

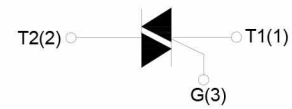
## DESCRIPTION:

With high ability to withstand the shock loading of large current, **VSA16/VSB16** triacs provide high dv/dt rate with strong resistance to electromagnetic interface. With high commutation performances, 3 quadrants products especially recommended for use on inductive load.



## MAIN FEATURES

Symbol	Value	Unit
$I_{T(RMS)}$	16	A
$V_{DRM}/V_{RRM}$	600/800/1200	V



## ABSOLUTE MAXIMUM RATINGS

Parameter		Symbol	Value	Unit
Storage junction temperature range		$T_{stg}$	-40-150	°C
Operating junction temperature range		$T_j$	-40-125	°C
Repetitive peak off-state voltage ( $T_j=25^{\circ}C$ )		$V_{DRM}$	600/800/1200	V
Repetitive peak reverse voltage ( $T_j=25^{\circ}C$ )		$V_{RRM}$	600/800/1200	V
Non repetitive surge peak Off-state voltage		$V_{DSM}$	$V_{DRM} + 100$	V
Non repetitive peak reverse voltage		$V_{RSM}$	$V_{RRM} + 100$	V
RMS on-state current	TO-220A(Ins)/ TO-220F(Ins) ( $T_c=75^{\circ}C$ )	$I_{T(RMS)}$	16	A
	TO-220B(Non-Ins)/ TO-220C ( $T_c=95^{\circ}C$ )			
	TO-262 ( $T_c=70^{\circ}C$ )			
Non repetitive surge peak on-state current (full cycle, $F=50Hz$ )		$I_{TSM}$	160	A

I <sup>2</sup> t value for fusing (tp=10ms)	I <sup>2</sup> t	128	A <sup>2</sup> s
Critical rate of rise of on-state current (I <sub>G</sub> = 2 × I <sub>GT</sub> )	di/dt	50	A/μs
Peak gate current	I <sub>GM</sub>	4	A
Average gate power dissipation	P <sub>G(AV)</sub>	1	W
Peak gate power	P <sub>GM</sub>	5	W

### ELECTRICAL CHARACTERISTICS (T<sub>j</sub>=25°C unless otherwise specified)

#### 3 Quadrants

Symbol	Test Condition	Quadrant		Value				Unit
				BW	CW	SW	TW	
I <sub>GT</sub>	V <sub>D</sub> = 12V R <sub>L</sub> = 33Ω	I - II - III	MAX	50	35	10	5	mA
V <sub>GT</sub>		I - II - III	MAX	1.3				V
V <sub>GD</sub>	V <sub>D</sub> = V <sub>DRM</sub> T <sub>j</sub> = 125°C R <sub>L</sub> = 3.3KΩ	I - II - III	MIN	0.2				V
I <sub>L</sub>	I <sub>G</sub> = 1.2I <sub>GT</sub>	I - III	MAX	70	50	30	15	mA
		II		80	60	40	20	
I <sub>H</sub>	I <sub>T</sub> = 100mA		MAX	60	40	25	15	mA
dV/dt	V <sub>D</sub> = 2/3V <sub>DRM</sub> Gate Open T <sub>j</sub> = 125°C		MIN	1000	500	200	100	V/μs

#### 4 Quadrants

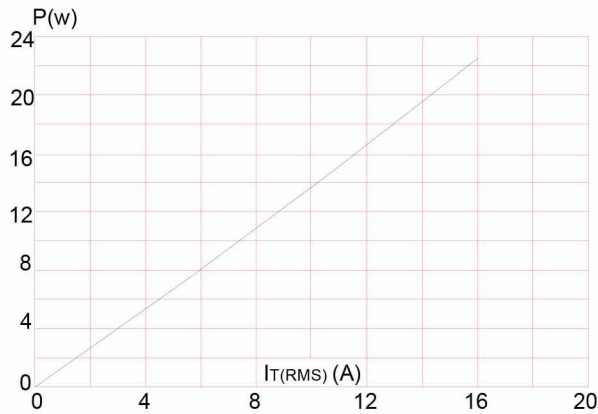
Symbol	Test Condition	Quadrant		Value		Unit
				B	C	
I <sub>GT</sub>	V <sub>D</sub> = 12V R <sub>L</sub> = 33Ω	I - II - III	MAX	50	25	mA
		IV		70	50	
V <sub>GT</sub>		ALL	MAX	1.5		V
V <sub>GD</sub>	V <sub>D</sub> = V <sub>DRM</sub> T <sub>j</sub> = 125°C R <sub>L</sub> = 3.3KΩ	ALL	MIN	0.2		V
I <sub>L</sub>	I <sub>G</sub> = 1.2I <sub>GT</sub>	I - III - IV	MAX	70	50	mA
		II		100	80	
I <sub>H</sub>	I <sub>T</sub> = 100mA		MAX	60	40	mA
dV/dt	V <sub>D</sub> = 2/3V <sub>DRM</sub> Gate Open T <sub>j</sub> = 125°C		MIN	500	200	V/μs

