TIP31C

DATASHEET

Specification Revision History:

Version	Date	Description
V1.0	2021/12	New
V1.1	2022/05	Modify Ordering Information
V1.2	2024/02	Modify Ordering Information
V1.3	2025/05	Add application precautions and overall typesetting.

Features

Medium Power Complementary Silicon Transistors

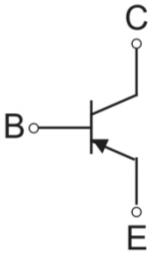
Maximum Ratings (Ta=25°C unless otherwise noted)

Symbol	Parameter	TIP31C	Unit
V_{CBO}	Collector-Base Voltage	140	V
V_{CEO}	Collector-Emitter Voltage	100	V
V_{EBO}	Emitter-Base Voltage	6	V
I_C	Collector Current -Continuous	3	A
P_C	Collector Power Dissipation	2	W
$R_{\Theta JA}$	Thermal Resistance From Junction To Ambient	62.5	°C/W
T_J,T_{stg}	Operation Junction and Storage Temperature Range	-55~+150	°C

The appearance of the product



1. BASE
2. COLLECTOR
3. EMITTER



TO-220-3

Ordering Information

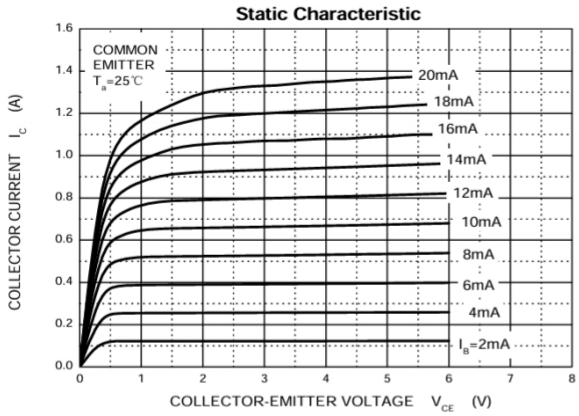
Product Model	Package Type	Packing	Packing Qty
TIP31CT	TO-220	TUBE	1000PCS/BOX
TIP31C	TO-220	TUBE	1000PCS/BOX

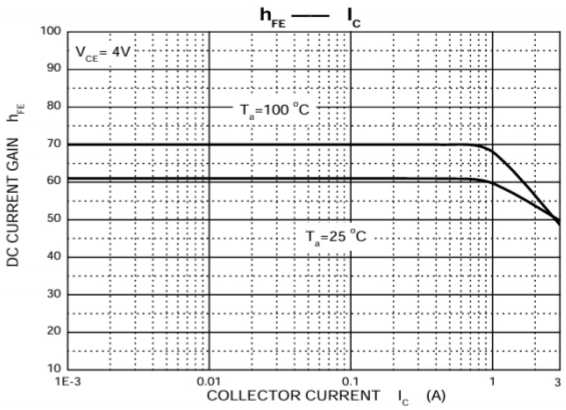
Electrical Characteristics (Ta=25°C unless otherwise specified)

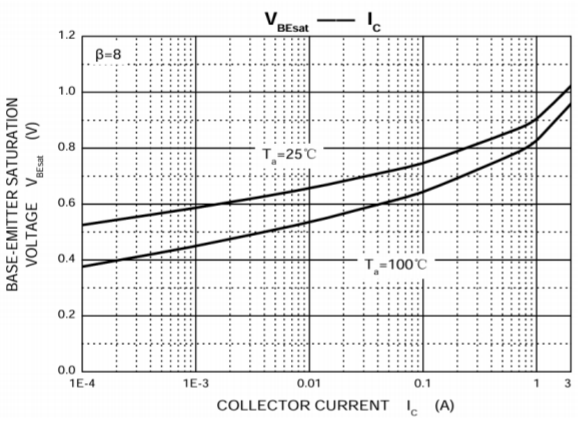
Parameter	Symbol	Test conditions	Min	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	I_C= 0.1mA, I_E=0	140		V
Collector-emitter breakdown voltage	$V_{CEO(sus)}$	I_C= 1mA, I_B=0	100		V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	I_E= 0.1mA, I_C=0	6		V
Collector cut-off current	I_{CBO}	V_{CB}=112V, I_E=0		0.5	μA
Collector cut-off current	I_{CEO}	V_{CE}= 60V, I_B= 0		0.5	μA
Emitter cut-off current	I_{EBO}	V_{EB}=5V, I_C=0		1	mA
DC current gain	h_{FE}	V_{CE}=5V, I_C= 0.5A	100	300	
Collector-emitter saturation voltage	$V_{CE(sat)}$	I_C=1A, I_B=100mA		0.6	V
Base-emitter saturation voltage	$V_{BE(sat)}$	I_C=1A, I_B=100mA		1.5	V
Transition frequency	f_T	V_{CE}=10V,I_C=0.5A f =1MHz	3		MHZ

