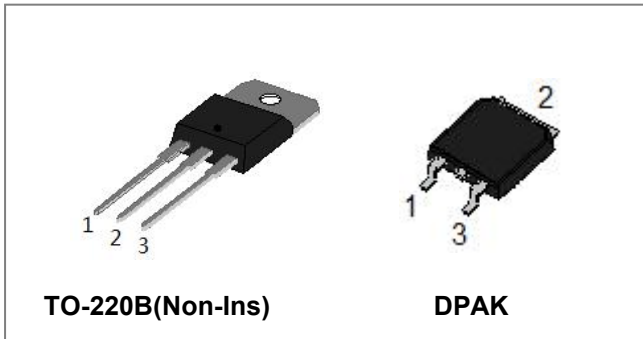
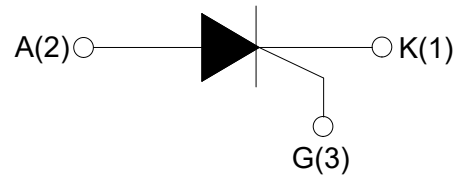


## SCT612/812 Series 12A SCRs



### Circuit Diagram



### Description

With high ability to withstand the shock loading of large current, SCTx12 series of silicon controlled rectifiers provide high dv/dt rate with strong resistance to electromagnetic interference. They are especially recommended for use on solid state relay, motorcycle, power charger, T-tools etc.

### Maximum Ratings:

Characteristics	Symbol	Condition	Max.	Units
Storage junction temperature range	$T_J$	-	-40 to +125	°C
Operating junction temperature range	$T_{stg}$	-	-40 to +150	°C
Repetitive peak off-state voltage	$V_{DRM}$	-	600/800	V
Repetitive peak reverse voltage	$V_{RRM}$	-	600/800	V
Non repetitive 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	$I_{(TRMS)}$	TO-220B(Non-Ins)( $T_c=110^\circ\text{C}$ )	12	A
		DPAK( $T_c=105^\circ\text{C}$ )		
Non repetitive surge peak on-state current (tp=10ms)	$I_{TSM}$	-	140	A
I <sup>2</sup> t value for fusing (tp=10ms)	$I^2t$	-	98	A <sup>2</sup> s
Critical rate of rise of on-state current ( $I_G=2 \times I_{GT}$ )	$di/dt$	-	50	A/ $\mu\text{s}$
Peak gate current	$I_{GM}$	-	4	A
Average gate power dissipation	$P_{G(AV)}$	-	1	W
Peak gate power	$P_{GM}$	-	5	W

### Electrical Characteristics (T<sub>j</sub>=25°C unless otherwise specified)

Symbol	Test Condition	Value			Unit
		MIN.	TYP.	MAX.	
I <sub>GT</sub>	V <sub>D</sub> =12V R <sub>L</sub> =33Ω	-	-	15	mA
V <sub>GT</sub>		-	-	1.5	V
V <sub>GD</sub>	V <sub>D</sub> =V <sub>DRM</sub> T <sub>j</sub> =125°C R <sub>L</sub> =3.3KΩ	0.2	-	-	V
I <sub>L</sub>	I <sub>G</sub> =1.2I <sub>GT</sub>	-	-	60	mA
I <sub>H</sub>	I <sub>T</sub> =500mA	-	-	50	mA
dV/dt	V <sub>D</sub> =2/3V <sub>DRM</sub> Gate Open T <sub>j</sub> =125°C	200	-	-	V/μs

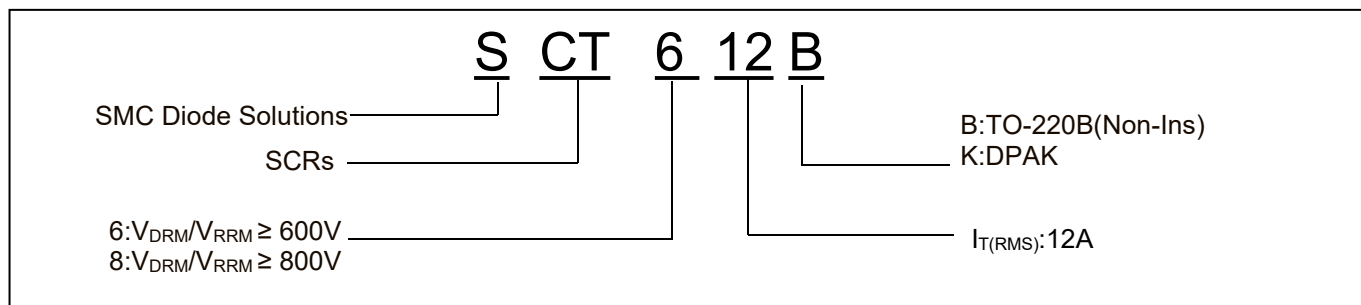
### Static Characteristics

Symbol	Condition	Max.	Units
V <sub>TM</sub>	I <sub>T</sub> =24A t <sub>p</sub> =380μs, T <sub>j</sub> =25°C	1.55	V
I <sub>DRM</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
I <sub>RRM</sub>	V <sub>D</sub> =V <sub>DRM</sub> V <sub>R</sub> =V <sub>RRM</sub> , T <sub>j</sub> =125°C	2	mA

