

## RS12xxHxF Series 12A TRIACS

### DESCRIPTION:

High current density due to double mesa technology, glass passivation, guaranteed maximum junction temperature 150° C.

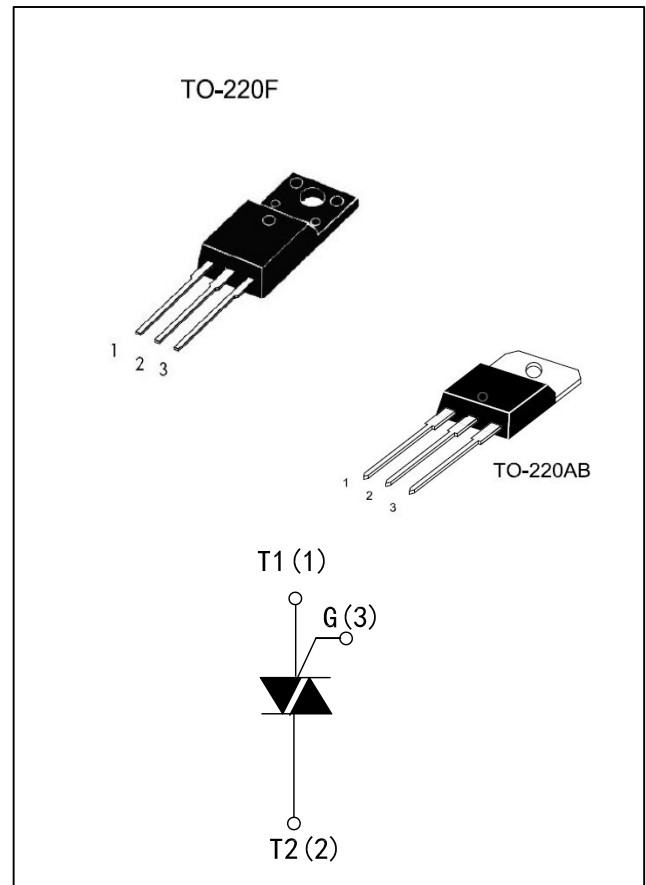
RS12xxH series triacs are suitable for general purpose AC switching, They can be used as an ON/OFF function in applications such as static relays, washing machine, soymlk maker, flush toilet, hair drier, induction motor staing circuits...or for phase contol operation light dimmers, motor speed controllers.

RS1210H-1220H-1235H-1250H are 3 quadrants triacs, They are specially recommended for use on inductive loads.

RS12xxHxF series are full pack plastic e, they provide a 2000V RMS isolation voltage from all three terminals to external heat sink.

### MAIN FEATURES

Symbol	Value	Unit
$I_{T(RMS)}$	12	A
$V_{DRM}/V_{RRM}$	600 and 800	V
$V_{TM}$	$\leq 1.55$	V



### ABSOLUTE MAXIMUM RATINGS

Parameter		Symbol	Value	Unit
Storage junction temperature range		Tstg	-40 to +150	°C
Operating junction temperature range		Tj	-40 to +150	°C
Repetitive Peak Off-state Voltage	Tj=25°C	VDRM	600and800	V
Repetitive Peak Reverse Voltage	Tj=25°C	VRRM	600and800	
Non repetitive Surge Peak Off-state Voltage	tp=10ms, Tj=25°C	VDSM	700and900	V
Non repetitive Peak Reverse Voltage		VRSM	700and900	
RMS on-state current (full sine wave)	TO-220F Tc=97°C	IT(RMS)	12	A
Non repetitive surge peak on-state current (full cycle, Tj=25°C)	f = 60 Hz t=16.7ms	ITSM	126	A
	f = 50 Hz t=20ms		120	
I²t Value for fusing	tp=10ms	I²t	78	A²s
Critical rate of rise of on-state current IG=2×IGT, tr≤100 ns, f=120Hz, Tj=150°C		di / dt	50	A/μs
Peak gate current	tp=20us, Tj=150°C	IGM	2	A
Peak gate power	tp=20us, Tj=150°C	PGM	5	W
Average gate power dissipation	Tj=150°C	PG(AV)	1	W

