

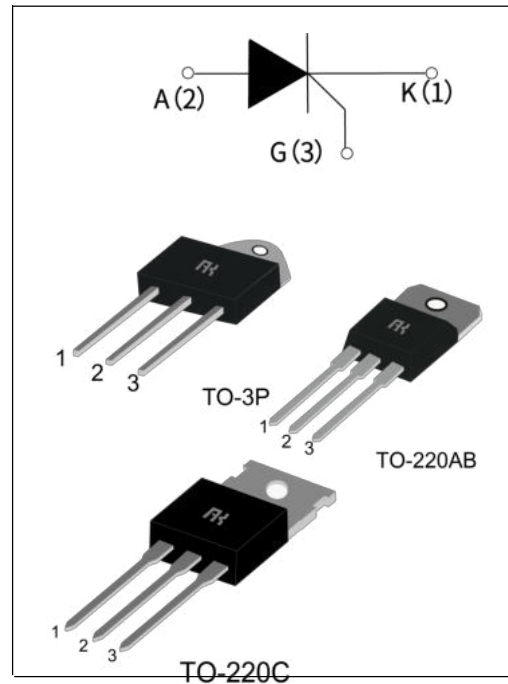
## TYN640/840/1240 Serial SCRs

### GENERAL DESCRIPTION

TYN640/840/1240 series of silicon controlled rectifiers, with high ability to withstand the shock loading of large current, 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.

### Main Features:

$I_{T(RMS)}$	$V_{DRM}/V_{RRM}$	$I_{GT}$
40A	600V (TYN640) 800V (TYN840) 1200V (TYN1240)	$\leq 35mA$



### Absolute Ratings(limiting values) :

Symbol	Parameter	Value	Unit	
$T_{stg}$	Storage junction temperature range	- 40 to + 150	$^{\circ}C$	
$T_j$	Operating junction temperature range	- 40 to + 125	$^{\circ}C$	
$I_{T(RMS)}$	RMS on-state current	TO-220A(Ins) (TC=80 $^{\circ}C$ )	40	A
		TO-220B/C(Non-Ins) (TC=85 $^{\circ}C$ )		
		TO-3P(Ins) (TC=90 $^{\circ}C$ )		
$I_{TSM}$	Non repetitive surge peak on-state current (tp=10ms)	460	A	
$V_{DRM}$	Repetitive peak off-state voltage(Tj =25 $^{\circ}C$ )	600 and 800 and 1200	V	
$V_{RRM}$	Repetitive peak reverse voltage(Tj =25 $^{\circ}C$ )	600 and 800 and 1200	V	
$V_{DSM}$	Non repetitive surge peak Off-state voltage	$V_{DRM} + 100$	V	
$V_{RSM}$	Non repetitive peak reverse voltage	$V_{RRM} + 100$	V	
$I^2t$	$I^2t$ value for fusing tp = 10 ms	1060	A <sup>2</sup> s	
$dI/dt$	Critical rate of rise of on-state current ( $I_G = 2 \times I_{GT}$ )	50	A/ $\mu$ s	

<b>I<sub>GM</sub></b>	Peak gate current	4	A
<b>P<sub>G(AV)</sub></b>	Average gate power dissipation	1	W
<b>P<sub>GM</sub></b>	Peak gate power	5	W

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

Symbol	Test Condition	Value			Unit
		MIN	TYP	MAX	
<b>I<sub>GT</sub></b>	V <sub>D</sub> =12V R <sub>L</sub> =33Ω	--	15	35	mA
<b>V<sub>GT</sub></b>		--	-	1.5	V
<b>V<sub>GD</sub></b>	V <sub>D</sub> =V <sub>DRM</sub> R <sub>L</sub> =3.3kΩ T <sub>j</sub> =125°C	0.2	--	--	V
<b>I<sub>L</sub></b>	I <sub>G</sub> =1.2 I <sub>GT</sub>	--	--	150	mA
<b>I<sub>H</sub></b>	I <sub>T</sub> = 500mA	--	--	75	mA
<b>dV/dt</b>	V <sub>D</sub> =2/3V <sub>DRM</sub> Gate Open T <sub>j</sub> =125°C	1000	--	--	V/μs

