



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

SENSITIVE GATE TRIACS

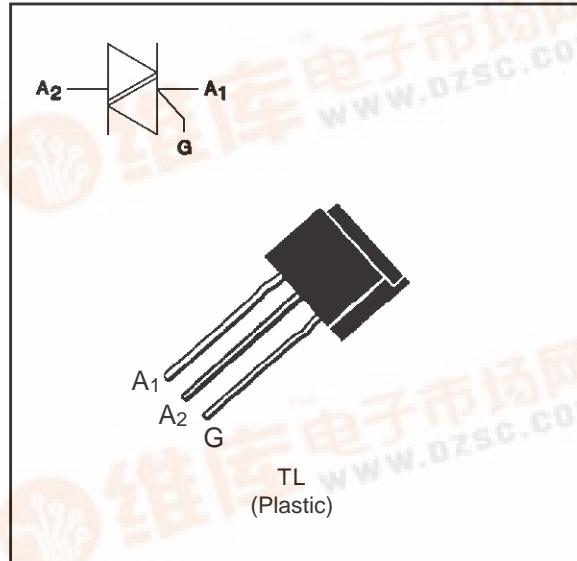
FEATURES

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

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
IT(RMS)	RMS on-state current (360° conduction angle)	TI = 40°C	3
		Ta = 25°C	1.3 (1)
ITSM	Non repetitive surge peak on-state current (Tj initial = 25°C)	tp = 8.3 ms	31.5
		tp = 10 ms	30
I ² t	I ² t value	tp = 10 ms	A ² s
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
		Non Repetitive	50
T _{stg} T _j	Storage and operating junction temperature range	- 40 to + 150 - 40 to + 110	°C °C
TI	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 T _j = 110°C	200	400	600	700	V

(1) With Cu surface 1cm².

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THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
R _{th} (j-a)	Junction to ambient on printed circuit with Cu surface 1cm ²	50	°C/W
R _{th} (j-l) DC	Junction leads for DC	20	°C/W
R _{th} (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	T _j =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	T _j =25°C	I-II-III-IV	MAX	1.5				V
V _{GD}	V _D =V _{DRM} R _L =3.3kΩ	T _j =110°C	I-II-III-IV	MIN	0.2				V
t _{gt}	V _D =V _{DRM} I _G = 40mA dI _G /dt = 0.5A/μs	T _j =25°C	I-II-III-IV	TYP	2				μs
I _L	I _G = 1.2 I _{GT}	T _j =25°C	I-III-IV	MAX	15	15	25	25	mA
			II		15	15	25	25	
I _H *	I _T = 100mA gate open	T _j =25°C		MAX	15	15	25	25	mA
V _{TM} *	I _{TM} = 4A tp= 380μs	T _j =25°C		MAX	1.85				V
I _{DRM} I _{RRM}	V _{DRM} Rated V _{RRM} Rated	T _j =25°C		MAX	0.01				mA
		T _j =110°C		MAX	0.75				
dV/dt *	Linear slope up to V _D =67%V _{DRM} gate open	T _j =110°C		TYP	10	10	20	20	V/μs
(dV/dt)c *	(dI/dt)c = 1.3A/ms	T _j =110°C		TYP	1	1	5	5	V/μs

* For either polarity of electrode A₂ voltage with reference to electrode A₁.

ORDERING INFORMATION

Package	$I_T(\text{RMS})$	V _{DRM} / V _{RRM}	Sensitivity Specification			
			A	V	T	D
TLC ..6	3	200		X	X	X
		400		X	X	X
		600		X	X	X
		700		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)

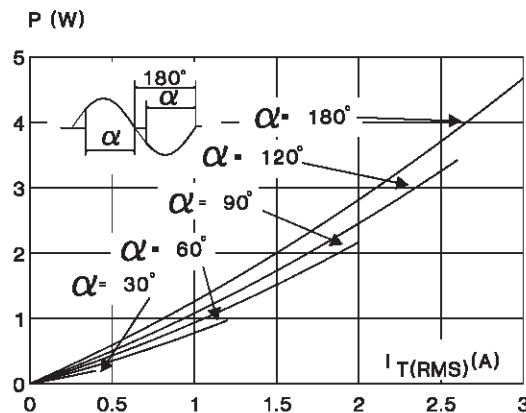


Fig.3 : RMS on-state current versus case temperature.

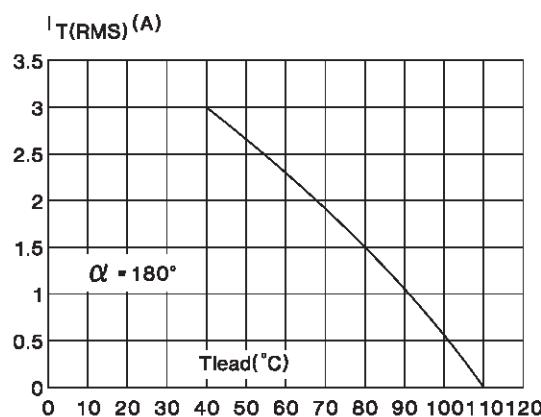


Fig.2 : Correlation between maximum RMS power dissipation and maximum allowable temperatures (T_{amb} and T_{lead}).

