



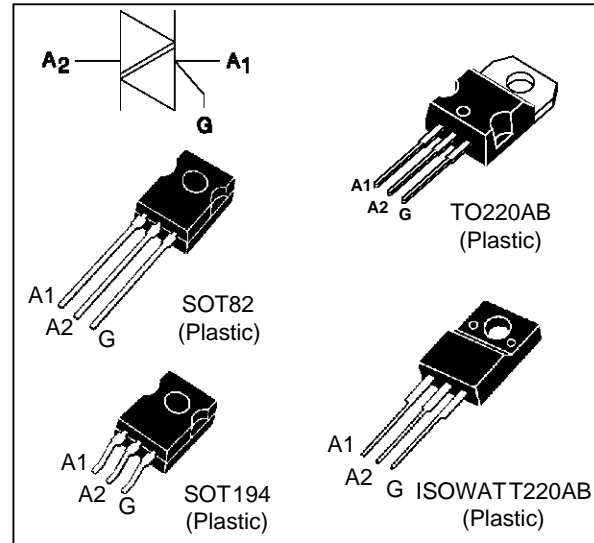
HIGH PERFORMANCE TRIACS

FEATURES

- $I_{TRMS} = 4\text{ A}$
- $V_{DRM} = 400\text{ V to }800\text{ V}$
- SENSITIVE GATE : $I_{GT} \leq 10\text{ mA}$
- HIGH COMMUTATION : $(di/dt)_c > 3.5\text{ A/ms}$

DESCRIPTION

The T410 / T435 high voltage TRIAC Families are high performance planar diffused PNPN devices glass passivated technology. Packaged either in TO220AB, SOT82, SOT194 and ISOWATT220AB these products are intended for all bi-directional switch applications.



ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
$I_{T(RMS)}$	RMS on-state current (360° conduction angle)	TO220AB	4	A
		SOT194/SOT82		
		ISOWATT220AB	$T_c = 100\text{ °C}$	
I_{TSM}	Non repetitive surge peak on-state current (T_j initial = 25°C)	$t_p = 8.3\text{ ms}$	35	A
		$t_p = 10\text{ ms}$	30	
i^2t	i^2t value	$t_p = 10\text{ ms}$	4.5	A ² s
di/dt	Critical rate of rise of on-state current Gate supply : $I_G = 500\text{ mA}$ $di_G/dt = 1\text{ A}/\mu\text{s}$	Repetitive F = 50 Hz	10	A/ μs
		Non Repetitive	50	
T_{stg} T_j	Storage and operating junction temperature range		- 40 to + 150 - 40 to + 125	°C °C
TI	Maximum lead temperature for soldering during 10 s at 4.5 mm from case		260	°C

Symbol	Parameter	T410 or T435				Unit
		-400	-600	-700	-800	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage $T_j = 125\text{ °C}$	400	600	700	800	V

THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
Rth (j-a)	Junction to ambient	SOT82 / SOT194	100	°C/W
		TO220AB	60	
		ISOWATT 220AB	50	
Rth (j-c) DC	Junction to case for DC	SOT82 / SOT194 TO220AB	3.5	°C/W
		ISOWATT 220AB	5.3	
Rth (j-c) AC	Junction to case for 360° conduction angle (F= 50 Hz)	SOT82 / SOT194 TO220AB	2.6	°C/W
		ISOWATT 220AB	4	

GATE CHARACTERISTICS (maximum values)