**STATIC CHARACTERISTICS**

Symbol	Parameter		Value(MAX)	Unit
<b>V<sub>TM</sub></b>	I <sub>TM</sub> = 80A t <sub>p</sub> = 380μs	T <sub>j</sub> =25°C	1.6	V
<b>I<sub>DRM</sub></b> <b>I<sub>RRM</sub></b>	V <sub>D</sub> =V <sub>DRM</sub> , V <sub>R</sub> =V <sub>RDM</sub>	T <sub>j</sub> =25°C	10	μ A
		T <sub>j</sub> =125°C	4	mA

**Thermal Resistances :**

Symbol	Parameter		Value	Unit
<b>R<sub>th(j-c)</sub></b>	junction to base(AC)	TO-220A(Ins)	1.3	°C/W
		TO-220B/C(Non-Ins)	1.2	
		TO-3P(Ins)	1.1	

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

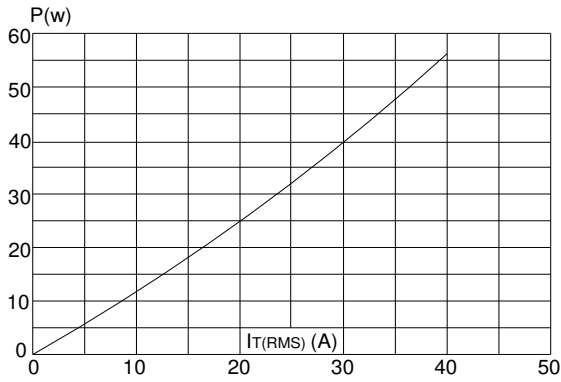


Fig.2 : RMS on-state current versus case temperature

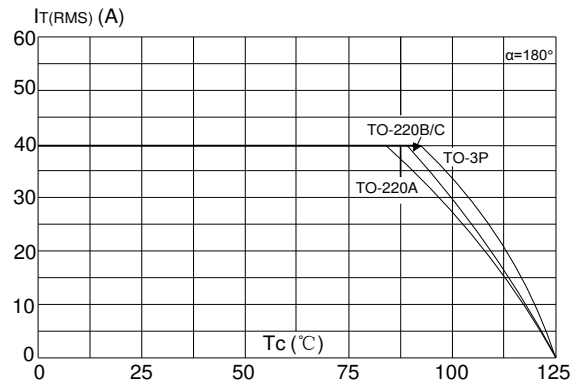


Fig.3 : Surge peak on-state current versus number of cycles

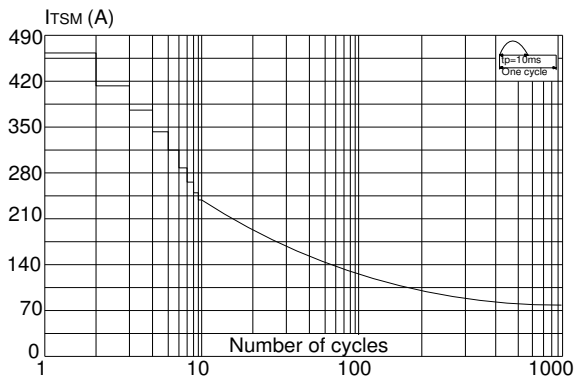


Fig.4 : On-state characteristics (maximum values)

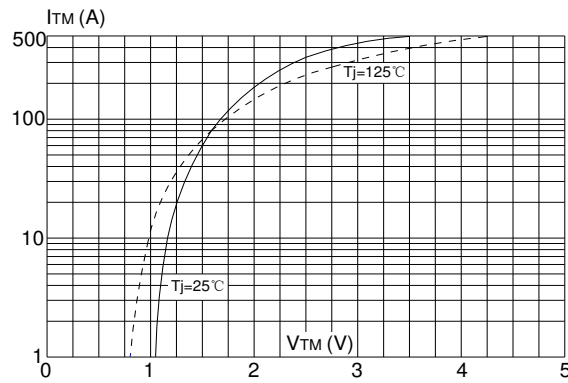


Fig.5 : Non-repetitive surge peak on-state current for a sinusoidal pulse with width  $t_p < 10\text{ms}$  and corresponding value of  $I^2 t$  ( $dI/dt < 50\text{A}/\mu\text{s}$ )

