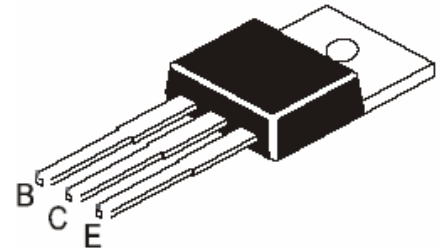


Power Transistors (NPN)

Features

- Low power audio amplifier and low current,
- High speed switching applications
- RoHS Compliant



TO-220



Mechanical Data

Case:	TO-220, Plastic Package
Terminals:	Solderable per MIL-STD-202, Method 208
Weight:	0.08 ounces, 2.24 grams

Maximum Ratings *(T_{Ambient}=25°C unless noted otherwise)*

Symbol	Description	TIP31	TIP31A	TIP31B	TIP31C	Unit
V_{CB0}	Collector-Base Voltage	40	60	80	100	V
V_{CEO}	Collector-Emitter Voltage	40	60	80	100	V
V_{EB0}	Emitter-Base Voltage	5.0				V
I_C	Collector Current Continuous	3.0				A
I_{CM}	Collector Current Peak	5.0				A
I_B	Base Current	1.0				A
P_D	Power Dissipation upto T _C =25°C	40				W
	Power Dissipation Derate above T _C =25°C	0.32				W/° C
	Power Dissipation upto T _A =25°C	2.0				W
	Power Dissipation Derate above T _A =25°C	0.016				W/° C
*E	Unclamped Inductive Load Energy	32				mJ
R_{θJA}	Thermal Resistance from Junction to Ambient in Free Air	62.5				° C /W
R_{θJC}	Thermal Resistance from Junction to Case	3.125				° C /W
T_J, T_{STG}	Operating Junction and Storage Temperature Range	-65 to +150				° C

*I_C=1.8A, L=20mH, P.R.F.=10Hz, V_{CC}=10V, R_{BE}=100Ω

Power Transistors (NPN)

TIP31/A/B/C

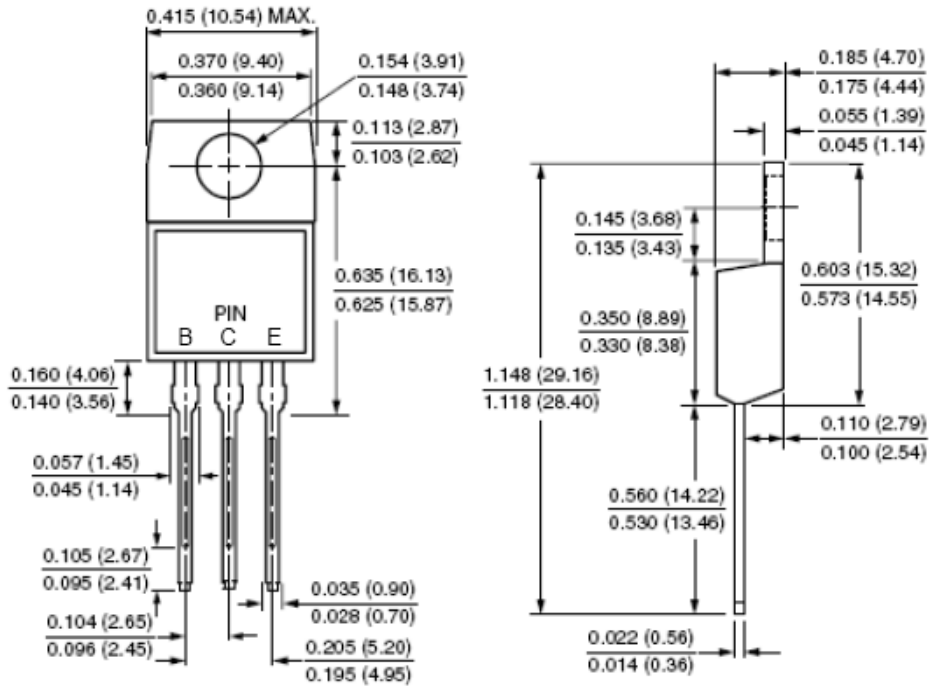
Electrical Characteristics ($T_{Ambient}=25^{\circ}C$ unless noted otherwise)

Symbol	Description	Min.	Max.	Unit	Conditions	
*h_{FE}	D.C. Current Gain	25	-		V _{CE} =4V, I _C =1A	
		10	50		V _{CE} =4V, I _C =3A	
*V_{CEO(sus)}	Collector-Emitter Sustaining Voltage	TIP31	40	-	V	I _C =30mA, I _B =0
		TIP31A	60	-	V	
		TIP31B	80	-	V	
		TIP31C	100	-	V	
*V_{CE(sat)}	Collector-Emitter Saturation Voltage	-	1.2	V	I _C =3A, I _B =375mA	
*V_{BE(on)}	Base-Emitter On Voltage	-	1.8	V	I _C =3A, V _{CE} =4V	
I_{CEO}	Collector Cut-off Current	TIP31, TIP31A	-	0.3	mA	V _{CE} =30V, I _B =0
		TIP31B, TIP31C	-	0.3	mA	V _{CE} =60V, I _B =0
I_{CES}	Collector Cut-off Current	-	0.2	mA	V _{CE} =V _{CEO(max)} , V _{BE} =0	
I_{EBO}	Emitter Cut-off Current	-	1.0	mA	V _{EB} =5V, I _C =0	
h_{fe}	Small Signal Current Gain	20	-		V _{CE} =10V, I _C =0.5A f=1KHZ,	
f_T	Transition Frequency	3	-	MHz	V _{CE} =10V, I _C =0.5A f=1MHz,	

*Pulse Test: Pulse Width<300μs, Duty Cycle<2%

Dimensions in inch (mm)

TO-220



Pin Configuration

- B. Base
- C. Collector
- E. Emitter

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