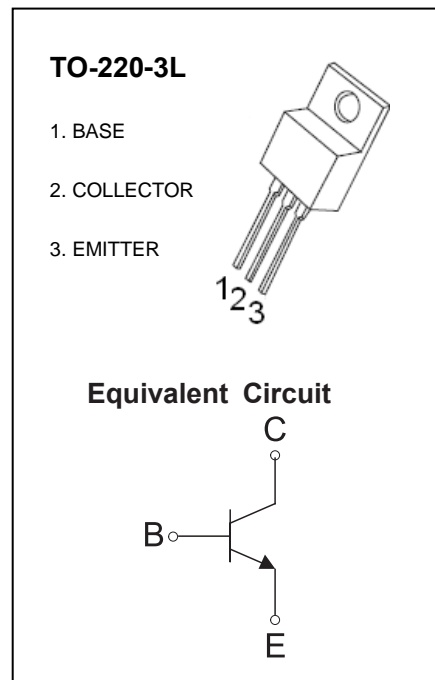
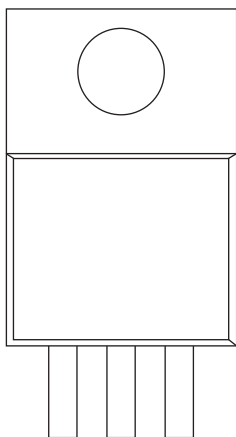


TO-220-3L Plastic-Encapsulate Transistors

FEATURES

- Medium Power Linear Switching Applications

MARKING



MAXIMUM RATINGS ($T_a=25^{\circ}\text{C}$ unless otherwise noted)

