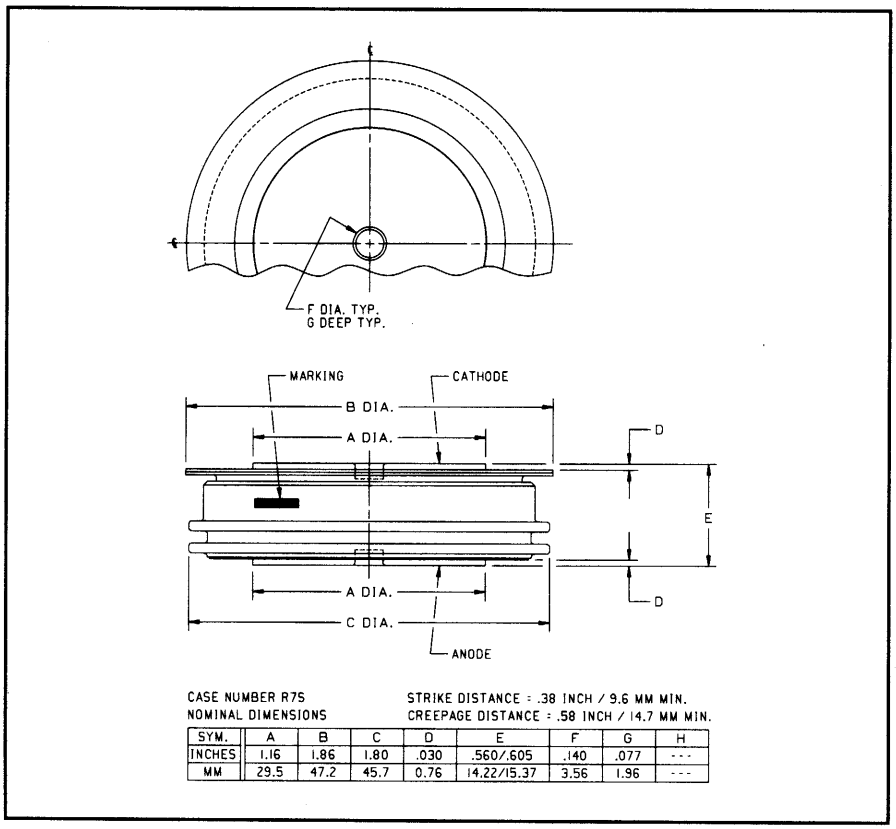
Powerex, Inc., 200 Hillis Street, Youngwood, Pennsylvania 15697-1800 (412) 925-7272
Powerex, Europe, S.A. 428 Avenue G. Durand, BP107, 72003 Le Mans, France (43) 41.14.14

General Purpose Rectifier

1200 Amperes Average
2400 Volts

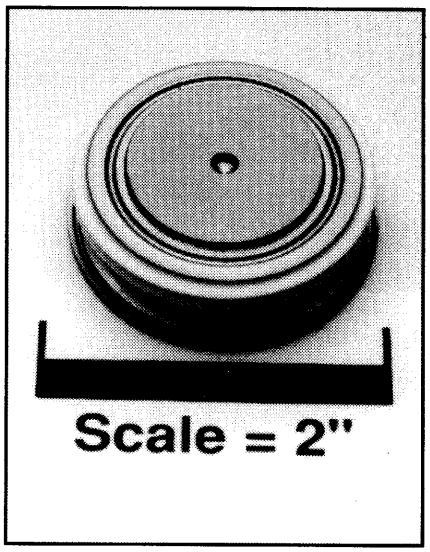


CASE NUMBER R7S
NOMINAL DIMENSIONS

STRIKE DISTANCE = .38 INCH / 9.6 MM MIN.
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 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 V_{RRM} (Volts)	Current $I_{T(av)}$ (A)	Typical Recovery Time t_{rr} (µsec)
R7S0	18 through 24	12	XX
	1800V through 2400V	1200A	10µsec

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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°C	$I_{F(rms)}$	1875	Amperes
Average Current 180° Sine Wave, T_C = 86°C	$I_{F(av)}$	1200	Amperes
RMS Forward Current, T_C = 55°C	$I_{F(rms)}$	2355	Amperes
Average Current 180° Sine Wave, T_C = 55°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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R7S0 1200A
General Purpose Rectifier
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Electrical Characteristics, T_j = 25°C Unless Otherwise Specified

