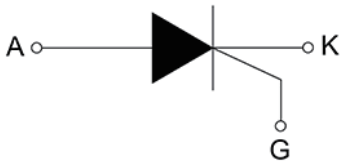
DESCRIPTION:

With high ability to withstand the shock loading of large current, chip series of silicon controlled rectifiers provide high dv/dt rate with strong resistance to electro-magnetic interference. They are especially recommended for use on solid state relay, motorcycle, power charger, T-tools etc.

TO-263

MAIN FEATURES

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



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}	800	V
Repetitive peak reverse voltage (T_j=25℃)	V_{RRM}	800	V
Average on-state current (T_C≤102℃)	$I_{T(AV)}$	7.6	A
RMS on-state current (T_C≤102℃)	$I_{T(RMS)}$	12	A
Non repetitive surge peak on-state current (t_p=10ms, T_j=25℃)	I_{TSM}	140	A
Non repetitive surge peak on-state current (t_p=8.3ms, T_j=25℃)		154	
I^2t value for fusing (t_p=10ms , T_j=25℃)	I^2t	98	A^2s
Critical rate of rise of on-state current (I_G=2×I_{GT}, f=100Hz , T_j=125℃)	dI/dt	150	A/μs
Peak gate current (t_p=20μs , T_j=125℃)	I_{GM}	4	A

Average gate power dissipation (T_j=125℃)	$P_{G(AV)}$	1	W
Peak gate power	P_{GM}	10	W
Peak pulse voltage (T_j=25℃; non-repetitive,off-state;FIG)	V_{pp}	0.5	kV

ELECTRICAL CHARACTERISTICS (T_j=25℃ unless otherwise specified)

Symbol	Test Condition	Value			Unit
		MIN.	TYP.	MAX.	
I_{GT}	V_D=12V R_L=33Ω	-	-	15	mA
V_{GT}		-	-	1	V
V_{GD}	V_D=V_{DRM} T_j=125℃ R_L=3.3kΩ	0.2	-	-	V
I_L	I_G=1.2I_{GT}	-	-	60	mA
I_H	I_T=500mA	-	-	50	mA
dV/dt	V_D=540V Gate Open T_j=125℃	500	-	-	V/μs
t_{on}	I_G=20mA I_A=200mA I_R=20mA T_j=25℃	-	5	-	μs
t_{off}		-	80	-	

STATIC CHARACTERISTICS

Symbol	Parameter		Value(MAX.)	Unit
V_{TM}	I_{TM}=24A t_p=380μs	T_j=25℃	1.5	V
V_{TO}	Threshold voltage	T_j=125℃	0.8	V
R_D	Dynamic resistance	T_j=125℃	27	mΩ
I_{DRM}	V_D=V_{DRM} V_R=V_{RRM}	T_j=25℃	5	μA
I_{RRM}		T_j=125℃	0.25	mA

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
$R_{th(j-c)}$	junction to case (DC)	1.5	℃/W
$R_{th(j-a)}$	junction to ambient (DC, in free air, S=1cm^2)	60	℃/W

FIG : Maximum power dissipation versus RMS on-state current

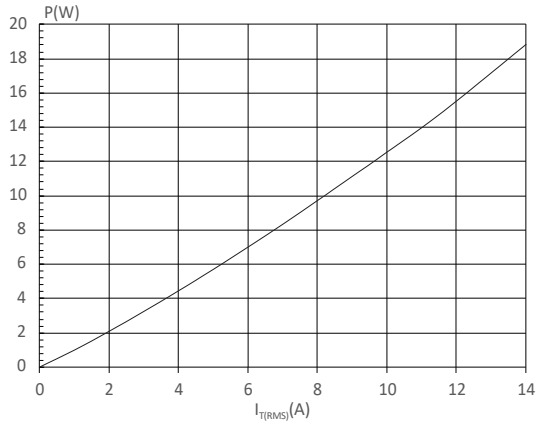


FIG : RMS on-state current versus case temperature

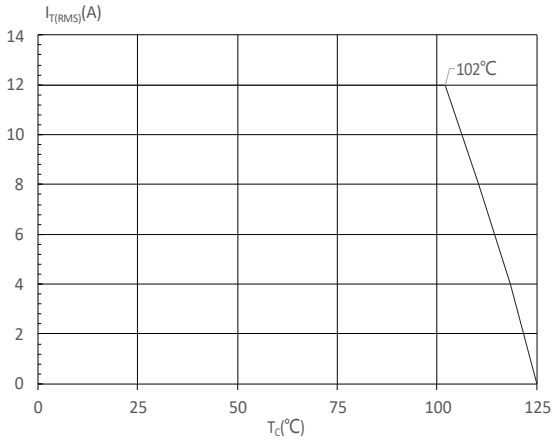


FIG : RMS on-state current versus ambient temperature (printed circuit board FR4,copper thickness:35μm)(full cycle)