## STATIC CHARACTERISTICS

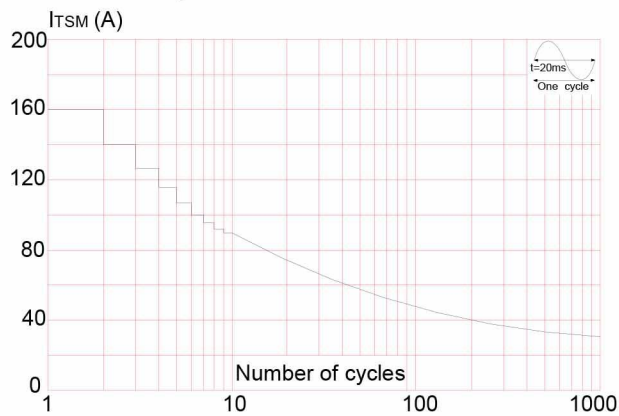
Symbol	Parameter		Value(MAX)			Unit
			-600V	-800V	-1200V	
$V_{TM}$	$I_{TM}=22.5A$ $t_p=380\mu s$	$T_j=25^{\circ}C$	1.5			V
$I_{DRM}$	$V_D=V_{DRM}$ $V_R=V_{RRM}$	$T_j=25^{\circ}C$	5	5	10	$\mu A$
$I_{RRM}$		$T_j=125^{\circ}C$	1	1	2	mA

## THERMAL RESISTANCES

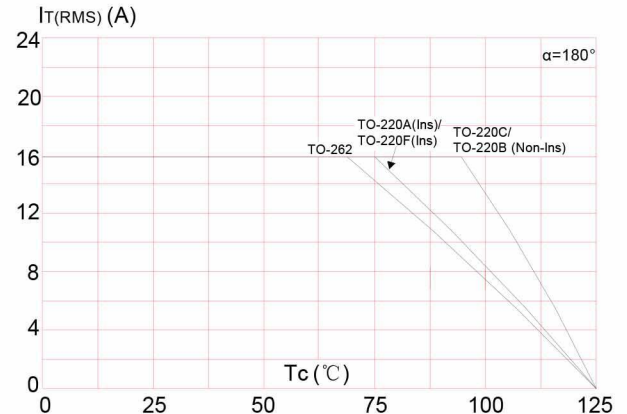
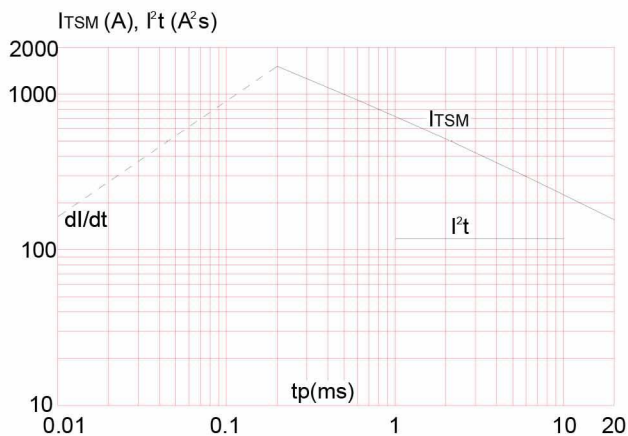
Symbol	Parameter		Value	Unit
$R_{th(j-c)}$	junction to case(AC)	TO-220A(Ins)	2.1	$^{\circ}C/W$
		TO-220B(Non-Ins)/ TO-220C	1.2	
		TO-220F(Ins)	2.3	
		TO-262	2.5	



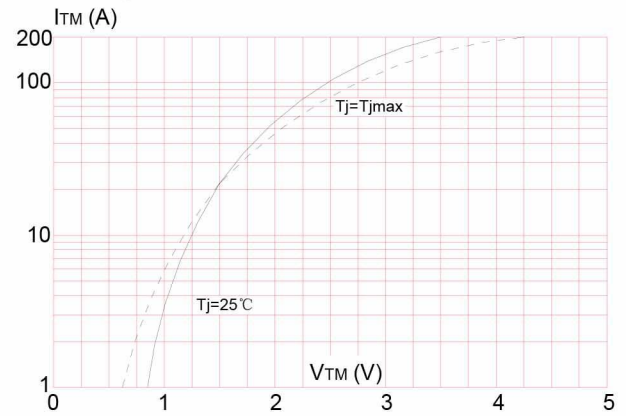
**FIG.3:** Surge peak on-state current versus number of cycles



**FIG.5:** Non-repetitive surge peak on-state current for a sinusoidal pulse with width  $t_p < 20\text{ms}$ , and corresponding value of  $I^2t$  ( $di/dt < 50\text{A}/\mu\text{s}$ )



**FIG.4:** On-state characteristics (maximum values)



**FIG.6:** Relative variations of gate trigger current, holding current and latching current versus junction temperature

