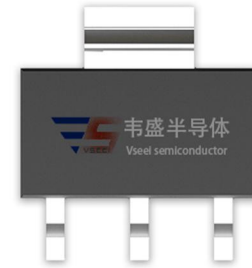


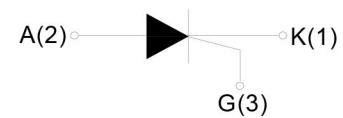
DESCRIPTION:

The **VS008-S23** series provide high dv/dt rate with strong resistance to electromagnetic interface. They are especially recommended for use on residual current circuit breaker, straight hair, igniter etc.



MAIN FEATURES

Symbol	Value	Unit
$I_{T(RMS)}$	0.8	A
I_{GT}	≤ 200	μA



ABSOLUTE MAXIMUM RATINGS

Parameter		Symbol	Value	Unit
Storage junction temperature range		T_{stg}	-40-150	$^{\circ}C$
Operating junction temperature range		T_j	-40-125 ^①	$^{\circ}C$
Repetitive peak off-state voltage		V_{DRM}	600	V
Repetitive peak reverse voltage		V_{RRM}	600	V
RMS on-state current	SOT-23-3L ($T_c=40^{\circ}C$)	$I_{T(RMS)}$	0.8	A
	SOT-89-2L ($T_c=70^{\circ}C$)			
	SOT-223-2L ($T_c=90^{\circ}C$)			
Non repetitive surge peak on-state current (F=50Hz tp=10ms)		I_{TSM}	8	A
Non repetitive surge peak on-state current (F=60Hz tp=8.3ms)		I_{TSM}	9	A
I^2t value for fusing (tp=10ms)		I^2t	0.32	A^2s
Critical rate of rise of on-state current		dl/dt	50	A/ μs
Peak gate current (tp=20 μs , $T_j=125^{\circ}C$)		I_{GM}	0.2	A
Peak gate power (tp=20 μs , $T_j=125^{\circ}C$)		P_{GM}	0.5	W
Average gate power dissipation($T_j=125^{\circ}C$)		$P_{G(AV)}$	0.1	W

NOTE 1: When we parallel connect a $\leq 1K\Omega$ resistor between Gate and Cathode, the T_j can reach $125^{\circ}C$; if without this resistor, the T_j only can reach $110^{\circ}C$.

ELECTRICAL CHARACTERISTICS ($T_j=25^{\circ}\text{C}$ unless otherwise specified)

Symbol	Test Condition	Value			Unit
		MIN.	TYP.	MAX.	
I_{GT}	$V_D=12\text{V}$ $R_L=33\Omega$	20	50	200	μA
V_{GT}		-	0.6	0.8	V
V_{GD}	$V_D=V_{DRM}$ $T_j=125^{\circ}\text{C}$	0.2	-	-	V
I_L	$I_G=1.2 I_{GT}$	-	-	4	mA
I_H	$I_T=0.05\text{A}$	-	-	3	mA
dV/dt	$V_D=400\text{V}$ $T_j=125^{\circ}\text{C}$ $R_{GK}=1\text{K}\Omega$	600	-	-	V/ μs
dV/dt	$V_D=400\text{V}$ $T_j=125^{\circ}\text{C}$ $R_{GK}=220\Omega$	1000	-	-	V/ μs
t_{on}	$I_G=10\text{mA}$ $I_A=4\text{mA}$ $I_R=0.4\text{mA}$ $T_j=25^{\circ}\text{C}$	-	2	-	μs
t_{off}		-	50	-	μs
R_d	Dynamic Resistance $T_j=125^{\circ}\text{C}$	-	-	35	m Ω

STATIC CHARACTERISTICS

Symbol	Parameter		Value(MAX)	Unit
V_{TM}	$I_T=1.1\text{A}$ $t_p=380\mu\text{s}$	$T_j=25^{\circ}\text{C}$	1.5	V
I_{DRM}	$V_D=V_{DRM}$ $V_R=V_{RRM}$	$T_j=25^{\circ}\text{C}$	5	μA
I_{RRM}		$T_j=125^{\circ}\text{C}$	100	μA

THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
$R_{th(j-c)}$	junction to case	SOT-23-3L	75	$^{\circ}\text{C}/\text{W}$
		SOT-89-2L	45	
		SOT-223-2L	31	
$R_{th(j-a)}$	junction to ambient	SOT-23-3L	125	$^{\circ}\text{C}/\text{W}$
		SOT-89-2L	90	
		SOT-223-2L	60	