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

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions		Quadrant		Suffix		Unit
					T410	T435	
I_{GT}	$V_D=12\text{V}$ (DC) $R_L=33\Omega$	$T_j=25^\circ\text{C}$	I-II-III	MAX	10	35	mA
V_{GT}	$V_D=12\text{V}$ (DC) $R_L=33\Omega$	$T_j=25^\circ\text{C}$	I-II-III	MAX	1.5		V
V_{GD}	$V_D=V_{DRM}$ $R_L=3.3\text{k}\Omega$	$T_j=125^\circ\text{C}$	I-II-III	MIN	0.2		V
tgt	$V_D=V_{DRM}$ $I_G = 500\text{mA}$ $di_G/dt = 3\text{A}/\mu\text{s}$ $I_{TM} = 5.5\text{A}$	$T_j=25^\circ\text{C}$	I-II-III	TYP	2		μs
I_L	$I_G=1.2 I_{GT}$	$T_j=25^\circ\text{C}$	I-II-III	MAX	30	60	mA
I_H *	$I_T= 100\text{mA}$ gate open	$T_j=25^\circ\text{C}$		MAX	15	35	mA
V_{TM} *	$I_{TM}= 5.5\text{A}$ tp= 380μs	$T_j=25^\circ\text{C}$		MAX	1.75		V
I_{DRM} I_{RRM}	V _{DRM} Rated V _{RRM} Rated	$T_j=25^\circ\text{C}$		MAX	0.01		mA
		$T_j=125^\circ\text{C}$		MAX	2		
dV/dt *	Linear slope up to $V_D=67\%V_{DRM}$ gate open	$T_j=125^\circ\text{C}$		MIN	50	250	V/μs
					30	250	
(di/dt) _c *	dV/dt = 0.1V/μs	$T_j=125^\circ\text{C}$		MIN	2.7	4.4	A/ms
	dV/dt = 20V/μs			MIN	1.8	2.7	

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

ORDERING INFORMATION

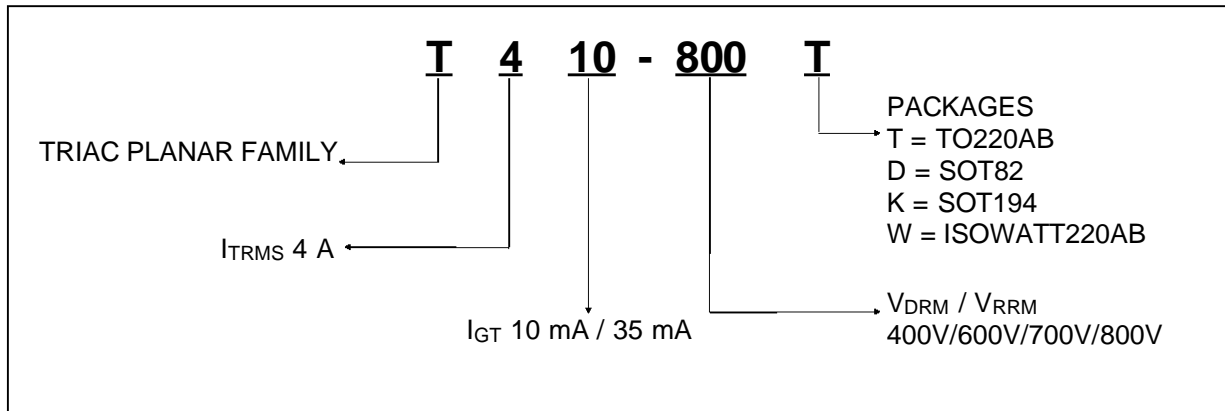


Fig.1 : Maximum RMS power dissipation versus RMS on-state current ($F=50\text{Hz}$).
 (Curves are cut off by $(di/dt)_c$ limitation)

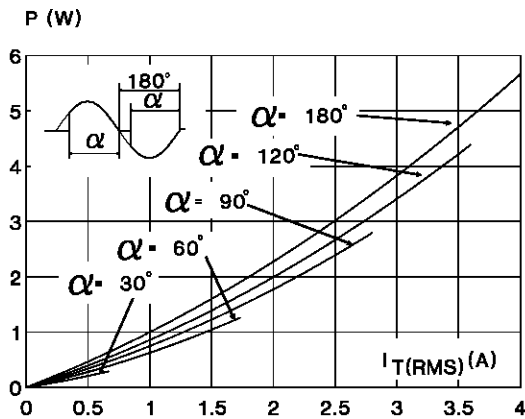


Fig.3 : Correlation between maximum RMS power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact (ISOWATT220AB).

