

TIP31  
TIP31A  
TIP31B  
TIP31C  
SILICON  
NPN POWER TRANSISTORS

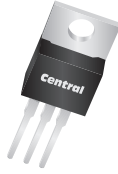


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**DESCRIPTION:**

The CENTRAL SEMICONDUCTOR TIP31 series devices are silicon NPN epitaxial-base power transistors designed for power amplifier and high speed switching applications.

**MARKING: FULL PART NUMBER**



TO-220 CASE

**MAXIMUM RATINGS:** ( $T_C=25^\circ\text{C}$  unless otherwise noted)

	SYMBOL	TIP31	TIP31A	TIP31B	TIP31C	UNITS
Collector-Base Voltage	$V_{CBO}$	40	60	80	100	V
Collector-Emitter Voltage	$V_{CEO}$	40	60	80	100	V
Emitter-Base Voltage	$V_{EBO}$		5.0			V
Continuous Collector Current	$I_C$		3.0			A
Peak Collector Current	$I_{CM}$		5.0			A
Continuous Base Current	$I_B$		1.0			A
Power Dissipation	$P_D$		40			W
Power Dissipation ( $T_A=25^\circ\text{C}$ )	$P_D$		2.0			W
Operating and Storage Junction Temperature	$T_J, T_{stg}$		-65 to +150			$^\circ\text{C}$
Thermal Resistance	$\theta_{JA}$		62.5			$^\circ\text{C/W}$
Thermal Resistance	$\theta_{JC}$		3.13			$^\circ\text{C/W}$

**ELECTRICAL CHARACTERISTICS:** ( $T_C=25^\circ\text{C}$  unless otherwise noted)

SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNITS
$I_{CEO}$	$V_{CE}=30\text{V}$ (TIP31, TIP31A)			0.3	mA
$I_{CEO}$	$V_{CE}=60\text{V}$ (TIP31B, TIP31C)			0.3	mA
$I_{CES}$	$V_{CE}=\text{Rated } V_{CEO}$			0.2	mA
$I_{EBO}$	$V_{EB}=5.0\text{V}$			1.0	mA
$BV_{CEO}$	$I_C=30\text{mA}$ (TIP31)	40			V
$BV_{CEO}$	$I_C=30\text{mA}$ (TIP31A)	60			V
$BV_{CEO}$	$I_C=30\text{mA}$ (TIP31B)	80			V
$BV_{CEO}$	$I_C=30\text{mA}$ (TIP31C)	100			V
$V_{CE(SAT)}$	$I_C=3.0\text{A}, I_B=375\text{mA}$			1.2	V
$V_{BE(ON)}$	$V_{CE}=4.0\text{V}, I_C=3.0\text{A}$			1.8	V
$h_{FE}$	$V_{CE}=4.0\text{V}, I_C=1.0\text{A}$	25			
$h_{FE}$	$V_{CE}=4.0\text{V}, I_C=3.0\text{A}$	10		50	
$h_{fe}$	$V_{CE}=10\text{V}, I_C=0.5\text{A}, f=1.0\text{kHz}$	20			
$f_T$	$V_{CE}=10\text{V}, I_C=0.5\text{A}, f=1.0\text{MHz}$	3.0			MHz
$t_{on}$	$I_C=1.0\text{A}, I_{B1}=I_{B2}=0.1\text{A}, R_L=30\Omega$		0.3		$\mu\text{s}$
$t_{off}$	$I_C=1.0\text{A}, I_{B1}=I_{B2}=0.1\text{A}, R_L=30\Omega$		1.0		$\mu\text{s}$

R0 (12-June 2014)

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TO-220 CASE - MECHANICAL OUTLINE



R2

LEAD CODE:

- 1) Base
- 2) Collector
- 3) Emitter
- Tab) Collector

MARKING:  
 FULL PART NUMBER

SYMBOL	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.170	0.190	4.31	4.82
B	0.045	0.055	1.15	1.39
C	0.013	0.026	0.33	0.65
D	0.083	0.107	2.10	2.72
E	0.394	0.417	10.01	10.60
F (DIA)	0.140	0.157	3.55	4.00
G	0.100	0.118	2.54	3.00
H	0.230	0.270	5.85	6.85
I	0.560	0.625	14.23	15.87
J	-	0.250	-	6.35
K	0.025	0.038	0.64	0.96
L	0.500	0.579	12.70	14.70
M	0.090	0.110	2.29	2.79

TO-220 (REV: R2)

R0 (12-June 2014)

## OUTSTANDING SUPPORT AND SUPERIOR SERVICES



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### PRODUCT SUPPORT

Central's operations team provides the highest level of support to insure product is delivered on-time.

- Supply management (Customer portals)
- Inventory bonding
- Consolidated shipping options
- Custom bar coding for shipments
- Custom product packing

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### DESIGNER SUPPORT/SERVICES

Central's applications engineering team is ready to discuss your design challenges. Just ask.

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- Online technical data and parametric search
- SPICE models
- Custom electrical curves
- Environmental regulation compliance
- Customer specific screening
- Up-screening capabilities
- Special wafer diffusions
- PbSn plating options
- Package details
- Application notes
- Application and design sample kits
- Custom product and package development

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### REQUESTING PRODUCT PLATING

1. If requesting Tin/Lead plated devices, add the suffix " TIN/LEAD" to the part number when ordering (example: 2N2222A TIN/LEAD).
2. If requesting Lead (Pb) Free plated devices, add the suffix " PBFREE" to the part number when ordering (example: 2N2222A PBFREE).

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### CONTACT US

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