Projet 7 - ISOTRIAC / Commande isolée pour Triac.

Projet : PROJETS-IUT1

Info : [DATA066]

Révision : 3 du 26 mars 1999

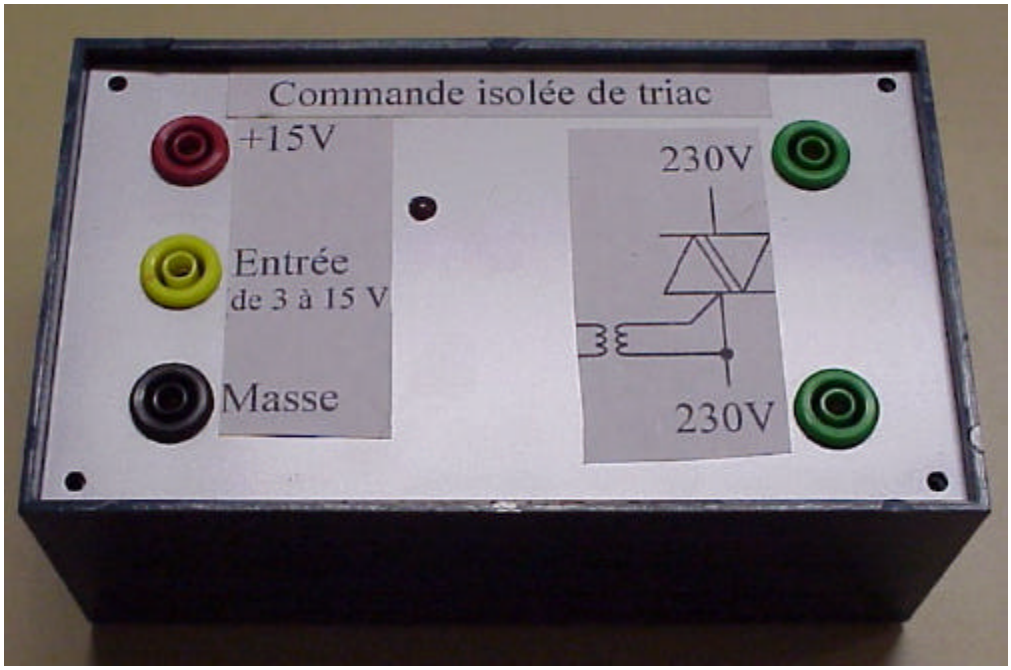


Figure 7.1. Commande de triac (images-maquettes\triac010.jpg).

7.1 Liste des documents

- Dimensions mécanique de la face avant (triac).
- Implantation de la face avant (triac).
- Liste des composants.
- Schéma électronique.
- Implantation des composants et circuit imprimé coté cuivre.
- Documentations sur les composants : BTA16-800B, CD4093B, LM7805, IT245, 2N2219.

