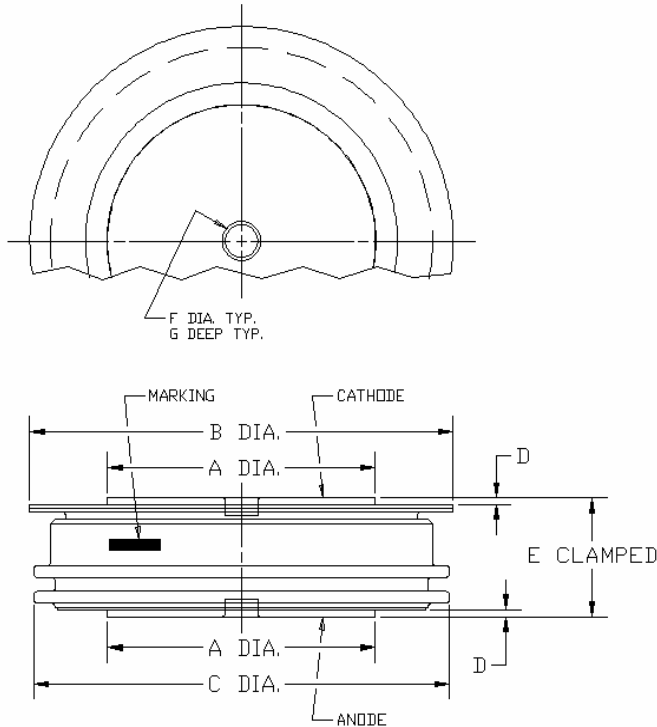


General Purpose Rectifier 1200 Amperes Average 2400 Volts

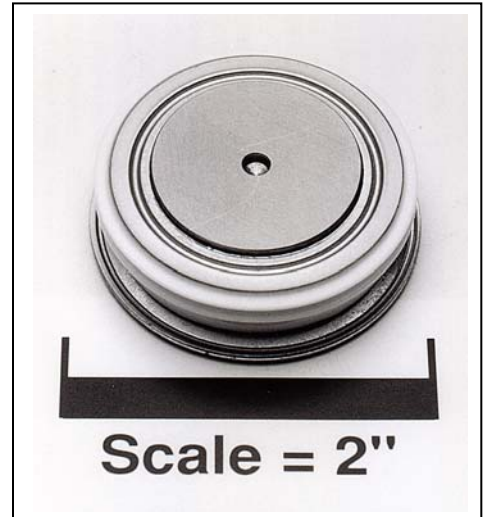


CASE NUMBER R7S
NOMINAL DIMENSIONS

SYM.	A	B	C	D	E	F	G	H
INCHES	1.16	1.86	1.80	.030	.560/.605	.140	.080	---
MM	29.5	47.2	45.7	0.76	14.22/15.37	3.56	2.03	---

ALL DIMENSIONS ARE REFERENCE

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. The 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 eight digit module part number from the table below.

Example: R7S01812XX is a 1800V 1200 A General Purpose Rectifier

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

Absolute Maximum Ratings

Characteristics	Symbol	Units
Non-Repetitive Transient Peak Reverse Blocking 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, $T_C = 86^\circ C$	$I_{F(AV)}$ 1500	Amperes
Peak One Cycle Surge Forward Current (Non-Repetitive) 60 Hz	I_{FSM} 9000	Amperes
Peak One Cycle Surge Forward Current (Non-Repetitive) 50 Hz	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, 60 Hz	I^2t 337,500	$A^2 \text{ sec}$
Maximum I^2t of Package ($t = 8.3 \text{ msec}$)	I^2t 80×10^6	$A^2 \text{ sec}$
Operating Temperature	T_J -65 to +175	$^\circ C$
Storage Temperature	T_{stg} -65 to +200	$^\circ C$
Approximate Weight	4	oz.
	113	g
Mounting Force	2000 to 2400	lb.
	900 to 1090	kg.

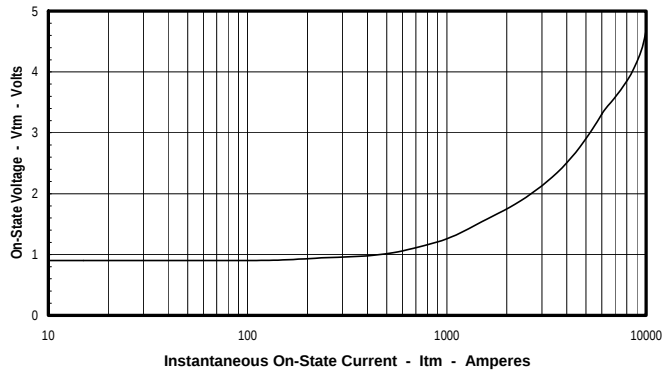
Electrical Characteristics, $T_J=25^{\circ}\text{C}$ unless otherwise specified

