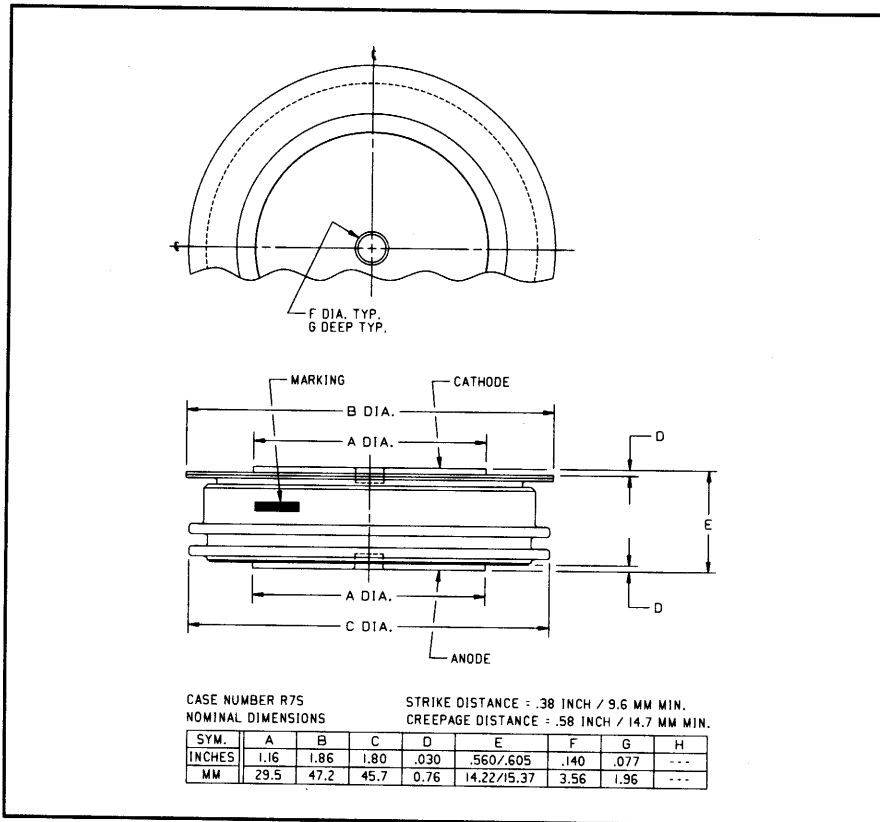
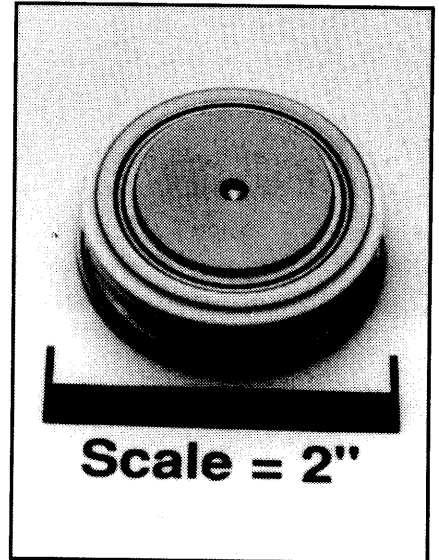


Powerex, Inc., 200 Hillis Street, Youngwood, Pennsylvania 15697-1800 (412) 925-7272
Powerex, Europe, S.A. 428 Avenue G. Durand, BP107, 72003 Le Mans, France (43) 41.14.14

General Purpose Rectifier 800 Amperes Average 2400 Volts



R7S0 800A (Outline Drawing)



R7S0 800A General Purpose Rectifier
800 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} (μsec)
R7S0	18 through 24	08	XX
	1800V through 2400V	800A	13 μsec



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R7S0 800A
General Purpose Rectifier
800 Amperes Average, 2400 Volts

Absolute Maximum Ratings

Characteristics	Symbol	R7S0 800A	Units
Non-repetitive Transient Peak Reverse Voltage	V_{RSM}	$V_{RRM} + 200V$	Volts
RMS Forward Current, $T_C = 121^\circ C$	$I_F(rms)$	1250	Amperes
Average Current 180° Sine Wave, $T_C = 121^\circ C$	$I_F(av)$	800	Amperes
RMS Forward Current, $T_C = 55^\circ C$	$I_F(rms)$	1870	Amperes
Average Current 180° Sine Wave, $T_C = 55^\circ C$	$I_F(av)$	1190	Amperes
Peak One Cycle Surge Forward Current (Non-repetitive) 60Hz	I_{fsm}	8500	Amperes
Peak One Cycle Surge Forward Current (Non-repetitive) 50Hz	I_{fsm}	7750	Amperes
3 Cycle Surge Current	I_{fsm}	6125	Amperes
10 Cycle Surge Current	I_{fsm}	5290	Amperes
I^2t (for Fusing) for One Cycle, 60Hz	I^2t	301,000	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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R7S0 800A

General Purpose Rectifier

800 Amperes Average, 2400 Volts

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}	$I_{FM} = 1500\text{A}$, Duty Cycle $< 0.1\%$			1.80	Volts
Threshold Voltage, Low-level	$V_{(TO)1}$	$T_j = 175^\circ\text{C}$, $I = 15\%$, $I_{T(av)}$ to $\pi I_{T(av)}$			0.91169	Volts
Slope Resistance, Low-level	r_{T1}				0.51788	$\text{m}\Omega$
Threshold Voltage, High-level	$V_{(TO)2}$	$T_j = 175^\circ\text{C}$, $I = \pi I_{T(av)}$ to I_{TSM}			1.28022	Volts
Slope Resistance, High-level	r_{T2}				0.38047	$\text{m}\Omega$
V_{TM} Coefficients, Low-level		$T_j = 175^\circ\text{C}$, $I = 15\%$ $I_{T(av)}$ to $\pi I_{T(av)}$			$A_1 = 1.43581$ $B_1 = -0.18135$ $C_1 = 1.734\text{E-}04$ $D_1 = 0.03468$	
V_{TM} Coefficients, High-level		$T_j = 175^\circ\text{C}$, $I = \pi I_{T(av)}$ to I_{TSM}			$A_2 = 1.07471$ $B_2 = -0.10079$ $C_2 = 2.2248\text{E-}04$ $D_2 = 0.02685$	
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