ELECTRICAL CHARACTERISTICS(T<sub>j</sub>=25°C unless otherwise specified)

Symbol	Test Condition	Quadrant		Limits				Unit
				RS1210H	RS1220H	RS1235H	RS1250H	
I <sub>GT</sub>	V <sub>D</sub> =12V R <sub>L</sub> =33Ω	I-II-III	MAX.	10	20	35	50	mA
V <sub>GT</sub>		I-II-III	MAX.	1.5				V
V <sub>GD</sub>	V <sub>D</sub> =V <sub>DRM</sub> R <sub>L</sub> =3.3KΩ T <sub>j</sub> =150°C	I-II-III	MIN.	0.2				V
I <sub>L</sub>	I <sub>G</sub> =1.2I <sub>GT</sub>	I-III	MAX.	20	40	50	70	mA
		II	MAX.	35	55	70	100	mA
I <sub>H</sub>	I <sub>T</sub> =100mA		MAX.	20	30	45	60	mA
dV/dt	V <sub>D</sub> =67%V <sub>DRM</sub> gate open T <sub>j</sub> =150°C		MIN.	200	500	1000	1500	V/μs
(dV/dt) <sub>c</sub>	V <sub>D</sub> =400V (di/dt) <sub>c</sub> =-5.3A/ms T <sub>j</sub> =150°C		MIN.	1	5	15	20	V/μs

## STATIC CHARACTERISTICS

Symbol	Parameter		Value(MAX.)	Unit
V <sub>TM</sub>	I <sub>TM</sub> =17A, t <sub>p</sub> =380μs	T <sub>j</sub> =25°C	1.55	V
I <sub>DRM</sub> I <sub>RRM</sub>	V <sub>D</sub> =V <sub>DRM</sub> V <sub>R</sub> =V <sub>RRM</sub>	T <sub>j</sub> =25°C	5	μA
		T <sub>j</sub> =150°C	3.0	mA

## THERMAL RESISTANCES

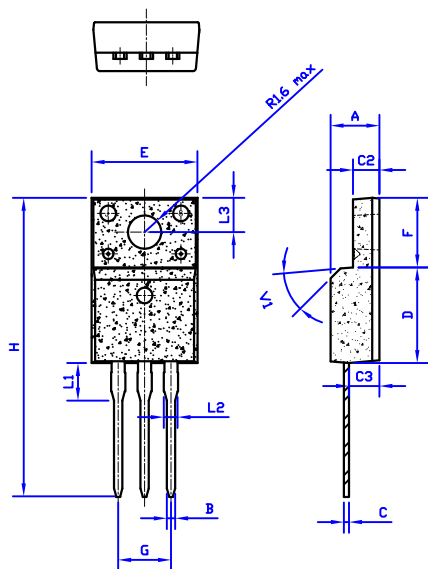
Symbol	Parameter		Value	Unit
R <sub>th(J-C)</sub>	Junction to Case(AC)	TO-220F	2.3	°C/W

## ORDERING INFORMATION

<b>R S 12 xx H x F</b>	
SIKA CO., LIMITED TRIAC SERIES I <sub>T(RMS)</sub> : 12A 10:I <sub>GT</sub> 123≤10mA 20:I <sub>GT</sub> 123≤20mA 35:I <sub>GT</sub> 123≤35mA 50:I <sub>GT</sub> 123≤50mA	F:TO-220F A:TO-220A B:TO-220B E:D <sup>2</sup> PAK 6:V <sub>DRM</sub> /V <sub>RRM</sub> ≥ 600V 8:V <sub>DRM</sub> /V <sub>RRM</sub> ≥ 800V High junction temperature

