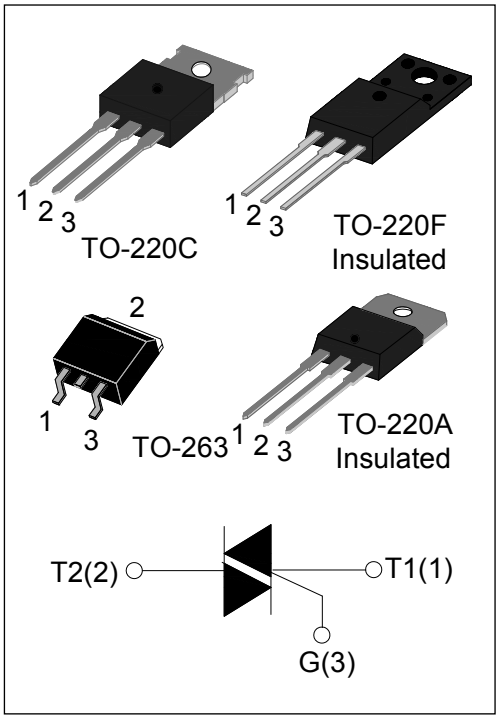
DESCRIPTION:

YR139 series triacs with low holding and latching current are especially recommended for use on middle and small resistance type power load. YR139F provides insulation voltage rated at 2000V RMS and YR139A provides insulation voltage rated at 2500V RMS from all three terminals to external heatsink complying with UL standards.



MAIN FEATURES

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

ABSOLUTE MAXIMUM RATINGS

Parameter		Symbol	Value	Unit
Storage junction temperature range		T_{stg}	-40-150	℃
Operating junction temperature range		T_j	-40-125	℃
Repetitive peak off-state voltage(T_j=25℃)		V_{DRM}	600/800	V
Repetitive peak reverse voltage(T_j=25℃)		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-220C(T_C=100℃)	$I_{T(RMS)}$	16	A
	TO-220F(Ins) (T_C=85℃)			
	TO-263 (T_C=110℃)			
	TO-220A(Ins) (T_C=87℃)			
Non repetitive surge peak on-state current (tp=20ms)		I_{TSM}	140	A

I^2t value for fusing (tp=10ms)		I^2t	98	A^2s
Critical rate of rise of on-state current (I_G=2×I_{GT})	Ⅰ-Ⅱ-Ⅲ	dI/dt	50	A/μs
	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℃ unless otherwise specified)

Symbol	Test Condition	Quadrant		Value			Unit
				D	E	F	
I_{GT}	V_D=12V R_L=33Ω	Ⅰ-Ⅱ-Ⅲ	MAX	5	10	25	mA
		Ⅳ		10	25	70	
V_{GT}		ALL	MAX	1.3			V
V_{GD}	V_D=V_{DRM} T_j=125℃ R_L=3.3KΩ	ALL	MIN	0.2			V
I_L	I_G=1.2I_{GT}	Ⅰ- Ⅲ	MAX	15	30	50	mA
		Ⅱ- Ⅳ		20	40	100	
I_H	I_T=100mA		MAX	10	25	40	mA
dV/dt	V_D=2/3V_{DRM} Gate Open T_j=125℃		MIN	20	50	100	V/μs

STATIC CHARACTERISTICS

Symbol	Parameter		Value(MAX)	Unit
V_{TM}	I_{TM}=20A tp=380μs	T_j=25℃	1.6	V
I_{DRM}	V_D=V_{DRM} V_R=V_{RRM}	T_j=25℃	5	μA
I_{RRM}		T_j=125℃	1	mA

THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
$R_{th(j-c)}$	junction to case(AC)	TO-220C	1.4	℃/W
		TO-220F(Ins)	2.5	
		TO-263	2.1	
		TO-220A(Ins)	2.4	

