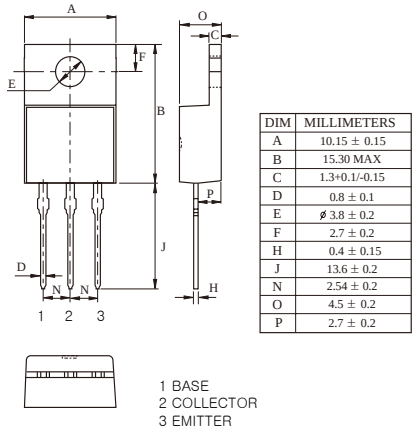
TIP31/31A/31B/31C TRANSISTOR (NPN)

FEATURES

Medium Power Linear Switching Applications



DIM	MILLIMETERS
A	10.15 ± 0.15
B	15.30 MAX
C	1.3+0.1/-0.15
D	0.8 ± 0.1
E	ø 3.8 ± 0.2
F	2.7 ± 0.2
H	0.4 ± 0.15
J	13.6 ± 0.2
N	2.54 ± 0.2
O	4.5 ± 0.2
P	2.7 ± 0.2

TO-220AB

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				℃

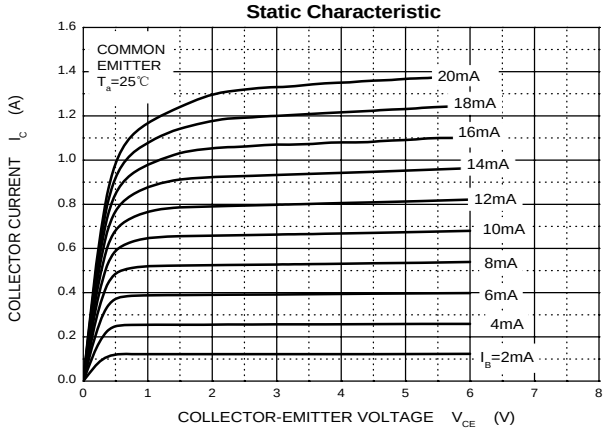
ELECTRICAL CHARACTERISTICS (T_a=25℃ unless otherwise specified)

Parameter		Symbol	Test conditions	Min	Max	Unit
Collector- base breakdown voltage	TIP31	$V_{(BR)CBO}$	I_C= 1mA, I_E=0	40		V
	TIP31A			60		
	TIP31B			80		
	TIP31C			100		
Collector- emitter breakdown voltage *	TIP31	$V_{CEO(sus)}$	I_C= 30mA, I_B=0	40		V
	TIP31A			60		
	TIP31B			80		
	TIP31C			100		
Emitter- base breakdown voltage		$V_{(BR)EBO}$	I_E= 1mA, I_C=0	5		V
Collector cut- off current	TIP31	I_{CBO}	V_{CB}=40V, I_E=0		200	μA
	TIP31A		V_{CB}=60V, I_E=0			
	TIP31B		V_{CB}=80V, I_E=0			
	TIP31C		V_{CB}=100V, I_E=0			
Collector cut- off current	TIP31/31A	I_{CEO}	V_{CE}= 30V, I_B= 0		0.3	mA
	TIP31B/31C		V_{CE}= 60V, I_B= 0			
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

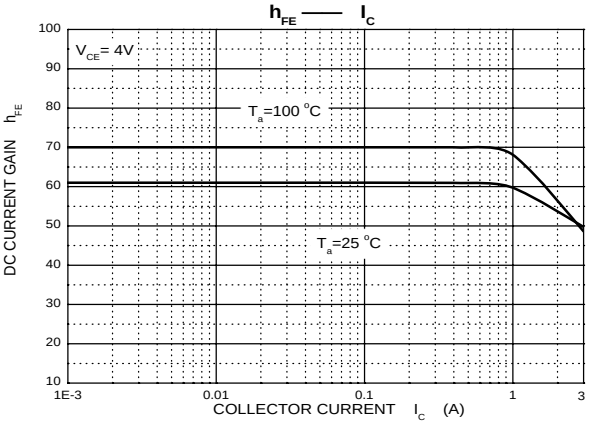
* Pulse Test: PW≤300μs, Duty Cycle≤2%.

