

TO-220 Plastic-Encapsulate Transistors

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

FEATURES

Power dissipation

$$P_{CM} : 2 \text{ W (Tamb=25}^\circ\text{C)}$$

Collector current

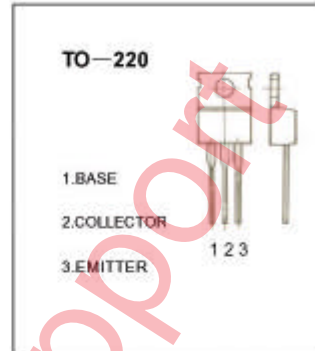
$$I_{CM} : 3 \text{ A}$$

Collector-base voltage

$$V_{(BR)CB0} : \begin{array}{l} \text{TIP31 : 40 V} \\ \text{TIP31A : 60 V} \\ \text{TIP31B : 80 V} \\ \text{TIP31C : 100 V} \end{array}$$

Operating and storage junction temperature range

$$T_j, T_{stg} : -55^\circ\text{C to } +150^\circ\text{C}$$



ELECTRICAL CHARACTERISTICS (Tamb=25°C unless otherwise specified)

Parameter	Symbol	Test conditions	MIN	MAX	UNIT	
Collector-base breakdown voltage	31	$V_{(BR)CB0}$ $I_C=100\mu\text{A}, I_E=0$	40		V	
	31A		60			
	31B		80			
	31C		100			
Collector-emitter breakdown voltage	31	$V_{(BR)CE0}$ $I_C=30\text{mA}, I_E=0$	40		V	
	31A		60			
	31B		80			
	31C		100			
Emitter-base breakdown voltage	$V_{(BR)EB0}$	$I_E=100\mu\text{A}, I_C=0$	5		V	
Collector cut-off current	31	I_{CBO}	$V_{CE}=40\text{V}, I_E=0$		mA	
	31A		$V_{CE}=60\text{V}, I_E=0$	0.2		
	31B		$V_{CE}=80\text{V}, I_E=0$			
	31C		$V_{CE}=100\text{V}, I_E=0$			
Collector cut-off current	31/31A 31B/31C	I_{CBO}	$V_{CE}=30\text{V}, I_B=0$ $V_{CE}=60\text{V}, I_B=0$		0.3 0.3	mA
Emitter cut-off current	I_{EBO}	$V_{EB}=5\text{V}, I_C=0$		1	mA	
DC current gain	$h_{FE(1)}$	$V_{CE}=4\text{V}, I_C=3\text{A}$	10	50		
	$h_{FE(2)}$	$V_{CE}=4\text{V}, I_C=1\text{A}$	25			
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C=3\text{A}, I_E=375\text{mA}$		1.2	V	
Base-emitter voltage	$V_{BE(sat)}$	$V_{CE}=4\text{V}, I_C=3\text{A}$		1.8	V	
Transition frequency	f_T	$V_{CE}=10\text{V}, I_C=500\text{mA}$	3		MHz	