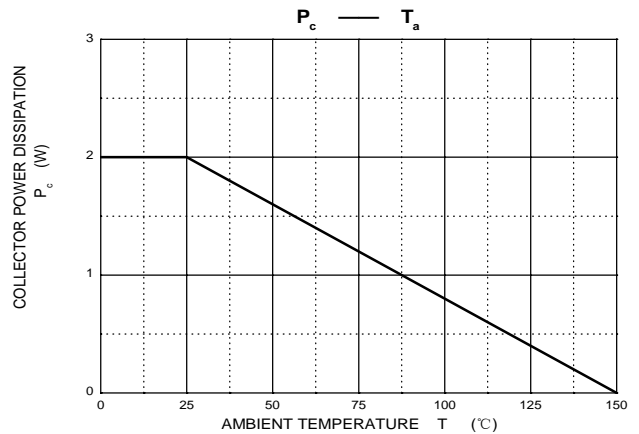
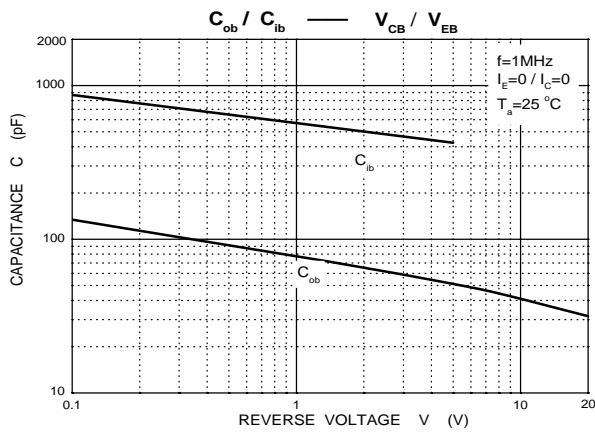
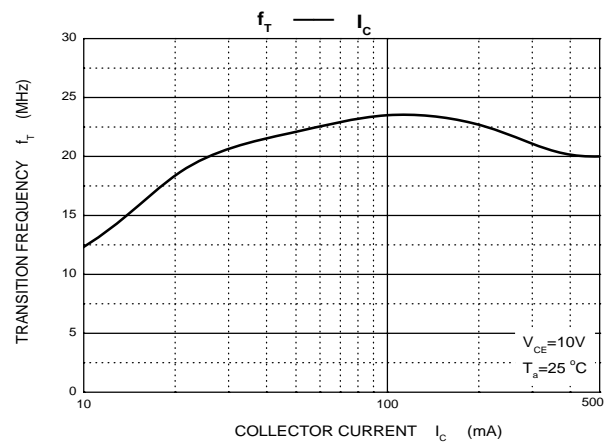
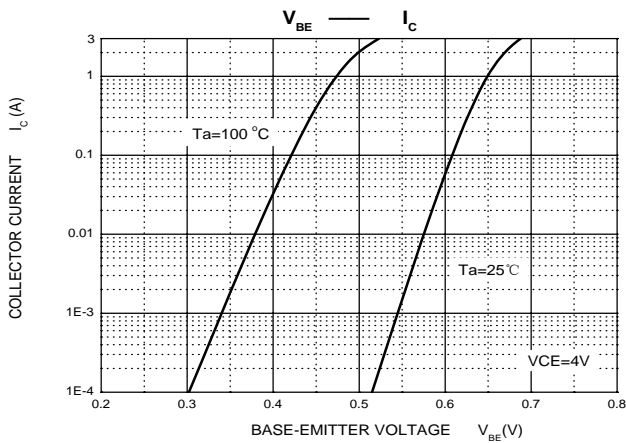
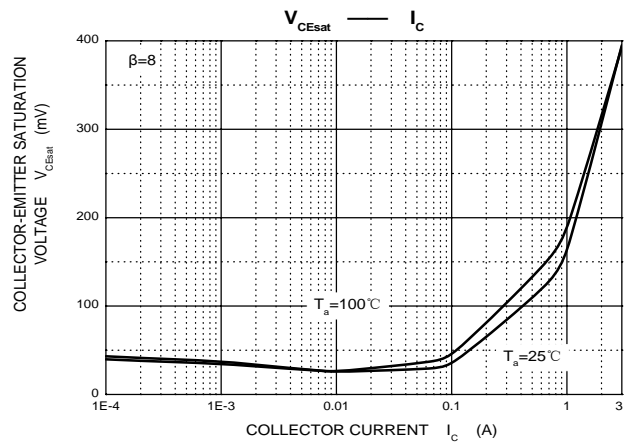
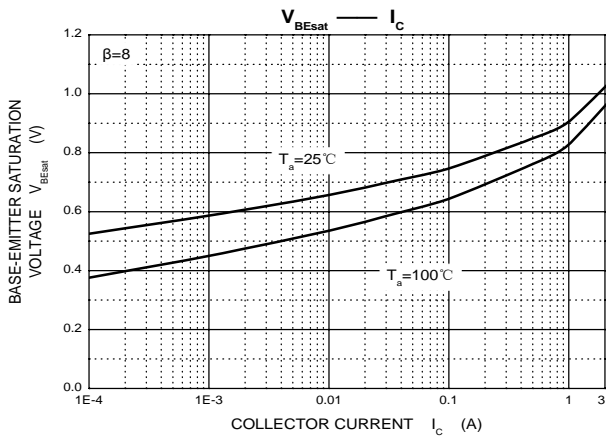
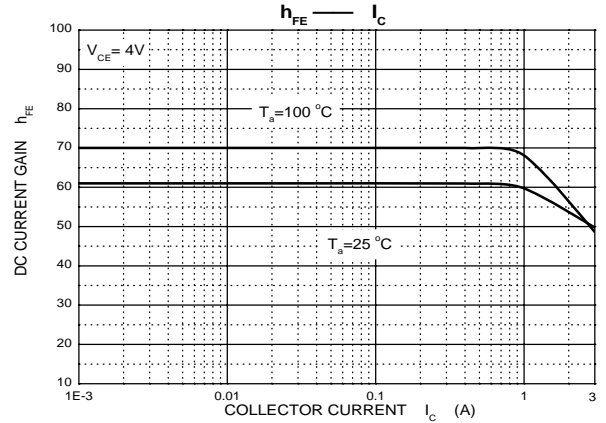
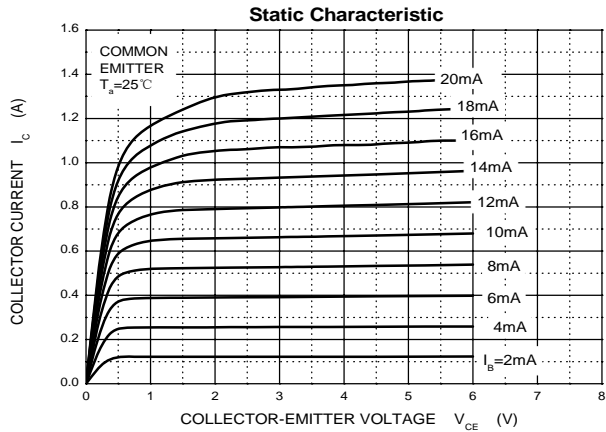
Symbol	Parameter	TIP31A	TIP31B	TIP31C	Unit
V_{CBO}	Collector-Base Voltage	60	80	100	V
V_{CEO}	Collector-Emitter Voltage	60	80	100	V
V_{EBO}	Emitter-Base Voltage	5			V
I_{C}	Collector Current	3			A
P_{C}	Collector Power Dissipation	2			W
$R_{\theta\text{JA}}$	Thermal Resistance from Junction to Ambient	62.5			$^{\circ}\text{C}/\text{W}$
$T_{\text{j}}, T_{\text{stg}}$	Operation Junction and Storage Temperature Range	-55~+150			$^{\circ}\text{C}$

