

TO-220-3L Plastic-Encapsulate Transistors

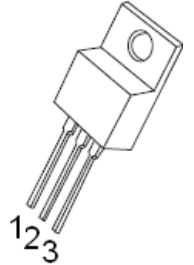
TIP31/31A/31B/31C TRANSISTOR (NPN)

FEATURES

Medium Power Linear Switching Applications

TO-220-3L

1. BASE
2. COLLECTOR
3. EMITTER



MAXIMUM RATINGS (Ta=25°C unless otherwise noted)

Symbol	Parameter	TIP31	TIP31A	TIP31B	TIP31C	Unit
V _{CBO}	Collector-Base Voltage	40	60	80	100	V
V _{CEO}	Collector-Emitter Voltage	40	60	80	100	V
V _{EBO}	Emitter-Base Voltage	5				V
I _C	Collector Current	3				A
P _C	Collector Power Dissipation	2				W
R _{θJA}	Thermal Resistance from Junction to Ambient	62.5				
T _J	Junction Temperature	150				°C
T _{stg}	Storage Temperature	-55~+150				°C

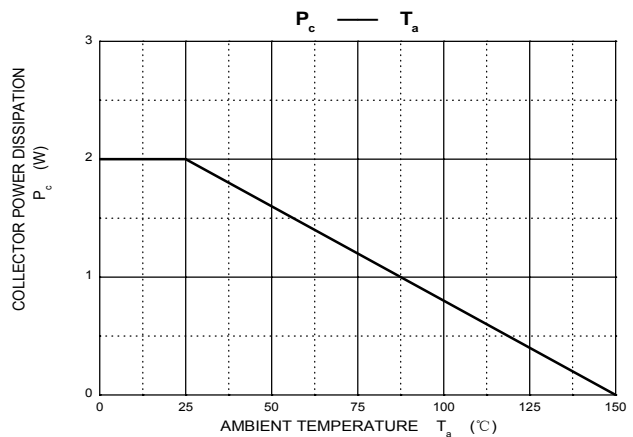
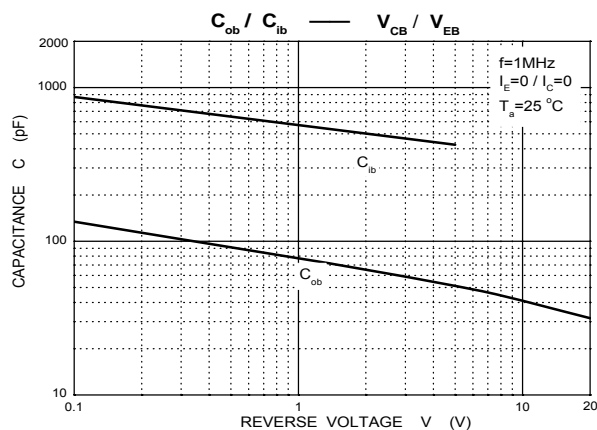
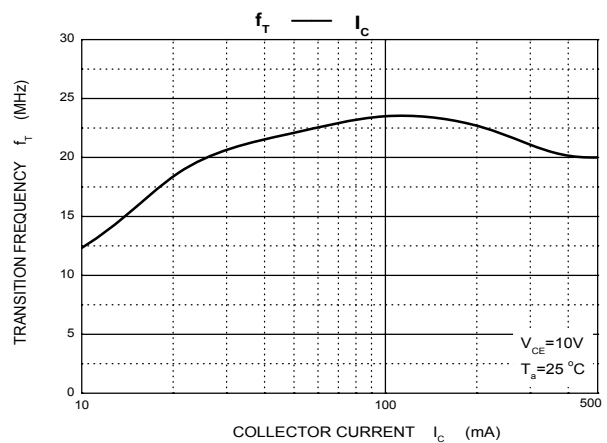
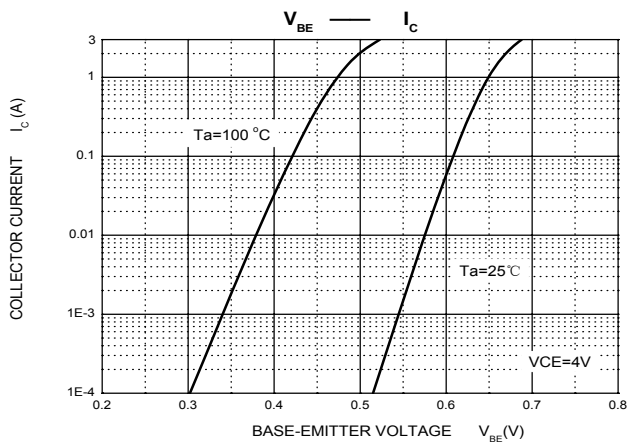
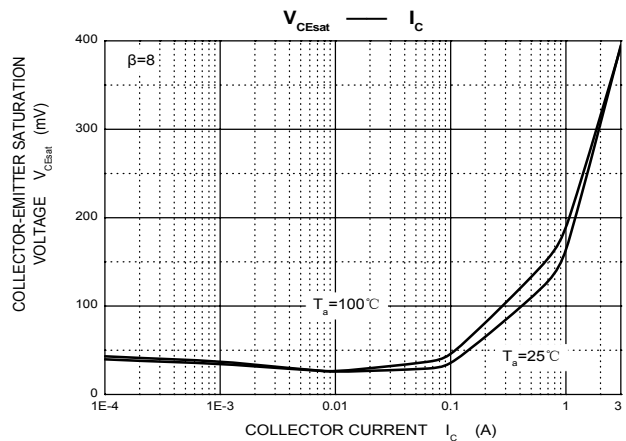
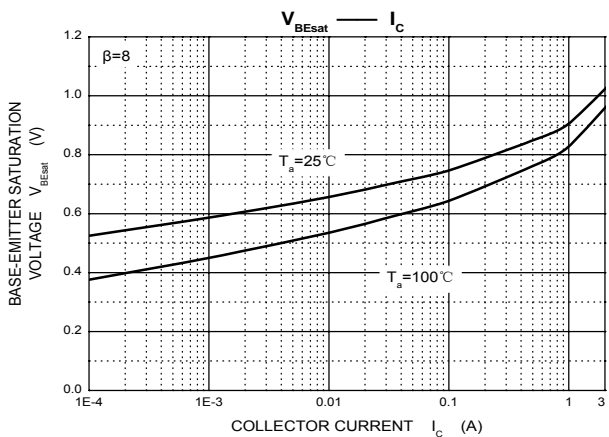
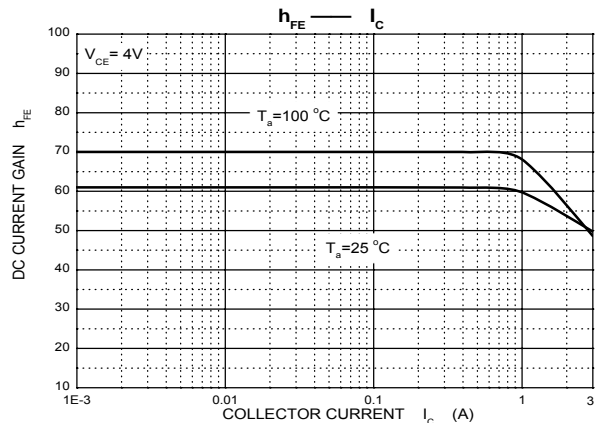
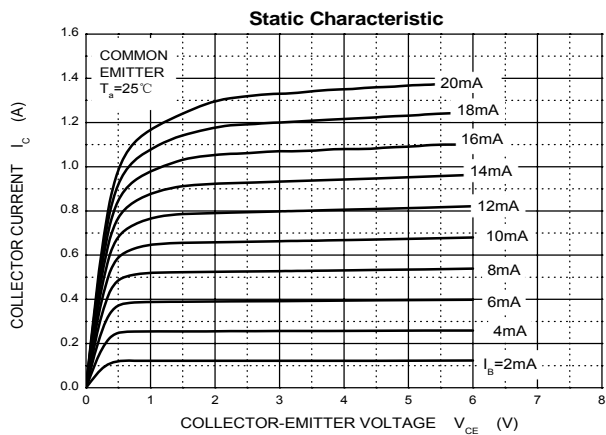
