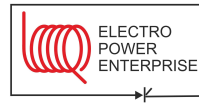


ELECTRO POWER

REP0878LS20E- Power Thyristor



1200-2000 V_{DRM} ; 1000 A rms

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HIGH POWER THYRISTOR FOR INVERTER AND CHOPPER APPLICATIONS

Features:

- . All Diffused Structure
- . Interdigitated Amplifying Gate Configuration
- . 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)
REP0878LS20 E	2000	2000	2100

V_{RRM} = Repetitive peak reverse voltage

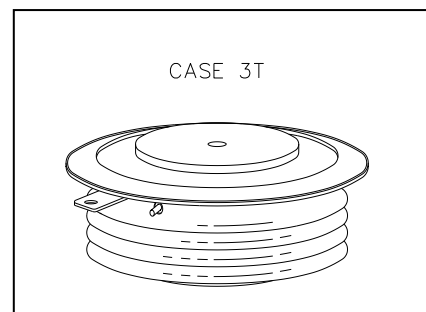
V_{DRM} = Repetitive peak off state voltage

V_{RSM} = Non repetitive peak reverse voltage (2)

Repetitive peak reverse leakage and off state leakage	I_{RRM} / I_{DRM}	15 mA 70 mA (3)
Critical rate of voltage rise (4)	dV/dt	500 V/ μ sec

Conducting - on state

Parameter	Symbol	Min.	Max.	Typ.	Units	Conditions
RMS value of on-state current	I_{TRMS}		878		A	Nominal value
Peak one cycle surge (non repetitive) current	I_{TSM}		1765 1456		A A	8.3 msec (60Hz), sinusoidal wave-shape, 180° conduction, $T_j = 125^\circ\text{C}$ 10.0 msec (50Hz), sinusoidal wave-shape, 180° conduction, $T_j = 125^\circ\text{C}$
I square t	I^2t		281000		A^2s	8.3 msec and 10.0 msec
Latching current	I_L		1000		mA	$V_D = 24\text{ V}$; $R_L = 12\text{ ohms}$
Holding current	I_H		500		mA	$V_D = 24\text{ V}$; $I = 2.5\text{ A}$
Peak on-state voltage	V_{TM}		2.12		V	$I_{TM} = 1400\text{ A}$; Duty cycle $\leq 0.01\%$
Critical rate of rise of on-state current (5, 6)	di/dt		800		A/ μ s	Switching from $V_{DRM} \leq 1000\text{ V}$, non-repetitive
Critical rate of rise of on-state current (6)	di/dt		400		A/ μ s	Switching from $V_{DRM} \leq 1000\text{ V}$



Notes:

All ratings are specified for $T_j = 25^\circ\text{C}$ unless otherwise stated.

(1) All voltage ratings are specified for an applied 50Hz/60Hz sinusoidal waveform over the temperature range -40 to $+125^\circ\text{C}$.

(2) 10 msec. max. pulse width

(3) Maximum value for $T_j = 125^\circ\text{C}$.

(4) Minimum value for linear and exponential waveshape to 80% rated V_{DRM} . Gate open. $T_j = 125^\circ\text{C}$.

(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 $0.2\text{ }\mu\text{F}$ capacitor and 20 ohms resistance in parallel with the thyristor under test.

ELECTRICAL CHARACTERISTICS AND RATINGS (cont.)

Power Thyristor REP0878LS20E

Gating

Parameter	Symbol	Min.	Max.	Typ.	Units	Conditions
Peak gate power dissipation	P_{GM}		200		W	$t_p = 40 \mu s$
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}		400 200 150		mA mA mA	$V_D = 6 V; R_L = 3 \text{ ohms}; T_j = -40^\circ C$ $V_D = 6 V; R_L = 3 \text{ ohms}; T_j = +25^\circ C$ $V_D = 6 V; R_L = 3 \text{ ohms}; T_j = +125^\circ C$
Gate voltage required to trigger all units	V_{GT}	0.25	5 3		V V V	$V_D = 6 V; R_L = 3 \text{ ohms}; T_j = -40^\circ C$ $V_D = 6 V; R_L = 3 \text{ ohms}; T_j = 0-125^\circ C$ $V_D = \text{Rated } V_{DRM}; R_L = 1000 \text{ ohms}; T_j = +125^\circ C$
Peak negative voltage	V_{GRM}		5		V	

Dynamic

Parameter	Symbol	Min.	Max.	Typ.	Units	Conditions
Delay time	t_d		1.5	0.5	μs	$I_{TM} = 500 A; V_D = \text{Rated } V_{DRM}$ Gate pulse: $V_G = 20 V; R_G = 20 \text{ ohms}; t_r = 0.1 \mu s; t_p = 20 \mu s$
Turn-off time (with $V_R = -50 V$)	t_q		25		μs	$I_{TM} = 500 A; di/dt = 25 A/\mu s;$ $V_R \geq -50 V; \text{Re-applied } dV/dt = 400 V/\mu s \text{ linear to } 80\% V_{DRM}; V_G = 0;$ $T_j = 125^\circ C; \text{Duty cycle} \geq 0.01\%$
Reverse recovery charge	Q_{rr}		*		μC	$I_{TM} = 500 A; di/dt = 25 A/\mu s;$ $V_R \geq -50 V$

* For guaranteed max. value, contact factory.

THERMAL AND MECHANICAL CHARACTERISTICS AND RATINGS

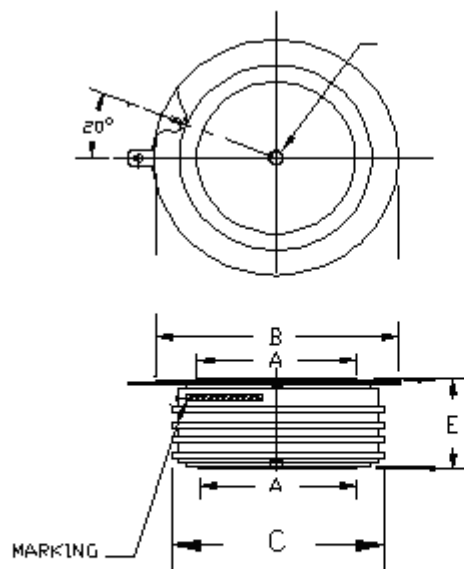
Parameter	Symbol	Min.	Max.	Typ.	Units	Conditions
Operating temperature	T_j	-40	+125		$^\circ C$	
Storage temperature	T_{stg}	-40	+150		$^\circ C$	
Thermal resistance - junction to case	$R_{\theta(j-c)}$		0.040 0.080		$^\circ C/W$	Double sided cooled Single sided cooled
Thermal resistance - case to sink	$R_{\theta(c-s)}$		0.015 0.030		$^\circ C/W$	Double sided cooled * Single sided cooled *
Mounting force	P	3000 13.3	3500 15.5		lb. kN	
Weight	W			9 225	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

CASE OUTLINE AND DIMENSIONS.

Power Thyristor REP0878LS20E



A:	34 mm
B:	59 mm
C:	53 mm
E:	26 mm