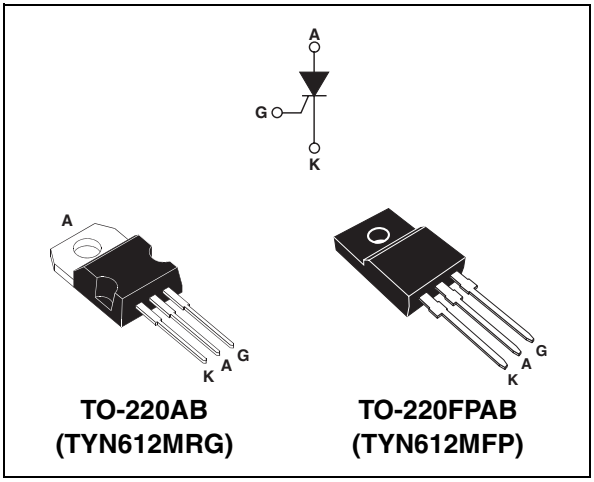
TYN612M

12A SCR

Table 1: Main Features

Symbol	Value	Unit
$I_{T(RMS)}$	12	A
V_{DRM}/V_{RRM}	600	V
I_{GT} (min./max.)	1.5 / 5	mA



TO-220AB (TYN612MRG) **TO-220FPAB (TYN612MFP)**

DESCRIPTION

The TYN612M SCR is suitable to fit modes of control found in applications such as voltage regulation circuits for motorbikes, overvoltage crowbar protection, motor control circuits in power tools and kitchen aids, inrush current limiting circuits, capacitive discharge ignition.

The insulated fullpack package allows a back to back configuration.

Table 2: Order Codes

Part Number	Marking
TYN612MRG	TYN612M
TYN612MFP	TYN612MFP

Table 3: Absolute Ratings (limiting values)

Symbol	Parameter			Value	Unit
$I_{T(RMS)}$	RMS on-state current (180° conduction angle)	TO-220AB	Tc = 105°C	12	A
		TO-220FPAB	Tc = 70°C	12	
$I_{T(AV)}$	Average on-state current (180° conduction angle)	TO-220AB	Tc = 105°C	8	A
		TO-220FPAB	Tc = 70°C	8	
I_{TSM}	Non repetitive surge peak on-state current	tp = 8.3 ms	Tj = 25°C	125	A
		tp = 10 ms		120	
I^2t	I^2t Value for fusing	tp = 10 ms	Tj = 25°C	72	A^2s
dI/dt	Critical rate of rise of on-state current I_G = 2 x I_{GT} , tr ≤ 100 ns	F = 60 Hz	Tj = 125°C	50	A/µs
I_{GM}	Peak gate current	tp = 20 µs	Tj = 125°C	4	A
$P_{G(AV)}$	Average gate power dissipation		Tj = 125°C	1	W
T_{stg} Tj	Storage junction temperature range Operating junction temperature range			- 40 to + 150 - 40 to + 125	°C
V_{RGM}	Maximum peak reverse gate voltage			5	V

Tables 4: Electrical Characteristics (T_j = 25°C, unless otherwise specified)

Symbol	Test Conditions			Value	Unit
I_{GT}	V_D = 12 V R_L = 140 Ω		MIN.	1.5	mA
			MAX.	5	
V_{GT}			MAX.	1.3	V
V_{GD}	$V_D = V_{DRM}$ R_L = 3.3 kΩ	Tj = 125°C	MIN.	0.2	V
I_H	I_T = 500 mA Gate open		MAX.	20	mA
I_L	$I_G = 1.2\ I_{GT}$		MAX.	40	mA
dV/dt	V_D = 67 % V_{DRM} Gate open	Tj = 125°C	MIN.	50	V/µs
V_{TM}	I_{TM} = 24 A tp = 380 µs	Tj = 25°C	MAX.	1.6	V
V_{t0}	Threshold voltage	Tj = 125°C	MAX.	0.85	V
R_d	Dynamic resistance	Tj = 125°C	MAX.	30	mΩ
I_{DRM} I_{RRM}	$V_{DRM} = V_{RRM}$	Tj = 25°C	MAX.	5	µA
		Tj = 125°C		2	mA

Table 5: Thermal Resistances

Symbol	Parameter		Value	Unit
$R_{th(j-c)}$	Junction to case (DC)	TO-220AB	1.3	°C/W
		TO-220FPAB	4.5	
$R_{th(j-a)}$	Junction to ambient	TO-220AB	55	°C/W
		TO-220FPAB	55	

Table 6: Product Selector

Part Number	Voltage	Sensitivity	Package
TYN612MRG	600V	5mA	TO-220AB
TYN612MFP	600V	5mA	TO-220FPAB

