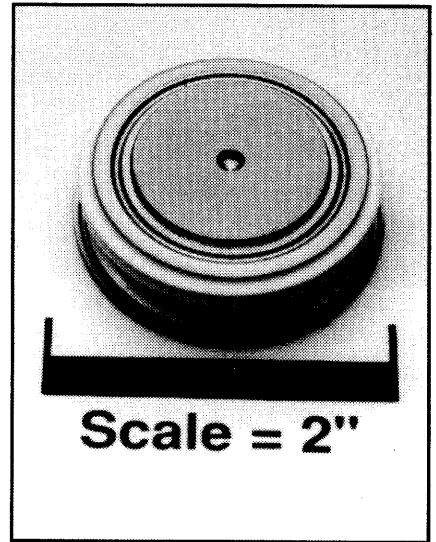
Powerex, Inc., 200 Hillis Street, Youngwood, Pennsylvania 15697-1800 (412) 925-7272
 Powerex, Europe, S.A. 428 Avenue G. Durand, BP107, 72003 Le Mans, France (43) 41.14.14

General Purpose Rectifier

1200 Amperes Average
2400 Volts



R7S0 1200A (Outline Drawing)



R7S0 1200A General Purpose Rectifier
1200 Amperes Average, 2400 Volts

Description:

Powerex General Purpose Rectifiers are designed for high blocking voltage capability with low forward voltage to minimize conduction losses. These hermetic Pow-R-Disc devices can be mounted using commercially available clamps and heatsinks.

Features:

- Low Forward Voltage
- Low Thermal Impedance
- Low Profile Package
- Hermetic Packaging
- Excellent Surge and I^2t Ratings

Applications:

- Power Supplies
- Motor Control
- Free Wheeling Diode
- Battery Chargers
- Resistance Welding

Ordering Information:

Select the complete 8 digit part number you desire from the table below.

Type	Voltage	Current	Typical Recovery Time
	V_{RRM} (Volts)	$I_{T(av)}$ (A)	t_{rr} (μ sec)
R7S0	18 through 24	12	XX
	1800V through 2400V	1200A	10 μ sec



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R7S0 1200A
General Purpose Rectifier
1200 Amperes Average, 2400 Volts

Absolute Maximum Ratings

Characteristics	Symbol	R7S0 1200A	Units
Non-repetitive Transient Peak Reverse Voltage	V_{RSM}	$V_{RRM} + 200V$	Volts
RMS Forward Current, $T_C = 86^\circ C$	$I_{F(rms)}$	1875	Amperes
Average Current 180° Sine Wave, $T_C = 86^\circ C$	$I_{F(av)}$	1200	Amperes
RMS Forward Current, $T_C = 55^\circ C$	$I_{F(rms)}$	2355	Amperes
Average Current 180° Sine Wave, $T_C = 55^\circ C$	$I_{F(av)}$	1500	Amperes
Peak One Cycle Surge Forward Current (Non-repetitive) 60Hz	I_{fsm}	9000	Amperes
Peak One Cycle Surge Forward Current (Non-repetitive) 50Hz	I_{fsm}	8200	Amperes
3 Cycle Surge Current	I_{fsm}	6485	Amperes
10 Cycle Surge Current	I_{fsm}	5600	Amperes
I^2t (for Fusing) for One Cycle, 60Hz	I^2t	337,500	A^2sec
Maximum I^2t of Package ($t = 8.3$ msec)	I^2t	80×10^6	A^2sec
Operating Temperature	T_j	-65 to +175°C	°C
Storage Temperature	T_{stg}	-65 to +200°C	°C
Approximate Weight		4	oz.
		113	g
Mounting Force		2000 to 2400	lb.
		900 to 1090	kg.



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Electrical Characteristics, $T_j = 25^\circ\text{C}$ Unless Otherwise Specified

Characteristics	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Peak Reverse Leakage Current	I_{RRM}	$T_j = 125^\circ\text{C}, V_R = V_{RRM}$			50	mA
Forward Voltage Drop	V_{FM}	$I_{FM} = 1500\text{A}, \text{Duty Cycle} < 0.1\%$			1.60	Volts
Threshold Voltage, Low-level	$V_{(TO)1}$	$T_j = 175^\circ\text{C}, I = 15\%, I_{T(av)}$ to $\pi I_{T(av)}$			0.38717	Volts
Slope Resistance, Low-level	r_{T1}				0.4301	m Ω
Threshold Voltage, High-level	$V_{(TO)2}$	$T_j = 175^\circ\text{C}, I = \pi I_{T(av)}$ to I_{TSM}			0.79286	Volts
Slope Resistance, High-level	r_{T2}				0.41857	m Ω
V_{TM} Coefficients, Low-level		$T_j = 175^\circ\text{C}, I = 15\% I_{T(av)}$ to $\pi I_{T(av)}$				$A_1 = 2.3948$ $B_1 = -0.44937$ $C_1 = -6.159\text{E-}05$ $D_1 = 0.06475$
V_{TM} Coefficients, High-level		$T_j = 175^\circ\text{C}, I = \pi I_{T(av)}$ to I_{TSM}				$A_2 = 7.6844$ $B_2 = -0.85143$ $C_2 = 5.913\text{E-}04$ $D_2 = -0.00755$
Typical Reverse Recovery Time	t_{rr}	$T_C = 25^\circ\text{C}, I_{FM} = 1500\text{A},$ $di_R/dt = 25\text{A}/\mu\text{sec}, t_p = 190\mu\text{sec}$		10		μsec

