

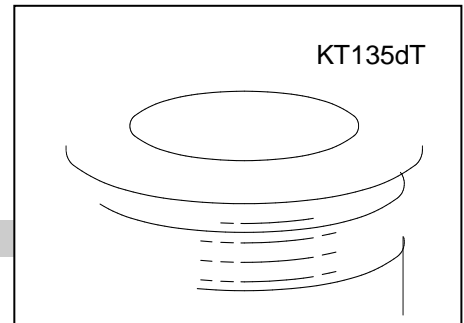


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**FREE FLOATING TYPE THYRISTOR FOR PHASE CONTROL APPLICATIONS**

**Features:**

- . Free-floating silicon technology
- . Low on-state and switching losses
- . Optimum power handling capability
- . Blocking capability up to 4200 volts
- . Distributed amplifying gate



**ELECTRICAL CHARACTERISTICS AND RATINGS**

**Blocking - Off State**

Device Type	V <sub>RRM</sub> (1)	V <sub>DRM</sub> (1)	V <sub>RSM</sub> (1)
KP5580/34	3400	3400	3500
KP5580/36	3600	3600	3700
KP5580/38	3800	3800	3900
KP5580/40	4000	4000	4100
KP5580/42	4200	4200	4300

V<sub>RRM</sub> = Repetitive peak reverse voltage  
 V<sub>DRM</sub> = Repetitive peak off state voltage  
 V<sub>RSM</sub> = Non repetitive peak reverse voltage (2)

Notes:

- (1) All voltage ratings are specified for an applied 50Hz/60Hz sinusoidal waveform over the temperature range 0 to +125 °C.
- (2) 10 msec. max. pulse width
- (3) Maximum value for T<sub>j</sub> = 125 °C.
- (4) Minimum value for linear and exponential waveshape to 67% rated V<sub>DRM</sub>. Gate open. T<sub>j</sub> = 125 °C.
- (5). The value of di/dt is established in accordance with EIA/NIMA Standard JB/T 8950.2-2013

Repetitive peak reverse leakage and off state leakage	I <sub>RRM</sub> /I <sub>DRM</sub>	5 mA 200 mA (3)
Critical rate of voltage rise	dv/dt (4)	1000 V//μsec

**Conducting - On State**

Parameter	Symbol	Min.	Max.	Typ.	Units	Conditions
Average value of on-state current	I <sub>T(AV)</sub>		5580		A	Sinewave, 180° conduction, T <sub>c</sub> =70°C
RMS value of on-state current	I <sub>T(RMS)</sub>		8760		A	Nominal value
Peak one cycle surge (non repetitive) current	I <sub>TSM</sub>		90000		A	10.0 msec (50Hz), sinusoidal waveshape, 180° conduction, T <sub>j</sub> = 125 °C
I square t	I <sup>2</sup> t		4x10 <sup>7</sup>		A <sup>2</sup> s	10 msec
Latching current	I <sub>L</sub>		1000		mA	V <sub>D</sub> = 12 V; R <sub>L</sub> = 12 ohms
Holding current	I <sub>H</sub>		200		mA	V <sub>D</sub> = 12 V; I = 2.5 A
Peak on-state voltage	V <sub>TM</sub>		1.40		V	I <sub>TM</sub> =5000A; T <sub>j</sub> =25°C
Threshold voltage, low-level	V <sub>TO</sub>		0.9		V	T <sub>j</sub> =125°C
Slope resistance, low-level	r <sub>T</sub>		0.1			3000A to 6000A
Critical rate of rise of on-state current	di/dt		200			Repetition

**Gating**

Parameter	Symbol	Min.	Max.	Typ.	Units	Conditions
Peak gate power dissipation	P <sub>GM</sub>		20		W	
Average gate power dissipation	P <sub>G(AV)</sub>		4		W	
Gate-trigger current	I <sub>GT</sub>		200		mA	V <sub>D</sub> = 12 V; R <sub>L</sub> = 3 ohms; T <sub>j</sub> = +25 °C
Gate- trigger voltage	V <sub>GT</sub>	0.70	2.5		V	V <sub>D</sub> = 12 V; R <sub>L</sub> = 3 ohms; T <sub>j</sub> = +25 °C
Peak negative voltage	V <sub>GRM</sub>		5		V	

**Dynamic**

Parameter	Symbol	Min.	Max.	Typ.	Units	Conditions
Delay time	t <sub>d</sub>		3.0	2.5	μs	I <sub>TM</sub> = 100 A; V <sub>D</sub> = 67% V <sub>DRM</sub> Gate pulse: V <sub>G</sub> = 30 V; R <sub>G</sub> = 10 ohms; t <sub>r</sub> % <sub>p</sub> %
Turn-off time (with V <sub>R</sub> = -5 V)	t <sub>q</sub>			600	μs	I <sub>TM</sub> = 2000 A; di/dt = -10 A/μs; V <sub>R</sub> = 50 V; dV/dt = 30V/μs ; V <sub>D</sub> = 67% V <sub>DRM</sub> ; T <sub>j</sub> = 125 °C
Reverse recovery charge	Q <sub>rr</sub>			5000	μC	I <sub>TM</sub> = 2000A; di/dt = -10A/s; V <sub>R</sub> = 50 V; T <sub>j</sub> = 125 °C

**THERMAL AND MECHANICAL CHARACTERISTICS AND RATINGS**

Parameter	Symbol	Min.	Max.	Typ.	Units	Conditions
Operating temperature	T <sub>j</sub>	-40	+125		°C	
Storage temperature	T <sub>stg</sub>	-40	+125		°C	
Thermal resistance - junction to case	R <sub>θ(c)</sub>		0.004		°C/W	Double sided cooled
Thermal resistance - case to heatsink	R <sub>θ(s)</sub>		0.001		°C/W	Double sided cooled
Mounting force	P			120	kN	
Weight	W			3.60	kg	

\* Mounting surfaces smooth, flat and greased

