

TIP31 Series(TIP31/31A/31B/31C)

Medium Power Linear Switching Applications

• Complementary to TIP32/32A/32B/32C



NPN Epitaxial Silicon Transistor

Absolute Maximum Ratings T_C=25°C unless otherwise noted

Symbol	Parameter	Value	Units
V _{CBO}	Collector-Base Voltage : TIP31	40	V
	: TIP31A	60	V
	: TIP31B	80	V
	: TIP31C	100	V
V _{CEO}	Collector-Emitter Voltage : TIP31	40	V
	: TIP31A	60	V
	: TIP31B	80	V
	: TIP31C	100	V
V_{EBO}	Emitter-Base Voltage	5	V
I _C	Collector Current (DC)	3	А
I _{CP}	Collector Current (Pulse)	5	А
I _B	Base Current	1	А
P _C	Collector Dissipation (T _C =25°C)	40	W
P _C	Collector Dissipation (T _a =25°C)	2	W
T _J	Junction Temperature	150	°C
T _{STG}	Storage Temperature	- 65 ~ 150	°C

Electrical Characteristics T_C=25°C unless otherwise noted

Symbol	Parameter	Test Condition	Min.	Max.	Units
V _{CEO} (sus)	* Collector-Emitter Sustaining Voltage				
	: TIP31	$I_{C} = 30 \text{mA}, I_{B} = 0$	40		V
	: TIP31A		60		V
	: TIP31B		80		V
	: TIP31C		100		V
I _{CEO}	Collector Cut-off Current				
	: TIP31/31A	$V_{CE} = 30V, I_{B} = 0$		0.3	mA
	: TIP31B/31C	$V_{CE} = 60V, I_B = 0$		0.3	mA
I _{CES}	Collector Cut-off Current				
	: TIP31	$V_{CE} = 40V, V_{EB} = 0$		200	μΑ
	: TIP31A	$V_{CE} = 60V, V_{EB} = 0$		200	μΑ
	: TIP31B	$V_{CE} = 80V, V_{EB} = 0$		200	μΑ
	: TIP31C	$V_{CE} = 100V, V_{EB} = 0$		200	μΑ
I _{EBO}	Emitter Cut-off Current	$V_{EB} = 5V, I_{C} = 0$		1	mA
h _{FE}	* DC Current Gain	$V_{CE} = 4V, I_{C} = 1A$	25		
		$V_{CE} = 4V$, $I_C = 3A$	10	50	
V _{CE} (sat)	* Collector-Emitter Saturation Voltage	$I_C = 3A, I_B = 375mA$		1.2	V
V _{BE} (sat)	* Base-Emitter Saturation Voltage	$V_{CE} = 4V, I_C = 3A$		1.8	V
f _T	Current Gain Bandwidth Product	$V_{CE} = 10V, I_{C} = 500mA$	3.0		MHz

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Typical Characteristics

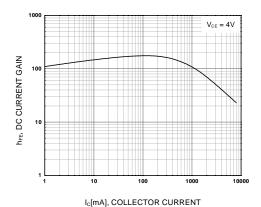


Figure 1. DC current Gain

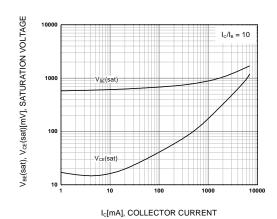


Figure 2. Base-Emitter Saturation Voltage Collector-Emitter Saturation Voltage

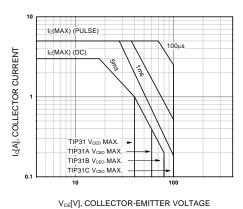


Figure 3. Safe Operating Area

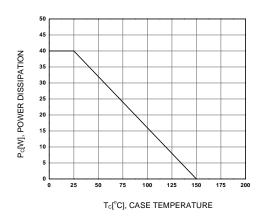
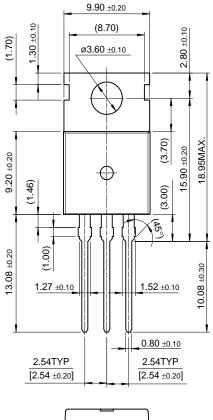


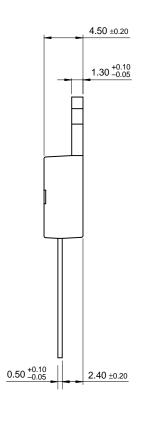
Figure 4. Power Derating

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Package Demensions

TO-220





10.00 ±0.20

Dimensions in Millimeters

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