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

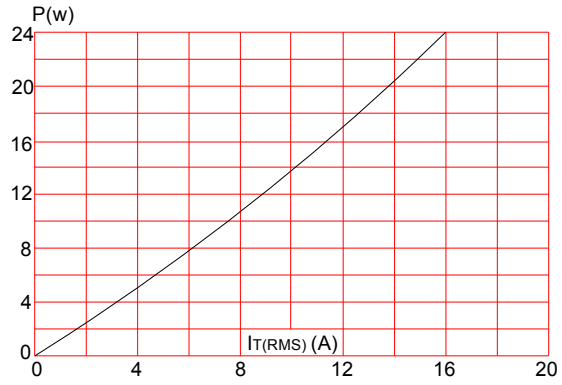


FIG.2: RMS on-state current versus case temperature

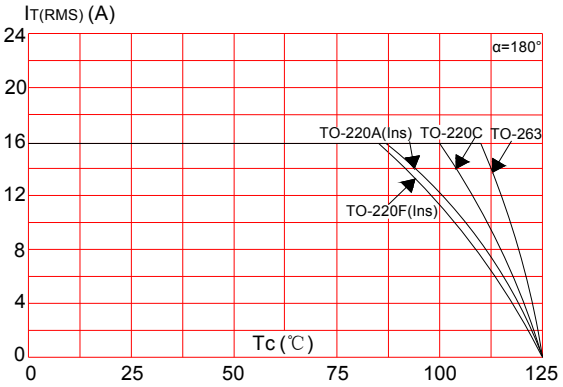


FIG.3: Surge peak on-state current versus number of cycles

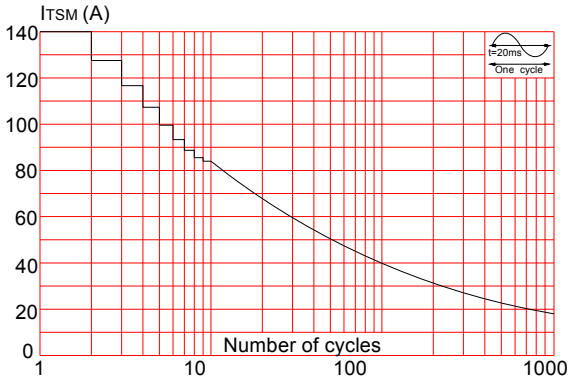


FIG.4: On-state characteristics (maximum values)

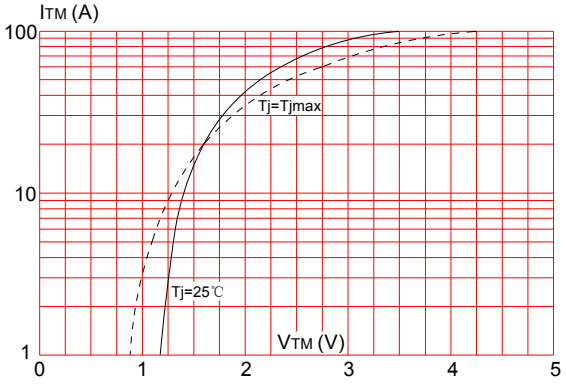


FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width tp<20ms and corresponding value of I^2t (Ⅰ-Ⅱ-Ⅲ:dI/dt < 50A/μs; Ⅳ:dI/dt < 10A/μs)

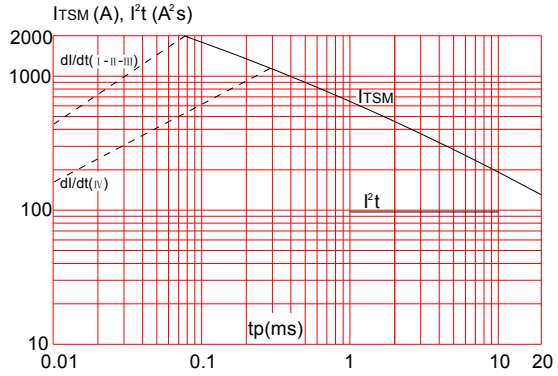


FIG.6: Relative variations of gate trigger current versus junction temperature

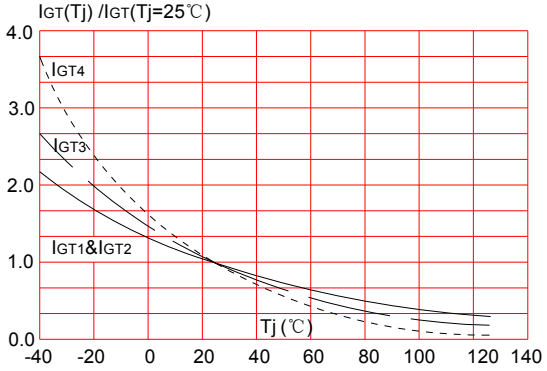


FIG.7: Relative variations of holding current versus junction temperature

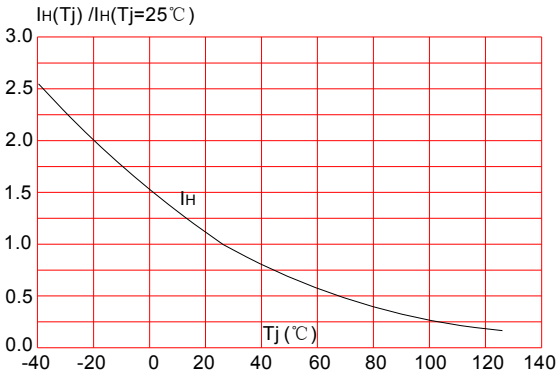


FIG.8: Relative variations of latching current versus junction temperature