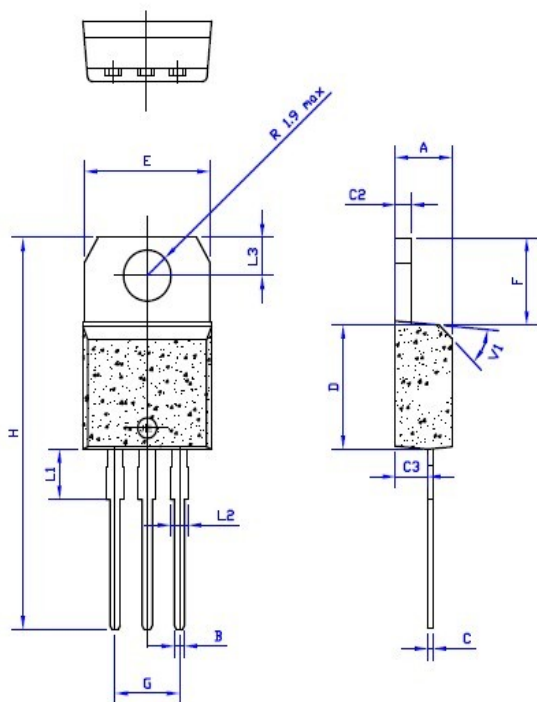
PACKAGE MECHANICAL DATA

TO-220F



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.4		4.8	0.173		0.189
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	2.6		3.0	0.102		0.118
D	8.8		9.3	0.346		0.367
E	9.7		10.3	0.382		0.406
F	6.4		6.8	0.252		0.268
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		3.3			0.130	
V1		40°			40°	

TO-220A insulated package and TO-220B non-insulated package



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.4		4.6	0.173		1.181
B	0.61		0.88	0.024		0.034
C	0.46		0.70	0.018		0.027
C2	1.23		1.32	0.048		0.051
C3	2.4		2.72	0.094		0.107
D	8.6		9.7	0.338		0.382
E	9.8		10.4	0.386		0.409
F	6.2		6.6	0.244		0.259
G	4.8		5.4	0.189		0.213
H	28.0		29.8	11.0		11.7
L1		3.75			0.147	
L2	1.14		1.7	0.044		0.066
L3	2.65		2.95	0.104		0.116
V1		40°			40°	

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

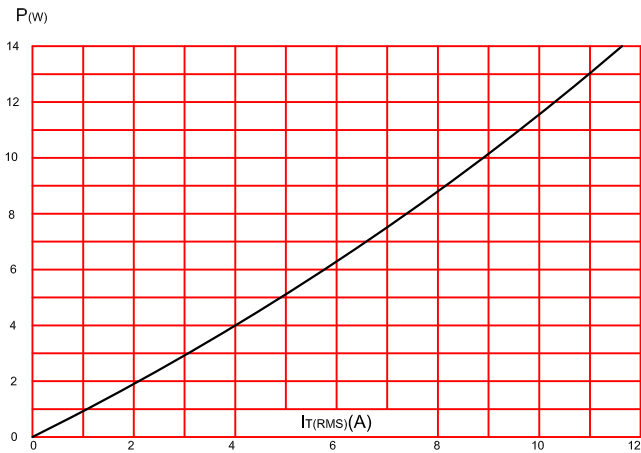


FIG.2:RMS on-state current versus case temperature(full cycle)

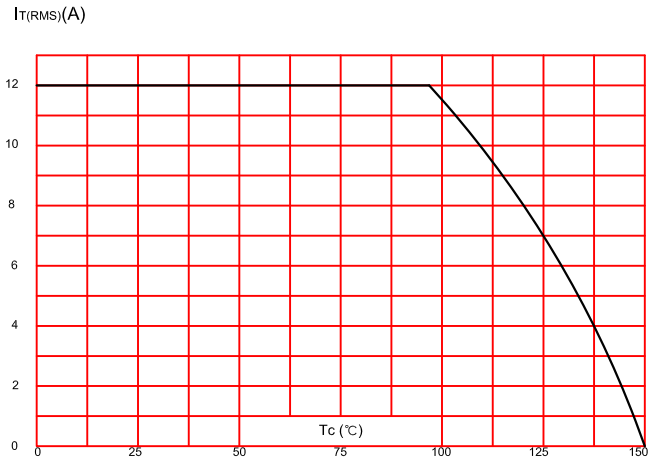


FIG.3:On-state characteristics (maximum values).

