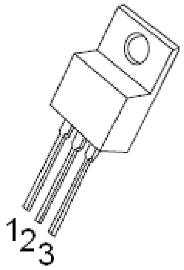
TO-220 Plastic-Encapsulate Transistors

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

TO-220

1. BASE
2. COLLECTOR
3. EMITTER



FEATURES

- Medium Power Linear Switching Applications

MAXIMUM RATINGS (T_a=25℃ 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
$R_{\theta JA}$	Thermal Resistance from Junction to Ambient	62.5				
T_j	Junction Temperature	150				℃
T_{stg}	Storage Temperature	-55~+150				℃

ELECTRICAL CHARACTERISTICS (T_a=25℃ unless other wise specified)

Parameter	Symbol	Test conditions	Min	Max	Unit
Collector-base breakdown voltage **TIP31** **TIP3 1A** **TIP31B** **TIP31C**	$V_{(BR)CBO}$	I_C= 1mA, I_E=0	40 60 80 100		V
Collector-emitter breakdown voltage * **TIP31** **TIP31A** **TIP31B** **TIP31C**	$V_{(BR)CEO}$	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%.