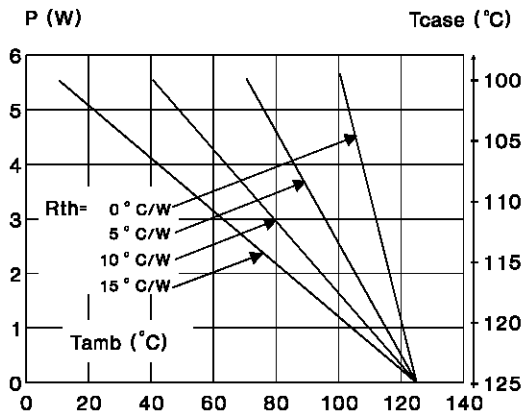


Fig.2 : Correlation between maximum RMS power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact (TO220AB / SOT82 / SOT 94).

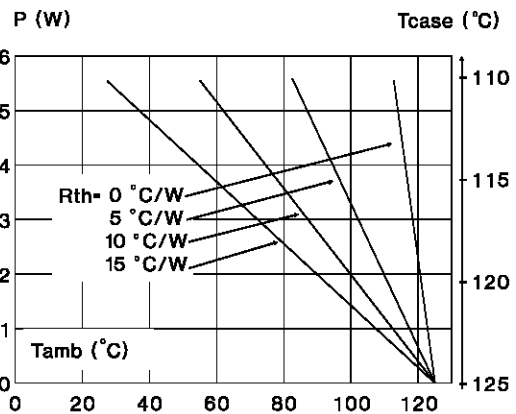


Fig.4 : RMS on-state current versus case temperature.

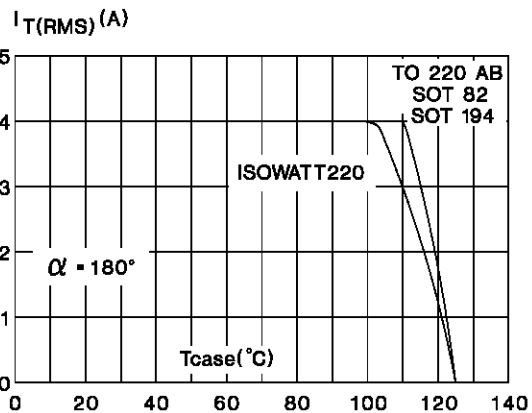


Fig.5 : Relative variation of thermal impedance versus pulse duration (SOT82 / SOT194 / TO220AB only).

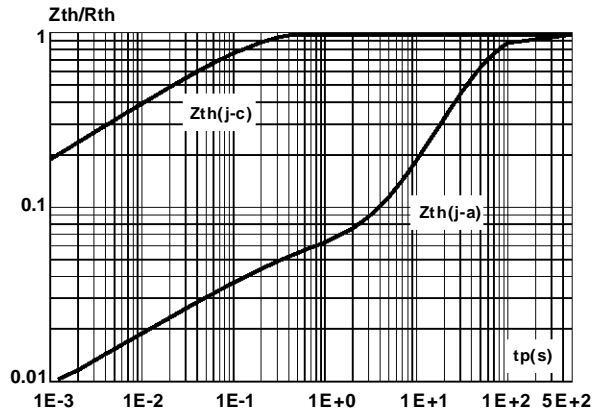


Fig.6 : Relative variation of thermal impedance versus pulse duration (ISOWATT220AB only).

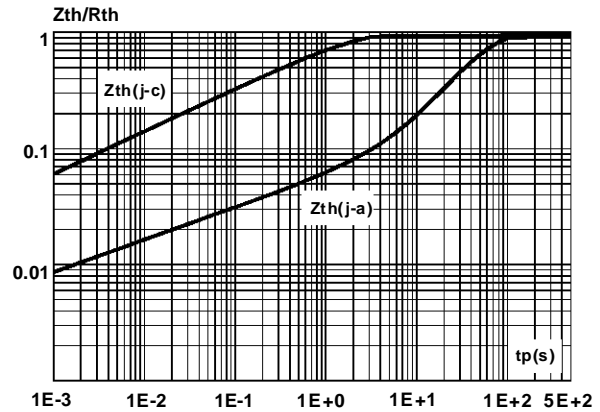


Fig.7 : Relative variation of gate trigger current and holding current versus junction temperature.