Typical Characteristics

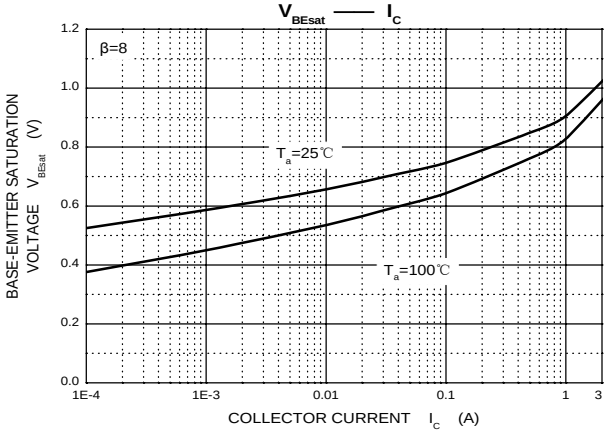
Static Characteristic



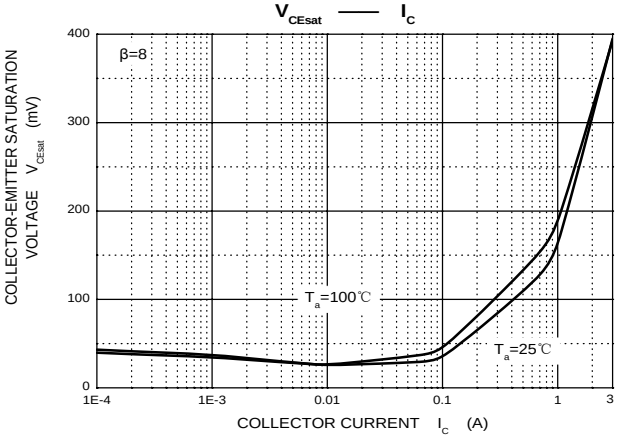
h_{FE} —— I_C



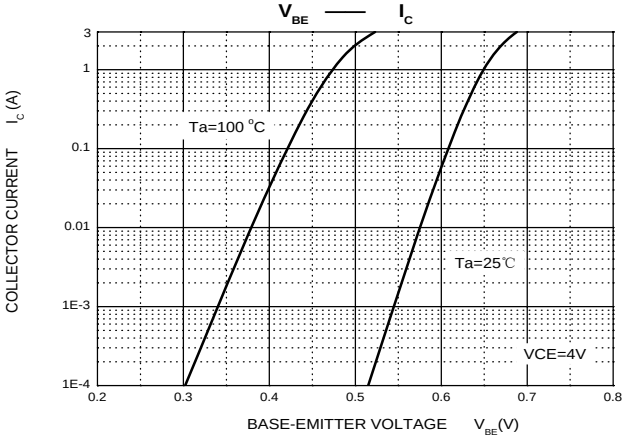
V_{BEsat} —— I_C



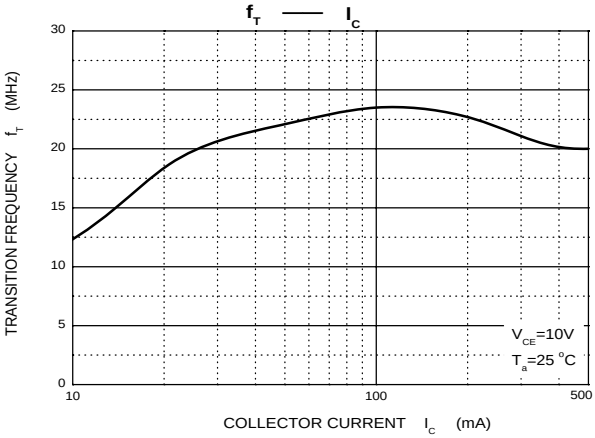
V_{CEsat} —— I_C



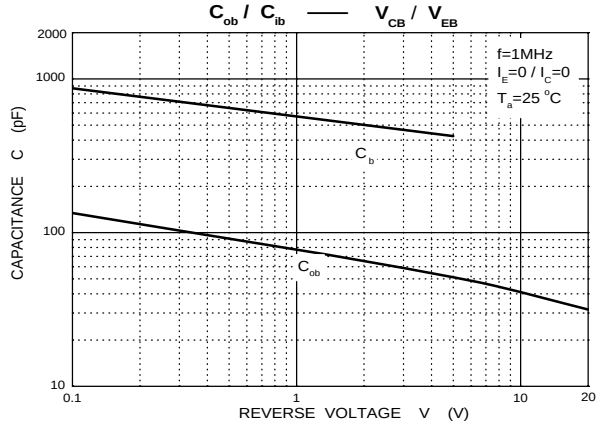
V_{BE} —— I_C



f_T —— I_C



C_{ob} / C_{ib} —— V_{CB} / V_{EB}



P_c —— T_a