

ELECTRO POWER

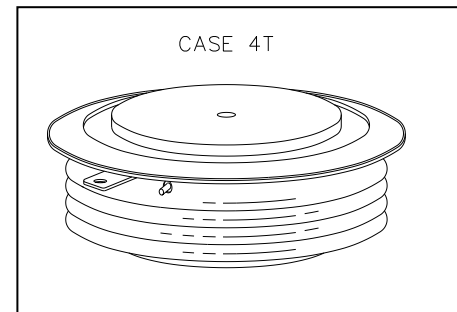
REP1275NS_x - Power Thyristor

1400 - 2100 V_{DRM}; 1900 A rms

HIGH POWER THYRISTOR FOR INVERTER AND CHOPPER APPLICATIONS

Features:

- . All Diffused Structure
- . Interdigitated Amplifying Gate Configuration
- . Blocking capability up to 2100 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)
REP1275NS14	1400	1400	1500
REP1275NS18	1800	1800	1900
REP1275NS21	2100	2100	2200

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 65 mA (3)
Critical rate of voltage rise	dV/dt (4)	500 V/μsec

Conducting - on state

Parameter	Symbol	Min.	Max.	Typ.	Units	Conditions
Average on-state current.	I _{TRMS}		1275		A	T _c = 55 °C
Peak one cycle surge (non repetitive) current	I _{TSM}		15500		A	10.0 msec (50Hz), sinusoidal wave-shape, 180° conduction, T _j = 125 °C
I square t	I ² t		1.2x10 ⁶		A ² s	10.0 msec
Holding current	I _H		1000		mA	V _D = 24 V; I = 2.5 A
Peak on-state voltage	V _{TM}		1.9		V	I _{TM} = 2000 A; Duty cycle ≤ 0.01%
Critical rate of rise of on-state current (5, 6)	di/dt		1500		A/μs	Switching from V _{DRM} ≤ 1000 V, non-repetitive
Critical rate of rise of on-state current (6)	di/dt		1000		A/μs	Switching from V _{DRM} ≤ 1000 V

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 +125 °C.

(2) 10 msec. max. pulse width

(3) Maximum value for T_j = 125 °C.

(4) Minimum value for linear and exponential waveshape to 80% rated V_{DRM}. Gate open. T_j = 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 thyristor under test.

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ELECTRICAL CHARACTERISTICS AND RATINGS (cont'd)

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Gating

Parameter	Symbol	Min.	Max.	Typ.	Units	Conditions
Peak gate power dissipation	P _{GM}		30		W	t _p = 40 μs
Average gate power dissipation	P _{G(AV)}		5		W	
Peak gate current	I _{GM}		10		A	
Gate current required to trigger all units	I _{GT}		300		mA	V _D = 6 V; R _L = 3 ohms; T _j = +25 °C
Gate voltage required to trigger all units	V _{GT}		3		V	V _D = 6 V; R _L = 3 ohms; T _j = +25 °C
Peak negative voltage	V _{GRM}		5		V	

Dynamic

Parameter	Symbol	Min.	Max.	Typ.	Units	Conditions
Delay time	t _d		1.5	0.7	μs	I _{TM} = 500 A; V _D = Rated V _{DRM} Gate pulse: V _G = 20 V; R _G = 20 ohms; t _r = 0.1 μs; t _p = 20 μs
Turn-off time (with V _R = -50 V)	t _q		40		μs	I _{TM} = 1000 A; di/dt = 60 A/μs; V _R ≥ -50 V; Re-applied dV/dt = 200 V/μs linear to 80% V _{DRM} ; V _G = 0; T _j = 125 °C; t _p = 1ms
Reverse recovery charge	Q _{rr}		*	940	μC	I _{TM} = 1000 A; di/dt = 60 A/μs; V _R ≥ 50 V

* For guaranteed max. value, contact factory.

