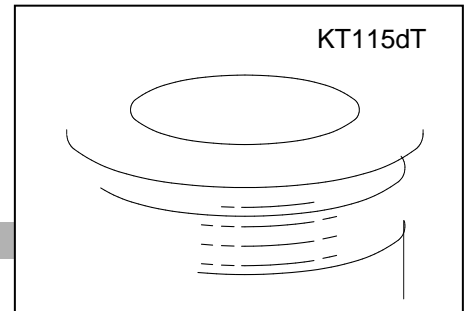




FREE FLOATING TYPE THYRISTOR FOR PHASE CONTROL APPLICATIONS

Features:

- . Free-floating silicon technology
- . Low on-state and switching losses
- . Optimum power handling capability
- . Blocking capability up to 5200 volts
- . Distributed amplifying gate



ELECTRICAL CHARACTERISTICS AND RATINGS

Blocking - Off State

Device Type	V_{RRM} (1)	V_{DRM} (1)	V_{RSM} (1)
KP3910/44	4400	4400	4500
KP3910/46	4600	4600	4700
KP3910/48	4800	4800	4900
KP3910/50	5000	5000	5100
KP3910/52	5200	5200	5300

V_{RRM} = Repetitive peak reverse voltage
 V_{DRM} = Repetitive peak off state voltage
 V_{RSM} = Non repetitive peak reverse voltage (2)

Notes:

- (1) All voltage ratings are specified for an applied 50Hz/60zHz sinusoidal waveform over the temperature range 0 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 67% rated V_{DRM} . Gate open. $T_j = 125$ °C.
- (5).The value of di/dt is established in accordance with JB/T 8950.2-2013

Repetitive peak reverse leakage and off state leakage	I_{RRM}/I_{DRM}	10mA 200 mA (3)
Critical rate of voltage rise	dv/dt (4)	2000 V/sec (min)

Conducting - On State

Parameter	Symbol	Min.	Max.	Typ.	Units	Conditions
Average value of on-state current	$I_{T(AV)}$		3910		A	Sinewave, 180° conduction, $T_c=65$ °C
RMS value of on-state current	$I_{T(RMS)}$		6138		A	Nominal value
Peak one cycle surge (non repetitive) current	I_{TSM}		55000		A	10.0 msec (50Hz), sinusoidal waveshape, 180° conduction, $T_j = 125$ °C
I square t	I^2t		1.5×10^7		A ² s	10 msec
Latching current	I_L		1000		mA	$V_D = 12$ V; $R_L = 12$ ohms
Holding current	I_H		200		mA	$V_D = 12$ V; $I = 2.5$ A
Peak on-state voltage	V_{TM}		1.5		V	$I_{TM}=3000A; T_j = 25$ °C
Threshold voltage, low-level	V_{TO}		1.0		V	$T_j=125$ °C
Slope resistance, low-level	r_T		0.165			3000A to 6000A
Critical rate of rise of on-state current	di/dt		100		A/	Repetition

Gating

Parameter	Symbol	Min.	Max.	Typ.	Units	Conditions
Peak gate power dissipation	P_{GM}		20		W	
Average gate power dissipation	$P_{G(AV)}$		4		W	
Gate-trigger current	I_{GT}		300		mA	$V_D = 12\text{ V}; R_L = 3\text{ ohms}; T_j = +25\text{ }^\circ\text{C}$
Gate- trigger voltage	V_{GT}	0.8	3.0		V	$V_D = 12\text{ V}; R_L = 3\text{ ohms}; T_j = +25\text{ }^\circ\text{C}$
Peak negative voltage	V_{GRM}		10		V	

Dynamic

Parameter	Symbol	Min.	Max.	Typ.	Units	Conditions
Delay time	t_d		3.0		μs	$I_{FG} = 2.0\text{ A}; V_D = 0.4V_{DRM}; t_r = 0.5\mu\text{s}$
Turn-off time (with $V_R = -5\text{ V}$)	t_q		800		μs	$I_{TM} = 1000\text{ A}; di/dt = -10\text{ A}/\mu\text{s}; V_R = 100\text{ V}; dV/dt = 30\text{ V}/\mu\text{s}; V_D = 67\%V_{DRM}; T_j = 125^\circ\text{C}$
Reverse recovery charge	Q_{rr}		2800		μC	$I_{TM} = 1000\text{ A}; di/dt = -1\text{ A/s}; V_R = 100\text{ V}; T_j = 125^\circ\text{C}$

THERMAL AND MECHANICAL CHARACTERISTICS AND RATINGS

Parameter	Symbol	Min.	Max.	Typ.	Units	Conditions
Operating temperature	T_j	-40	+125		$^\circ\text{C}$	
Storage temperature	T_{stg}	-40	+125		$^\circ\text{C}$	
Thermal resistance - junction to case	$R_{\square-c}$		0.0057		$^\circ\text{C}/\text{W}$	Double sided cooled
Thermal resistance - case to heatsink	$R_{\square-s}$		0.0015		$^\circ\text{C}/\text{W}$	Double sided cooled
Mounting force	P			90	kN	
Weight	W			2.90	kg	

* Mounting surfaces smooth, flat and greased

