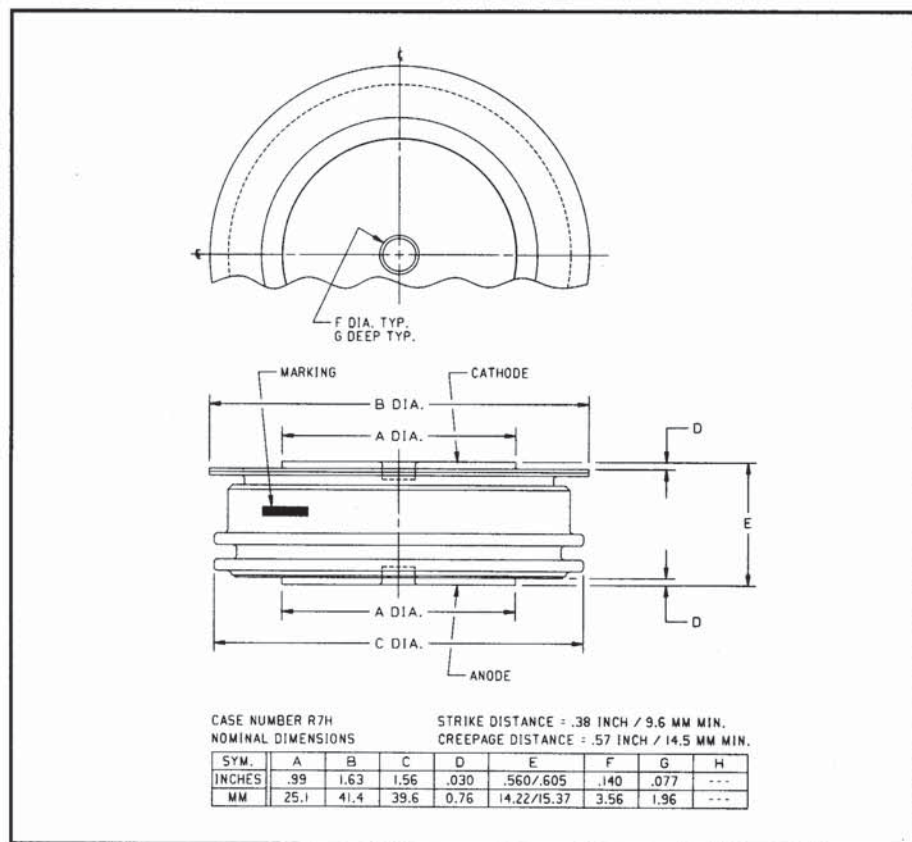
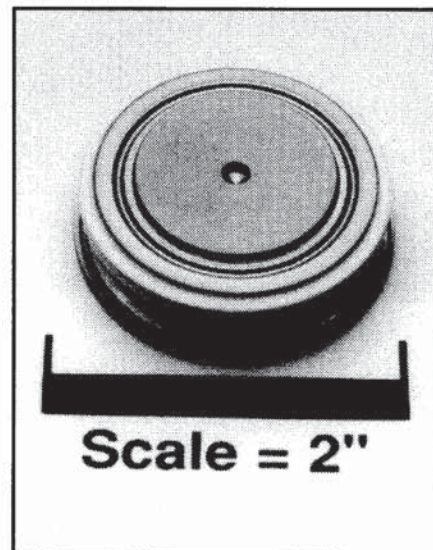


**General Purpose
Rectifier**
1600 Amperes Average
1800 Volts



R7S0 1600A (Outline Drawing)



R7S0 1600A General Purpose Rectifier
1600 Amperes Average, 1800 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	02 through 18	16	XX
	200V through 1800V	1600A	7 μ sec



Powerex, Inc., 173 Pavilion Lane, Youngwood, Pennsylvania 15697 (724) 925-7272
www.pwr.com

