

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

NPN EPITAXIAL SILICON TRANSISTOR

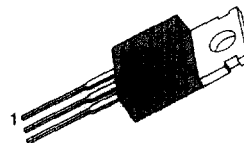
MEDIUM POWER LINEAR SWITCHING APPLICATIONS

• Complement to TIP32/32A/32B/32C

ABSOLUTE MAXIMUM RATINGS

Characteristic	Symbol	Rating	Unit
Collector Emitter Voltage : TIP31	V_{CE0}	40	V
: TIP31A		60	V
: TIP31B		80	V
: TIP31C		100	V
Collector Emitter Voltage : TIP31	V_{CEO}	40	V
: TIP31A		60	V
: TIP31B		80	V
: TIP31C		100	V
Emitter-Base Voltage	V_{EBO}	5	V
Collector Current (DC)	I_C	3	A
Collector Current (Pulse)	I_C	5	A
Base Current	I_B	1	A
Collector Dissipation ($T_C=25^{\circ}\text{C}$)	P_C	40	W
Collector Dissipation ($T_A=25^{\circ}\text{C}$)	P_C	2	W
Junction Temperature	T_J	150	$^{\circ}\text{C}$
Storage Temperature	T_{STG}	-65~150	$^{\circ}\text{C}$

TO-220



1. Gate 2. Drain 3. Source

ELECTRICAL CHARACTERISTICS ($T_C=25^{\circ}\text{C}$)

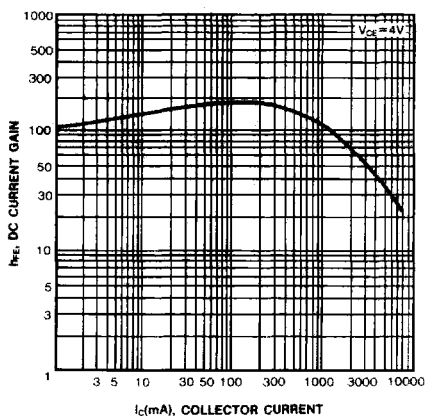
Characteristic	Symbol	Test Conditions	Min	Max	Unit
*Collector Emitter Sustaining Voltage : TIP31	$BV_{CEO(sus)}$	$I_C = 30\text{mA}, I_B = 0$	40		V
: TIP31A			60		V
: TIP31B			80		V
: TIP31C			100		V
Collector Cutoff Current : TIP31/31A	I_{CEO}	$V_{CE} = 30\text{V}, I_B = 0$		0.3	mA
: TIP31B/31C		$V_{CE} = 60\text{V}, I_B = 0$		0.3	mA
Collector Cutoff Current : TIP31	I_{CES}	$V_{CE} = 40\text{V}, V_{EB} = 0$		200	μA
: TIP31A		$V_{CE} = 60\text{V}, V_{EB} = 0$		200	μA
: TIP31B		$V_{CE} = 80\text{V}, V_{EB} = 0$		200	μA
: TIP31C		$V_{CE} = 100\text{V}, V_{EB} = 0$		200	μA
Emitter Cutoff Current	I_{EBO}	$V_{EB} = 5\text{V}, I_C = 0$		1	mA
*DC Current Gain	h_{FE}	$V_{CE} = 4\text{V}, I_C = 1\text{A}$	25		
		$V_{CE} = 4\text{V}, I_C = 3\text{A}$	10	50	
*Collector Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 3\text{A}, I_B = 375\text{mA}$		1.2	V
*Base Emitter Saturation Voltage	$V_{BE(on)}$	$V_{CE} = 4\text{V}, I_C = 3\text{A}$		1.8	V
Current Gain Bandwidth Product	f_T	$V_{CE} = 10\text{V}, I_C = 500\text{mA}$ $f = 1\text{MHz}$	3.0		MHz

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

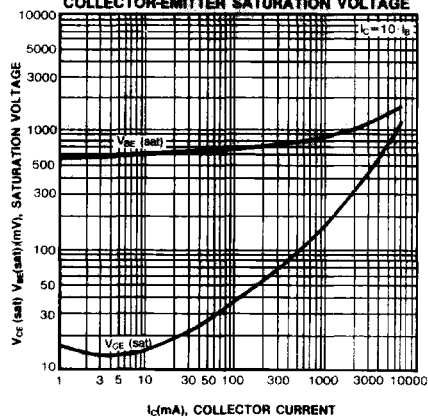
TIP31 SERIES (TIP31/31A/31B/31C)

NPN EXITAXIAL SILICON TRANSISTOR

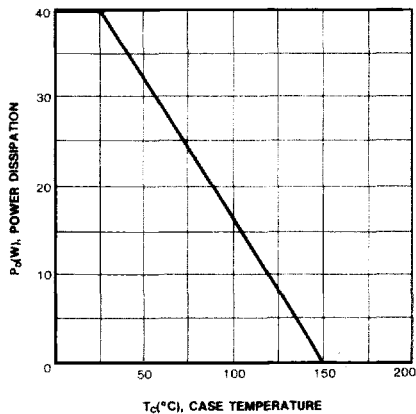
DC CURRENT GAIN



BASE-EMITTER SATURATION VOLTAGE



POWER DERATING



SAFE OPERATING AREA