ELECTRICAL CHARACTERISTICS (Ta=25°C unless other wise specified)

Parameter	Symbol	Test conditions	Min	Max	Unit
Collector-base breakdown voltage	TIP31 TIP31A TIP31B TIP31C V _{(BR)CBO}	I _C = 1mA, I _E =0	40 60 80 100		V
Collector-emitter breakdown voltage *	TIP31 TIP31A TIP31B TIP31C V _{CEO(sus)}	I _C = 30mA, I _B =0	40 60 80 100		V
Emitter-base breakdown voltage	V _{(BR)EBO}	I _E = 1mA, I _C =0	5		V
Collector cut-off current	TIP31 TIP31A TIP31B TIP31C I _{CBO}	V _{CB} =40V, I _E =0 V _{CB} =60V, I _E =0 V _{CB} =80V, I _E =0 V _{CB} =100V, I _E =0		200	μA
Collector cut-off current	TIP31/31A TIP31B/31C I _{CEO}	V _{CE} = 30V, I _B = 0 V _{CE} = 60V, I _B = 0		0.3	mA
Emitter cut-off current	I _{EBO}	V _{EB} =5V, I _C =0		1	mA
DC current gain	h _{FE(1)}	V _{CE} = 4V, I _C = 1A	25		
	h _{FE(2)}	V _{CE} =4 V, I _C = 3A	15	75	
Collector-emitter saturation voltage	V _{CE(sat)}	I _C =3A, I _B =0.375A		1.2	V
Base-emitter voltage	V _{BE(on)}	V _{CE} = 4V, I _C =3A		1.8	V
Transition frequency	f _T	V _{CE} =10V, I _C =0.5A	3		MHZ

