RS12xxF Series 12A TRIACS

DESCRIPTION:

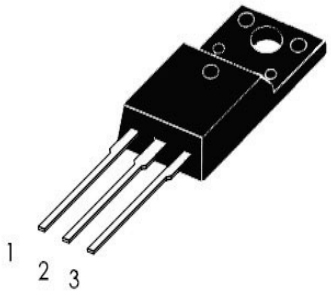
High current density due to double mesa technology, SIPOS and glass passivation.

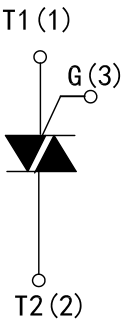
RS12xxF series triacs are suitable for general purpose AC switching,They can be used as an ON/OFF function in applications such as static relays,heating regulation, induction motor stating circuits...or for phase contol operation, light dimmers,motor speed controllers.

RS12xxF-SW -CW -BW are 3 quadrants triacs,They are specially recommended for use on inductive loads.

RS12xxF are isolated in internal, they provide a 2500V RMS isolation voltage from all three terminals to external heat sink.

TO-220F





MAIN FEATURES

Symbol	Value	Unit
$I_{T(RMS)}$	12	A
V_{DRM}/V_{RRM}	600 and 800	V
$I_{GT(Q1)}$	5 to 50	mA

ABSOLUTE MAXIMUM RATINGS

Parameter		Symbol	Value	Unit
Storage junction temperature range		Tstg	-40 to +150	˚C
Operrating junction temperature range		Tj	-40 to +125	˚C
Repetitive Peak Off-state Voltage	Tj=25˚C	V_{DRM}	600and800	V
Repetitive Peak Reverse Voltage	Tj=25˚C	V_{RRM}	600and800	
Non repetitive Surge Peak Off-state Voltage	tp=10ms,Tj=25˚C	V_{DSM}	700and900	V
Non repetitive Peak Reverse Voltage		V_{RSM}	700and900	
RMS on-state current (full sine wave)	TO-220F Tc=88˚C	$I_{T(RMS)}$	8	A
Non repetitive surge peak on-state current (full cycle,Tj=25˚C)	f = 60 Hz t=16.7ms	I_{TSM}	84	A
	f = 50 Hz t=20ms		80	
I^2t Value for fusing	tp=10ms	I^2t	36	A^2s
Critical rate of rise of on-state current $I_G=2\times I_{GT}$, tr≤100 ns, f=120Hz, Tj=125˚C		dI /dt	50	A/μs
Peak gate current tp=20us,Tj=125˚C		I_{GM}	4	A
Average gate power dissipation Tj=125˚C		$P_{G(AV)}$	1	W

ELECTRICAL CHARACTERISTICS(Tj=25℃ unless otherwise specified)

● 3 Quadrants

Symbol	Test Condition	Quadrant		RS12xxF				Unit
				TW	SW	CW	BW	
IGT	VD=12V RL=33Ω	I-II-III	MAX.	5	10	35	50	mA
VGT		I-II-III	MAX.	1.3				V
VGD	VD=VDRM RL=3.3KΩ Tj =125℃	I-II-III	MIN.	0.2				V
IL	IG=1.2IGT	I-III	MAX.	10	25	50	70	mA
		II	MAX.	15	30	60	80	mA
IH	IT =100mA		MAX.	10	15	35	50	mA
dV/dt	VD=67%VDRM gate open Tj=125℃		MIN.	20	40	400	1000	V/μs
(dI/dt)c	(dV/dt)c=0.1V/μs Tj=125℃		MIN.	3.5	5.4	---	---	A/mS
	(dV/dt)c=10V/μs Tj=125℃			1.5	2.8	---	---	
	Without snubber Tj=125℃			---	---	4.5	7	

● 4 Quadrants

Symbol	Test Condition	Quadrant		RS12xxF		Unit
				C	B	
IGT	VD=12V RL=33Ω	I-II-III IV	MAX.	25 50	50 100	mA
VGT		ALL	MAX.	1.3		V
VGD	VD=VDRM RL=3.3KΩ Tj =125℃	ALL	MIN.	0.2		V
IL	IG=1.2IGT	I-III-IV	MAX.	40	50	mA
		II	MAX.	80	100	mA
IH	IT =500mA		MAX.	25	50	mA
dV/dt	VD=67%VDRM gate open Tj=125℃		MIN.	200	400	V/μs
(dV/dt)c	(dI/dt)c=7A/ms Tj=125℃		MIN.	5	10	V/μs