7.2 Calcul du circuit de gâchette

7.3 Dimensions mécanique de la face avant (triac)

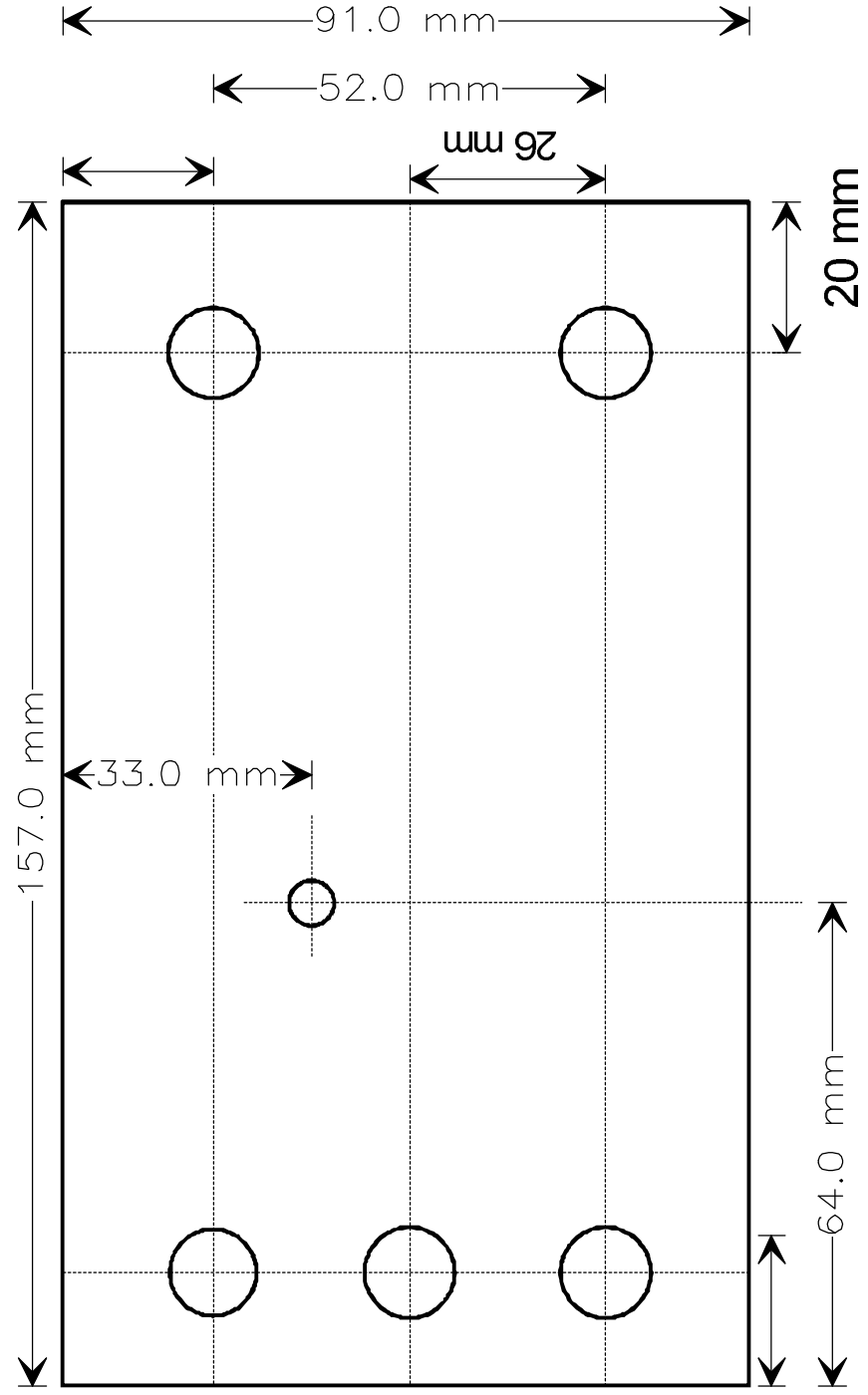


Figure 7.2. Face avant de la commande de TRIAC (orcad\projets-iut1\triac1.drw).

