

POWER THYRISTOR FOR INVERTER AND CHOPPER APPLICATIONS

YZPST-ST303S08PFN

Features:

- All diffused Structure
- Compression bonded construction
- Blocking capability up to 1200 volts

Applications:

- DC choppers
- High power inverters

ELECTRICAL CHARACTERISTICS AND RATINGS

Blocking – Off State

Device Type	$V_{RRM(1)}$	$V_{DRM(1)}$	$V_{RSM(1)}$
ST303S08PFN	800	800	900

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 $T_j=125^\circ\text{C}$.

V_{RRM} =Repetitive peak reverse voltage

V_{DRM} =Repetitive peak off state voltage

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

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

Repetitive peak reverse	I_{RRM}/I_{DRM}	5mA
Leakage and off state leakage		15mA(3)
Critical rate of voltage rise(4)	dv/dt	200V/ μ sec

Conducting-on state

Parameter	Symbol	Min.	Max.	Type.	Units	Conditions
Average value of on-state current	$I_{T(AV)}$		300		A	Sinewave, 180 ° conduction, $T_c=65^{\circ}C$
RMS value of on-state current	$I_{T(RMS)}$		471		A	Nominal value
Peak one cycle surge (non repetitive) current	I_{TSM}		7000		A	10 msec(50Hz), sinusoidal wave- shape, 180 ° conduction, $T_j=125^{\circ}C$
I square t	I^2t		245000		A^2s	10msec
Latching current	I_L		180		mA	$V_D=24V; R_L=12$ ohms
Holding current	I_H		500	60	mA	$V_D=24V; I=2.5A$
Peak on-state voltage	V_{TM}		2.3		V	$I_{TM}=1250A; \text{Duty cycle} \leq 0.01\%$
Critical rate of rise of on-sate Current (6)	di/dt		200		$A/\mu s$	$V_D=1/2DRM \quad I_G=1.0A$ $T_j=125^{\circ}C$

Gating

Parameter	Symbol	Min.	Max.	Type.	Units	Conditions
Peak gate power dissipation	P_{GM}		60		W	$T_p=40 \mu s$
Average gate power dissipation	$P_{G(AV)}$		2		W	
Peak gate current	I_{GM}		3		A	
Gate current required to trigger all Units	I_{GT}		200		mA	$V_D=6V; R_L=3$ ohms; $T_j=+25^{\circ}C$
Gate current required to trigger all Units	V_{GT}		3.0		V	$V_D=6V; R_L=3$ ohms; $T_j=25^{\circ}C$

Dynamic

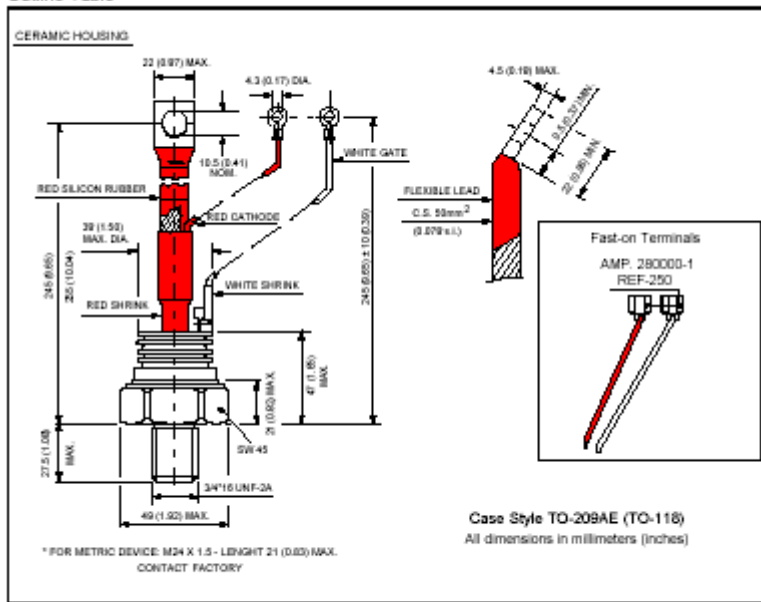
Parameter	Symbol	Min.	Max.	Type.	Units	Conditions
Delay time	t_d		1.5	0.7	μs	$I_{TM}=300A; V_D=Rated V_{DRM}$ Gate pulse: $V_G=20V; R_G=20ohms;$ $t_r=0.1 \mu s; t_p=20 \mu s$
Turn-off time(with $V_R=-50V$)	t_q	25	40	30	μs	$I_{TM}=300A; di/dt=25A/\mu s;$ $V_R \geq -50V; Re-applied dv/dt=20V/\mu s$ Linear to 80% $V_{DRM}; V_G=0; T_j=125^\circ C;$ Duty cycle $\geq 0.01\%$

THERMAL AND MECHANICAL CHARACTERISTICS AND RATINGS

Parameter	Symbol	Min.	Max.	Type.	Units	Conditions
Operating temperature	T_j	-40	+125		$^\circ C$	
Storage temperature	T_{stg}	-40	+150		$^\circ C$	
Thermal resistance-junction to Case	$R_{th(j-c)}$		0.1		$^\circ C/W$	Single sided cooled*180 sine wave
Thermal resistance-case to sink	$R_{th(c-s)}$		0.05		$^\circ C/W$	Single sided cooled*
Mounting torque	T	38	41		Nm	
Weight	W			510	g	

OUTLINE

Outline Table



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