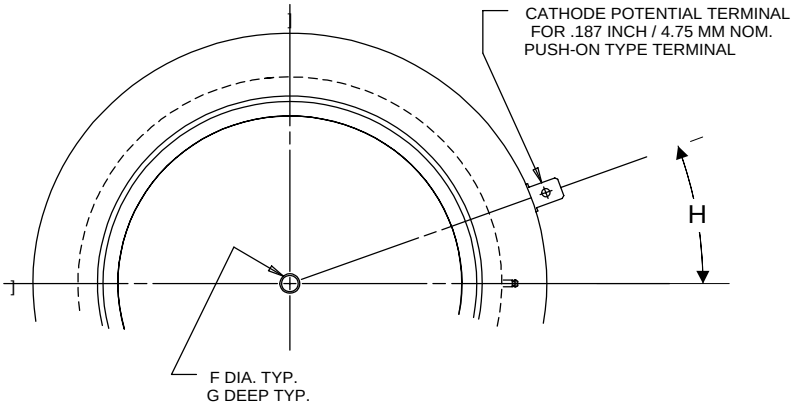
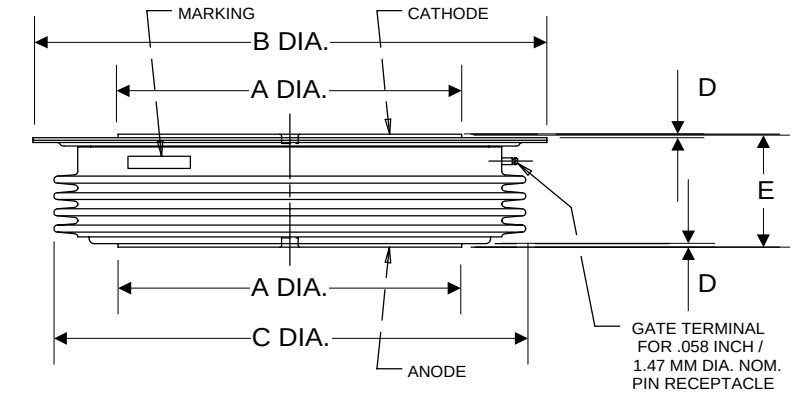
TBS7
2500A

Powerex, Inc., 200 Hillis Street, Youngwood, Pennsylvania 15697-1800 (724)925-7272

Phase Control Thyristor
2500 Amperes/Up to 2600 Volts





CASE NUMBER **TBS**
NOMINAL DIMENSIONS

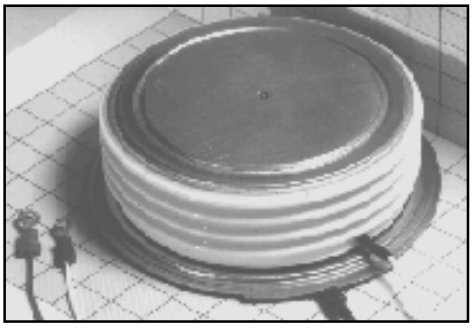
STRIKE DISTANCE = .62 INCH / 15.7 MM MIN.
CREEPAGE DISTANCE = 1.00 INCH / 25.4 MM MIN.

SYM.	A	B	C	D	E	F	G	H
INCHES	2.88	4.36	3.95	.030	1.010/1.080	.140	.080	20°
MM	73.2	110.7	100.3	0.76	25.65/27.43	3.56	2.03	20°

ALL DIMENSIONS ARE REFERENCE

Description:

Powerex Silicon Controlled Rectifiers (SCR) are designed for phase control applications. These are all-diffused, hermetic Pow-R-Disc devices employing the field-proven amplifying gate.



Features:

- Low On-State Voltage
- High di/dt Capability
- High dv/dt Capability
- Excellent Surge and I^2t Ratings

Applications:

- Power Supplies
- Motor Controllers

Ordering Information
Select the complete 12 digit device part number from the table below.

