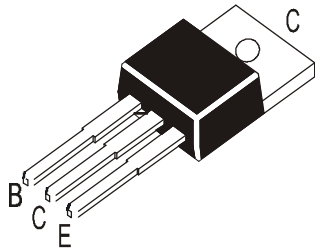


PLASTIC POWER TRANSISTORS

TIP31, A, B, C NPN
TIP32, A, B, C PNP



TO-220
Plastic Package

Complementary Silicon Transistors intended for a wide variety of Switching and Amplifier Applications, Series and Shunt Regulators, Driver and Output stages of Hi-Fi Amplifiers

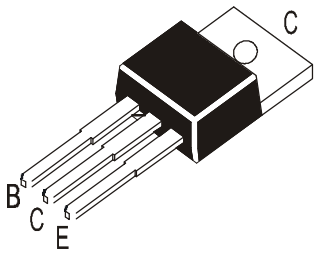
ABSOLUTE MAXIMUM RATINGS ($T_a=25^\circ\text{C}$)

DESCRIPTION	SYMBOL	TIP31	TIP31A	TIP31B	TIP31C	UNIT
		TIP32	TIP32A	TIP32B	TIP32C	
Collector Emitter Voltage	V_{CEO}	40	60	80	100	V
Collector Base Voltage	V_{CBO}	40	60	80	100	V
Emitter Base Voltage	V_{EBO}	5				V
Collector Current Continuous	I_C	3				A
Collector Current Peak	I_{CM}	5				A
Base Current	I_B	1				A
Power Dissipation upto $T_c=25^\circ\text{C}$	P_D	40				W
Derate above 25°C		320				mW/ $^\circ\text{C}$
Power Dissipation upto $T_a=25^\circ\text{C}$	P_D	2				W
Derate above 25°C		16				mW/ $^\circ\text{C}$
Unclamped Inductive Load Energy	*E	32				mJ
Operating And Storage Junction Temperature	T_j, T_{stg}	- 65 to +150				$^\circ\text{C}$

THERMAL RESISTANCE

Junction to Case	$R_{th(j-c)}$	3.125	$^\circ\text{C}/\text{W}$
Junction to Ambient in free air	$R_{th(j-a)}$	62.5	$^\circ\text{C}/\text{W}$

* $I_C=1.8\text{A}$, $L=20\text{mH}$, $P.R.F.=10\text{Hz}$, $V_{CC}=10\text{V}$, $R_{BE}=100\Omega$



ELECTRICAL CHARACTERISTICS (T_c=25°C unless specified otherwise)

DESCRIPTION	SYMBOL	TEST CONDITION	MIN	MAX	UNIT
Collector Emitter (sus) Voltage	*V _{CEO(sus)}	I _C =30mA, I _B =0			
		TIP31/32	40		V
		TIP31A/32A	60		V
		TIP31B/32B	80		V
		TIP31C/32C	100		V
Collector Cut off Current	I _{CEO}	V _{CE} =30V, I _B =0			
		TIP31, A / 32, A		0.3	mA
		V _{CE} =60V, I _B =0			
		TIP31B, C / 32B, C		0.3	mA
Collector Cut off Current	I _{CES}	V _{CE} =V _{CEO(max)} , V _{BE} =0		0.2	mA
Emitter Cut off Current	I _{EBO}	V _{EB} =5V, I _C =0		1.0	mA
DC Current Gain	*h _{FE}	I _C =1A, V _{CE} =4V	25		
		I _C =3A, V _{CE} =4V	10	50	
Collector Emitter Saturation Voltage	*V _{CE(sat)}	I _C =3A, I _B =375mA		1.2	V
Base Emitter on Voltage	*V _{BE(on)}	I _C =3A, V _{CE} =4V		1.8	V