Characteristics	Symbol	Test Conditions	Min.	Max.	Units
Repetitive Peak Reverse Leakage Current	I_{RRM}	$T_J=125^{\circ}\text{C}$, $V_R = V_{RRM}$		50	mA
Peak On-State Voltage	V_{FM}	$I_{FM}=1500\text{A}$, Duty Cycle < 0.1 %		1.60	V
Threshold Voltage	$V_{(TO)}$	$T_J = 175^{\circ}\text{C}$, $I = 15\%I_{F(AV)}$ to I_{FSM}		0.831	V
Slope Resistance	r_T			0.441	$\text{m}\Omega$
V_{TM} Coefficients, Full Range		$T_J = 175^{\circ}\text{C}$, $I = 15\%I_{F(AV)}$ to I_{FSM} $V_{FM} = A + B \ln I + C I + D \text{ Sqrt } I$	A =	1.585	
			B =	-0.216	
			C =	2.00 E-4	
			D =	0.0308	
Diode Reverse Recovery Time (Typical)	t_{rr}	$T_C = 25^{\circ}\text{C}$, $I_{fm} = 1500\text{A}$, $di_R/dt = -25\text{A}/\mu\text{s}$, $T_p = 190 \mu\text{s}$		10 (Typical)	μs

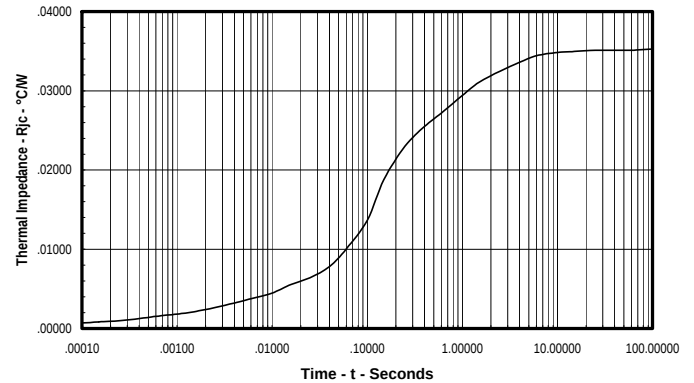
Thermal Characteristics

Maximum Thermal Resistance, Double Sided Cooling		Max.	Units
Junction-to-Case	$R_{\theta(J-C)}$	0.035	$^{\circ}\text{C}/\text{W}$
Case-to-Sink	$R_{\theta(C-S)}$	0.02	$^{\circ}\text{C}/\text{W}$

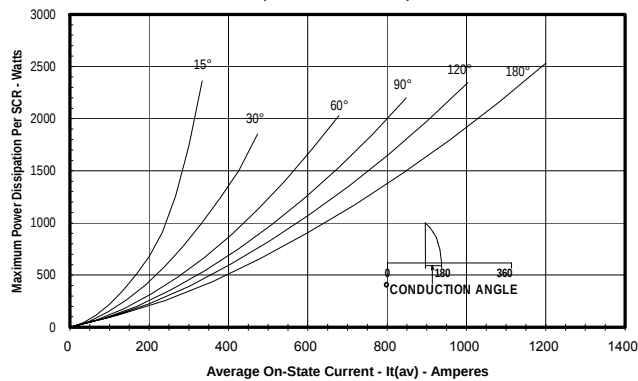
Maximum On-State Forward Voltage Drop
($T_j = 175^\circ\text{C}$)



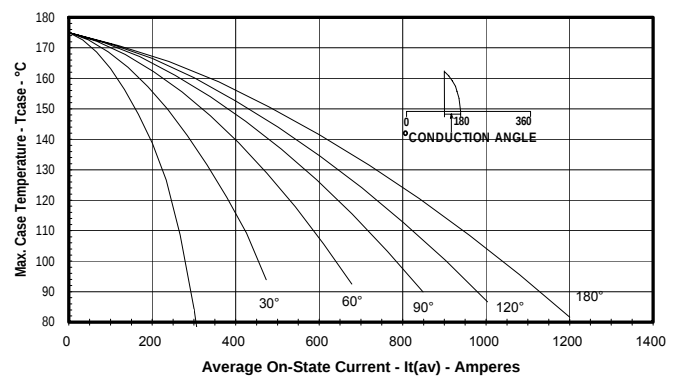
Maximum Transient Thermal Impedance
(Junction to Case)



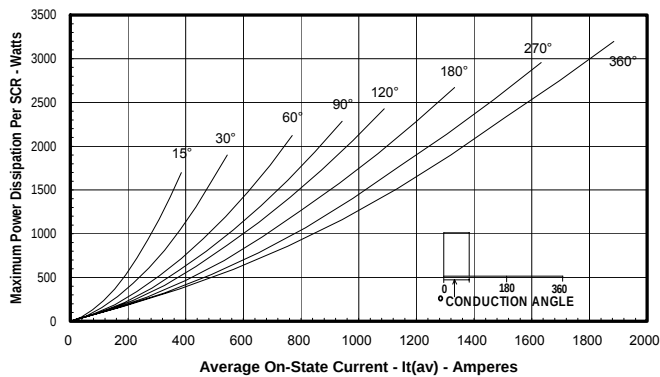
Maximum On-State Power Dissipation
(Sinusoidal Waveform)



Maximum Allowable Case Temperature
(Sinusoidal Waveform)



Maximum On-State Power Dissipation
(Rectangular Waveform)



Maximum Allowable Case Temperature
(Rectangular Waveform)

