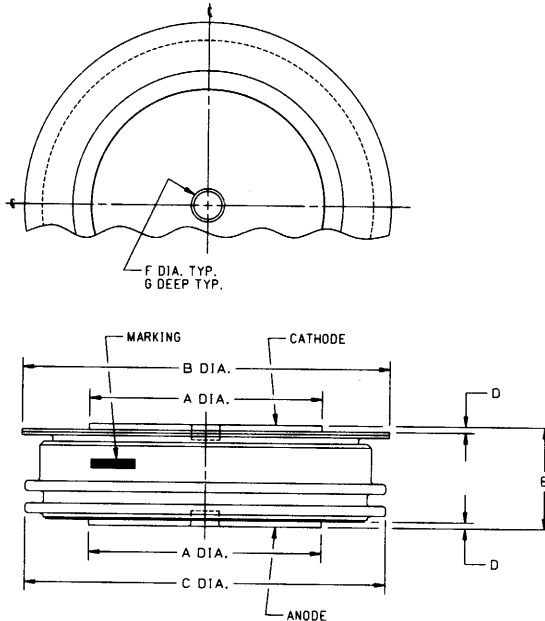


Powerex, Inc., 200 Hillis Street, Youngwood, Pennsylvania 15697-1800 (412) 925-7272
Powerex, Europe, S.A. 428 Avenue G. Durand, BP107, 72003 Le Mans, France (43) 41.14.14

General Purpose Rectifier 800 Amperes Average 2400 Volts



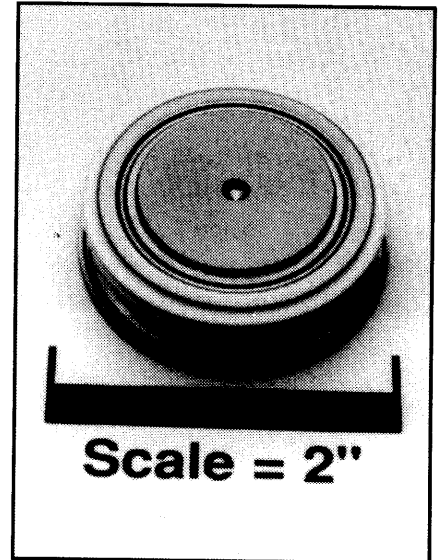
CASE NUMBER R7S				STRIKE DISTANCE : .38 INCH / 9.6 MM MIN.				
NOMINAL DIMENSIONS				CREEPAGE DISTANCE : .58 INCH / 14.7 MM MIN				
SYM.	A	B	C	D	E	F	G	H
INCHES	1.16	1.86	1.80	.030	.560/.605	.140	.077	---
MM	29.5	47.2	45.7	0.76	14.22/15.37	3.56	1.96	---

R7S0 800A (Outline Drawing)

Ordering Information:

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

Type	Voltage V_{RRM} (Volts)	Current $I_T(av)$ (A)	Typical Recovery Time t_{rr} (μsec)
R7S0	18 through 24	08	XX
	1800V through 2400V	800A	13 μsec



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



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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

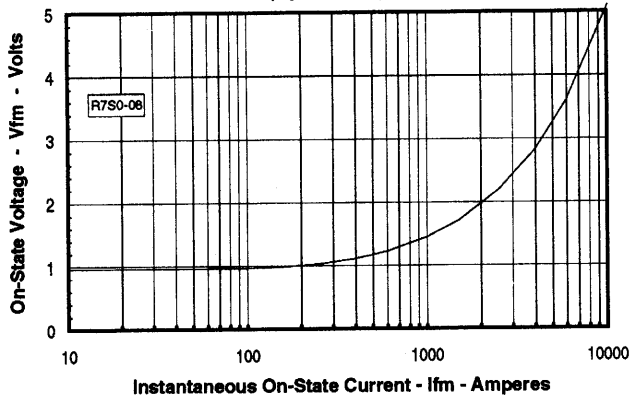
Maximum Thermal Resistance, Double Sided Cooling