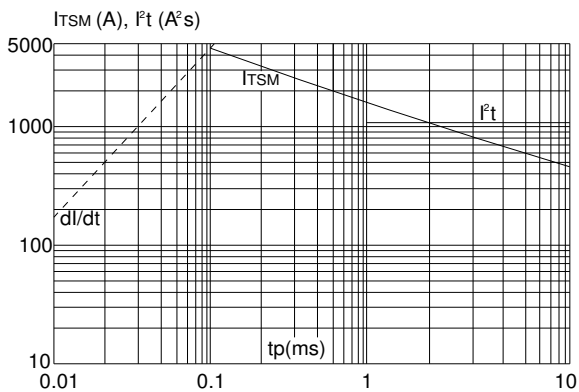
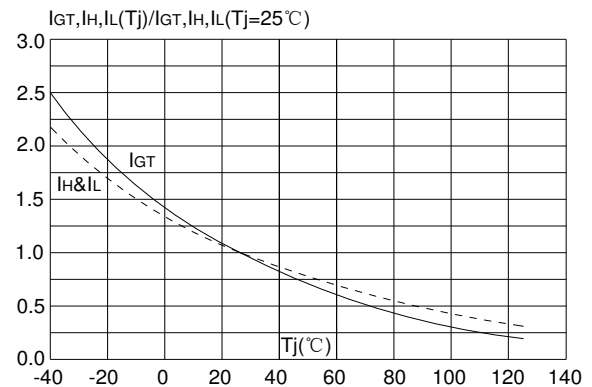
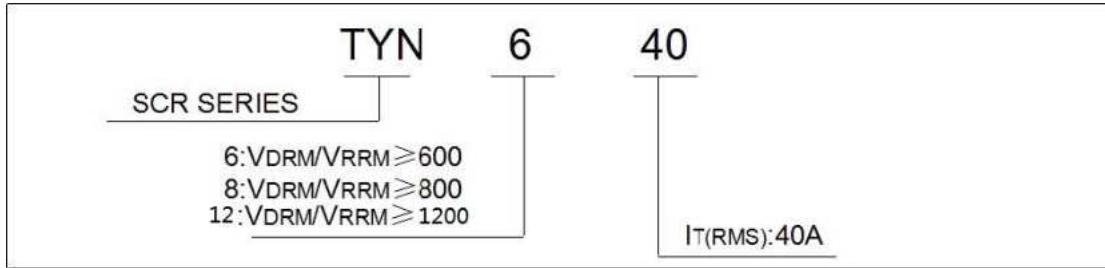


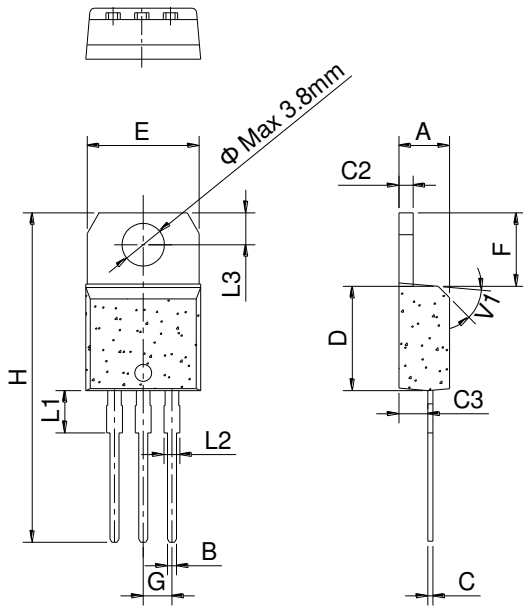
Fig.6: Relative variations of gate trigger current versus junction temperature