7.4 Implantation de la face avant (triac)

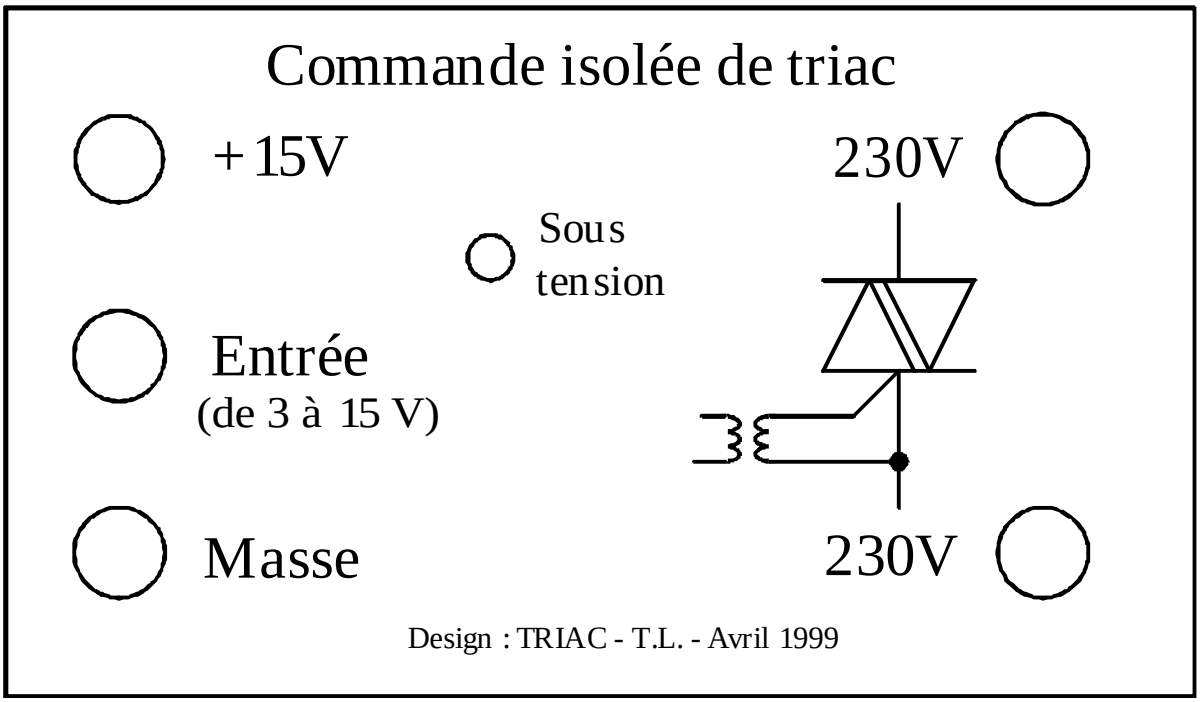


Figure 7.3. Face avant (orcad\projets-iut1\triac2.drw).

7.5 Allure des principaux composants

Figure 7.4. Embases filetées (images-composants\embases.gif).

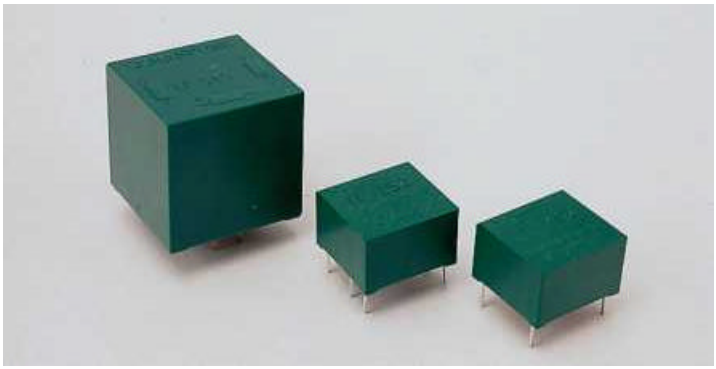


Figure 7.5. Transformateurs d'impulsions (images-composants\ti1.jpg).

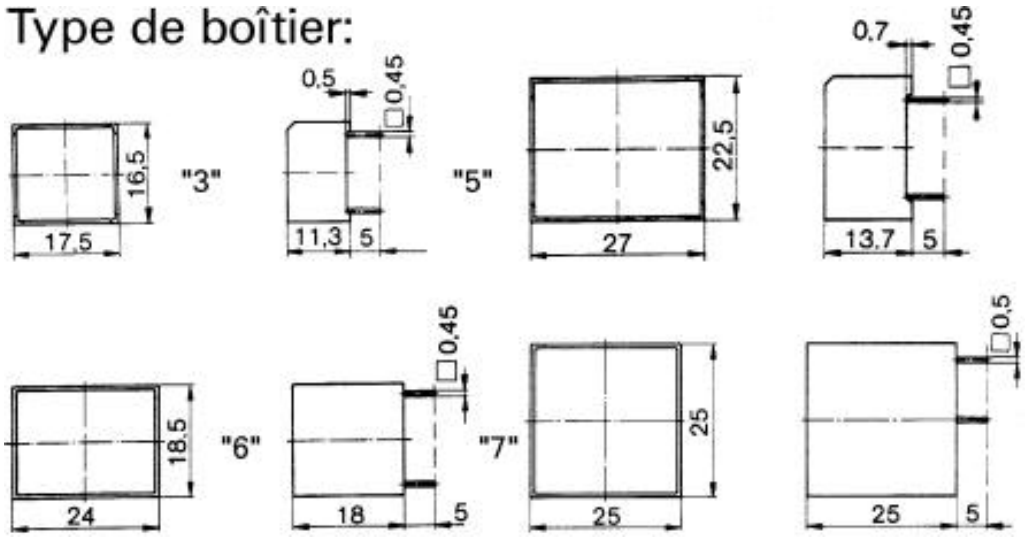


Figure 7.6. Transformateurs d'impulsions (images-composants\ti2.gif).