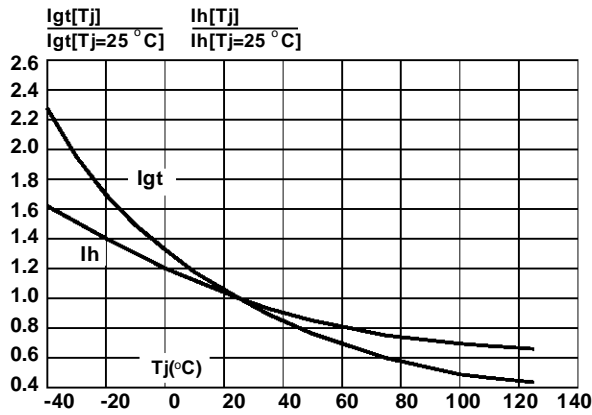


Fig.8 : Non Repetitive surge peak on-state current versus number of cycles.

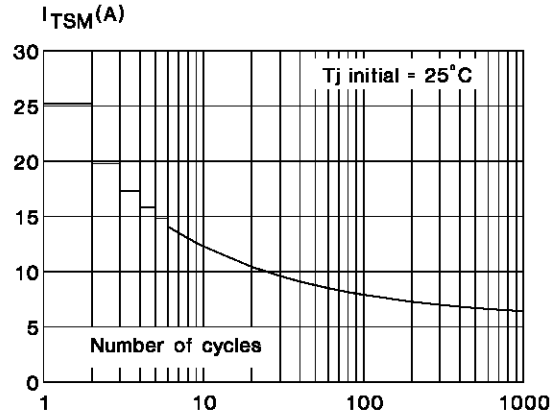


Fig.9 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : $t \leq 10\text{ms}$, and corresponding value of I^2t .

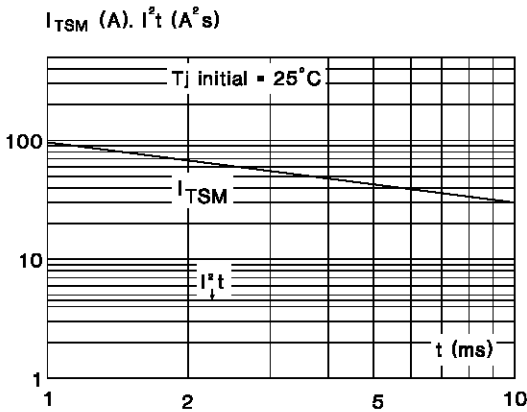
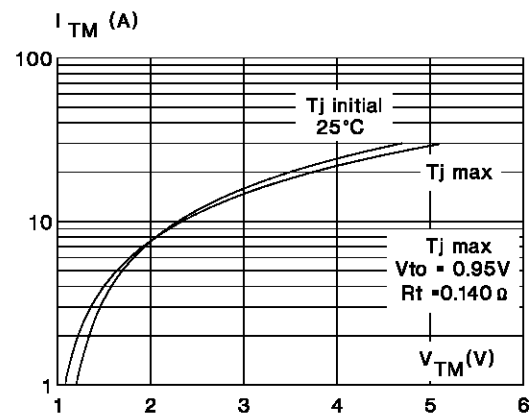
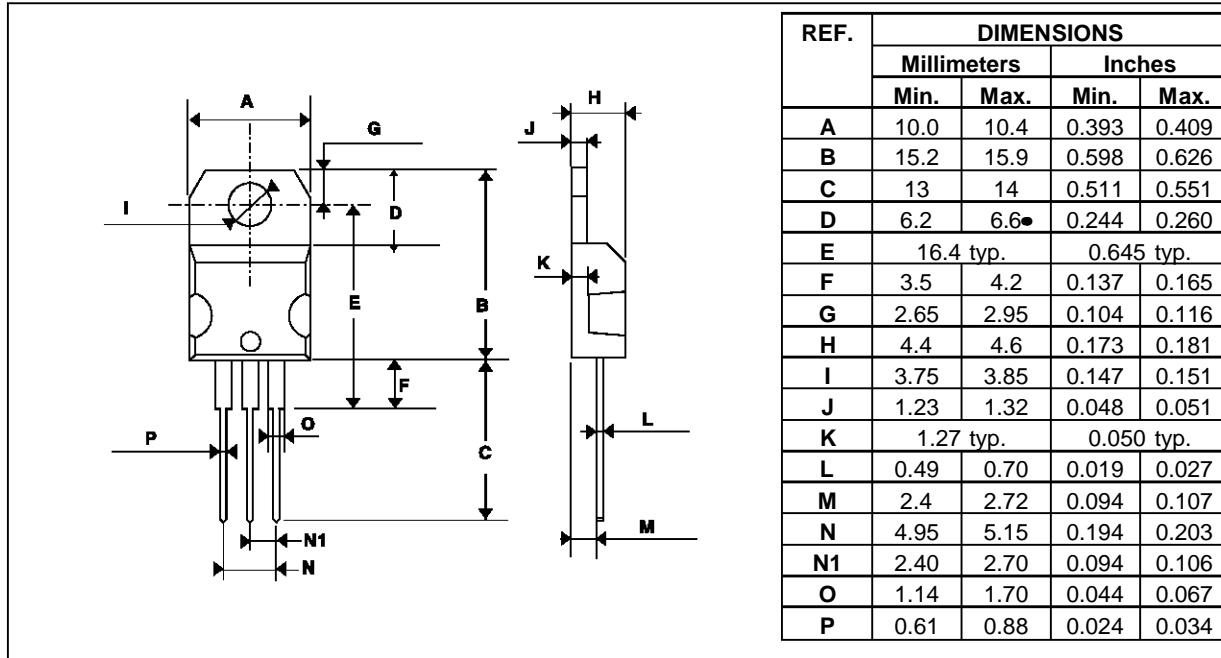