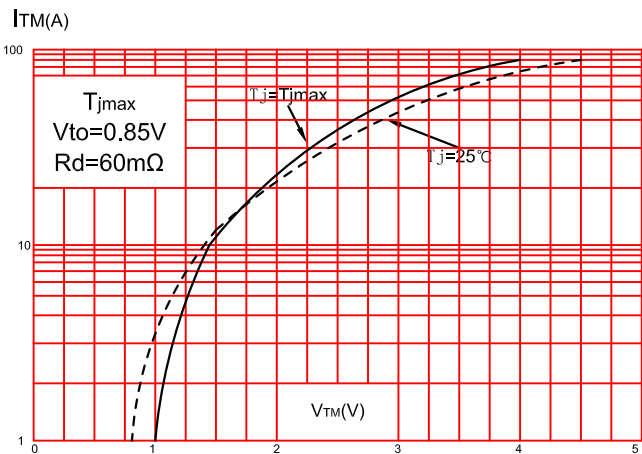


FIG.4:Surge peak on-state current versus number of cycles.

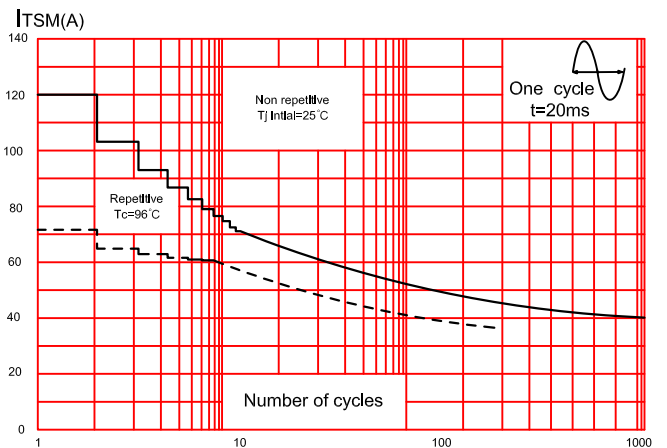


FIG.5:Non-repetitive surge peak on-state current for a sinusoidal pulse with width  $t_p < 10\text{ms}$ , and corresponding value of  $I^2t$ .

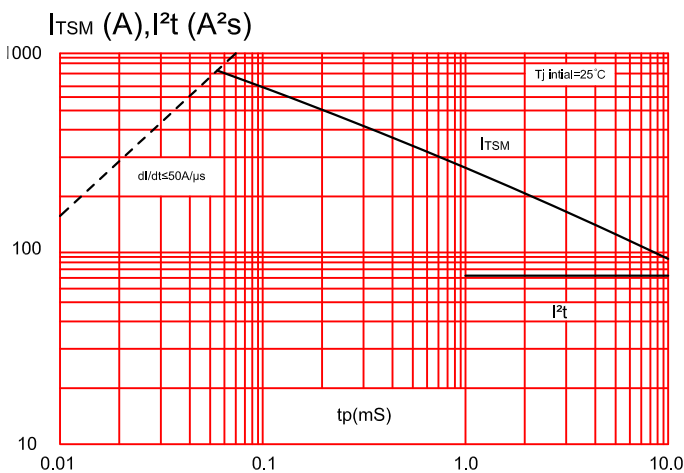


FIG.6:Relative variations of gate trigger current, holding current and latching current versus junction temperature(typical values)