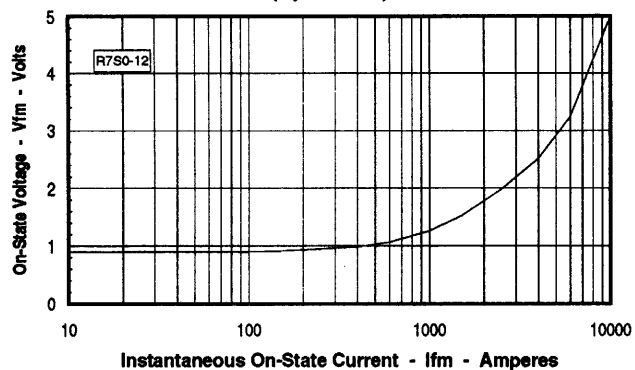
Thermal Characteristics

Maximum Thermal Resistance, Double Sided Cooling						
Junction-to-Case	$R_{\theta(j-c)}$				0.035	$^\circ\text{C}/\text{W}$
Case-to-Sink	$R_{\theta(c-s)}$				0.02	$^\circ\text{C}/\text{W}$

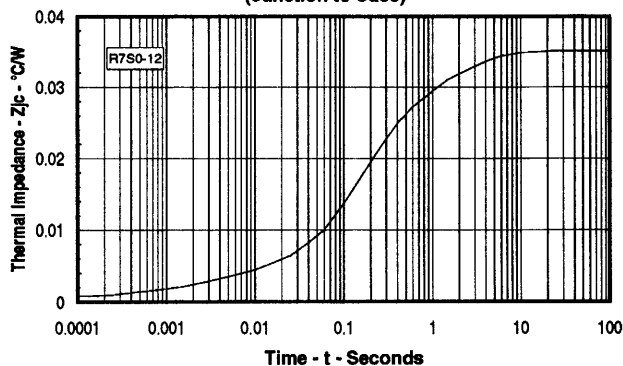
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R7S0 1200A
General Purpose Rectifier
 1200 Amperes Average, 2400 Volts

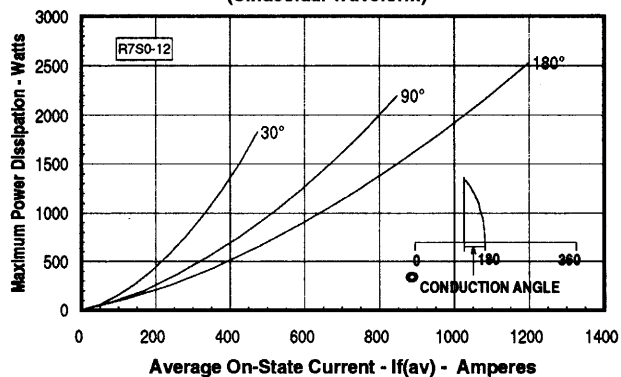
Maximum On-State Forward Voltage Drop
 ($T_j = 175^\circ\text{C}$)



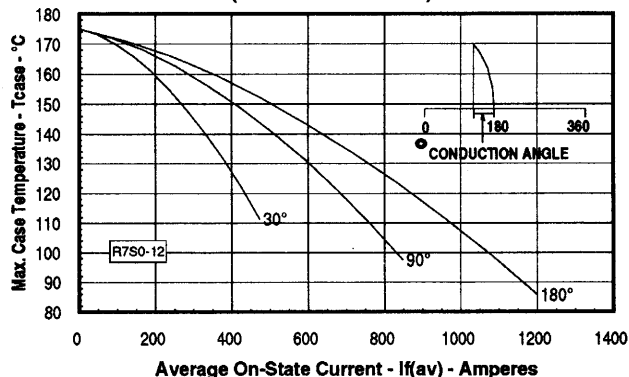
Maximum Transient Thermal Impedance
 (Junction to Case)



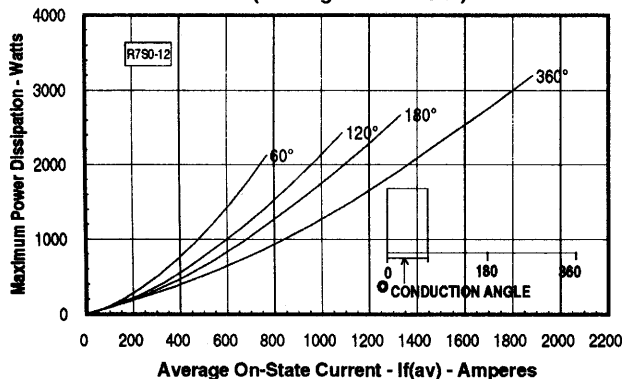
Maximum On-State Power Dissipation
 (Sinusoidal Waveform)



Maximum Allowable Case Temperature
 (Sinusoidal Waveform)



Maximum On-State Power Dissipation
 (Rectangular Waveform)



Maximum Allowable Case Temperature
 (Rectangular Waveform)