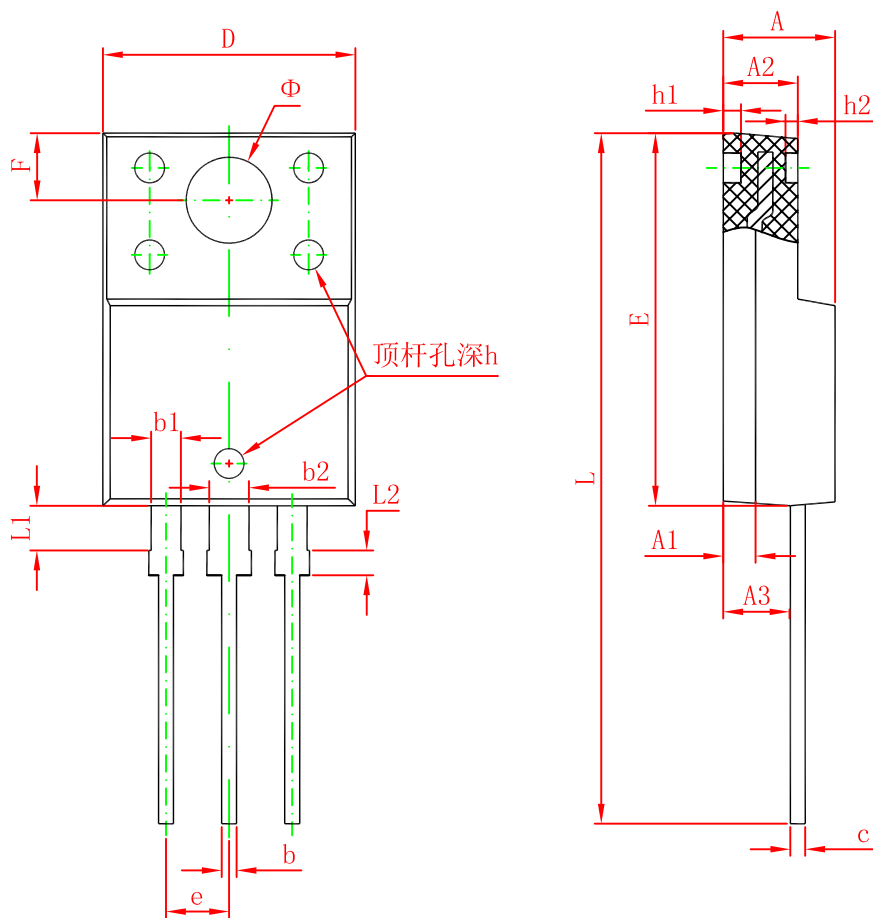
ELECTRICAL CHARACTERISTICS (Ta=25°C unless other wise specified)

Parameter	Symbol	Test conditions	Min	Max	Unit
Collector-base breakdown voltage	TIP31 TIP31A TIP31B TIP31C	$V_{(BR)CBO}$	$I_C=1\text{mA}, I_E=0$	40 60 80 100	V
Collector-emitter breakdown voltage *	TIP31 TIP31A TIP31B TIP31C	$V_{CEO(sus)}$	$I_C=30\text{mA}, I_B=0$	40 60 80 100	V
Emitter-base breakdown voltage		$V_{(BR)EBO}$	$I_E=1\text{mA}, I_C=0$	5	V
Collector cut-off current	TIP31 TIP31A TIP31B TIP31C	I_{CBO}	$V_{CB}=40\text{V}, I_E=0$ $V_{CB}=60\text{V}, I_E=0$ $V_{CB}=80\text{V}, I_E=0$ $V_{CB}=100\text{V}, I_E=0$	200	μA
Collector cut-off current	TIP31/31A TIP31B/31C	I_{CEO}	$V_{CE}=30\text{V}, I_B=0$ $V_{CE}=60\text{V}, I_B=0$	0.3	mA
Emitter cut-off current		I_{EBO}	$V_{EB}=5\text{V}, I_C=0$	1	mA
DC current gain		$h_{FE(1)}$	$V_{CE}=4\text{V}, I_C=1\text{A}$	25	
		$h_{FE(2)}$	$V_{CE}=4\text{V}, I_C=3\text{A}$	15	75
Collector-emitter saturation voltage		$V_{CE(sat)}$	$I_C=3\text{A}, I_B=0.375\text{A}$	1.2	V
Base-emitter voltage		$V_{BE(on)}$	$V_{CE}=4\text{V}, I_C=3\text{A}$	1.8	V
Transition frequency		f_T	$V_{CE}=10\text{V}, I_C=0.5\text{A}$		MHz

* Pulse Test: $PW \leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$.

Typical Characteristics





Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.300	4.700	0.169	0.185
A1	1.300 REF.		0.051 REF.	
A2	2.800	3.200	0.110	0.126
A3	2.500	2.900	0.098	0.114
b	0.500	0.750	0.020	0.030
b1	1.100	1.350	0.043	0.053
b2	1.500	1.750	0.059	0.069
c	0.500	0.750	0.020	0.030
D	9.960	10.360	0.392	0.408
E	14.800	15.200	0.583	0.598
e	2.540 TYP.		0.100 TYP.	
F	2.700 REF.		0.106 REF.	
Φ	3.500 REF.		0.138 REF.	
h	0.000	0.300	0.000	0.012
h1	0.800 REF.		0.031 REF.	
h2	0.500 REF.		0.020 REF.	
L	28.000	28.400	1.102	1.118
L1	1.700	1.900	0.067	0.075
L2	0.900	1.100	0.035	0.043