### Thermal Resistances

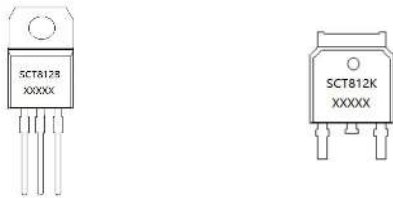
Symbol	Condition	Value	Units
R <sub>th(j-c)</sub>	Junction to case(AC)	TO-220B(Non-Ins)	1.3
		DPAK	1.8

### Ordering Information



Device	Package	Shipping
SCT612B/SCT812B	TO-220B(Non-Ins)	50pcs/ Tube
SCT812K	DPAK	2500pcs/ Reel
SCT812KTR	DPAK	2500pcs/ Reel

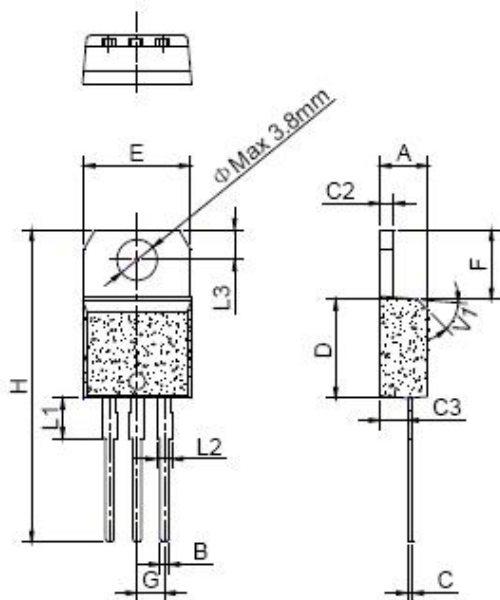
### Marking Diagram



Where XXXXX is YYWWL

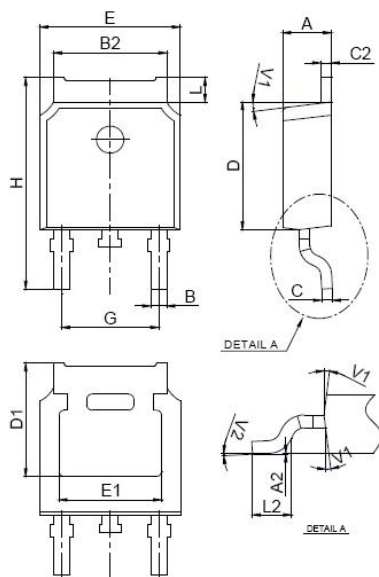
SCT812B = Part name  
SCT812K = Part name  
YY = Year  
WW = Week  
L = Lot Number

### Mechanical Dimensions TO-220B(Non-Ins)



SYMBOL	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.40		4.60	0.173		0.181
B	0.61		0.88	0.024		0.035
C	0.46		0.70	0.018		0.028
C2	1.21		1.32	0.048		0.052
C3	2.40		2.72	0.094		0.107
D	8.60		9.70	0.339		0.382
E	9.60		10.4	0.378		0.409
F	6.20		6.60	0.244		0.260
G		2.54			0.1	
H	28.0		29.8	1.102		1.173
L1		3.75			0.148	
L2	1.14		1.70	0.045		0.067
L3	2.65		2.95	0.104		0.116
V1		45°			45°	

