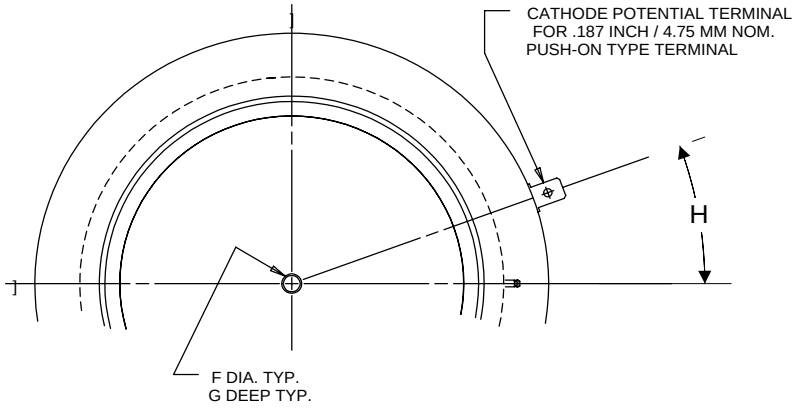
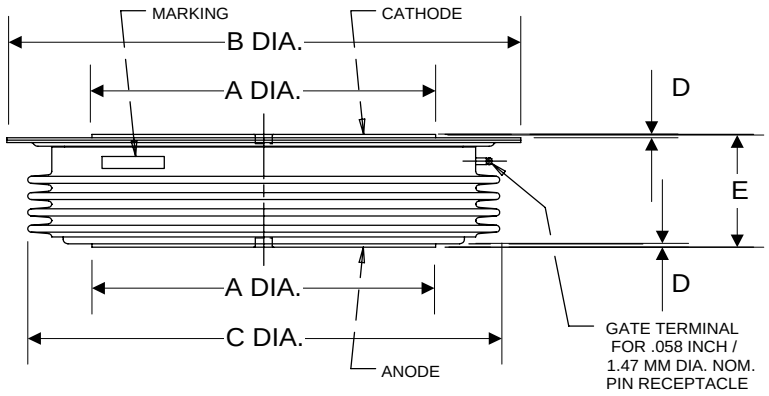
TBS7
3200A

Powerex, Inc., 173 Pavilion Ln, Youngwood, PA 15697 (412)925-7272 WWW.PWRX.COM

Phase Control Thyristor

3200 Amperes/Up to 1600 Volts





CASE NUMBER **TBS**

NOMINAL DIMENSIONS

STRIKE DISTANCE = .62 INCH / 15.7 MM MIN.

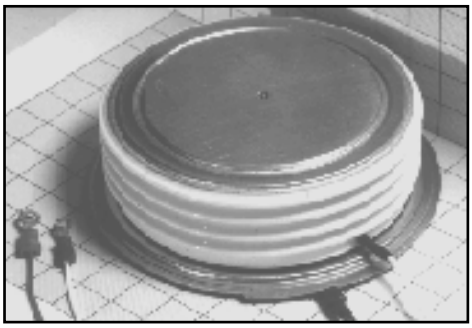
CREEPAGE DISTANCE = 1.00 INCH / 25.4 MM MIN.

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
- Battery Chargers
- 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	**12** **14** **16**	**32**	**0**	**3**	**DH**
	1200 V 1400 V 1600 V	3200 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	$I_{T(RMS)}$	5025	A
Average Current 180° Sine Wave, T_C=76°C	$I_{T(AV)}$	3200	A
Peak One Cycle Surge On-State Current (Non-Repetitive) 60Hz	I_{TSM}	44,000	A
Peak One Cycle Surge On-State Current (Non-Repetitive) 50Hz	I_{TSM}	40500	A
Critical Rate-of-Rise of On-State Current (Non-Repetitive)	di/dt	300	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	$8.07x10^6$	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=25°C, I_{TM}=3000A Duty Cycle < 0.01%			1.25	V
Threshold Voltage, Low-level	$V_{(TO)1}$	T_J=125°C, for 500A≤I_{TM}<10,000A			0.776	V
Slope Resistance, Low-level	r_{T1}				0.0889	mΩ
Threshold Voltage, High-level	$V_{(TO)2}$	T_J=125°C, for I_{TM}<10,0000A			1.032	V
Slope Resistance, High-level	r_{T2}				0.0735	mΩ
ABCD V_{TM} Modeling Coefficients	A	T_J=125°C, for 500A≤I_{TM}<60,000A			0.7393	V
	B				-0.01883	-
	C				0.05747	mΩ
	D				0.005836	_
Typical Delay Time	t_d	I_{TM}=1000A, V_D=0.5V_{DRM}		3		µs
Maximum Turn-Off Time	t_q	T_J=125°C, I_T=1000A, di_R/dt=25A/µs dv/dt=20V/µs linear to 80% V_{DRM}		350		µs
Minimum Critical dv/dt - Expodential to V_{DRM}	dv/dt	T_J=125°C	300			V/µs
Gate Trigger Current	I_{GT}	T_J=25°C, V_D=12V			200	mA
Gate Trigger Voltage	V_{GT}	T_J=25°C, V_D=12V			4.0	V
Non-Triggering Gate Voltage	V_{GDM}	T_J=125°C, V_D=V_{DRM}			0.5	V
Peak Forward Gate Current	I_{GTM}				4	A
Peak Reverse Gate Voltage	V_{GRM}				10	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