Fig.10 : On-state characteristics (maximum values).

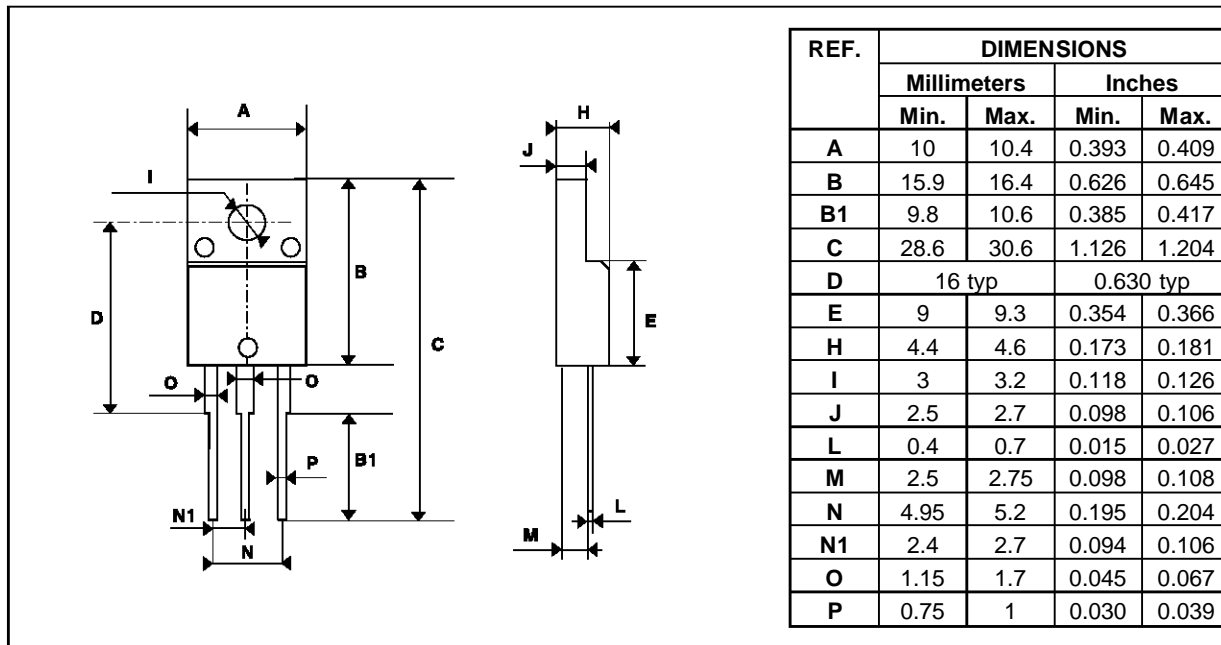


PACKAGE MECHANICAL DATA
TO220AB Plastic



Cooling Method : C
 Marking : Type number
 Weight : 2 g
 Recommended torque value : 0.55 m.N.