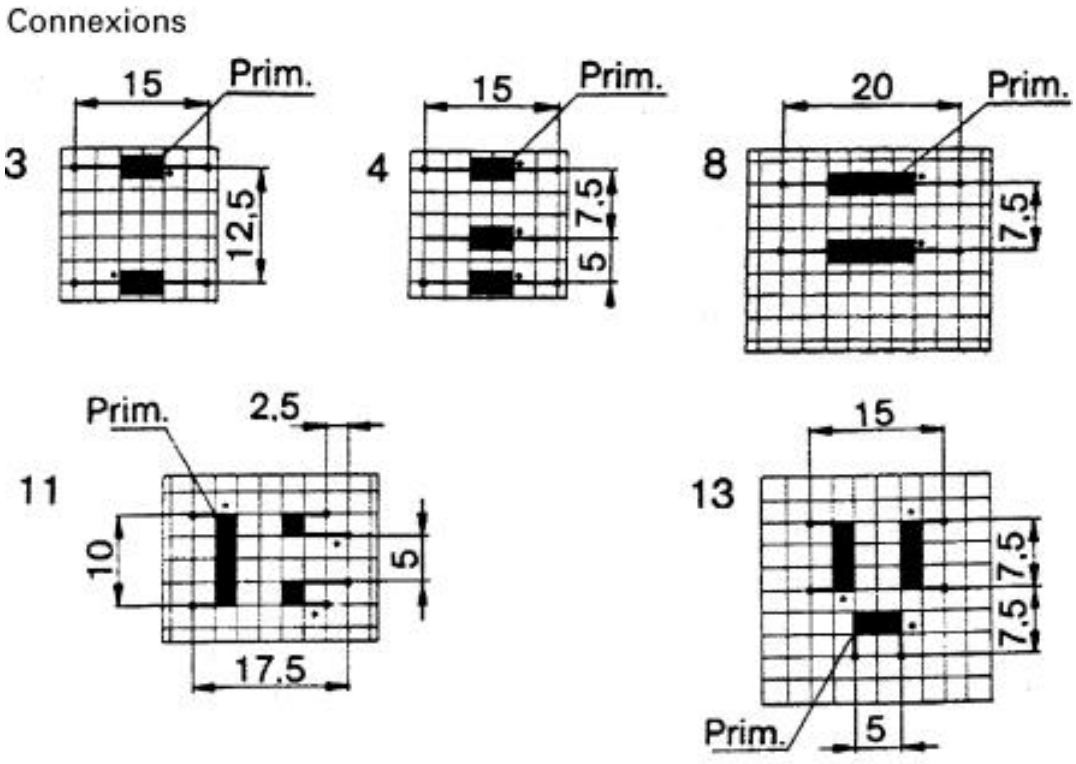