Type	Voltage V_{DRM} V_{RRM}	Current $I_{T(av)}$	Turn-Off t_q	Gate Current I_{GT}	Lead Code
TBS7	**22** **24** **26**	**25**	**0**	**3**	**DH**
	2200 V 2400 V 2600 V	2500 A	350 µs typical	200 mA	12"

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Absolute Maximum Ratings

Characteristics	Symbol		Units
Non-repetitive Transient Peak Reverse Voltage	V_{RSM}	V_{RRM}+100V	V
RMS On-State Current, T_C= 80°C	$I_{T(RMS)}$	3925	A
Average Current 180° Sine Wave, T_C= 80°C	$I_{T(AV)}$	2500	A
Peak One Cycle Surge On-State Current (Non-Repetitive) 60Hz	I_{TSM}	45,000	A
Peak One Cycle Surge On-State Current (Non-Repetitive) 50Hz	I_{TSM}	41,500	A
Critical Rate-of-Rise of On-State Current (Non-Repetitive)	di/dt	600	A/µs
Critical Rate-of-Rise of On-State Current (Repetitive)	di/dt	100	A/µs
I^2t for Fusing for One Cycle, 60 Hz	I^2t	$8.43x10^6$	A^2s
Peak Gate Power Dissipation	P_{GM}	250	W
Average Gate Power Dissipation	$P_{G(av)}$	35	W
Operating Temperature	T_J	-40 to 125°C	°C
Storage Temperature	T_{STG}	-40 to 150°C	°C
Mounting Force		6000 to 10000 26.6 to 44.4	lb. kN

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Electrical Characteristics, T_J=25° C unless otherwise specified

Characteristics	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Repetitive Peak Reverse Leakage Current	I_{RRM}	T_J=125° C, V_R=V_{RRM}			150	mA
Repetitive Peak Forward Leakage Current	I_{DRM}	T_J=125° C, V_D=V_{DRM}			150	mA
Peak On-State Voltage	V_{TM}	T_J=125° C, I_{TM}=2000A Duty Cycle < 0.01%			1.22	V
Threshold Voltage, Low-level	$V_{(TO)1}$	T_J=125° C, for 375A≤I_{TM}<7800A			0.9496	V
Slope Resistance, Low-level	r_{T1}				0.1234	mΩ
Threshold Voltage, High-level	$V_{(TO)2}$	T_J=125° C, for I_{TM}>7800A			1.10	V
Slope Resistance, High-level	r_{T2}				0.1149	mΩ
ABCD V_{TM} Modeling Coefficients	A = 0.89085	T_J=125° C, for 10A≤I_{TM}<60,000A				V
	B = -2.419 E-2					-
	C = 8.257 E-5	A + B x Ln(I_{tm}) + C x I_{tm} +				mΩ
	D = 7.861 E-3	D x Sqrt(I_{tm})				–
Typical Delay Time	t_d	Tj = 125C, V_D=1500V		3		µs
Maximum Turn-Off Time	t_q	T_J=125° C, I_T=2000A, di_R/dt=5A/µs dv/dt=1000V/µs linear to 1000 V		250		µs
Minimum Critical dv/dt - Exponential to V_{DRM}	dv/dt	T_J=125° C	500			V/µs
Gate Trigger Current	I_{GT}	T_J=25° C, V_D=12V			250	mA
Gate Trigger Voltage	V_{GT}	T_J=25° C, V_D=12V			4.2	V
Non-Triggering Gate Voltage	V_{GDM}	T_J=125° C, V_D=V_{DRM}			0.5	V
Peak Forward Gate Current	I_{GTM}				20	A
Peak Reverse Gate Voltage	V_{GRM}				20	V

Thermal Characteristics

Characteristics	Symbol	Min.	Typ.	Max.	Units
Maximum Thermal Resistance, Double Sided Cooling					
Junction to Case	$R_{\theta JC}$			.010	°C/W
Case to Sink	$R_{\theta CS}$			.002	°C/W