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

Thermal Characteristics

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

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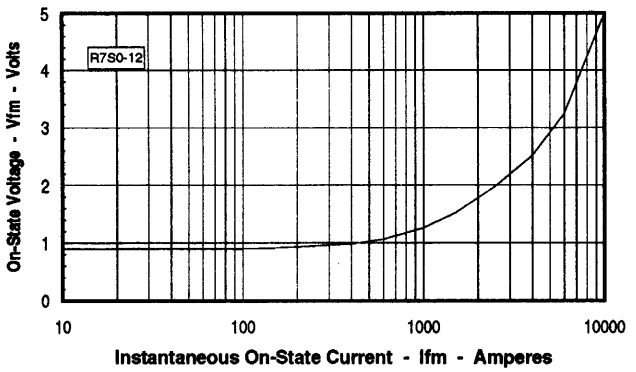
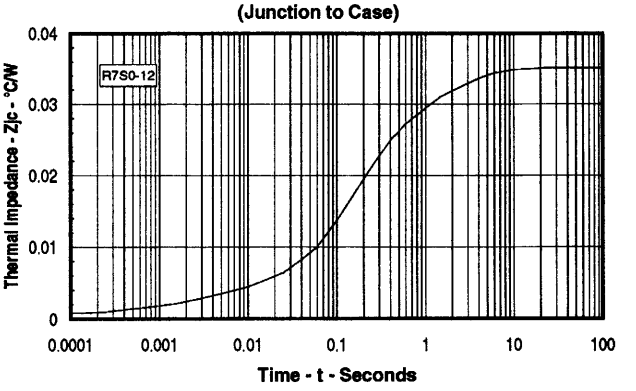
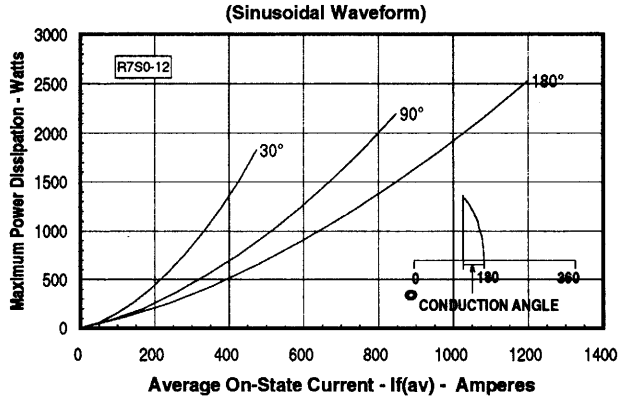
Maximum On-State Forward Voltage Drop
(Tj = 175 °C)



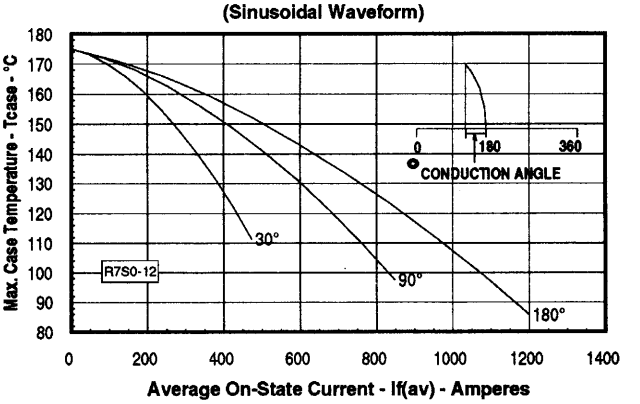
Maximum Transient Thermal Impedance
(Junction to Case)



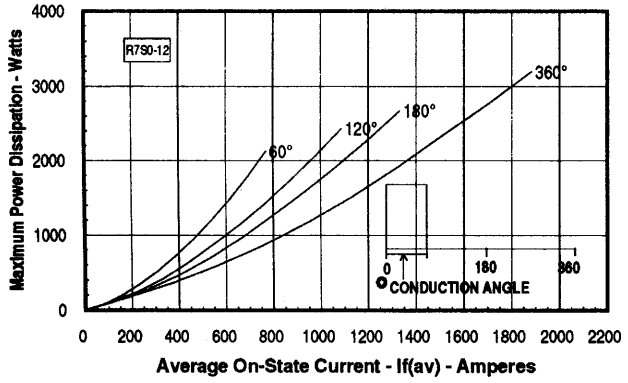
Maximum On-State Power Dissipation
(Sinusoidal Waveform)



Maximum Allowable Case Temperature
(Sinusoidal Waveform)



Maximum On-State Power Dissipation
(Rectangular Waveform)



Maximum Allowable Case Temperature
(Rectangular Waveform)