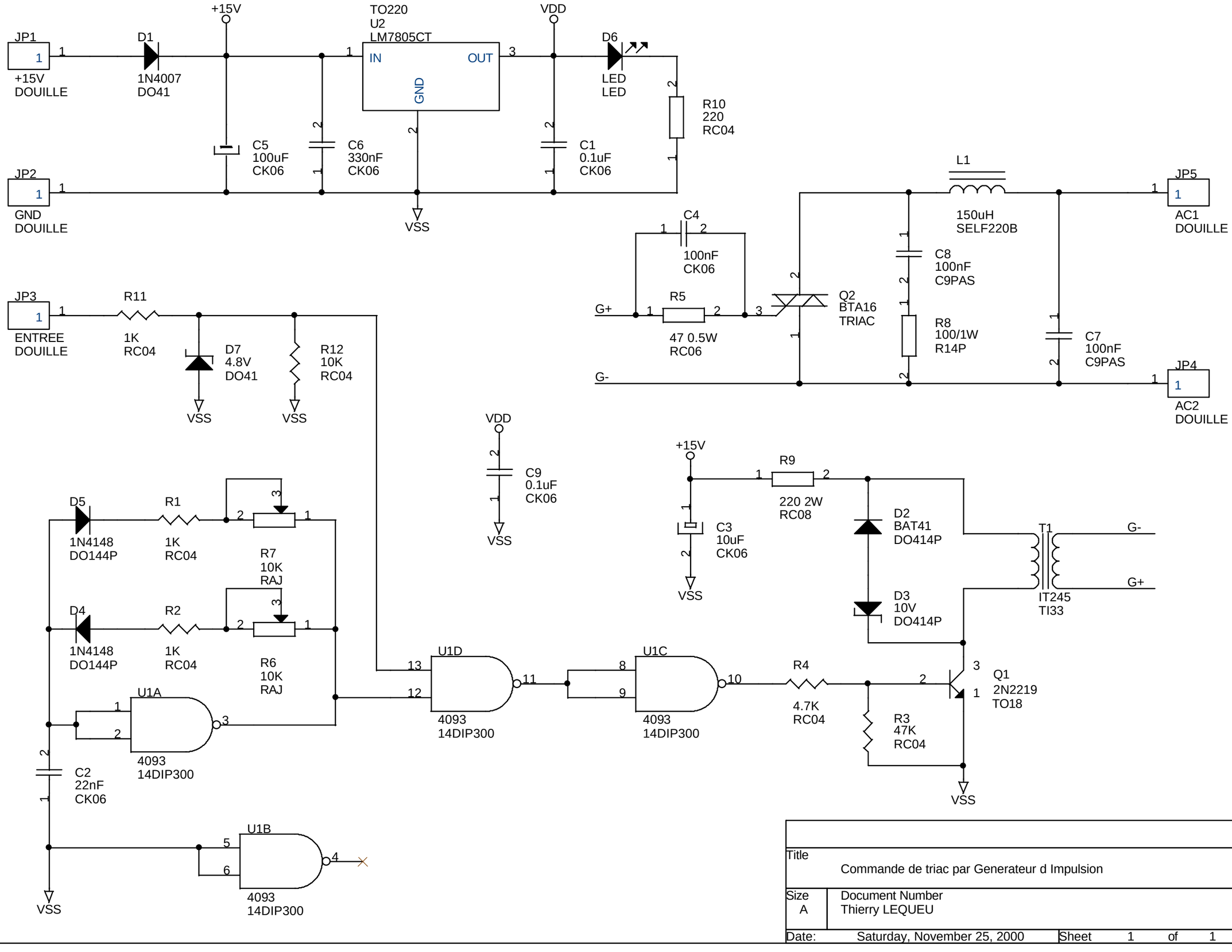