 Maximum torque value : 0.70 m.N.

PACKAGE MECHANICAL DATA
ISOWATT220AB Plastic

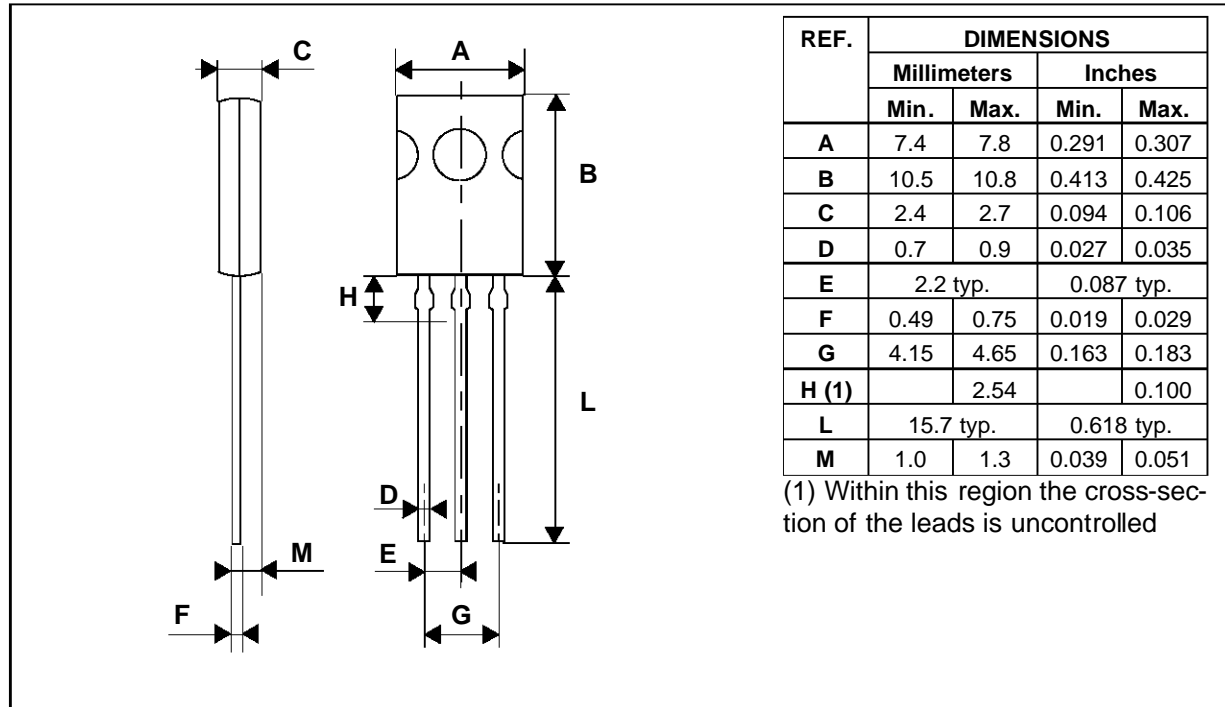


Cooling Method : C
 Marking : Type number
 Weight : 2.1g
 Recommended torque value : 0.55 m.N.
 Maximum torque value : 0.70 m.N.