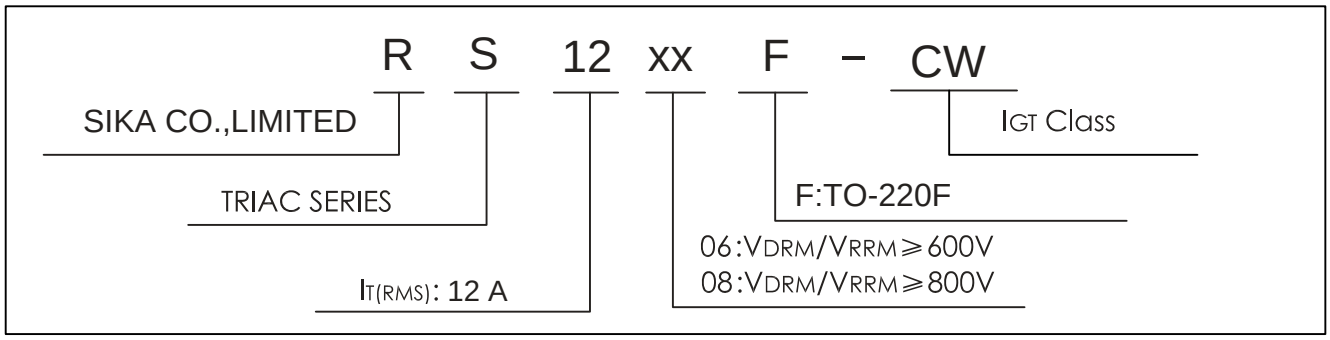
STATIC CHARACTERISTICS

Symbol	Parameter		Value(MAX.)	Unit
V_{TM}	I_{TM}=11A,tp=380μs	Tj=25℃	1.55	V
I_{DRM} I_{RRM}	V_D=V_{DRM} V_R=V_{RRM}	Tj=25℃	5	μA
		Tj=125℃	1	mA

THERMAL RESISTANCES

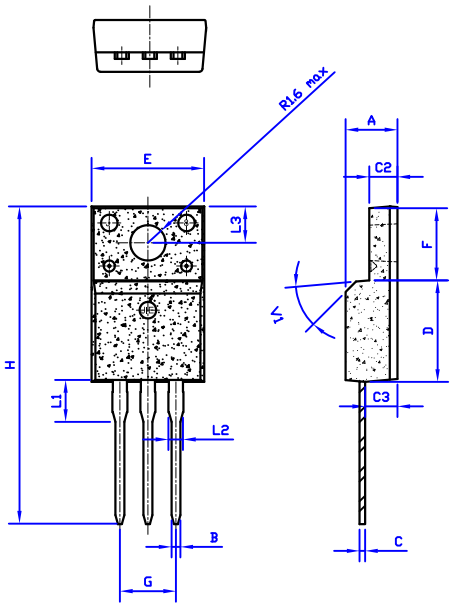
Symbol	Parameter		Value	Unit
$R_{th(J-C)}$	Junction to Case(AC)	TO-220F	3.7	℃/W

ORDERING INFORMATION



PACKAGE MECHANICAL DATA

TO-220F



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.3		4.7	0.169		0.185
B	0.74	0.8	0.83	0.029	0.031	0.033
C	0.5		0.75	0.020		0.030
C2	2.4		2.7	0.094		0.106
C3	2.5		2.9	0.098		0.114
D	8.6		9.2	0.338		0.362
E	9.7		10.3	0.382		0.406
F	6.3		6.5	0.248		0.256
G	5.0		5.2	0.197		0.205
H	28.0		29.8	11.0		11.7
L1		3.63			0.143	
L2	1.14		1.7	0.044		0.067
L3		3.2			0.126	
V1		40°			40°	

FIG.1:Maximum power dissipation versus RMS on-state current(full cycle)

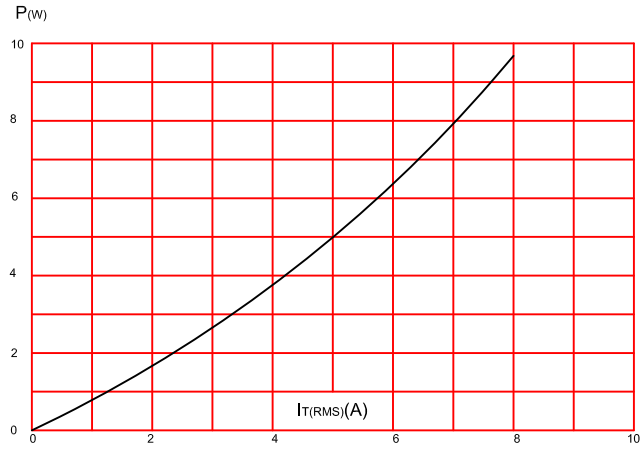


FIG.2:RMS on-state current versus case temperature(full cycle)

