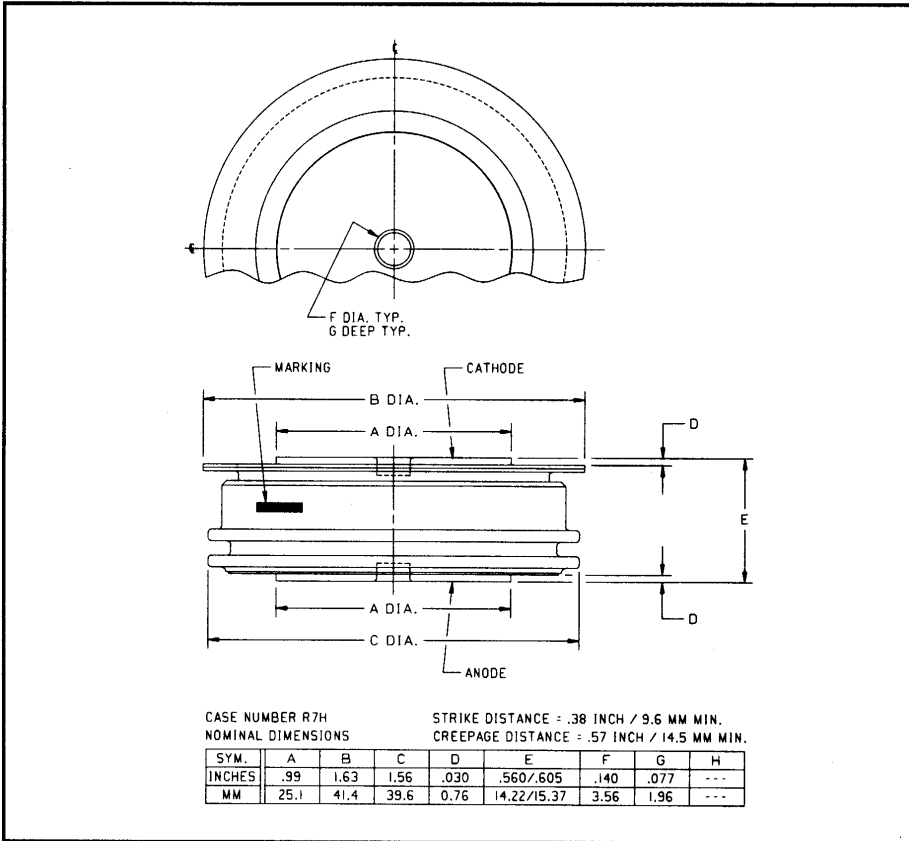


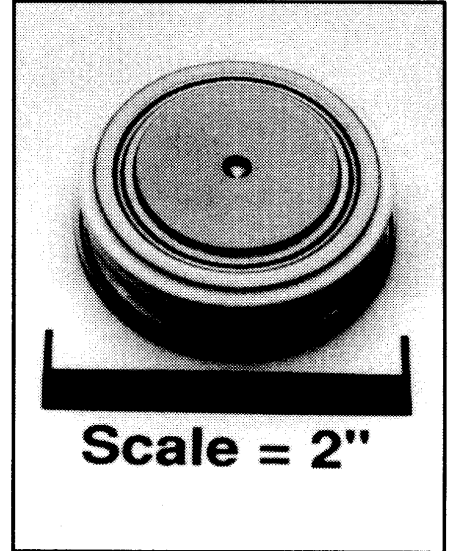
Powerex, Inc., 200 Hillis Street, Youngwood, Pennsylvania 15697-1800 (412) 925-7272
Powerex, Europe, S.A. 428 Avenue G. Durand, BP107, 72003 Le Mans, France (43) 41.14.14

General Purpose Rectifier

1600 Amperes Average
1600 Volts



R7S0 1600A (Outline Drawing)



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



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R7S0 1600A
General Purpose Rectifier
 1600 Amperes Average, 1600 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, 1600 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}	$I_{FM} = 1500\text{A}, \text{Duty Cycle} < 0.1\%$			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

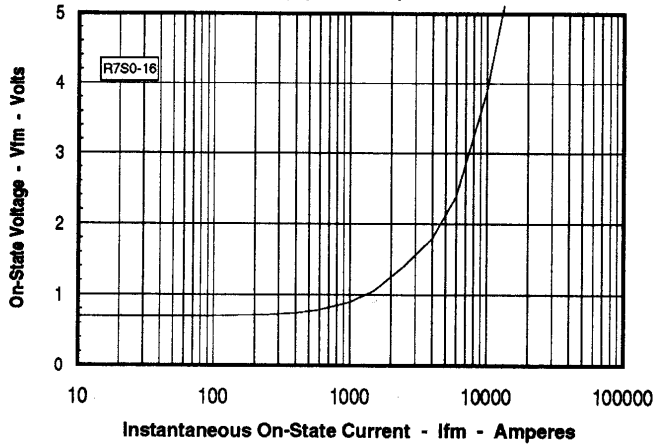
Maximum Thermal Resistance, Double Sided Cooling						
Junction-to-Case	$R_{\theta(j-c)}$				0.035	$^\circ\text{C/W}$
Case-to-Sink	$R_{\theta(c-s)}$				0.02	$^\circ\text{C/W}$



