E L E C T R O P O W E R

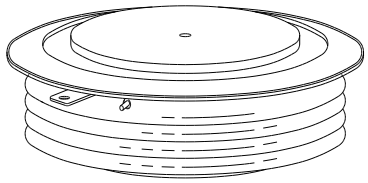
C770L - 3176 - Power Thyristor

1200 - 1800 V_{DRM}; 3300 A rms

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HIGH POWER THYRISTOR FOR INVERTER AND CHOPPER APPLICATIONS

CASE 5T



Features:

- **. All Diffused Structure**
- **. Interdigitated Amplifying Gate Configuration**
- **. Blocking capabilty up to 1800 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)
C770PB	1200	1200	1300
C770PD	1400	1400	1500
C770PE	1500	1500	1600
C770PM	1600	1600	1700
C770PS	1700	1700	1800
C770L	2000	2000	2000

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 100 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	$I_{T(AV)}$		2100		A	Sinewave,180° conduction,T_c=70°C
RMS value of on-state current	I_{TRMS}		3300		A	Nominal value
Peak one cycle surge (non repetitive) current	I_{TSM}		38000 36000		A A	8.3 msec (60Hz), sinusoidal wave-shape, 180° conduction, T_j = 125 °C 10.0 msec (50Hz), sinusoidal wave-shape, 180° conduction, T_j = 125 °C
I square t	I^2t		$5.5x10^6$		A^2s	8.3 msec
Latching current	I_L		1000		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}		1.55		V	I_{TM} = 2000 A; Tj = 125 °C
Critical rate of rise of on-state current (5, 6)	di/dt		800		A/µs	Switching from V_{DRM} ≤ 1000 V, non-repetitive
Critical rate of rise of on-state current (6)	di/dt		300		A/µs	Switching from V_{DRM} ≤ 1000 V

ELECTRICAL CHARACTERISTICS AND RATINGS (cont'd) C770L- 3176 - 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 ºC V_D = 6 V;R_L = 3 ohms;T_j = +25 ºC V_D = 6 V;R_L = 3 ohms;T_j = +125ºC
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 ºC V_D = 6 V;R_L = 3 ohms;T_j = 0-125ºC V_D = Rated V_{DRM}; R_L = 1000 ohms; T_j = + 125 ºC
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 = -5 V)	t_q		80		µs	I_{TM} > 2000 A; di/dt = 25 A/µs; V_R ≥ -5 V; Re-applied dV/dt = 400 V/µs linear to 67% V_{DRM} ; T_j = 125 ºC; Duty cycle ≥ 0.01%
Reverse recovery current	I_{rr}		200		A	I_{TM} > 2000 A; di/dt = 25 A/µs; V_R ≥ -50 V; T_j = 125 ºC

THERMAL AND MECHANICAL CHARACTERISTICS AND RATINGS

Parameter	Symbol	Min.	Max.	Typ.	Units	Conditions
Operating temperature	T_j	-40	+125		ºC	
Storage temperature	T_{stg}	-40	+150		ºC	
Thermal resistance - junction to case	$R_{\Theta (j-c)}$		0.012		ºC/W	Double sided cooled Single sided cooled
Thermal resistamce - case to sink	$R_{\Theta (c-s)}$		0.002		ºC/W	Double sided cooled * Single sided cooled *
Mounting force	P	8000 35.5	10000 44.4		lb. kN	
Weight	W			3.5 1.60	Lb. Kg.	

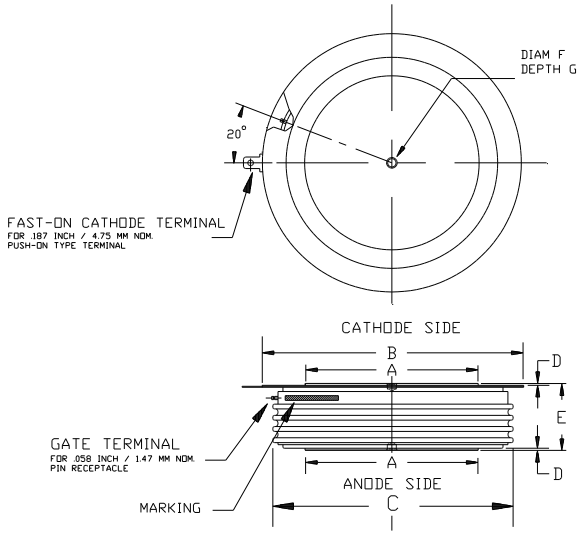
* Mounting surfaces smooth, flat and greased

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

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CASE OUTLINE AND DIMENSIONS.

C770L- 3176 - Power Thyristor



CASE 5T
NOMINAL OUTLINE DIMENSIONS

DIMENSIONS	INCH	MM
DIAM. A	2.88	73.2
DIAM. B	4.36	110.7
DIAM. C	3.95	100.3
D	.030	.76
E	1.400 / 1.440	35.56 / 36.58
F	.140	3.56
G	.080	2.03

STRIKE DISTANCE = 1.04 inch / 26.4 mm MIN.
CREEPAGE DISTANCE = 1.64 inch / 41.6 mm MIN.

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ELECTRO POWER

C770 - Power Thyristor