FIG.1 Maximum power dissipation versus RMS on-state current

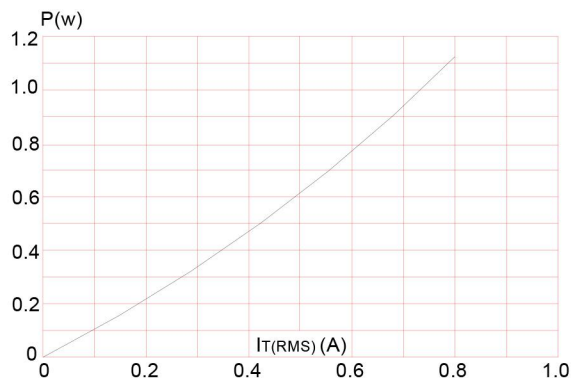


FIG.2: RMS on-state current versus ambient temperature (printed circuit board FR4, copper thickness:35 μ m)(full cycle)

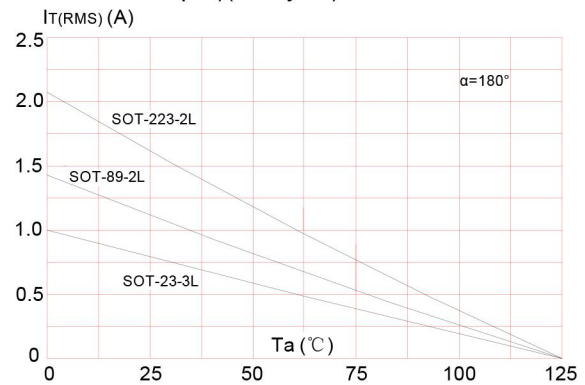


FIG.3: Surge peak on-state current versus number of cycles

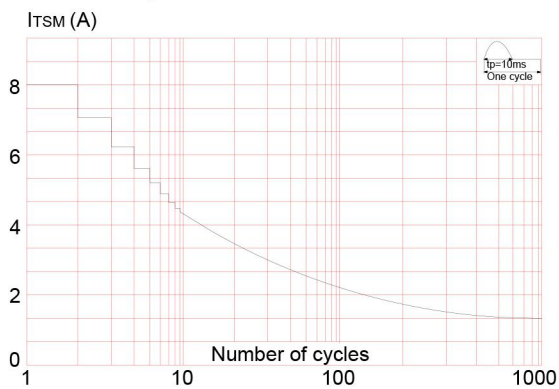


FIG.4: On-state characteristics (maximum values)

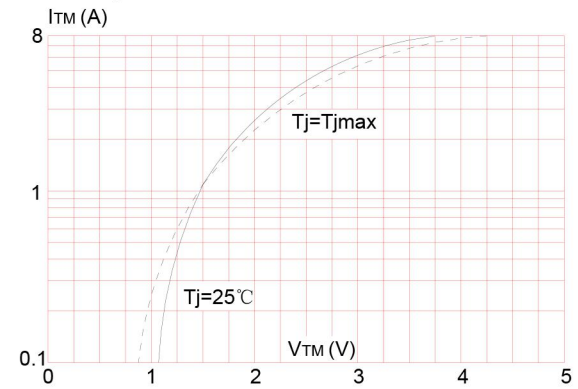


FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 10$ ms, and corresponding value of I^2t ($dI/dt < 50$ A/ μ s)

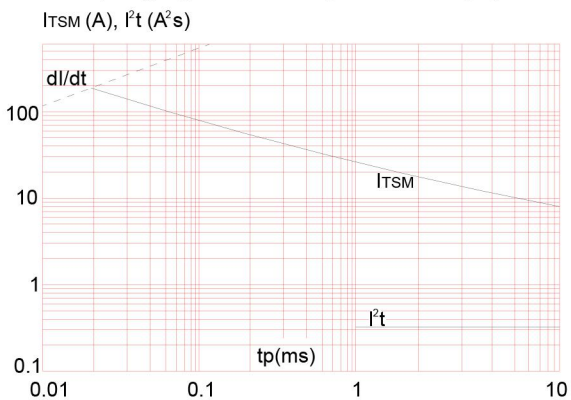


FIG.6: Relative variations of gate trigger current, holding current and latching current versus junction temperature