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***Phase Control* SCR**
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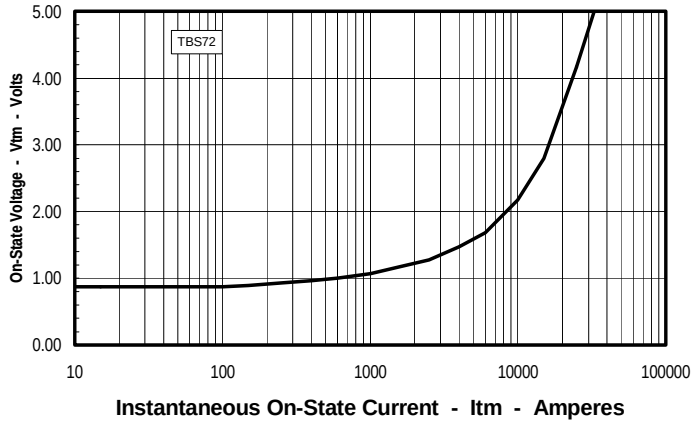
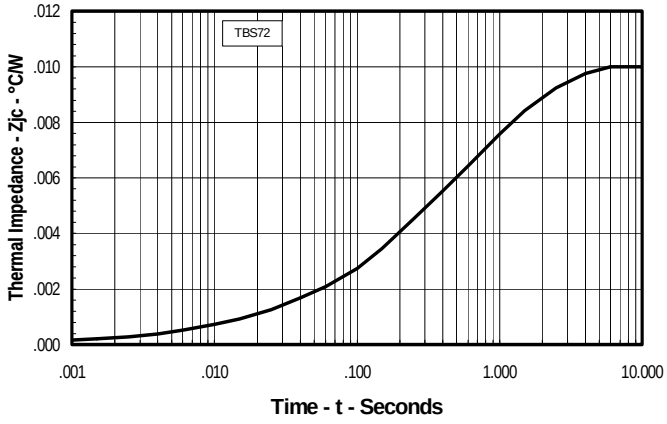
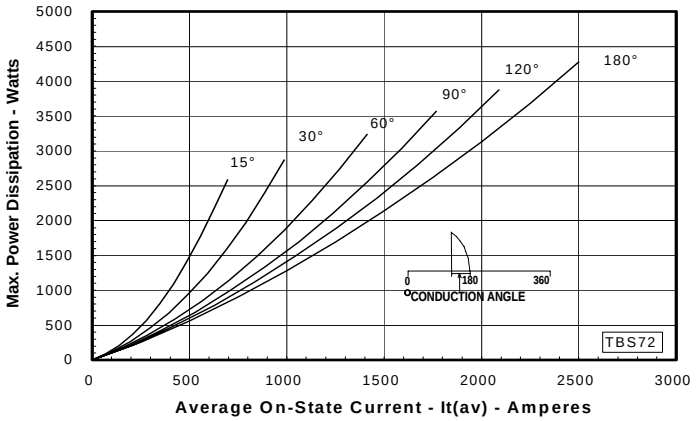
Maximum On-State Forward Voltage Drop
(Tj = 125 °C)



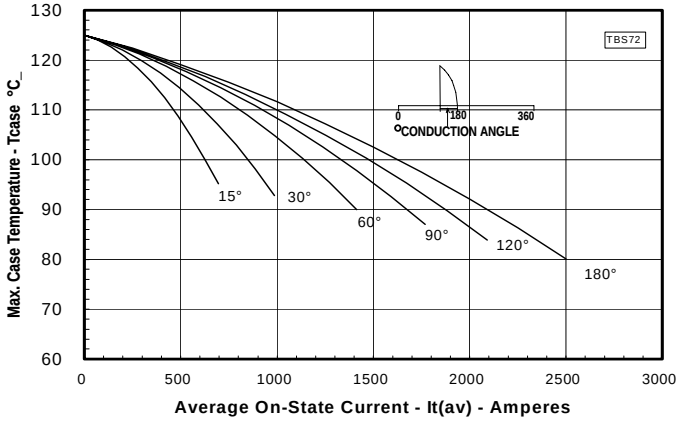
Maximum Transient Thermal Impedance
(Junction to Case)



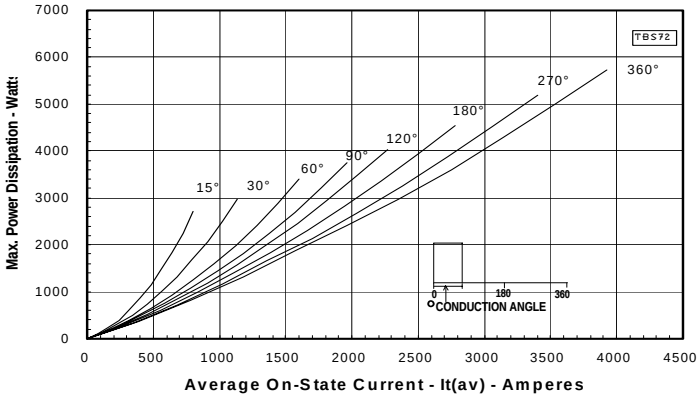
Maximum On-State Power Dissipation
(Sinusoidal



Maximum Allowable Case Temperature
(Sinusoidal Waveform)



Maximum On-State Power Dissipation
(Rectangular Waveform)



Maximum Allowable Case Temperature
(Rectangular Waveform)