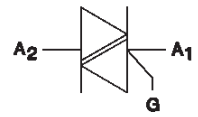
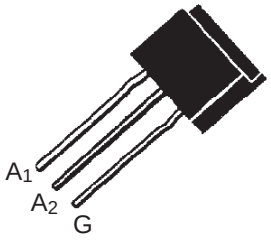
TLC116 ---> TLC386 T/D/S/A

SENSITIVE GATE TRIACS

FEATURES

- VERY LOW I_{GT} = 5mA max
- LOW I_H = 15mA max





TL
(Plastic)

DESCRIPTION

The TLC116 ---> TLC386 T/D/S/A triac family uses a high performance glass passivated PNPN technology.
These parts are suitable for general purpose applications where gate high sensitivity is required. Application on 4Q such as phase control and static

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
$I_{T(RMS)}$	RMS on-state current (360° conduction angle)	Tl = 40°C	3	A
		Ta = 25°C	1.3 (1)	
I_{TSM}	Non repetitive surge peak on-state current (Tj initial = 25°C)	tp = 8.3 ms	31.5	A
		tp = 10 ms	30	
I^2t	I^2t value	tp = 10 ms	4.5	A^2s
dI/dt	Critical rate of rise of on-state current Gate supply : I_G = 50mA di_G/dt = 0.1A/µs	Repetitive F = 50 Hz	10	A/µs
		Non Repetitive	50	
Tstg Tj	Storage and operating junction temperature range		- 40 to + 150 - 40 to + 110	°C °C
Tl	Maximum lead temperature for soldering during 4 s at 4.5 mm from case		230	°C

Symbol	Parameter	TLC				Unit
		116 T/D/S/A	226 T/D/S/A	336 T/D/S/A	386 T/D/S/A	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage Tj = 110°C	200	400	600	700	V

(1) With Cu surface 1cm^2.

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
Rth (j-a)	Junction to ambient on printed circuit with Cu surface 1cm^2	50	°C/W
Rth (j-l) DC	Junction leads for DC	20	°C/W
Rth (j-l) AC	Junction leads for 360° conduction angle (F= 50 Hz)	15	°C/W

GATE CHARACTERISTICS (maximum values)

$P_{G\ (AV)}$ = 0.1W P_{GM} = 2W (tp = 20 µs) I_{GM} = 1A (tp = 20 µs) V_{GM} = 16V (tp = 20 µs).

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions		Quadrant		Suffix				Unit
					T	D	S	A	
I_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	I-II-III	MAX	5	5	10	10	mA
			IV	MAX	5	10	10	25	
V_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	I-II-III-IV	MAX	1.5				V
V_{GD}	V_D=V_{DRM} R_L=3.3kΩ	Tj=110°C	I-II-III-IV	MIN	0.2				V
tgt	V_D=V_{DRM} I_G = 40mA dI_G/dt = 0.5A/µs	Tj=25°C	I-II-III-IV	TYP	2				µs
I_L	IG= 1.2 I_{GT}	Tj=25°C	I-III-IV	MAX	15	15	25	25	mA
			II		15	15	25	25	
I_H *	I_T= 100mA gate open	Tj=25°C		MAX	15	15	25	25	mA
V_{TM} *	I_{TM}= 4A tp= 380µs	Tj=25°C		MAX	1.85				V
I_{DRM} I_{RRM}	V_{DRM} Rated V_{RRM} Rated	Tj=25°C		MAX	0.01				mA
		Tj=110°C		MAX	0.75				
dV/dt *	Linear slope up to V_D=67%V_{DRM} gate open	Tj=110°C		TYP	10	10	20	20	V/µs
(dV/dt)c *	(dI/dt)c = 1.3A/ms	Tj=110°C		TYP	1	1	5	5	V/µs

* For either polarity of electrode A_2 voltage with reference to electrode A_1.

ORDERING INFORMATION

Package	$I_{T(RMS)}$	V_{DRM} / V_{RRM}	Sensitivity Specification			
	A	V	T	D	S	A
TLC ..6	3	200	X	X	X	X
		400	X	X	X	X
		600	X	X	X	X
		700	X	X	X	X

Fig.1 : Maximum RMS power dissipation versus RMS on-state current (F=50Hz).
(Curves are cut off by (dI/dt)c limitation)

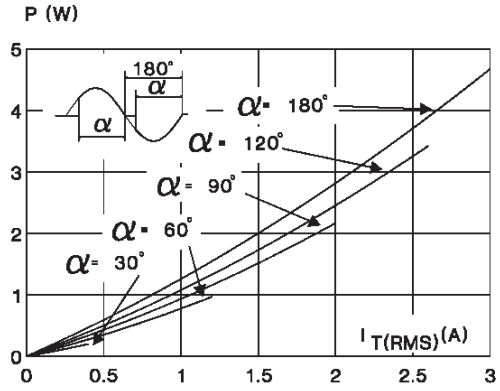


Fig.2 : Correlation between maximum RMS power dissipation and maximum allowable temperatures (T_{amb} and T_{lead}).

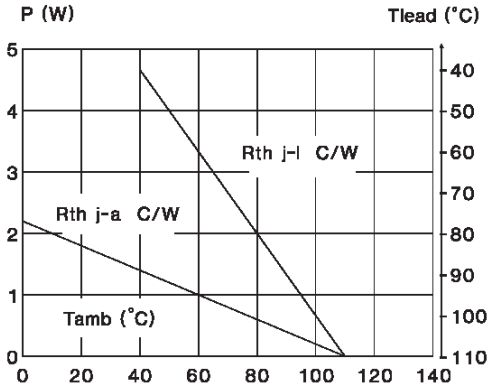


Fig.3 : RMS on-state current versus case temperature.