Figure 1: Maximum average power dissipation versus average on-state current

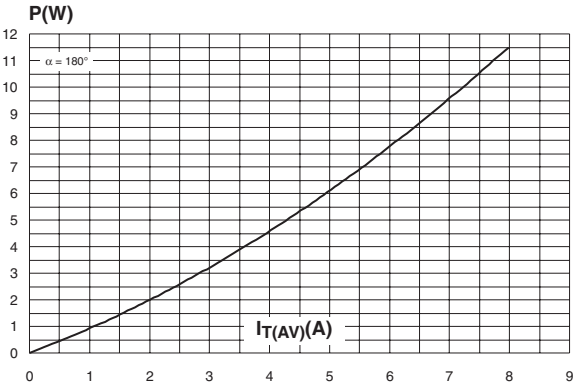


Figure 2: Average and D.C. on-state current versus case temperature (TO-220AB)

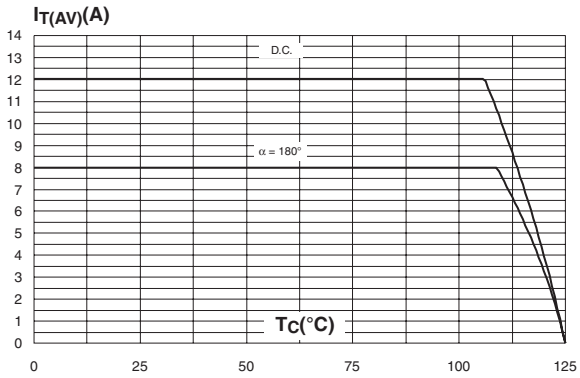


Figure 3: Average and D.C. on-state current versus case temperature (TO-220FPAB)

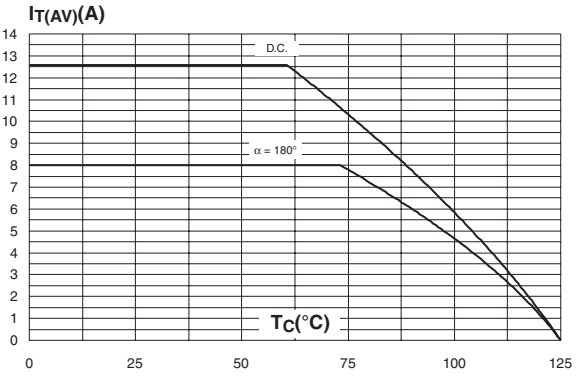


Figure 4: Relative variation of thermal impedance versus pulse duration (TO-220AB)

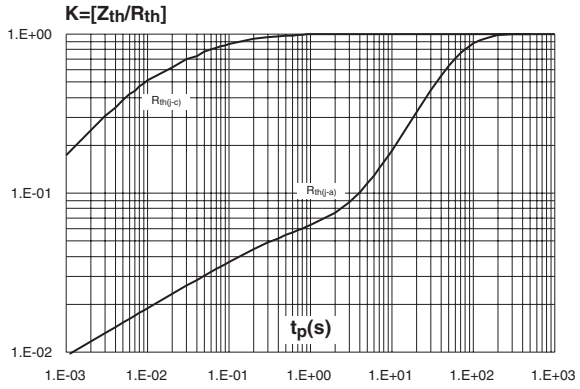


Figure 5: Relative variation of thermal impedance versus pulse duration (TO-220FPAB)

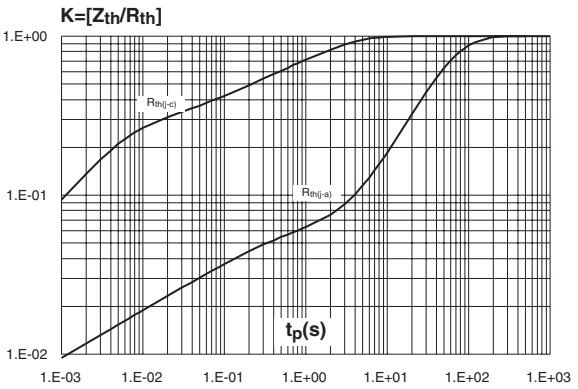


Figure 6: Relative variation of gate trigger current, holding current and latching current versus junction temperature (typical values)