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

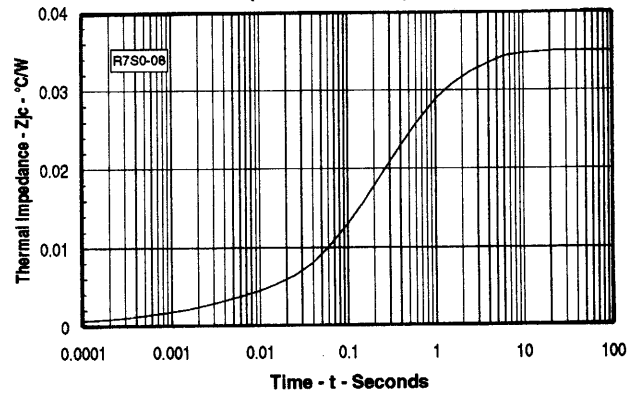
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R7S0 800A
General Purpose Rectifier
800 Amperes Average, 2400 Volts

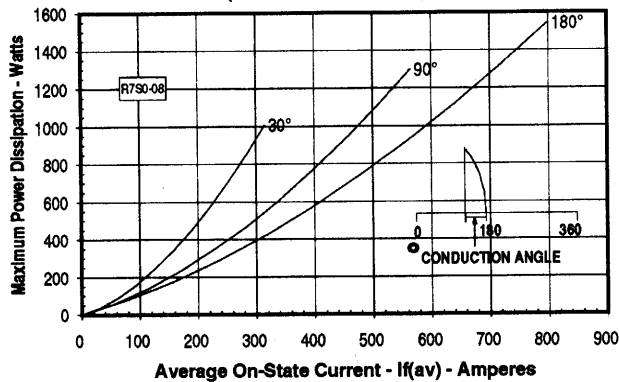
Maximum On-State Forward Voltage Drop
($T_J = 175^\circ\text{C}$)



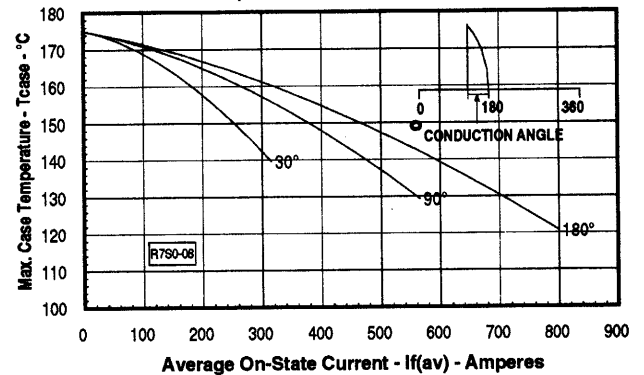
Maximum Transient Thermal Impedance
(Junction to Case)



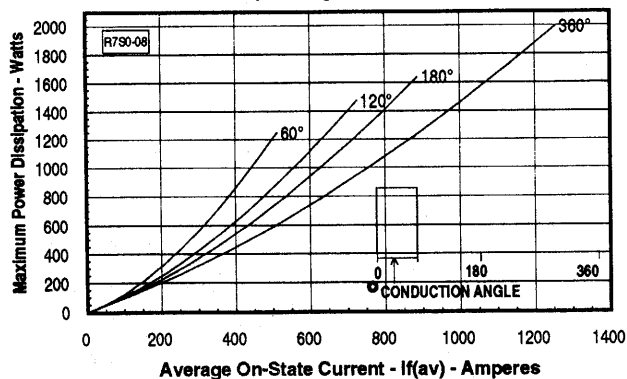
Maximum On-State Power Dissipation
(Sinusoidal Waveform)



Maximum Allowable Case Temperature
(Sinusoidal Waveform)



Maximum On-State Power Dissipation
(Rectangular Waveform)



Maximum Allowable Case Temperature
(Rectangular Waveform)