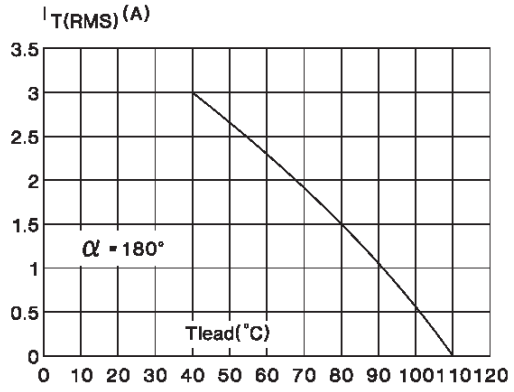


Fig.4 : Thermal transient impedance junction to case and junction to ambient versus pulse duration.

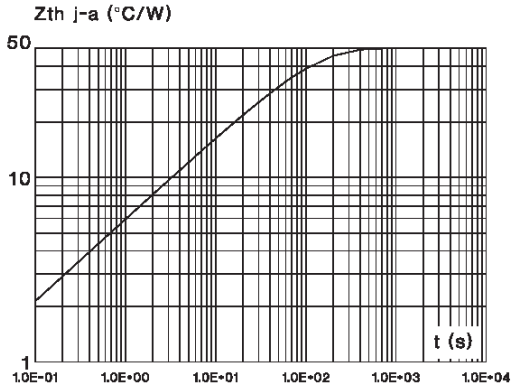


Fig.5 : Relative variation of gate trigger current and holding current versus junction temperature.

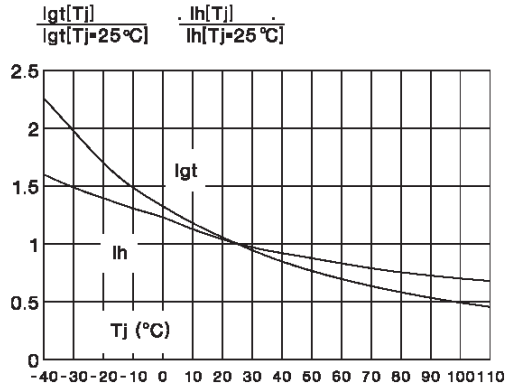


Fig.6 : Non Repetitive surge peak on-state current versus number of cycles.

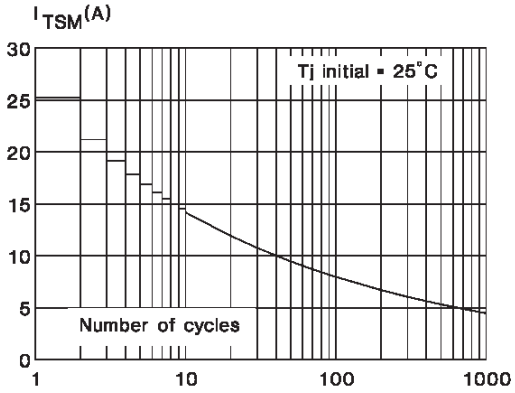


Fig.7 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : t ≤ 10ms, and corresponding value of I^2t.

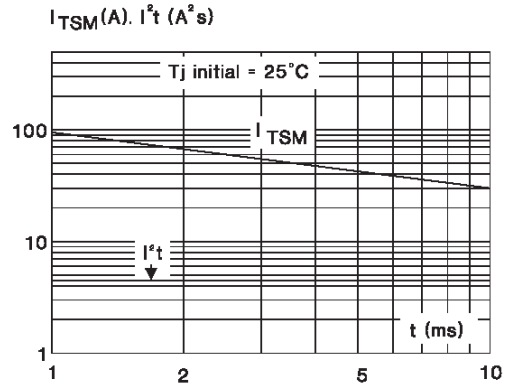
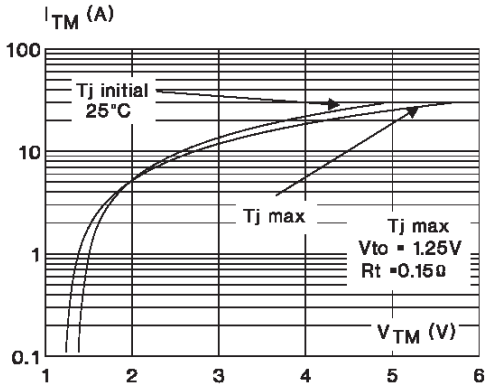
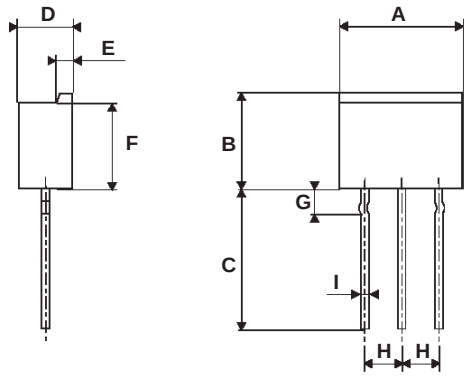


Fig.8 : On-state characteristics (maximum values).



PACKAGE MECHANICAL DATA

TL Plastic



REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	9.55	10.05	0.375	0.396
B	7.55	8.05	0.297	0.317
C	12.70		0.500	
D	4.25	4.75	0.167	0.187
E	1.25	1.75	0.049	0.069
F	6.75	7.25	0.266	0.285
G		4.50		0.177
H	2.04	3.04	0.80	0.120
I	0.75	0.85	0.029	0.033

Marking : type number
Weight : 0.75 g