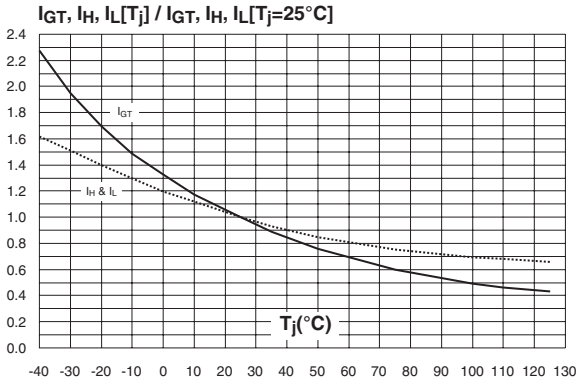


Figure 7: Surge peak on-state current versus number of cycles

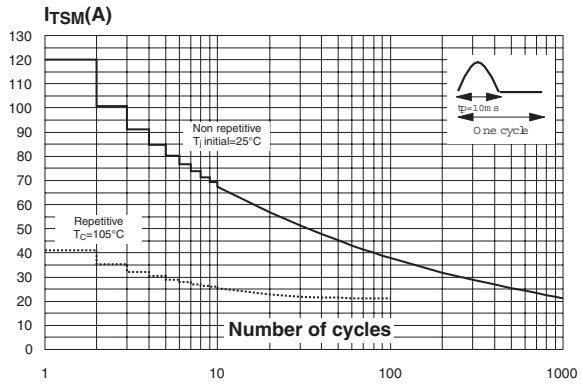


Figure 8: Non repetitive surge peak on-state current for a sinusoidal pulse with width tp<10ms, and corresponding value of I^2t

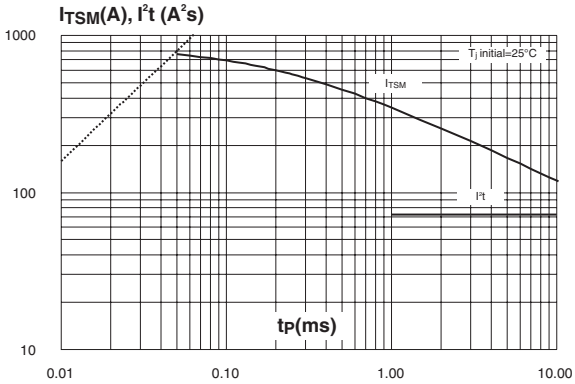


Figure 9: On-state characteristics (maximum values)