THERMAL AND MECHANICAL CHARACTERISTICS AND RATINGS

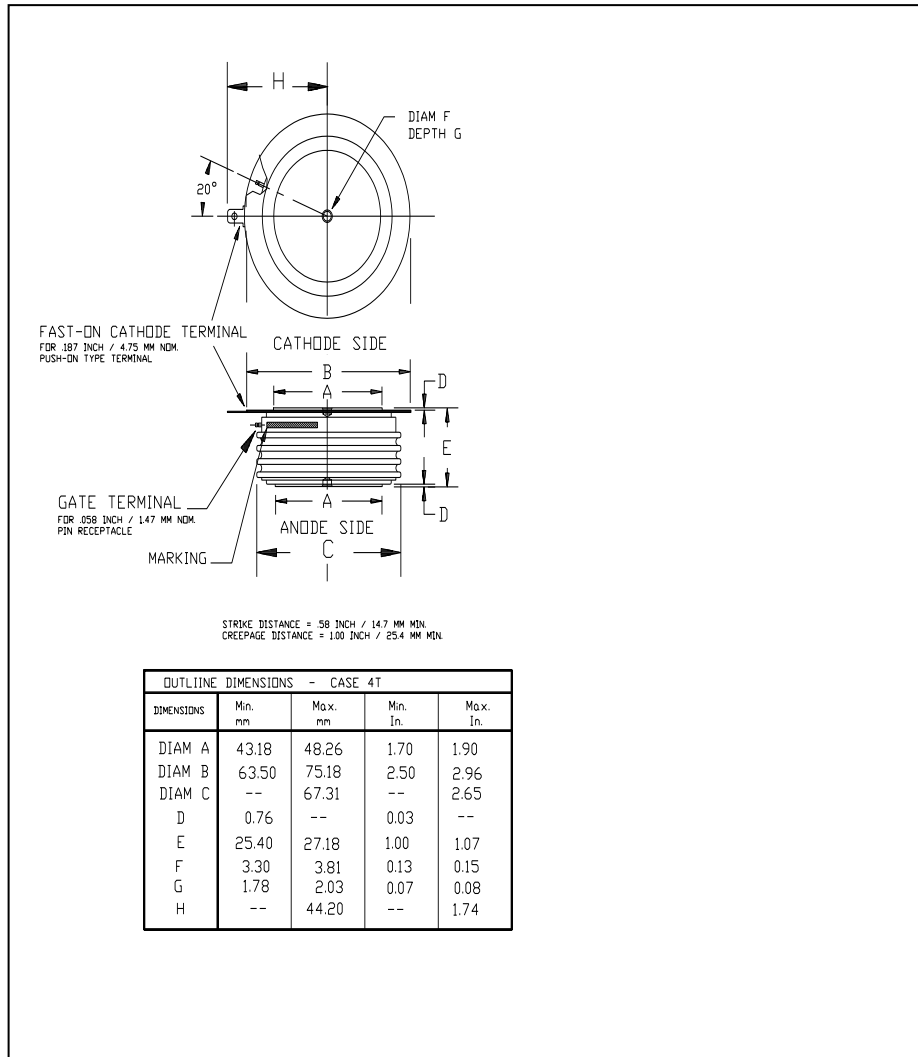
Parameter	Symbol	Min.	Max.	Typ.	Units	Conditions
Operating temperature	T _j	-40	+125		°C	
Storage temperature	T _{stg}	-40	+150		°C	
Thermal resistance - junction to case	R _{θ(j-c)}		0.023 0.046		°C/W	Double sided cooled Single sided cooled
Thermal resistance - case to sink	R _{θ(j-c)}		0.010 0.020		°C/W	Double sided cooled * Single sided cooled *
Mounting force	P	5500 24.5	6000 26.7		lb. kN	
Weight	W			16 460	oz. g	

* Mounting surfaces smooth, flat and greased

Note : for case outline and dimensions, see case outline drawing in page 4 of this Technical Data

REP1275NSx- Power Thyristor

CASE OUTLINE AND DIMENSIONS.



REP1275NSx - POWER THYRISTOR