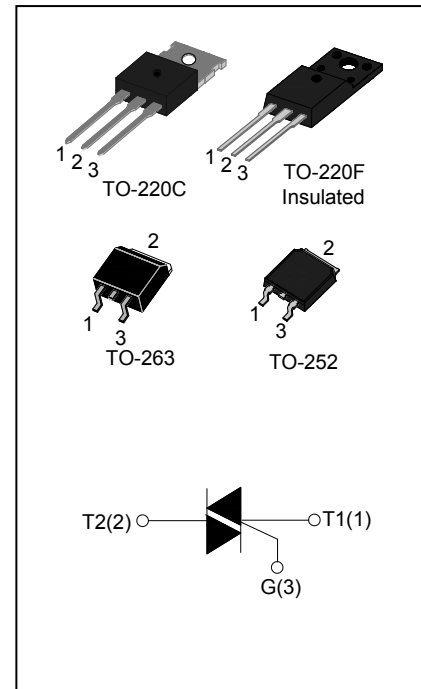


DESCRIPTION:

YR138 series triacs with low holding and latching current are especially recommended for use on middle and small resistance type power load. YR138F provides insulation voltage rated at 2000V RMS from all three terminals to external heatsink complying with UL standards.

MAIN FEATURES

Symbol	Value	Unit
$I_{T(RMS)}$	12	A
V_{DRM}/V_{RRM}	600 and 800	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($T_j=25^\circ\text{C}$)	V_{DRM}	600/800	V	
Repetitive peak reverse voltage($T_j=25^\circ\text{C}$)	V_{RRM}	600/800	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-252	$I_{T(RMS)}$	12	A
	TO-220C($T_C=110^\circ\text{C}$)			
	TO-220F(Ins) ($T_C=95^\circ\text{C}$)			
	TO-263($T_C=113^\circ\text{C}$)			
Non repetitive surge peak on-state current (full cycle, F=50Hz)	I_{TSM}	95	A	
I^2t value for fusing ($t_p=10\text{ms}$)	I^2t	45	A^2s	

12A TRIACs

Critical rate of rise of on-state current($I_G=2 \times I_{GT}$)	I - II - III	di/dt	50	A/ μ s
	IV		10	
Peak gate current		I_{GM}	2	A
Average gate power dissipation		$P_{G(AV)}$	0.5	W
Peak gate power		P_{GM}	5	W

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

Symbol	Test Condition	Quadrant		Value			Unit
				D	E	F	
I_{GT}	$V_D=12\text{V}$ $R_L=33\Omega$	I - II - III	MAX	5	10	25	mA
		IV		10	25	70	
V_{GT}		ALL	MAX	1.5			V
V_{GD}	$V_D=V_{DRM}$ $T_j=125^\circ\text{C}$ $R_L=3.3\text{K}\Omega$	ALL	MIN	0.2			V
I_L	$I_G=1.2I_{GT}$	I - III	MAX	15	30	40	mA
		II - IV		20	40	80	
I_H	$I_T=100\text{mA}$		MAX	10	25	30	mA
dV/dt	$V_D=2/3V_{DRM}$ Gate Open $T_j=125^\circ\text{C}$		MIN	20	50	50	V/ μ s

STATIC CHARACTERISTICS

Symbol	Parameter		Value(MAX)	Unit
V_{TM}	$I_{TM}=15\text{A}$ $t_p=380\mu\text{s}$	$T_j=25^\circ\text{C}$	1.6	V
I_{DRM}	$V_D=V_{DRM}$ $V_R=V_{RRM}$	$T_j=25^\circ\text{C}$	5	μA
I_{RRM}		$T_j=125^\circ\text{C}$	1	mA

THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
$R_{th(j-c)}$	junction to case(AC)	TO-220C	1.4	$^\circ\text{C}/\text{W}$
		TO-220F(Ins)	2.5	
		TO-252	1.7	
		TO-263	2.1	$^\circ\text{C}/\text{W}$