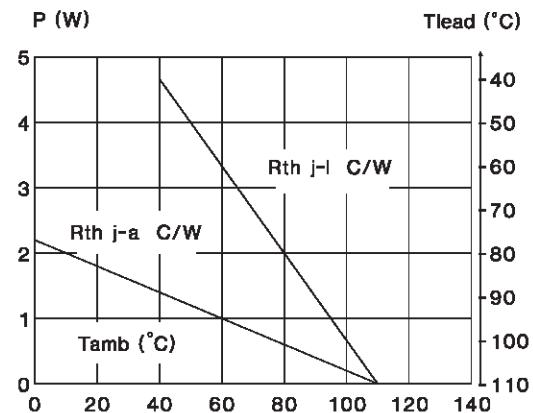
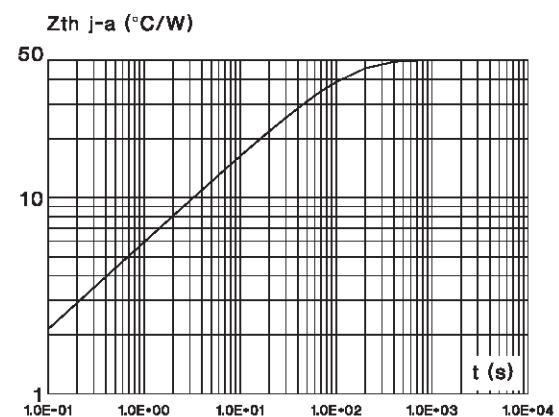


Fig.4 : Thermal transient impedance junction to case and junction to ambient versus pulse duration.



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

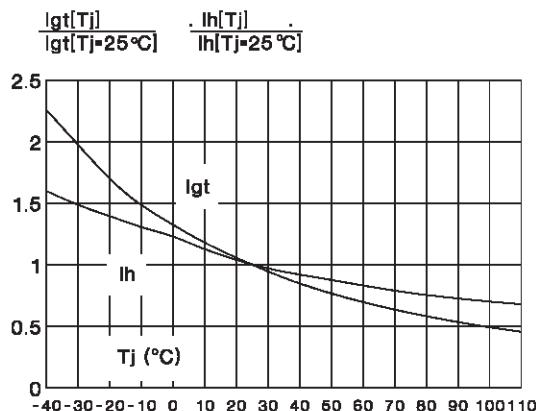


Fig.7 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : $t \leq 10\text{ms}$, and corresponding value of I^2t .

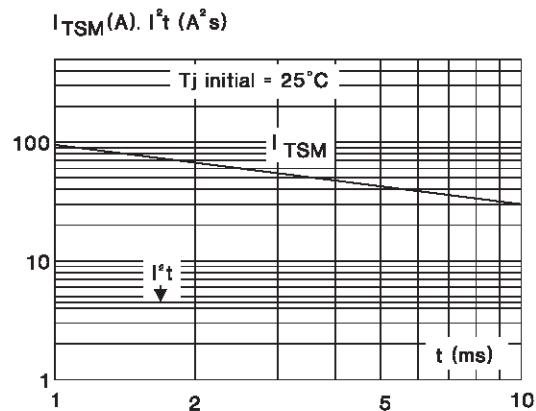


Fig.6 : Non Repetitive surge peak on-state current versus number of cycles.

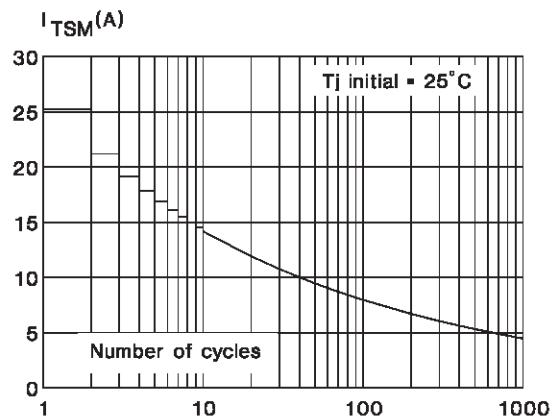
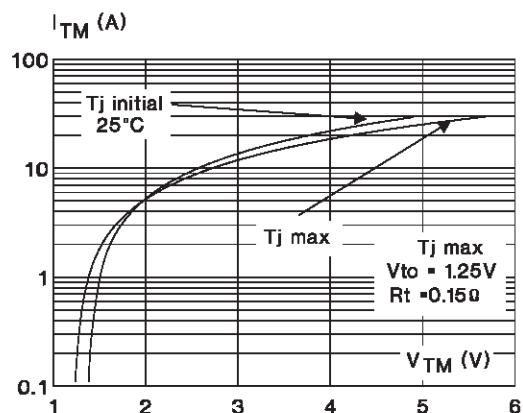
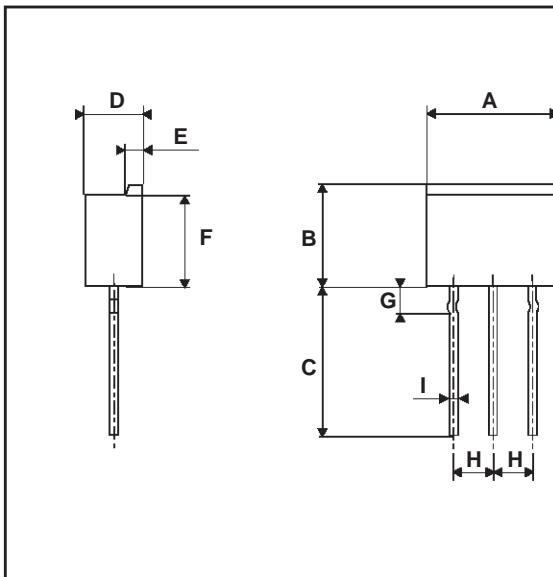


Fig.8 : On-state characteristics (maximum values).



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

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