T410 / T435

PACKAGE MECHANICAL DATA

SOT82 Plastic



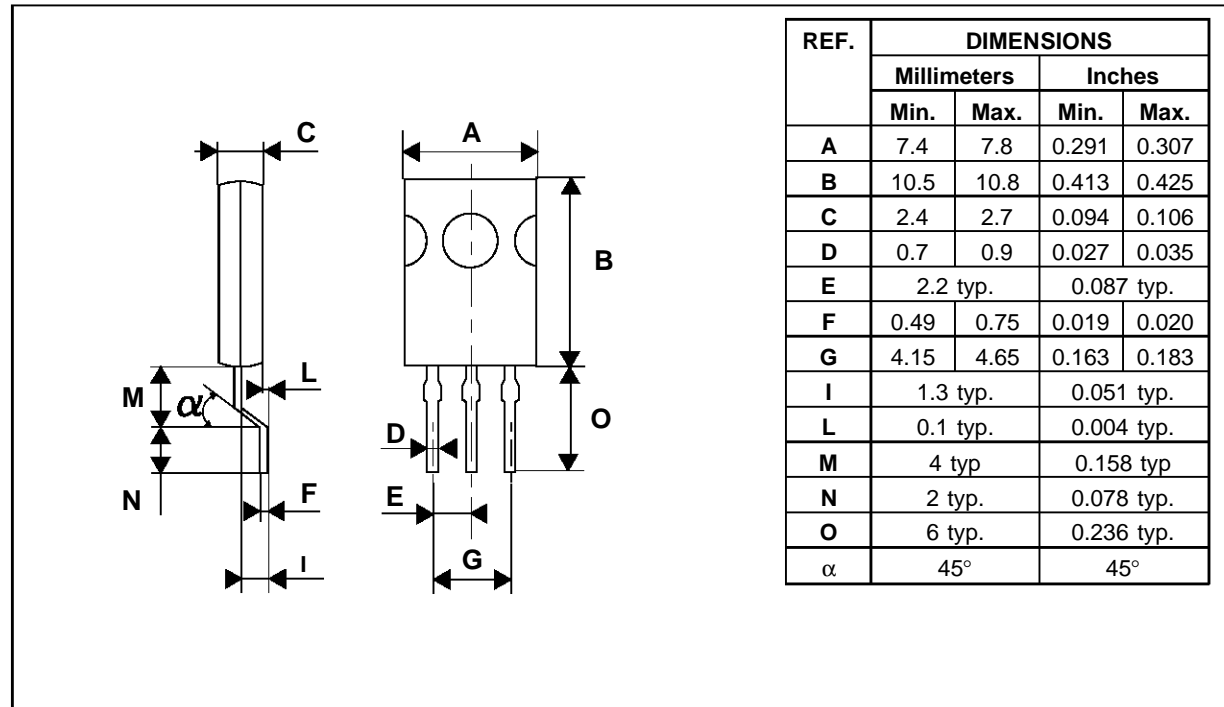
REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	7.4	7.8	0.291	0.307
B	10.5	10.8	0.413	0.425
C	2.4	2.7	0.094	0.106
D	0.7	0.9	0.027	0.035
E	2.2 typ.		0.087 typ.	
F	0.49	0.75	0.019	0.029
G	4.15	4.65	0.163	0.183
H (1)		2.54		0.100
L	15.7 typ.		0.618 typ.	
M	1.0	1.3	0.039	0.051

(1) Within this region the cross-section of the leads is uncontrolled

Marking : Type number
Weight : 0.72g

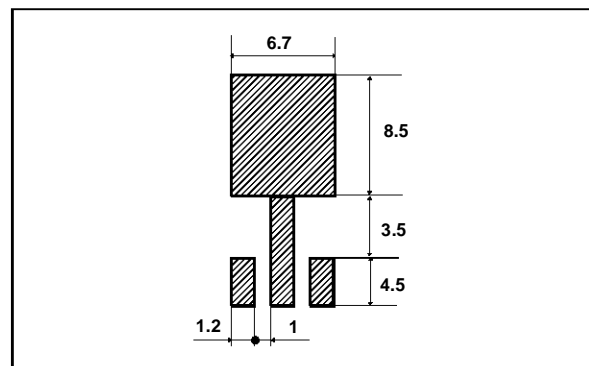
PACKAGE MECHANICAL DATA

SOT194 Plastic



Marking : Type number

Weight : 0.68g

FOOT PRINT

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