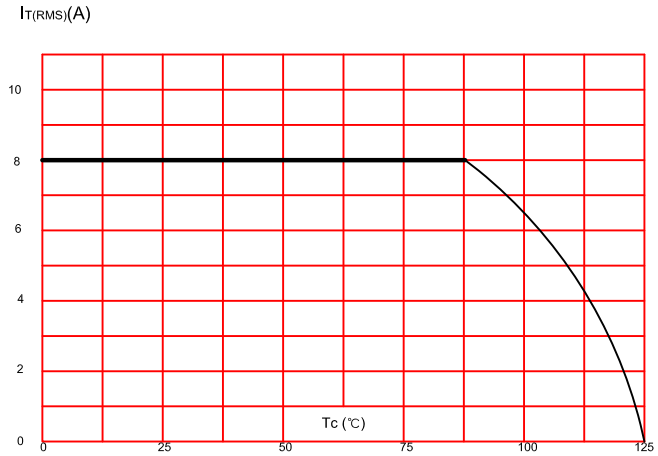


FIG.3:On-state characteristics (maximum values).

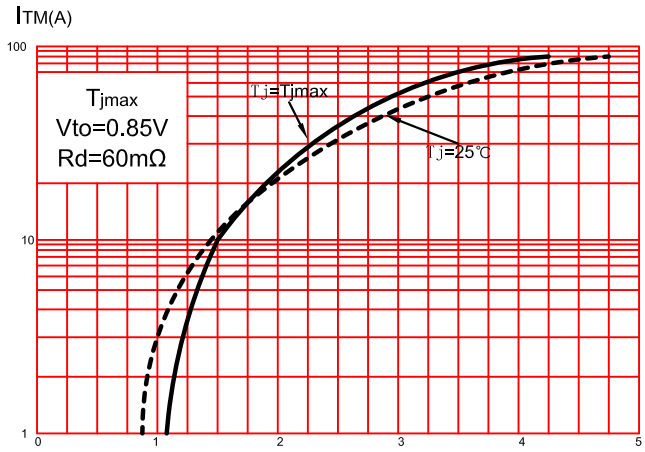


FIG.4:Surge peak on-state current versus number of cycles.

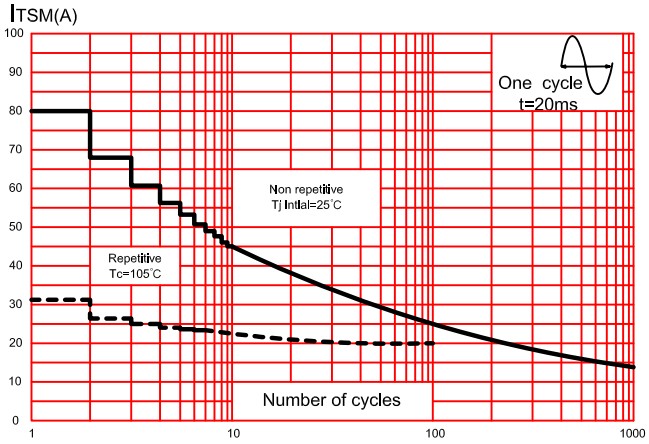


FIG.5:Non-repetitive surge peak on-state current for a sinusoidal pulse with width tp<10ms,and corresponding value of I²t.

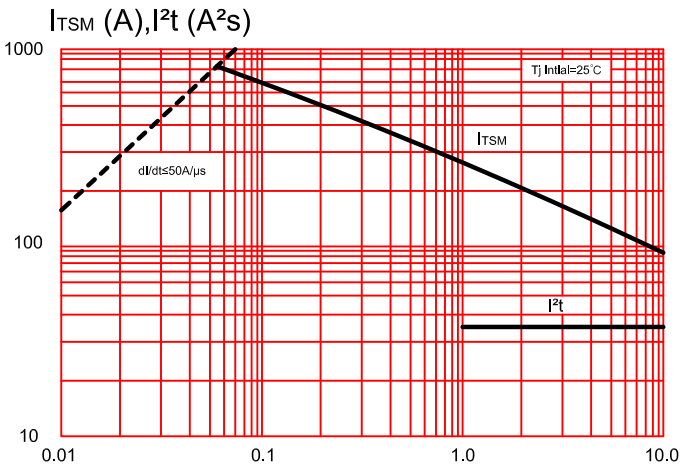


FIG.6:Relative variations of gate trigger current,holding current and latching current versus junction temperature(typical values)