R7S0 1600A

General Purpose Rectifier

1600 Amperes Average, 1800 Volts

Absolute Maximum Ratings

Characteristics	Symbol	R7S0 1600A	Units
Non-repetitive Transient Peak Reverse Voltage	V_{RSM}	$V_{RRM} + 100V$	Volts
RMS Forward Current, $T_C = 98^{\circ}C$	$I_{F(rms)}$	2500	Amperes
Average Current 180° Sine Wave, $T_C = 98^{\circ}C$	$I_{F(av)}$	1600	Amperes
RMS Forward Current, $T_C = 55^{\circ}C$	$I_{F(rms)}$	3170	Amperes
Average Current 180° Sine Wave, $T_C = 55^{\circ}C$	$I_{F(av)}$	2020	Amperes
Peak One Cycle Surge Forward Current (Non-repetitive) 60Hz	I_{fsm}	14000	Amperes
Peak One Cycle Surge Forward Current (Non-repetitive) 50Hz	I_{fsm}	12800	Amperes
3 Cycle Surge Current	I_{fsm}	10000	Amperes
10 Cycle Surge Current	I_{fsm}	8640	Amperes
I^2t (for Fusing) for One Cycle, 60Hz	I^2t	816,700	A^2sec
Maximum I^2t of Package ($t = 8.3$ msec)	I^2t	80×10^6	A^2sec
Operating Temperature	T_j	-65 to +200°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 1600A

General Purpose Rectifier

1600 Amperes Average, 1800 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%			1.20	Volts
Threshold Voltage, Low-level	$V_{(TO)1}$	$T_j = 200^\circ\text{C}$, $I = 15\%$, $I_{T(av)}$ to $\pi I_{T(av)}$			0.62955	Volts
Slope Resistance, Low-level	r_{T1}				0.2929	m Ω
Threshold Voltage, High-level	$V_{(TO)2}$	$T_j = 200^\circ\text{C}$, $I = \pi I_{T(av)}$ to I_{TSM}			0.32969	Volts
Slope Resistance, High-level	r_{T2}				0.3533	m Ω
V_{TM} Coefficients, Low-level		$T_j = 200^\circ\text{C}$, $I = 15\%$ $I_{T(av)}$ to $\pi I_{T(av)}$			$A_1 = 1.5051$ $B_1 = -0.2286$ $C_1 = 1.138\text{E-}04$ $D_1 = 0.02747$	
V_{TM} Coefficients, High-level		$T_j = 200^\circ\text{C}$, $I = \pi I_{T(av)}$ to I_{TSM}			$A_2 = 15.405$ $B_2 = -2.4898$ $C_2 = 8.376\text{E-}05$ $D_2 = 0.10548$	
Typical Reverse Recovery Time	t_{rr}	$T_C = 25^\circ\text{C}$, $I_{FM} = 1500\text{A}$, $di_R/dt = 25\text{A}/\mu\text{sec}$, $t_p = 190\mu\text{sec}$		7		μsec

