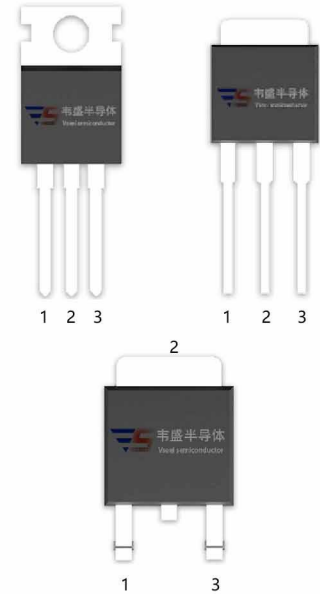


DESCRIPTION:

With high ability to withstand the shock loading of large current, **VST151-SS** of silicon controlled rectifiers provide high dv/dt rate with strong resistance to electromagnetic interference.



MAIN FEATURES

Symbol	Value	Symbol
V_{DRM}/V_{RRM}	650/800	V
$I_{T(RMS)}$	12	A
I_{GT}	≤ 15	mA

ABSOLUTE MAXIMUM RATINGS

Parameter		Symbol	Value	Unit
Storage junction temperature range		T_{stg}	-40 - 150	$^{\circ}C$
Operating junction temperature range		T_j	-40 - 150	$^{\circ}C$
Repetitive peak off-state voltage ($T_j=25^{\circ}C$)		V_{DRM}	650/800	V
Repetitive peak reverse voltage ($T_j=25^{\circ}C$)		V_{RRM}	650/800	V
RMS on-state current	TO-252-4R ($T_c=115^{\circ}C$)	$I_{T(RMS)}$	12	A
	TO-263 ($T_c=100^{\circ}C$)			
Non repetitive surge peak on-state current ($F=50Hz$ $t_p=10ms$)		I_{TSM}	120	A
Non repetitive surge peak on-state current ($F=60Hz$ $t_p=8.3ms$)		I_{TSM}	132	A
I^2t value for fusing ($t_p=10ms$)		I^2t	72	A^2s
Repetitive rate of rise of on-state current ($I_G=2 \times I_{GT}$)		dI_T/dt	50	$A/\mu s$
Peak gate current		I_{GM}	2	A

Peak gate power	P_{GM}	5	W
Average gate power dissipation	$P_{G(AV)}$	0.5	W

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

Symbol	Test Condition	Value			Unit
		MIN.	TYP.	MAX.	
I_{GT}	$V_D=12\text{V } R_L=33\Omega$	-	4	15	mA
V_{GT}		-	0.75	1.5	V
V_{GD}	$V_D=V_{DRM} T_j=150^{\circ}\text{C } R_L=3.3\text{K}\Omega$	0.2	-	-	V
I_L	$I_G=1.2I_{GT}$	-	12	40	mA
I_H	$I_T=500\text{mA}$	-	12	30	mA
dV/dt	$V_D=540\text{V}$ Gate Open $T_j=150^{\circ}\text{C}$	50	-	-	V/ μs
dV/dt	$V_D=436\text{V}$ Gate Open $T_j=150^{\circ}\text{C}$	80	-	-	V/ μs
t_{on}	$I_{GT}=20\text{mA } I_A=100\text{mA } I_R=10\text{mA}$ $T_j=25^{\circ}\text{C}$	-	2	-	μs
t_{off}		-	30	-	μs
R_d	Dynamic resistance $T_j=125^{\circ}\text{C}$	-	-	35	$\text{m}\Omega$

STATIC CHARACTERISTICS

Symbol	Parameter		Value(MAX)	Unit
V_{TM}	$I_{TM}=23\text{A } t_p=380\mu\text{s}$	$T_j=25^{\circ}\text{C}$	1.6	V
I_{DRM}	$V_D=V_{DRM} V_R=V_{RRM}$	$T_j=25^{\circ}\text{C}$	10	μA
I_{RRM}		$T_j=150^{\circ}\text{C}$	1	mA

THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
$R_{th(j-c)}$	Junction to case	TO-252-4R	1.3	$^{\circ}\text{C/W}$
		TO-263	2.0	
$R_{th(j-a)}$	Junction to ambient	TO-252-4R	70	
		TO-263	45	