**Ordering Information:**

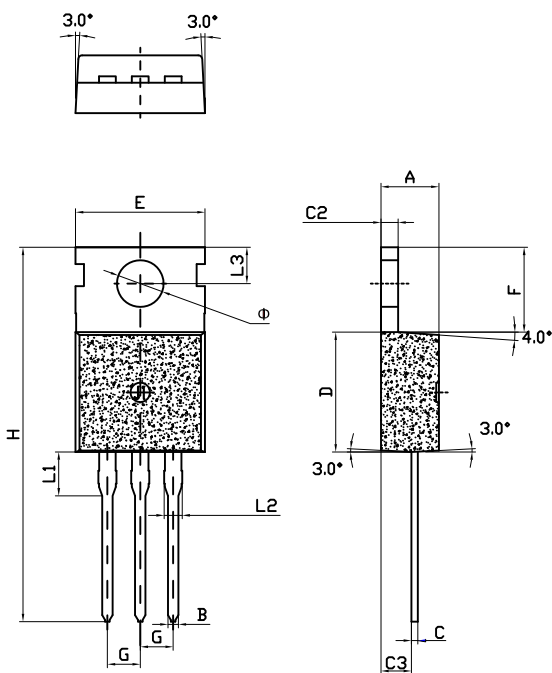


**Package Mechanical Data :**



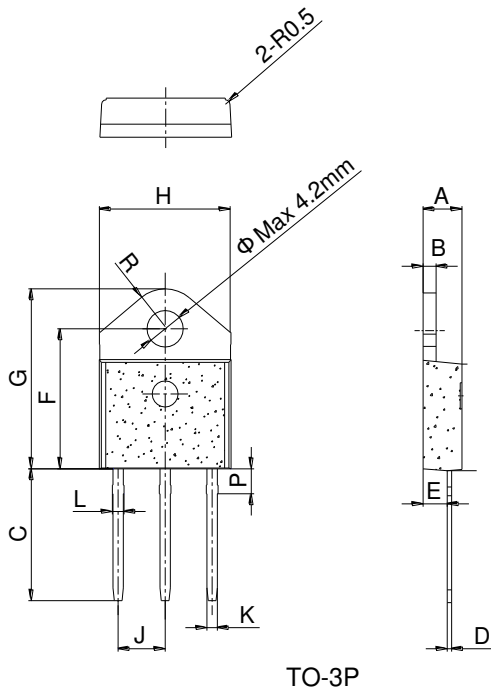
TO-220A/B

Ref.	Dimensions			
	Min.	Typ.	Max.	Inches
A	4.40			
B	0.61		0.88	0.024
C	0.46		0.70	0.018
C2	1.21		1.32	0.048
C3	2.40		2.72	0.094
D	8.60		9.70	0.339
E	9.80		10.4	0.386
F	6.55		6.95	0.258
G		2.54		0.1
H	28.0		29.8	1.102
L1		3.75		0.148
L2	1.14		1.70	0.045
L3	2.65		2.95	0.104
V1		45°		45°



TO-220C

Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.4		4.6	0.173		1.181
B	0.7		0.9	0.027		0.035
C	0.45		0.6	0.018		0.024
C2	1.23		1.32	0.048		0.052
C3	2.2		2.6	0.086		0.102
D	8.9		9.9	0.350		0.390
E	9.9		10.3	0.390		0.406
F	6.3		6.9	0.248		0.272
G		2.54			0.1	
H	28.0		29.8	11.0		11.7
L1		3.2			0.126	
L2	1.14		1.7	0.045		0.067
L3	2.65		2.95	0.104		0.116
Φ		3.6			0.142	



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.40		4.60	0.173		0.181
B	1.45		1.55	0.057		0.061
C	14.35		15.60	0.565		0.614
D	0.50		0.70	0.020		0.028
E	2.70		2.90	0.106		0.114
F	15.80		16.50	0.622		0.650
G	20.40		21.10	0.803		0.831
H	15.10		15.50	0.594		0.610
J	5.40		5.65	0.213		0.222
K	1.10		1.40	0.043		0.055
L	1.35		1.50	0.053		0.059
P	2.80		3.00	0.110		0.118
R		4.35			0.171	