Figure 7.7. Transformateurs d'impulsions (images-composants\ti3.gif).



Title	Commande de triac par Generateur d Impulsion	
Size A	Document Number Thierry LEQUEU	Rev 3
Date: Saturday, November 25, 2000	Sheet 1 of 1	

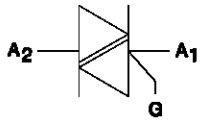
SGS-THOMSON MICROELECTRONICS

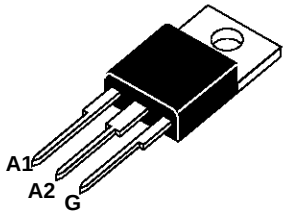
BTA12 SW
BTB12 SW

LOGIC LEVEL TRIACS

FEATURES

- LOW I_{GT} = 10mA max
- HIGH EFFICIENCY SWITCHING ON COMMUTATION
- BTA Family :
  INSULATING VOLTAGE = 2500$V_{(RMS)}$
  (UL RECOGNIZED : E81734)





TO220AB
(Plastic)

DESCRIPTION

The BTA/BTB12 SW Triac family are high performance products glass passivated PNPN devices.
These parts are suited for low power trigger circuit (integrated circuits, microcontroller, microprocessors.

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter			Value	Unit
$I_{T(RMS)}$	RMS on-state current (360° conduction angle)	BTA	Tc = 70 °C	12	A
		BTB	Tc = 75 °C		
I_{TSM}	Non repetitive surge peak on-state current (Tj initial = 25°C)		tp = 8.3 ms	126	A
			tp = 10 ms	120	
I^2t	I^2t value		tp = 10 ms	72	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	20	A/µs
			Non Repetitive	100	
Tstg Tj	Storage and operating junction temperature range			- 40 to + 150 - 40 to + 110	°C °C
Tl	Maximum lead temperature for soldering during 10 s at 4.5 mm from case			260	°C

Symbol	Parameter	BTA / BTB12-			Unit
		400 SW	600 SW	700 SW	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage Tj = 110 °C	400	600	700	V

THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
Rth (j-a)	Junction to ambient		60	°C/W
Rth (j-c) DC	Junction to case for DC	BTA	3.3	°C/W
		BTB	2.7	
Rth (j-c) AC	Junction to case for 360° conduction angle (F= 50 Hz)	BTA	2.5	°C/W
		BTB	2	

GATE CHARACTERISTICS (maximum values)

$P_{G\ (AV)}$ = 1W P_{GM} = 10W (tp = 20 µs) I_{GM} = 4A (tp = 20 µs) V_{GM} = 16V (tp = 20 µs).

ELECTRICAL CHARACTERISTICS

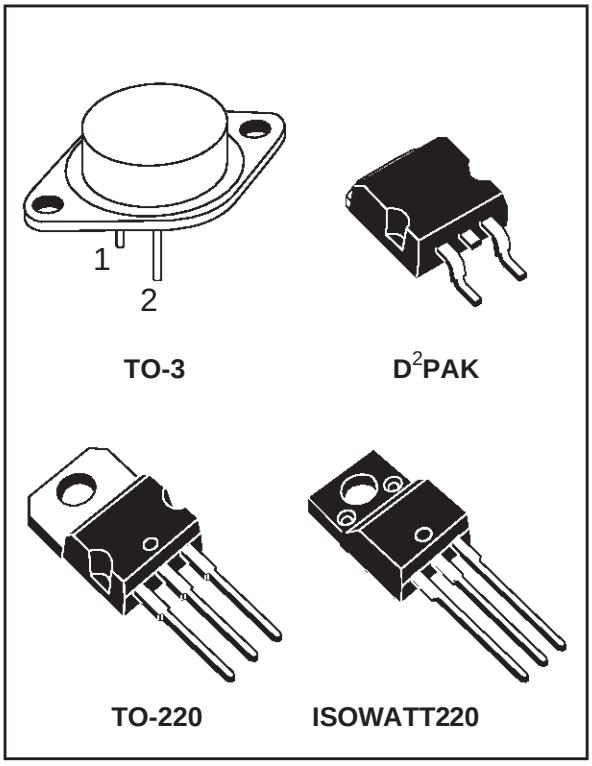
Symbol	Test Conditions		Quadrant		Suffix	Unit
					SW	
I_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	I-II-III	MAX	10	mA
V_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	I-II-III	MAX	1.5	V
V_{GD}	V_D=V_{DRM} R_L=3.3kΩ	Tj=110°C	I-II-III	MIN	0.2	V
tgt	V_D=V_{DRM} I_G = 40mA dI_G/dt = 0.5A/µs	Tj=25°C	I-II-III	TYP	2	µs
I_L	I_G=1.2 I_{GT}	Tj=25°C	I-III	TYP	15	mA
			II		25	
I_H *	I_T= 100mA gate open	Tj=25°C		MAX	25	mA
V_{TM} *	I_{TM}= 17A tp= 380µs	Tj=25°C		MAX	1.75	V
I_{DRM} I_{RRM}	V_{DRM} Rated V_{RRM} Rated	Tj=25°C		MAX	0.01	mA
		Tj=110°C		MAX	1	
dV/dt *	Linear slope up to V_D=67%V_{DRM} gate open	Tj=110°C		MIN	50	V/µs
(dI/dt)c *	dV/dt= 0.1V/µs	Tj=110°C		MIN	5.3	A/ms
	dV/dt= 20V/µs			MIN	3.5	