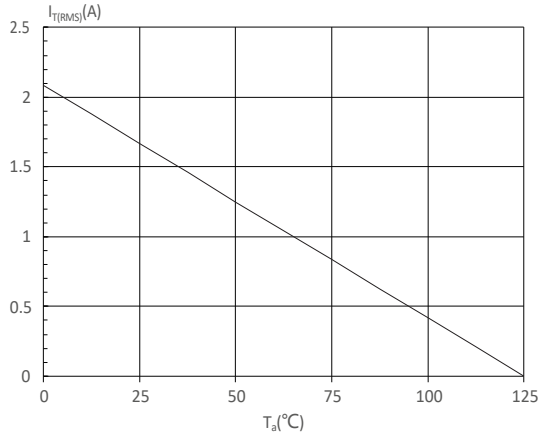


FIG : Surge peak on-state current versus number of cycles

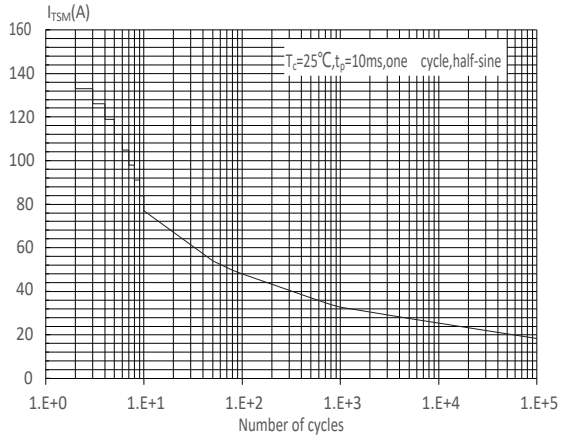


FIG : On-state characteristics

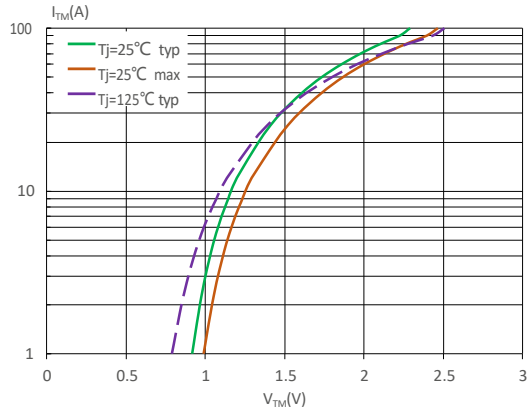


FIG : Non-repetitive surge peak on-state current for a sinusoidal pulse with width t_p<10ms, and corresponding value of I^2t (dI/dt<150A/μs)

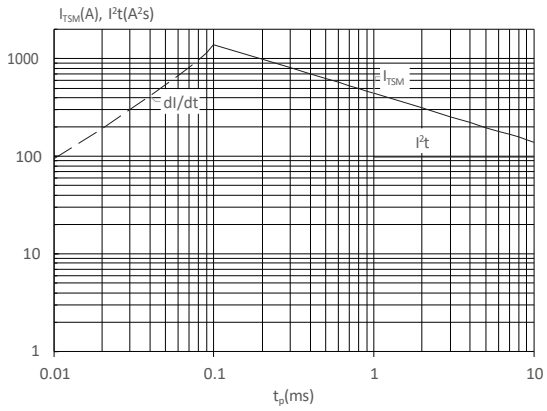


FIG : Relative variations of gate trigger current, holding current and latching current versus junction temperature