*Pulse Test : Pulse width ≤300μs, Duty Cycle ≤2%

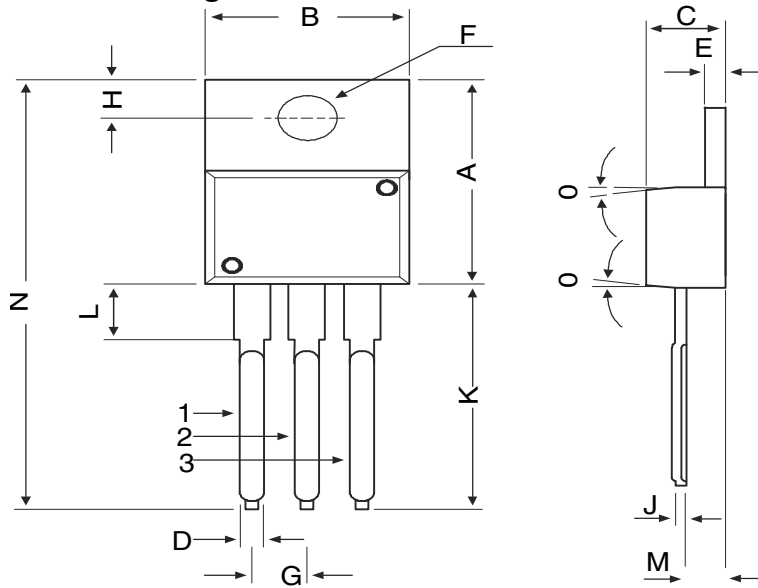
DYNAMIC CHARACTERISTIC

DESCRIPTION	SYMBOL	TEST CONDITION	MIN	MAX	UNIT
Small Signal Current Gain	h _{fe}	I _C =0.5A, V _{CE} =10V, f=1KHz	20		
Transition Frequency	f _T	I _C =0.5A, V _{CE} =10V, f=1MHz	3		MHz

TIP31, A, B, C NPN
TIP32, A, B, C PNP

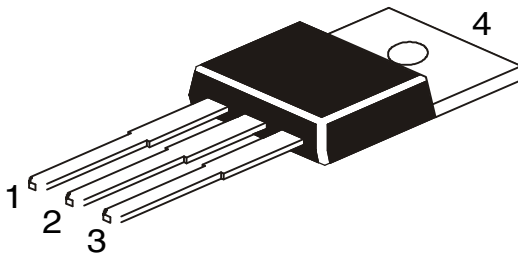
**TO-220
Plastic Package**

TO-220 Plastic Package



DIM	MIN	MAX
A	14.42	16.51
B	9.63	10.67
C	3.56	4.83
D	—	0.90
E	1.15	1.40
F	3.75	3.88
G	2.29	2.79
H	2.54	3.43
J	—	0.56
K	12.70	14.73
L	2.80	4.07
M	2.03	2.92
N	—	31.24
O	7 DEG	

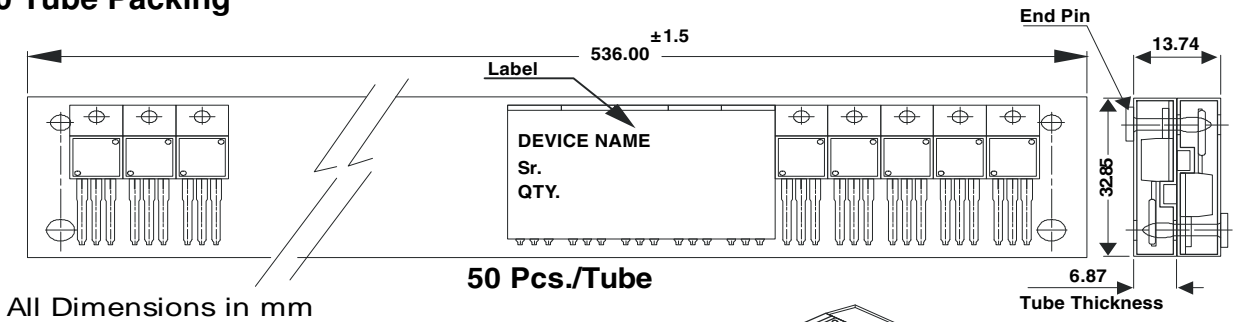
All diminsions in mm.



Pin Configuration

1. Base
2. Collector
3. Emitter
4. Collector

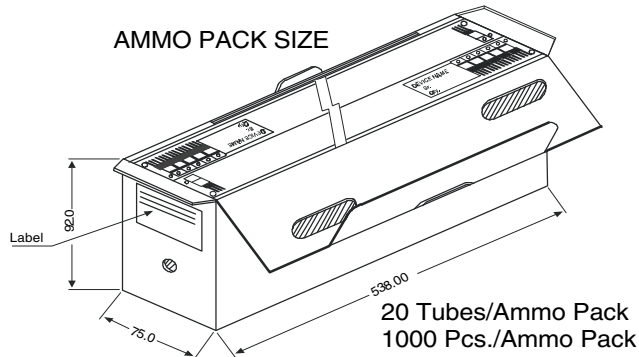
TO-220 Tube Packing



All Dimensions in mm

50 Pcs./Tube

AMMO PACK SIZE



20 Tubes/Ammo Pack
1000 Pcs./Ammo Pack

Packing Detail

PACKAGE	STANDARD PACK		INNER CARTON BOX		OUTER CARTON BOX		
	Details	Net Weight/Qty	Size	Qty	Size	Qty	Gr Wt
TO-220 / FP	200 pcs/polybag	396 gm/200 pcs	3" x 7.5" x 7.5"	1.0K	17" x 15" x 13.5"	16.0K	36 kgs
	50 pcs/tube	120 gm/50 pcs	3.5" x 3.7" x 21.5"	1.0K	19" x 19" x 19"	10.0K	29 kgs

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