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

L7800 SERIES

POSITIVE VOLTAGE REGULATORS

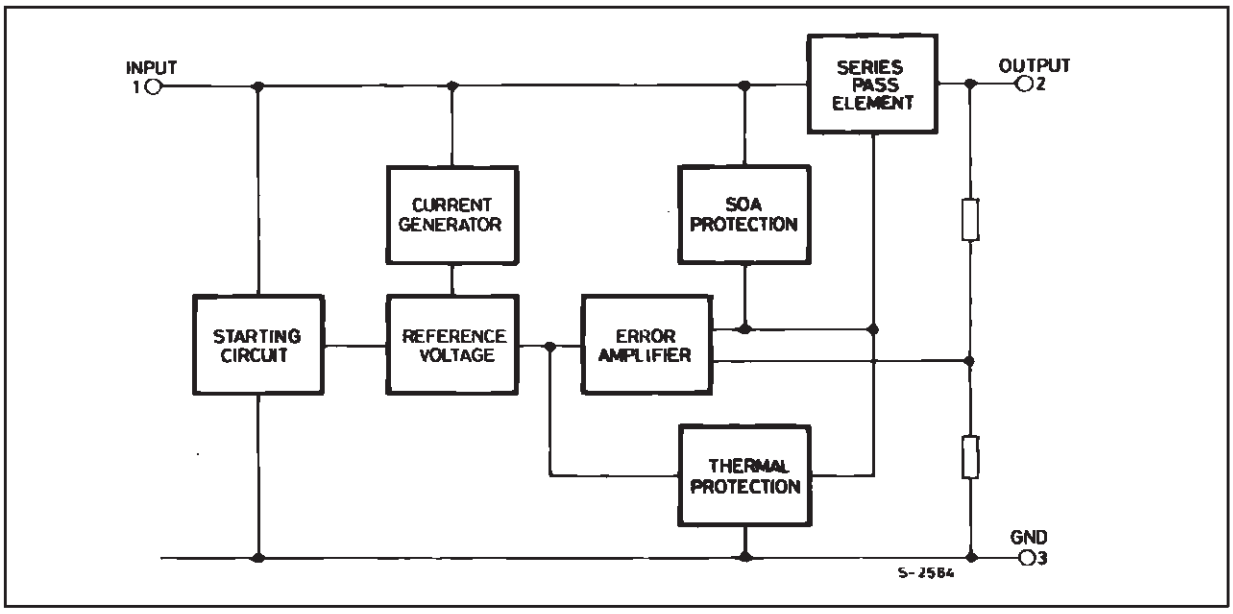
- OUTPUT CURRENT UP TO 1.5 A
- OUTPUT VOLTAGES OF 5; 5.2; 6; 8; 8.5; 9; 12; 15; 18; 24V
- THERMAL OVERLOAD PROTECTION
- SHORT CIRCUIT PROTECTION
- OUTPUT TRANSITION SOA PROTECTION



DESCRIPTION

The L7800 series of three-terminal positive regulators is available in TO-220 ISOWATT220 TO-3 and D^2PAK packages and several fixed output voltages, making it useful in a wide range of applications.These regulators can provide local on-card regulation, eliminating the distribution problems associated with single point regulation. Each type employs internal current limiting, thermal shut-down and safe area protection, making it essentially indestructible. If adequate heat sinking is provided, they can deliver over 1A output current. Although designed primarily as fixed voltage regulators, these devices can be used with external components to obtain adjustable voltages and currents.

BLOCK DIAGRAM



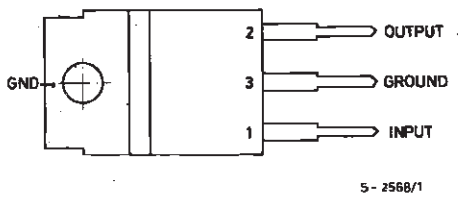
ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_i	DC Input Voltage (for V_O = 5 to 18V) (for V_O = 20, 24V)	35 40	V V
I_o	Output Current	Internally limited	
P_{tot}	Power Dissipation	Internally limited	
T_{op}	Operating Junction Temperature Range (for **L7800**) (for **L7800C**)	-55 to 150 0 to 150	°C °C
T_{stg}	Storage Temperature Range	-65 to 150	°C