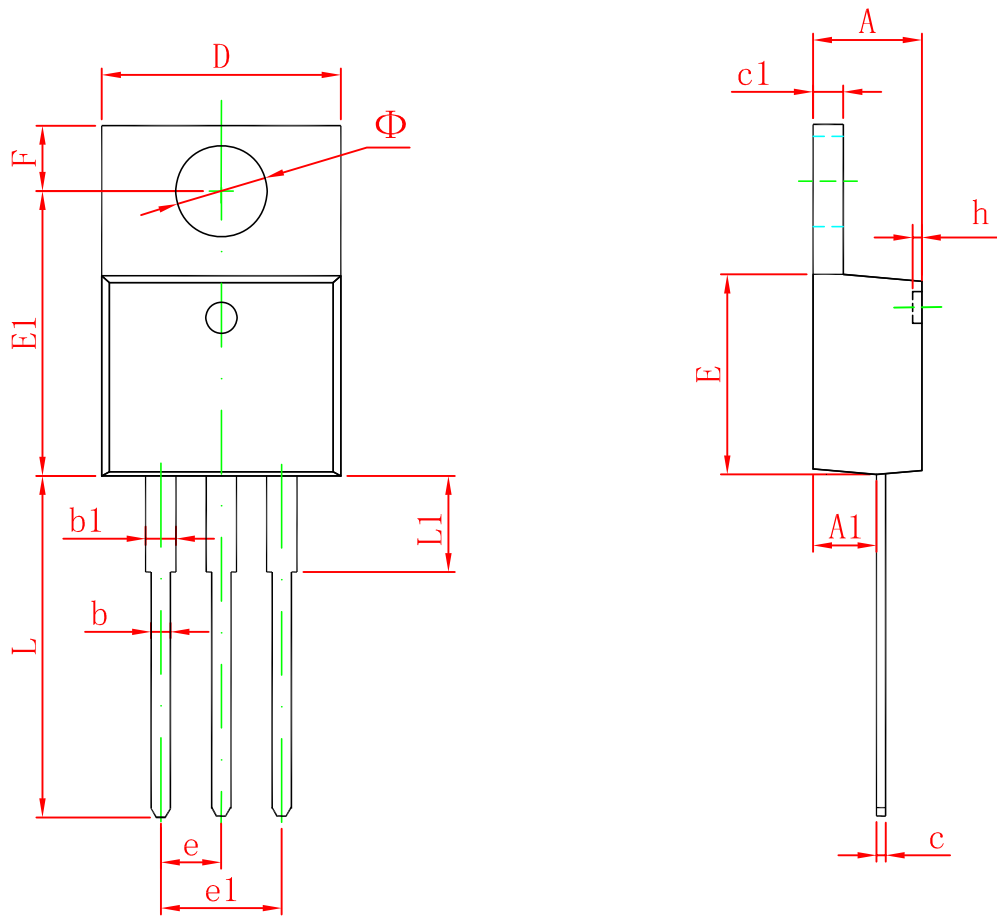
* Pulse Test: PW≤300μs, Duty Cycle≤2%.

Typical Characteristics

TIP31/31A/31B/31C



TO-220-3L Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	4.470	4.670	0.176	0.184
A1	2.520	2.820	0.099	0.111
b	0.710	0.910	0.028	0.036
b1	1.170	1.370	0.046	0.054
c	0.310	0.530	0.012	0.021
c1	1.170	1.370	0.046	0.054
D	10.010	10.310	0.394	0.406
E	8.500	8.900	0.335	0.350
E1	12.060	12.460	0.475	0.491
e	2.540 TYP		0.100 TYP	
e1	4.980	5.180	0.196	0.204
F	2.590	2.890	0.102	0.114
h	0.000	0.300	0.000	0.012
L	13.400	13.800	0.528	0.543
L1	3.560	3.960	0.140	0.156
Φ	3.735	3.935	0.147	0.155