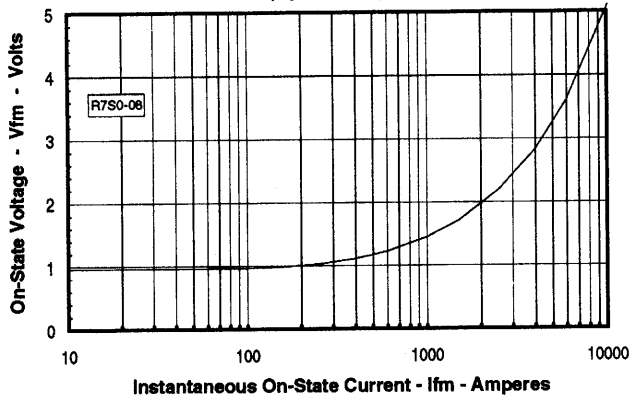
Maximum Thermal Resistance, Double Sided Cooling

Junction-to-Case	$R_{\theta(j-c)}$	0.035	$^\circ\text{C}/\text{W}$
Case-to-Sink	$R_{\theta(c-s)}$	0.02	$^\circ\text{C}/\text{W}$

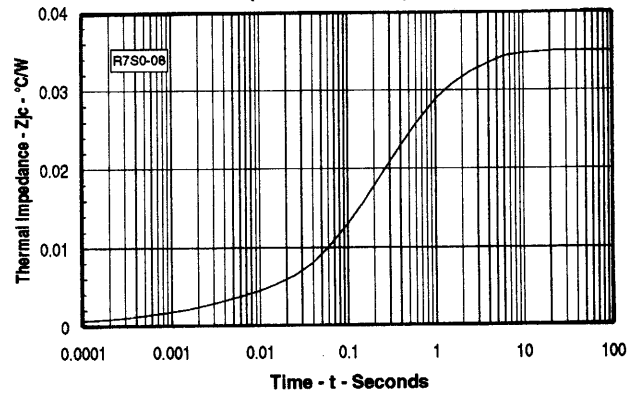
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R7S0 800A
General Purpose Rectifier
800 Amperes Average, 2400 Volts

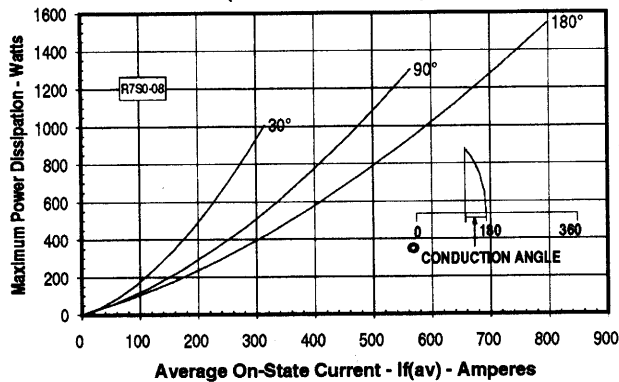
Maximum On-State Forward Voltage Drop
($T_J = 175^\circ\text{C}$)



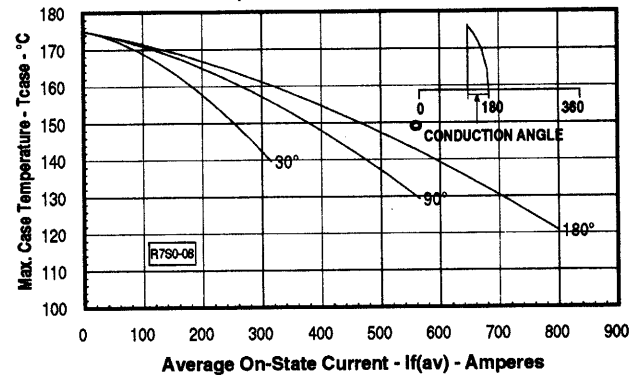
Maximum Transient Thermal Impedance
(Junction to Case)



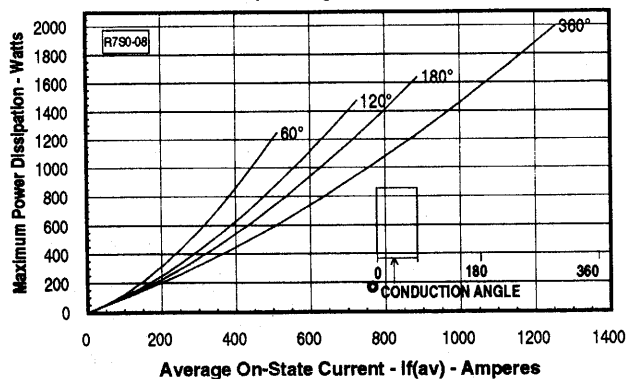
Maximum On-State Power Dissipation
(Sinusoidal Waveform)



Maximum Allowable Case Temperature
(Sinusoidal Waveform)



Maximum On-State Power Dissipation
(Rectangular Waveform)



Maximum Allowable Case Temperature
(Rectangular Waveform)

