POSITIONING PSTC761 - Power Thyristor

600 - 2000 V_{DRM}; 3100 A rms

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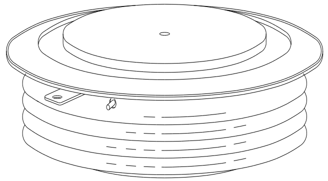
HIGH POWER THYRISTOR PHASE CONTROL APPLICATIONS

CASE 6T



Features:

- . All Diffused Structure
- . Spoke Amplifying Gate Configuration
- . Blocking capabilty up to 2000 volts
- . Guaranteed Maximum Turn-Off Time
- . High dV/dt Capability
- . Pressure Assembled Device

ELECTRICAL CHARACTERISTICS AND RATINGS

Blocking - Off State

Device Type	V_{RRM} (1)	V_{DRM} (1)	V_{RSM} (1)
PSTC761M	600	600	700
PSTC761P	1000	1000	1100
PSTC761PB	1200	1200	1300
PSTC761PM	1600	1600	1700
PSTC761PN	1800	1800	1900
PSTC761L	2000	2000	2100

V_{RRM} = Repetitive peak reverse voltage
V_{DRM} = Repetitive peak off state voltage
V_{RSM} = Non repetitive peak reverse voltage (2)

Repetitive peak reverse leakage and off state leakage	I_{RRM} / I_{DRM}	20 mA 90 mA (3)
Critical rate of voltage rise	dV/dt (4)	500 V/µsec

Notes:
All ratings are specified for Tj=25 °C unless otherwise stated.
(1) All voltage ratings are specified for an applied 50Hz/60zHz sinusoidal waveform over the temperature range -40 to +125 °C.
(2) 10 msec. max. pulse width
(3) Maximum value for Tj = 125 °C.
(4) Minimum value for linear and exponential waveshape to 80% rated V_{DRM}. Gate open. Tj = 125 °C.
(5) Non-repetitive value.
(6) The value of di/dt is established in accordance with EIA/NIMA Standard RS-397, Section 5-2-2-6. The value defined would be in addition to that obtained from a snubber circuit, comprising a 0.2 µF capacitor and 20 ohms resistance in parallel with the thristor under test.

Conducting - on state

Parameter	Symbol	Min.	Max.	Typ.	Units	Conditions
Average value of on-state current	$I_{T(AV)}$		2000		A	Sinewave,180° conduction,T_c=65°C
RMS value of on-state current	I_{TRMS}		3100		A	Nominal value
Peak one cpstcle surge (non repetitive) current	I_{TSM}		29400 26400		A A	8.3 msec (60Hz), sinusoidal waveshape, 180° conduction, T_j = 125 °C 10.0 msec (50Hz), sinusoidal waveshape, 180° conduction, T_j = 125 °C
I square t	I^2t		$3.0x10^6$		A^2s	8.3 msec
Latching current	I_L		500		mA	V_D = 24 V; R_L= 12 ohms
Holding current	I_H		500		mA	$V_{D\,=}$ 24 V; I = 2.5 A
Peak on-state voltage	V_{TM}		1.70		V	I_{TM} = 2000 A; Tj = 125 °C
Critical rate of rise of on-state current (5, 6)	di/dt		300		A/µs	Switching from V_{DRM} ≤ 1000 V, non-repetitive
Critical rate of rise of on-state current (6)	di/dt		150		A/µs	Switching from V_{DRM} ≤ 1000 V

ELECTRICAL CHARACTERISTICS AND RATINGS (cont'd) PSTC761 - Power Thyristor

Gating

Parameter	Symbol	Min.	Max.	Typ.	Units	Conditions
Peak gate power dissipation	P_{GM}		200		W	t_p = 40 us
Average gate power dissipation	$P_{G(AV)}$		5		W	
Peak gate current	I_{GM}		20		A	
Gate current required to trigger all units	I_{GT}		300 200 125		mA mA mA	V_D = 6 V;R_L = 3 ohms;T_j = -40 ^{o}C V_D = 6 V;R_L = 3 ohms;T_j = +25 ^{o}C V_D = 6 V;R_L = 3 ohms;T_j = +125^{o}C
Gate voltage required to trigger all units	V_{GT}	 0.30	5 4		V V V	V_D = 6 V;R_L = 3 ohms;T_j = -40 ^{o}C V_D = 6 V;R_L = 3 ohms;T_j = 0-125^{o}C V_D = Rated V_{DRM}; R_L = 1000 ohms; T_j = + 125 ^{o}C
Peak negative voltage	V_{GRM}		20		V	

Dynamic

Parameter	Symbol	Min.	Max.	Typ.	Units	Conditions
Delay time	t_d		2.0		μs	I_{TM} = 50 A; V_D = 67% V_{DRM} Gate pulse: V_G = 30 V; R_G = 10 ohms; t_r = 0.1 μs; t_p = 20 μs
Turn-off time (with V_R = -50 V)	t_q		250		μs	I_{TM} > 2000 A; di/dt = 10 A/μs; V_R ≥ -50 V; Re-applied dV/dt = 20 V/μs linear to 80% V_{DRM} ; T_j = 125 ^{o}C; Duty cpstcle ≥ 0.01%
Reverse recovery current	I_{rr}		120		A	I_{TM} > 2000 A; di/dt = 10 A/μs; V_R ≥ -50 V

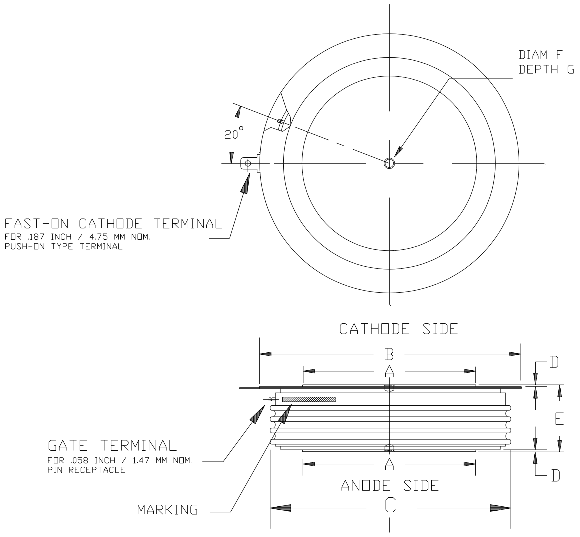
THERMAL AND MECHANICAL CHARACTERISTICS AND RATINGS

Parameter	Symbol	Min.	Max.	Typ.	Units	Conditions
Operating temperature	T_j	-40	+125		^{o}C	
Storage temperature	T_{stg}	-40	+150		^{o}C	
Thermal resistance - junction to case	$R_{\Theta\ (j\text{-}c)}$		0.017		^{o}C/W	Double sided cooled
Thermal resistamce - case to sink	$R_{\Theta\ (c\text{-}s)}$		0.003		^{o}C/W	Double sided cooled *
Mounting force	P	8000 35.5	10000 44.4		lb. kN	
Weight	W			2.1 953	Lb. g.	

* Mounting surfaces smooth, flat and greased

Note : for case outline and dimensions, see case outline drawing in page 3 of this Technical Data

CASE OUTLINE AND DIMENSIONS. PSTC761 - Power Thyristor



CASE 6T
NOMINAL OUTLINE DIMENSIONS

DIMENSIONS	INCH	MM
DIAM. A	2.47	62.7
DIAM. B	3.91	99.3
DIAM. C	3.50	88.9
D	.030	.76
E	1.300 / 1.340	33.02 / 34.04
F	.140	3.56
G	.080	2.03