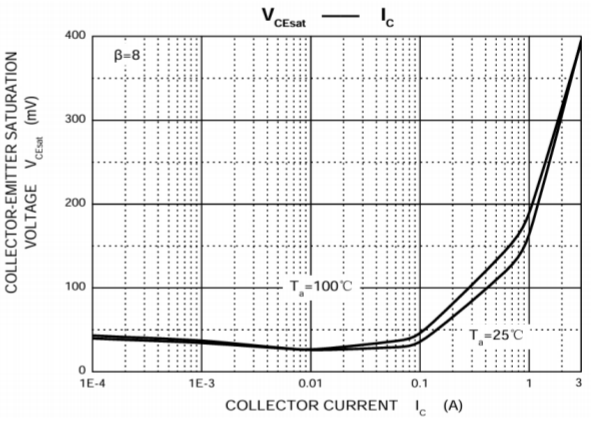
*Pulse test

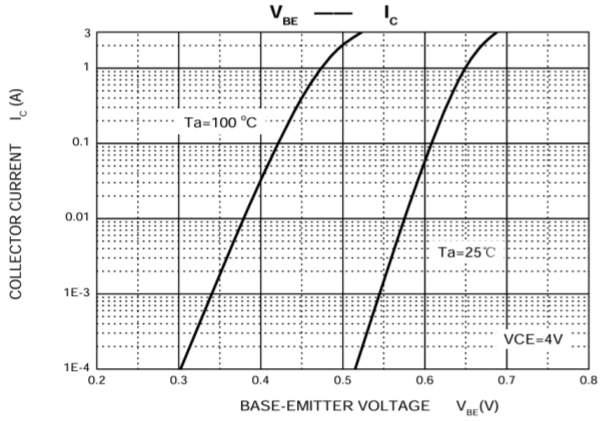
Typical Characteristics

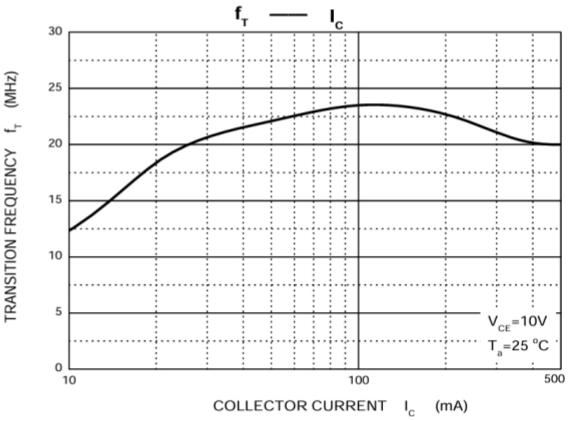


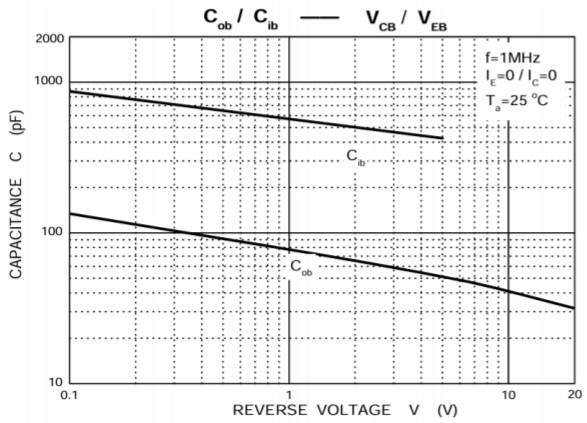


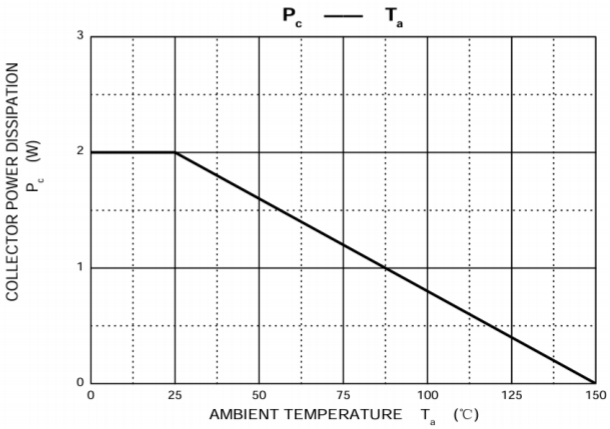






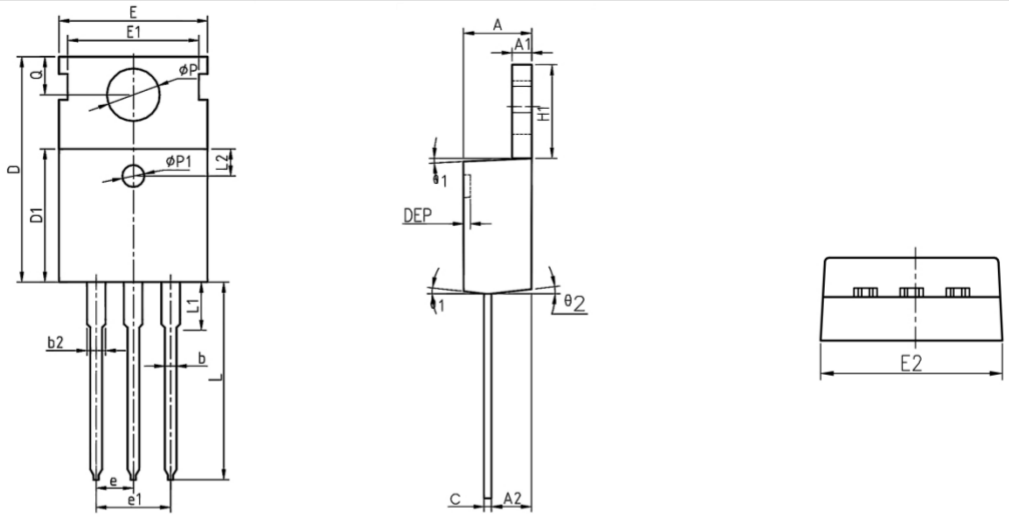






Outline Dimensions

TO-220-3(TO-220C)



Symbol	mm.			inch		
	MIN.	TYP	MAX.	MIN.	TYP.	MAX.
A	4.40	4.57	4.70	0.173	0.180	0.185
A1	1.27	1.30	1.33	0.050	0.051	0.052
A2	2.35	2.40	2.50	0.093	0.094	0.098
b	0.77	0.80	0.90	0.030	0.031	0.035
b2	1.17	1.27	1.36	0.046	0.050	0.054
c	0.48	0.50	0.56	0.019	0.020	0.022
D	15.40	15.60	15.80	0.606	0.614	0.622
D1	9.00	9.10	9.20	0.354	0.358	0.362
DEP	0.05	0.10	0.20	0.002	0.004	0.008
E	9.80	10.00	10.20	0.386	0.394	0.402
E1	-	8.70	-	-	0.343	-
E2	9.80	10.00	10.20	0.386	0.394	0.402
e	2.54BSC			0.100BSC		
e1	5.08BSC			0.200BSC		
H1	6.40	6.50	6.60	0.252	0.256	0.260
L	12.75	13.50	13.65	0.502	0.531	0.537
L1	-	3.10	3.30	-	0.122	0.130
L2	2.50REF			0.098REF		
P	3.50	3.60	3.63	0.138	0.142	0.143
P1	3.50	3.60	3.63	0.138	0.142	0.143
Q	2.73	2.80	2.87	0.107	0.110	0.113
θ1	5°	7°	9°	5°	7°	9°
θ2	1°	3°	5°	1°	3°	5°
θ3	1°	3°	5°	1°	3°	5°

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