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

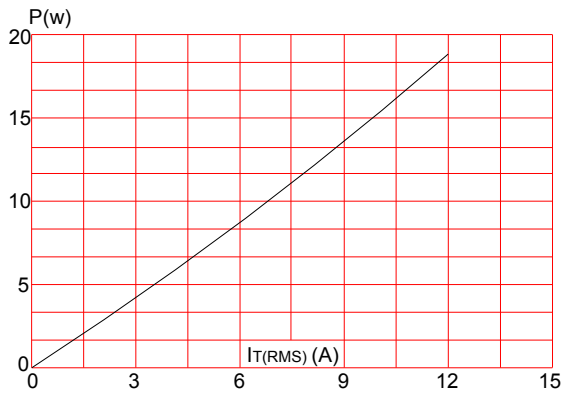


FIG.3: Surge peak on-state current versus number of cycles

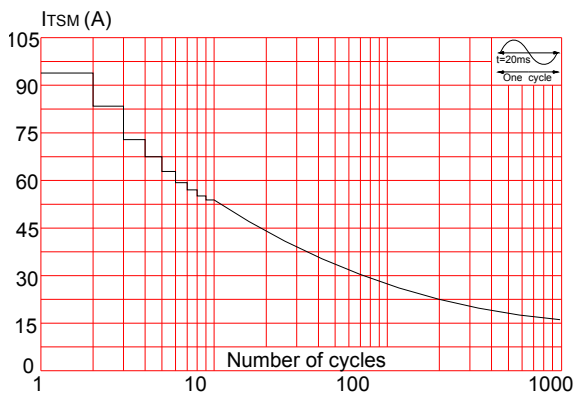


FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 20\text{ms}$, and corresponding value of $I^2 t$

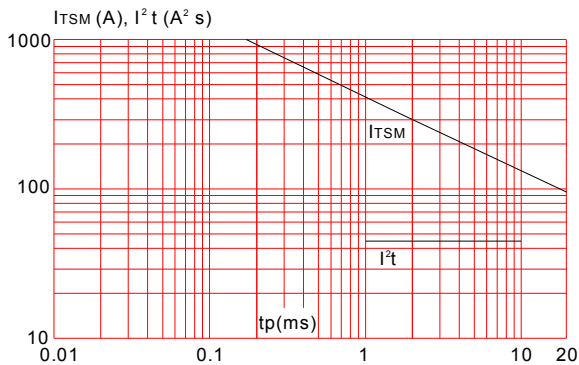


FIG.7: Relative variations of holding current versus junction temperature

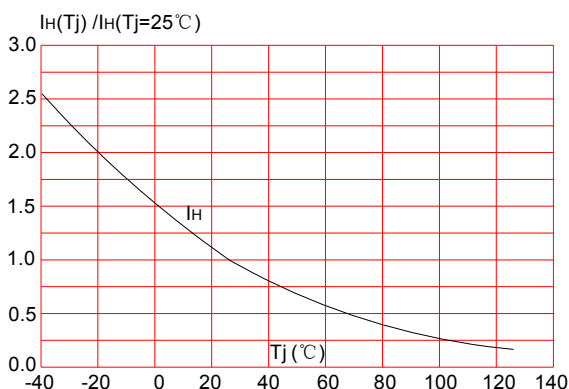


FIG.2: RMS on-state current versus case temperature

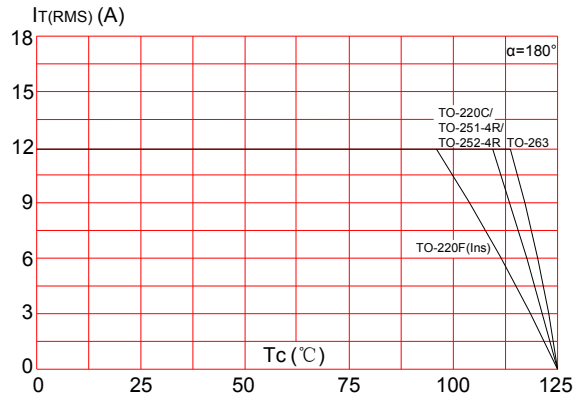


FIG.4: On-state characteristics (maximum values)

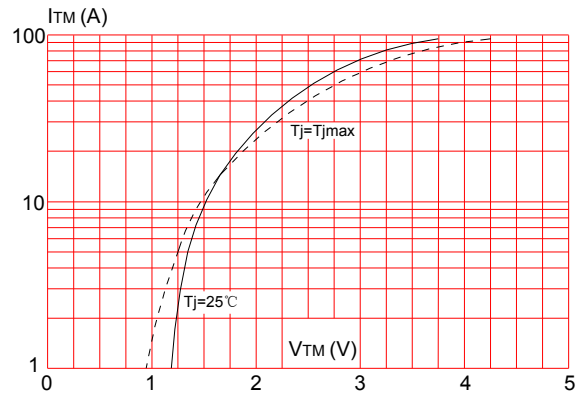


FIG.6: Relative variations of gate trigger current versus junction temperature

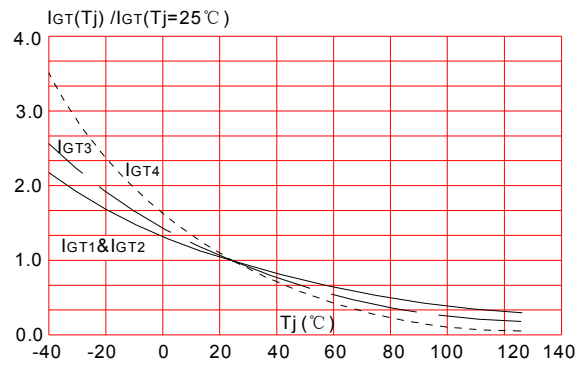


FIG.8: Relative variations of latching current versus junction temperature