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

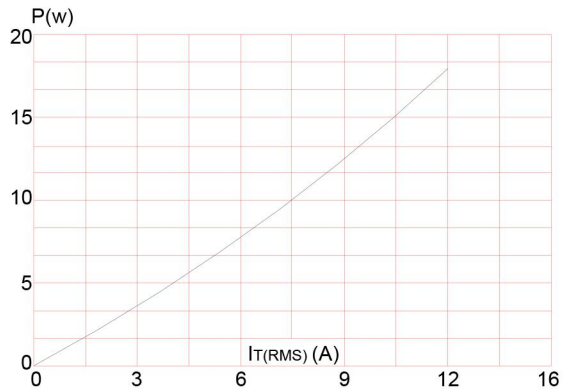


FIG.3: Surge peak on-state current versus number of cycles

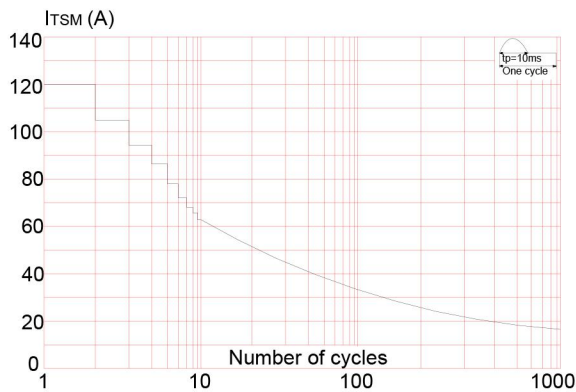


FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 10\text{ms}$, and corresponding value of I^2t ($di/dt < 50\text{A}/\mu\text{s}$)

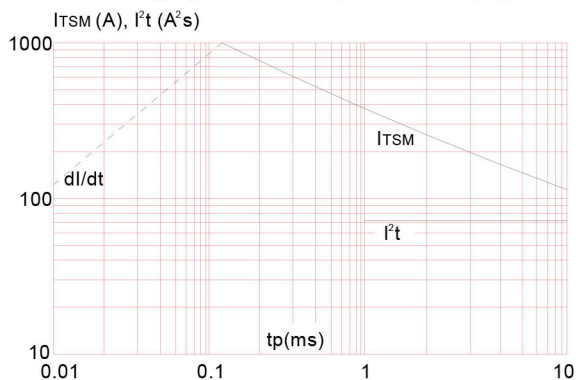


FIG.2: RMS on-state current versus ambient temperature (printed circuit board FR4, copper thickness: $35\mu\text{m}$) (full cycle)

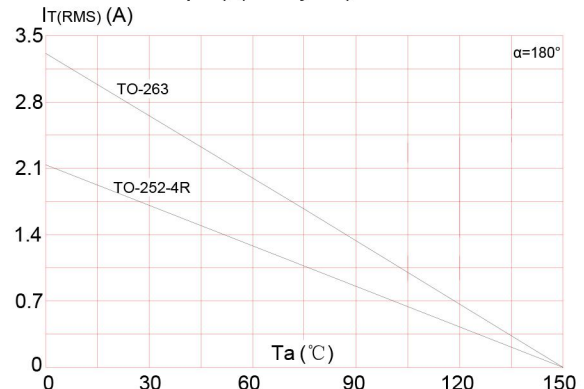


FIG.4: On-state characteristics (maximum values)

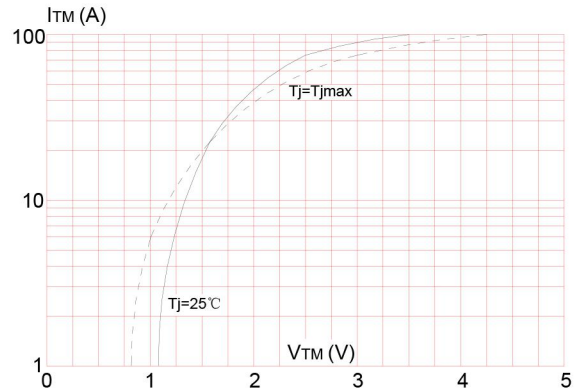


FIG.6: Relative variations of gate trigger current, holding current and latching current versus junction temperature