Thermal Characteristics

Maximum Thermal Resistance, Double Sided Cooling

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

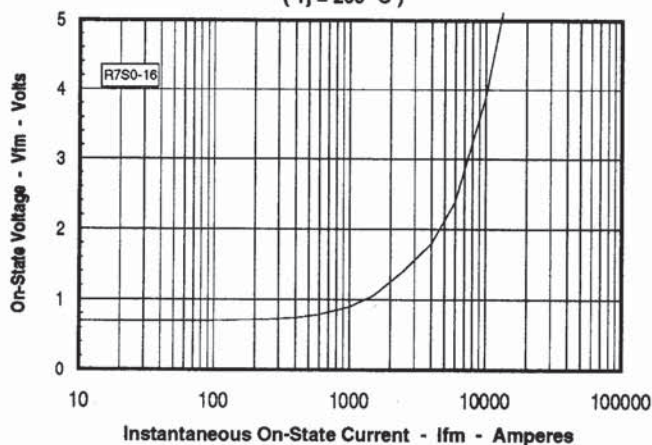
R7S0 1600A

General Purpose Rectifier

1600 Amperes Average, 1800 Volts

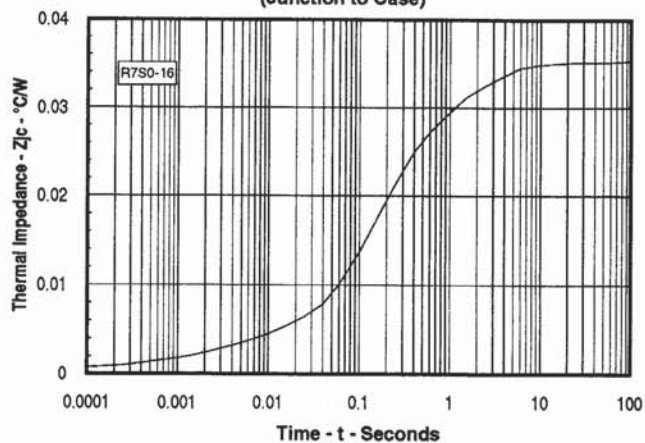
Maximum On-State Forward Voltage Drop

($T_J = 200^\circ\text{C}$)



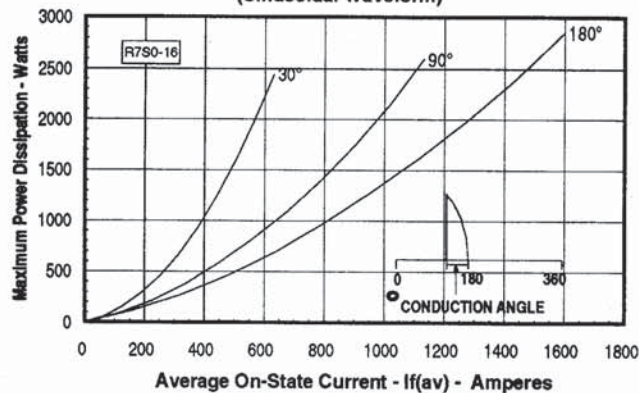
Maximum Transient Thermal Impedance

(Junction to Case)



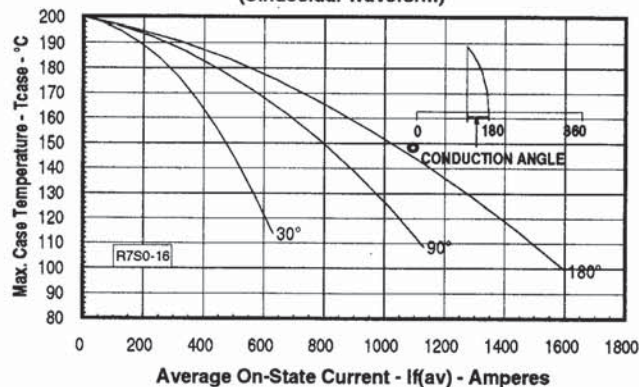
Maximum On-State Power Dissipation

(Sinusoidal Waveform)



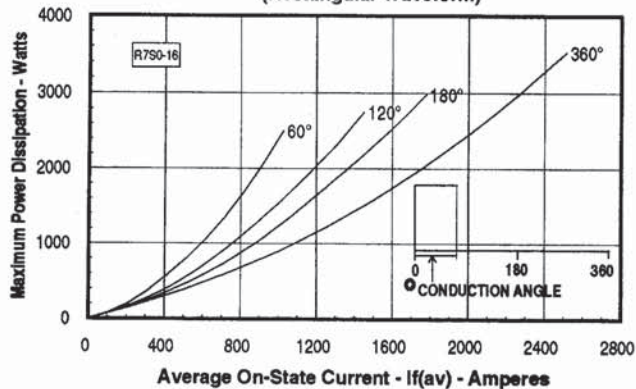
Maximum Allowable Case Temperature

(Sinusoidal Waveform)



Maximum On-State Power Dissipation

(Rectangular Waveform)



Maximum Allowable Case Temperature

(Rectangular Waveform)