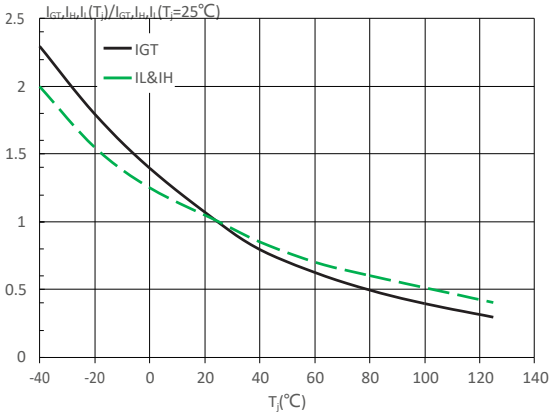
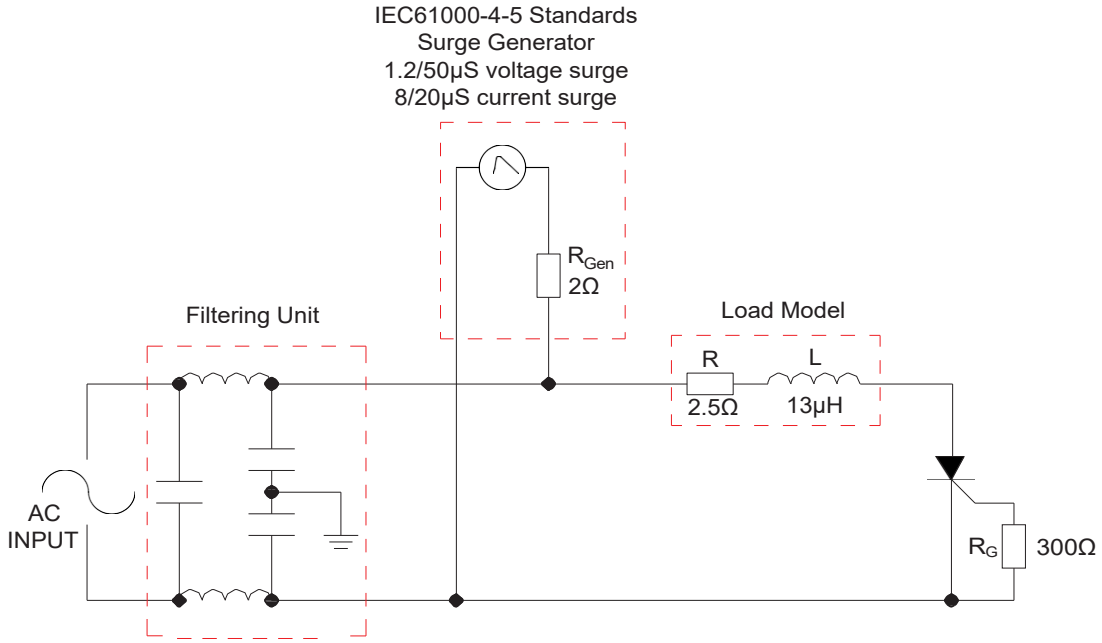
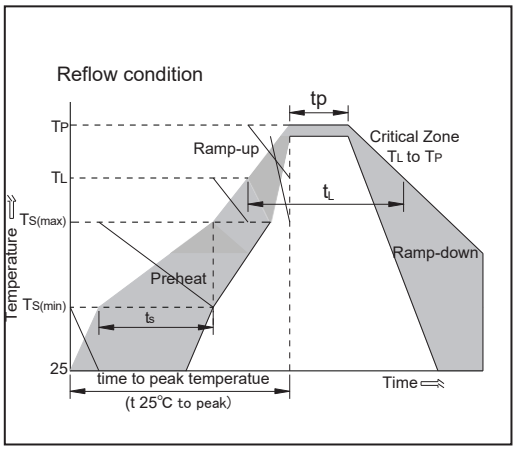


FIG ： Test circuit for inductive and resistive loads to IEC-61000-4-5 standards.



SOLDERING PARAMETERS

Reflow Condition		Pb-Free assembly (see figure at right)
Pre Heat	-Temperature Min ($T_{s(min)}$)	+150℃
	-Temperature Max($T_{s(max)}$)	+200℃
	-Time (Min to Max) (ts)	60-180 secs.
Average ramp up rate (Liquidus Temp (T_L)to peak)		3℃/sec. Max
$T_{s(max)}$ to T_L - Ramp-up Rate		3℃/sec. Max
Reflow	-Temperature(T_L) (Liquidus)	+217℃
	-Temperature(t_L)	60-150 secs.
Peak Temp (T_p)		+260(+0/-5)℃
Time within 5℃of actual Peak Temp (t_p)		20-40secs.
Ramp-down Rate		6℃/sec. Max
Time 25℃ to Peak Temp (T_P)		8 min. Max
Do not exceed		+260℃