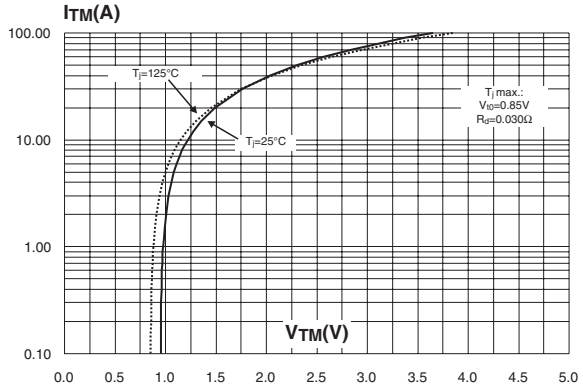


Figure 10: Ordering Information Scheme

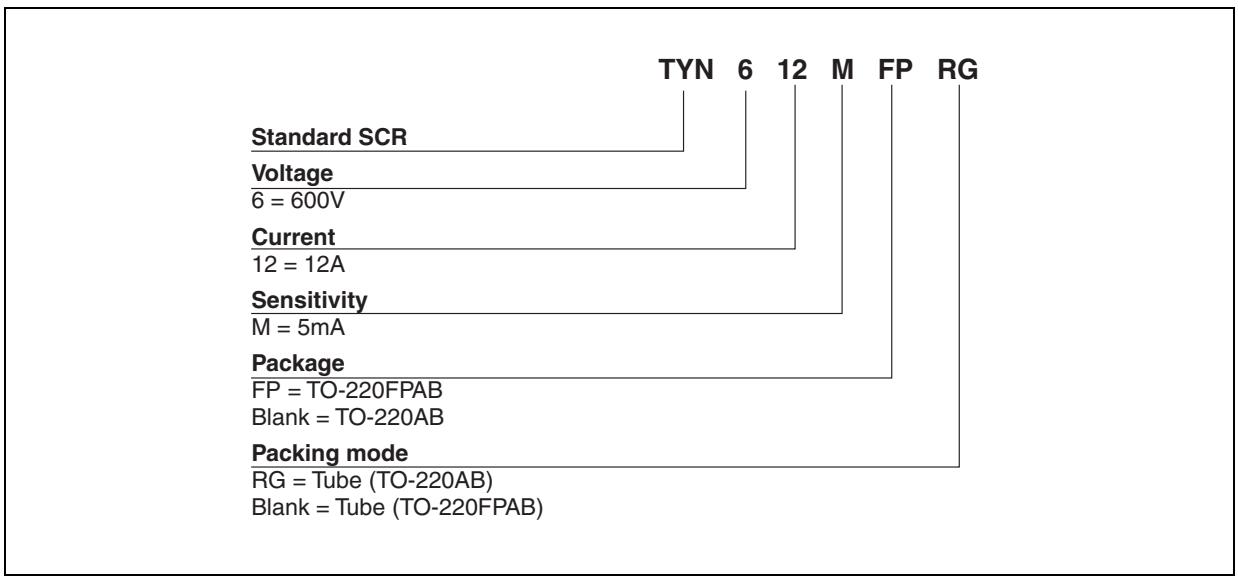
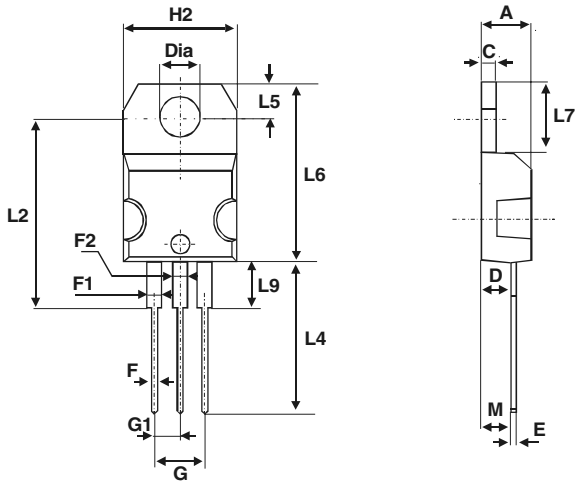
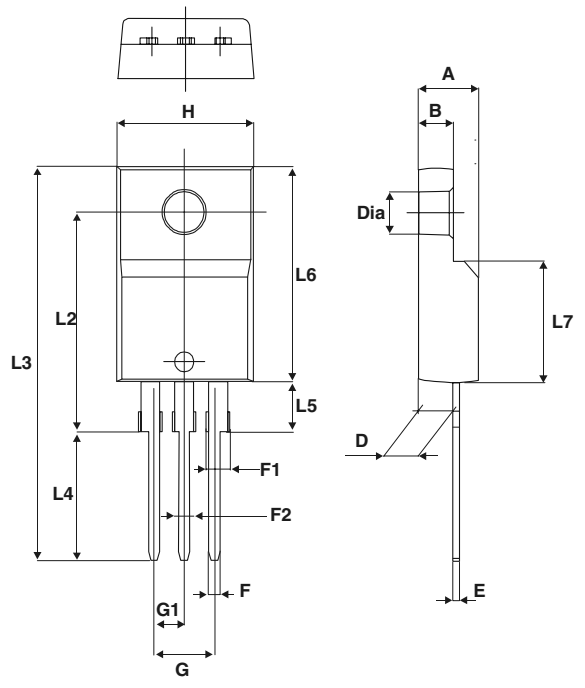


Figure 11: TO-220AB Package Mechanical Data



REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	4.40	4.60	0.173	0.181
C	1.23	1.32	0.048	0.051
D	2.40	2.72	0.094	0.107
E	0.49	0.70	0.019	0.027
F	0.61	0.88	0.024	0.034
F1	1.14	1.70	0.044	0.066
F2	1.14	1.70	0.044	0.066
G	4.95	5.15	0.194	0.202
G1	2.40	2.70	0.094	0.106
H2	10	10.40	0.393	0.409
L2	16.4 typ.		0.645 typ.	
L4	13	14	0.511	0.551
L5	2.65	2.95	0.104	0.116
L6	15.25	15.75	0.600	0.620
L7	6.20	6.60	0.244	0.259
L9	3.50	3.93	0.137	0.154
M	2.6 typ.		0.102 typ.	
Diam.	3.75	3.85	0.147	0.151

Figure 12: TO-220FPAB Package Mechanical Data



REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	4.4	4.6	0.173	0.181
B	2.5	2.7	0.098	0.106
D	2.5	2.75	0.098	0.108
E	0.45	0.70	0.018	0.027
F	0.75	1	0.030	0.039
F1	1.15	1.70	0.045	0.067
F2	1.15	1.70	0.045	0.067
G	4.95	5.20	0.195	0.205
G1	2.4	2.7	0.094	0.106
H	10	10.4	0.393	0.409
L2	16 Typ.		0.63 Typ.	
L3	28.6	30.6	1.126	1.205
L4	9.8	10.6	0.386	0.417
L5	2.9	3.6	0.114	0.142
L6	15.9	16.4	0.626	0.646
L7	9.00	9.30	0.354	0.366
Dia.	3.00	3.20	0.118	0.126

Table 7: Ordering Information

Ordering type	Marking	Package	Weight	Base qty	Delivery mode
TYN612MRG	TYN612M	TO-220AB	2.3 g	50	Tube
TYN612MFP	TYN612MFP	TO-220FPAB	2 g	50	Tube

Table 8: Revision History

Date	Revision	Description of Changes
Sep-2002	1A	Last update.
10-Fev-2005	2	TO-220FPAB package added.

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