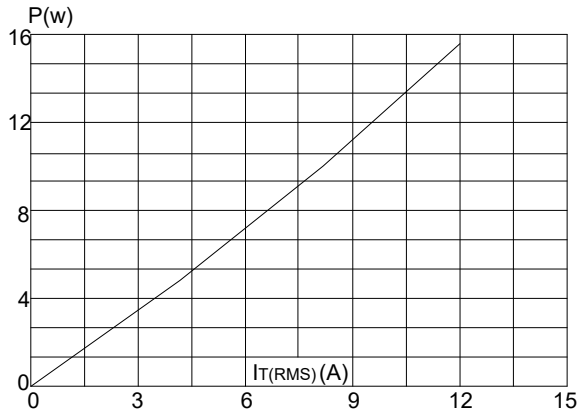
### Mechanical Dimensions DPAK



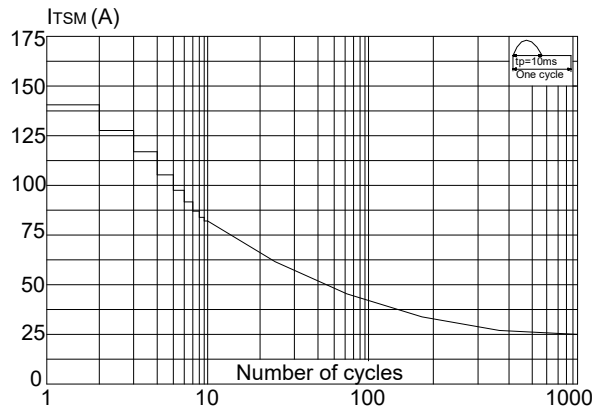
SYMBOL	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.10		2.50	0.083		0.098
A2	0		0.10	0		0.004
B	0.66		0.86	0.026		0.034
B2	5.18		5.48	0.202		0.216
C	0.40		0.60	0.016		0.024
C2	0.44		0.58	0.017		0.023
D	5.90		6.30	0.232		0.248
D1	5.30REF			0.209REF		
E	6.40		6.80	0.252		0.268
E1	4.63			0.182		
G	4.47		4.67	0.176		0.184
H	9.50		10.70	0.374		0.421
L	1.09		1.21	0.043		0.048
L2	1.35		1.65	0.053		0.065
V1	7°			7°		
V2	0°		6°	0°		6°

**Ratings and Characteristics Curves**

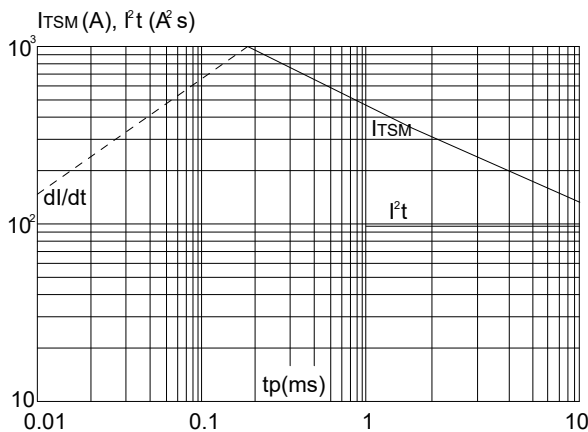
**FIG.1:** Maximum power dissipation versus RMS on-state current



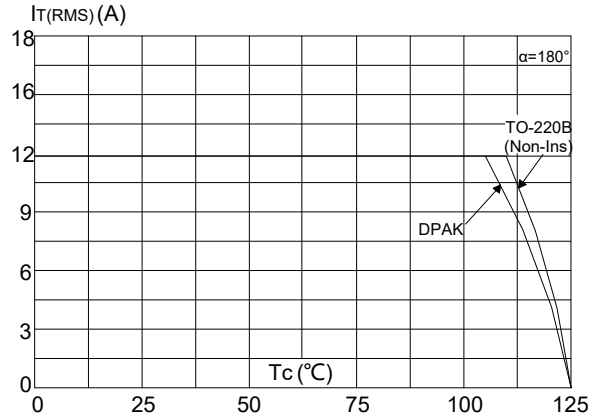
**FIG.3:** Surge peak on-state current versus number of cycles



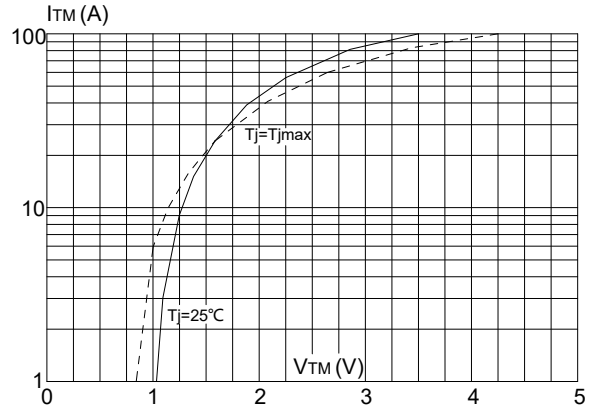
**FIG.5:** Non-repetitive surge peak on-state current for a sinusoidal pulse with width  $t_p < 10\text{ms}$ , and corresponding value of  $\int i^2 t$  ( $di/dt < 50\text{A}/\mu\text{s}$ )



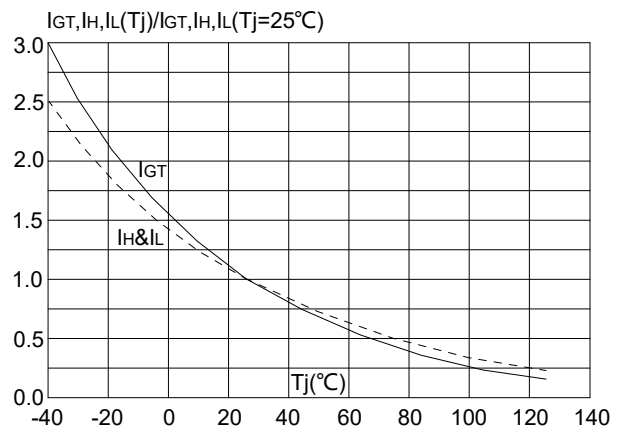
**FIG.2:** RMS on-state current versus case temperature



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



**FIG.6:** Relative variations of gate trigger current, holding current and latching current versus junction temperature





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