
RCT FOR INVERTER AND CHOPPER APPLICATIONS

Features:

- All Diffused Structure
- Interdigitated Amplifying Gate Configuration
- Blocking capability up to 1300 volts
- Guaranteed Maximum Turn-Off Time
- High dV/dt Capability
- Pressure Assembled Device

ELECTRICAL CHARACTERISTICS AND RATINGS

Blocking - Off State

Device Type	V _{DRM}	V _{DSM}
SHR400R22	1300	1300

V_{DRM} = Repetitive peak off state voltage

V_{DSM} = Non-repetitive peak off state voltage

(Non-repetitive < 5ms, T_j = 0 ~ 115 °C)

Repetitive peak off state leakage	I _{DRM}	35 mA
Critical rate of voltage rise	dV/dt	1000 V/μsec

Notes:

All ratings are specified for T_j = 25 °C unless otherwise stated.

(1) All voltage ratings are specified for an applied 50Hz/60Hz sinusoidal waveform over the temperature range -40 to +115 °C.

(2) 10 msec. max. pulse width

(3) Maximum value for T_j = 115 °C.

(4) Minimum value for linear and exponential waveshape to 80% rated V_{DRM}. Gate open. T_j = 115 °C.

(5) Non-repetitive value.

Conducting - on state

Parameter	Symbol	Min.	Max.	Typ	Units	Conditions
RMS value of on-state current	I _{TRMS}		630		A	Nominal value
Average on-state current	I _{T(AV)}		400		A	Continuous single-phase, half sine wave, 180° conduction
Peak one cycle surge on-state current (non repetitive)	I _{TSM}		7200		A	50Hz, sinusoidal wave-shape, 180° conduction, T _j = 115 °C
I ² t Limit Value	I ² t		200x10 ³ (On-Current)		A ² s	
			31x10 ³ (Reverse Current)			
Peak on-state voltage	V _{TM}		3.0		V	I _{TM} = 1250A; T _j = 25 °C
Critical rate of rise of on-state current	di/dt		100		A/μs	V _D = 1/2 V _{DRM} , I _{TM} = 800A f = 60Hz I _{GM} = 1.5A, di _G /dt = 1.0A/μs, T _j = 115 °C
Average reverse current	I _{R(AV)}		150		A	Continuous single-phase, half sine wave, 180° conduction
RMS reverse current	I _{R(RMS)}		235		A	
Peak reverse voltage	V _{RM}		2.5		V	I _{RM} = 500A, T _j = 25 °C
Peak one cycle surge reverse current (non repetitive)	I _{RSM}		2500		A	50Hz, sinusoidal wave-shape, 180° conduction, T _j = 115 °C
Critical rate of rise of commutating off-state voltage	(dv/dt) _C	200			A/μs	I _{TM} = 2000A, tw = 60μs, I _{RM} = 1000A, V _{DM} = 1/2 V _{DRM} , Pulse width 60μs, T _j = 115 °C,

ELECTRICAL CHARACTERISTICS AND RATINGS (cont.)
Gating

Parameter	Symbol	Min.	Max.	Typ.	Units	Conditions
Peak gate power dissipation	P_{GM}		20		W	$t_p = 40 \mu s$
Average gate power dissipation	$P_{G(AV)}$		4		W	
Peak gate current	I_{GM}		4		A	
Gate current required to trigger all units	I_{GT}		200		mA	$V_D = 6 V; R_L = 6 \text{ ohms}; T_C = 25^\circ C$
Holding current	I_H		500			$T_j = 25^\circ C; R_L = 6 \text{ ohms}$
Gate voltage required to trigger all units	V_{GT}		3.0		V	$V_D = 6 V; R_L = 6 \text{ ohms}; T_C = 25^\circ C$
Peak non- trigger voltage	V_{GD}		0.15		V	$T_j = 115^\circ C; V_D = 1/2 V_{DRM}$

Dynamic

Parameter	Symbol	Min	Max.	Typ.	Units	Conditions
Turn-off time	t_q		40		μs	$I_{TM} = 400 A; di_1/dt = -50 A/\mu s; di_2/dt = 50 A/\mu s, I_{RM} = 10 A; dV/dt(c) = 200 V/\mu s V_{DR} = 650 V; T_j = 115^\circ C; tw = 60 \mu s$

* For guaranteed max. value, contact factory.

THERMAL AND MECHANICAL CHARACTERISTICS AND RATINGS

Parameter	Symbol	Min.	Max.	Typ.	Units	Conditions
Operating temperature	T_j	-40	+115		$^\circ C$	
Storage temperature	T_{stg}	-40	+115		$^\circ C$	
Thyristor part thermal resistance - junction to fin	$R_{\theta I(j-C)}$		0.003		$^\circ C/W$	Double sided cooled
Diode part thermal resistance - junction to fin	$R_{\theta M(j-S)}$		0.1		$^\circ C/W$	Double sided cooled
Mounting force	P	13.5	16.5		kN	
Weight	W	240	280		g	

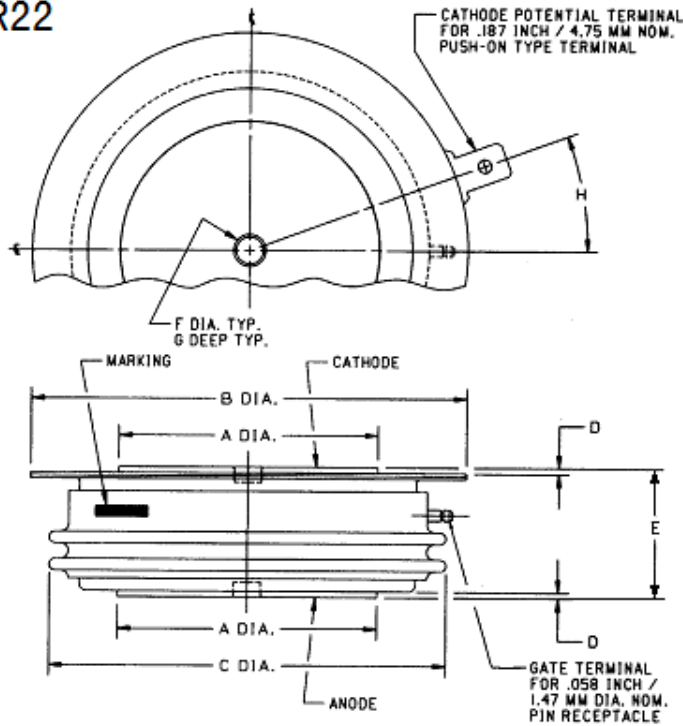
* Mounting surfaces smooth, flat and greased

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

CASE OUTLINE AND DIMENSIONS.

Reverse-conducting Thyristor

SHR400R22



CASE NUMBER T 2
NOMINAL DIMENSIONS

STRIKE DISTANCE = .58 INCH / 14.7 MM MIN.
CREEPAGE DISTANCE = 1.00 INCH / 25.4 MM MIN.

SYM.	A	B	C	D	E	F	G	H
INCHES	1.34	2.28	2.05	.030	0.650/0.689	.140	.078	20°
MM	34.0	57.9	52.1	0.76	16.50/17.50	3.56	1.98	20°