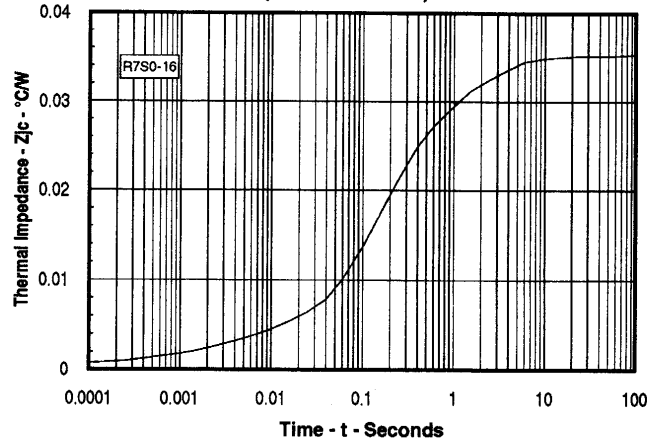
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R7S0 1600A
General Purpose Rectifier
 1600 Amperes Average, 1600 Volts

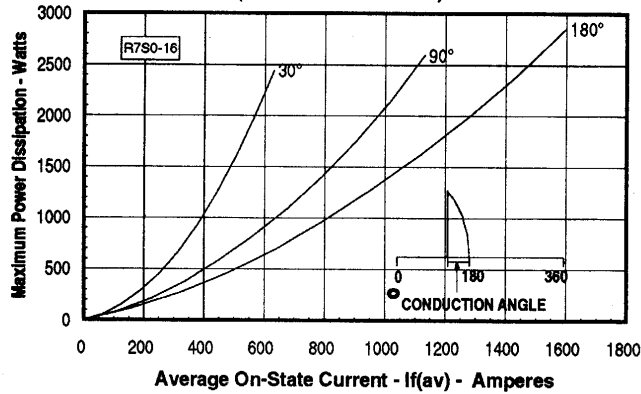
Maximum On-State Forward Voltage Drop
 ($T_J = 200^\circ\text{C}$)



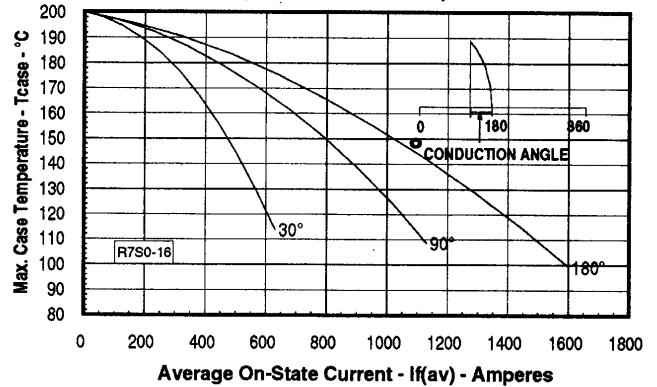
Maximum Transient Thermal Impedance
 (Junction to Case)



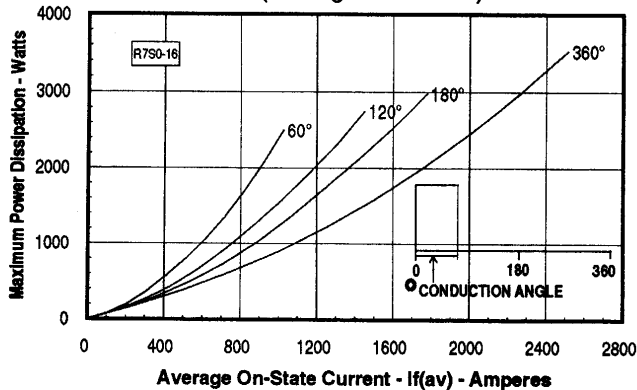
Maximum On-State Power Dissipation
 (Sinusoidal Waveform)



Maximum Allowable Case Temperature
 (Sinusoidal Waveform)



Maximum On-State Power Dissipation
 (Rectangular Waveform)



Maximum Allowable Case Temperature
 (Rectangular Waveform)