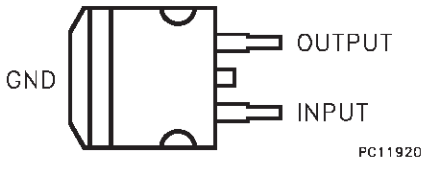
THERMAL DATA

Symbol	Parameter		D^2PAK	TO-220	ISOWATT220	TO-3	Unit
$R_{thj\text{-}case}$	Thermal Resistance Junction-case	Max	3	3	4	4	°C/W
$R_{thj\text{-}amb}$	Thermal Resistance Junction-ambient	Max	62.5	50	60	35	°C/W

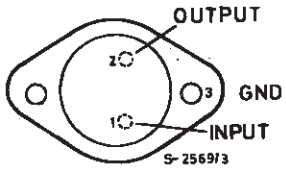
CONNECTION DIAGRAM AND ORDERING NUMBERS (top view)



TO-220 & ISOWATT220



D^2PAK



TO-3

Type	TO-220	D^2PAK (*)	ISOWATT220	TO-3	Output Voltage
L7805				L7805T	5V
L7805C	L7805CV	L7805CD2T	L7805CP	L7805CT	5V
L7852C	L7852CV	L7852CD2T	L7852CP	L7852CT	5.2V
L7806				L7806T	6V
L7806C	L7806CV	L7806CD2T	L7806CP	L7806CT	6V
L7808				L7808T	8V
L7808C	L7808CV	L7808CD2T	L7808CP	L7808CT	8V
L7885C	L7885CV	L7885CD2T	L7885CP	L7885CT	8.5V
L7809C	L7809CV	L7809CD2T	L7809CP	L7809CT	9V
L7812				L7812T	12V
L7812C	L7812CV	L7812CD2T	L7812CP	L7812CT	12V
L7815				L7815T	15V
L7815C	L7815CV	L7815CD2T	L7815CP	L7815CT	15V
L7818				L7818T	18V
L7818C	L7818CV	L7818CD2T	L7818CP	L7818CT	18V
L7820				L7820T	20V
L7820C	L7820CV	L7820CD2T	L7820CP	L7820CT	20V
L7824				L7824T	24V
L7824C	L7824CV	L7824CD2T	L7824CP	L7824CT	24V

(*) AVAILABLE IN TAPE AND REEL WITH "-TR" SUFFIX

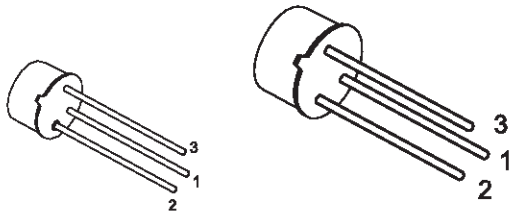
2N2219A
2N2222A

HIGH SPEED SWITCHES

DESCRIPTION

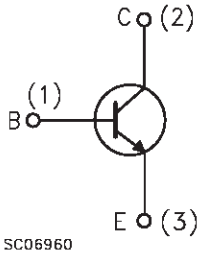
The 2N2219A and 2N2222A are silicon planar epitaxial NPN transistors in Jedec TO-39 (for 2N2219A) and in Jedec TO-18 (for 2N2222A) metal case. They are designed for high speed switching application at collector current up to 500mA, and feature useful current gain over a wide range of collector current, low leakage currents and low saturation voltage.

2N2219A approved to CECC 50002-100, 2N2222A approved to CECC 50002-101 available on request.



TO-18 **TO-39**

INTERNAL SCHEMATIC DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage (I_E = 0)	75	V
V_{CEO}	Collector-Emitter Voltage (I_B = 0)	40	V
V_{EBO}	Emitter-Base Voltage (I_C = 0)	6	V
I_C	Collector Current	0.8	A
P_{tot}	Total Dissipation at $T_{amb} \leq 25\ ^oC$		
	for **2N2219A**	0.8	W
	for **2N2222A**	0.5	W
	at $T_{case} \leq 25\ ^oC$		
	for **2N2219A**	3	W
	for **2N2222A**	1.8	W
T_{stg}	Storage Temperature	-65 to 200	^oC
T_j	Max. Operating Junction Temperature	175	^oC