

# Bipolar Transistor



## Description:

Plastic NPN TO-220 silicon power transistor is designed for various specific and general purpose applications such as output and driver stages of amplifiers operating at frequencies from DC to greater than 1MHz series shunt and switching regulators low and high frequency inverters/converters and many others.

## Features:

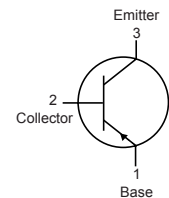
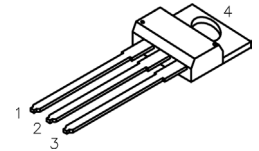
- Very low collector saturation voltage
- Excellent linearity
- Fast switching

## Absolute Maximum Ratings

Parameter	Symbol	Rating	Unit
Collector-Emitter Voltage	$V_{CEO}$	80	V
Collector-Base Voltage	$V_{CES}$	80	
Emitter-Base Voltage	$V_{EBO}$	5	
Continuous Collector Current	$I_C$	10	A
Base Current	$I_B$	2	A
Total Device Dissipation at $T_c = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	50 0.4	W W/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	$T_j, T_{stg}$	-65 to +150	$^\circ\text{C}$

RoHS  
Compliant

NPN



## Pin Configuration:

1. Base
2. Collector
3. Emitter
4. Collector

## Electrical Characteristics ( $T_a = 25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Test Conditions	Min.	Max.	Unit
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### OFF Characteristics

Collector - Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=30\text{mA}, I_B=0$	80	-	V
Collector Cut-Off Current	$I_{CES}$	$V_{CE}=80\text{V}, V_{BE}=0$	-	10	$\mu\text{A}$
Emitter Cut-Off Current	$I_{EBO}$	$V_{EB}=5\text{V}, I_C=0$	-	100	

### ON Characteristics

DC Current Gain	$h_{FE}$	$V_{CE}=1\text{V}, I_C=2\text{A}$	35	-	-
		$V_{CE}=1\text{V}, I_C=4\text{A}$	20	-	-
Collector - Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=8\text{A}, I_B=800\text{mA}$	-	1	V
Base - Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=8\text{A}, I_B=800\text{mA}$		1.5	

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## Electrical Characteristics ( $T_a = 25^\circ\text{C}$ unless otherwise specified)

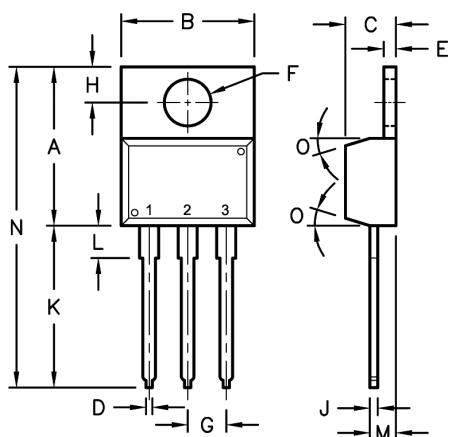
Parameter	Symbol	Test Conditions	Min.	Max.	Unit
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### Small-Signal Characteristics

Current Gain-Bandwidth Product	$f_T$	$V_{CE}=10\text{V}, I_C=500\text{mA}, f=0.5\text{MHz}$	15	-	MHz
Output Capacitance	$C_{obo}$	$V_{CB}=10\text{V}, I_E=0, f=1\text{MHz}$	220	-	pF

### Switching Characteristics

Rise Time	$t_r$	$I_C=5\text{A}, I_{B1}=I_{B2}=500\text{mA}$	-	0.5	$\mu\text{s}$
Storage Time	$t_s$		-	1	
Fall Time	$t_f$		-	0.4	



### Pin Configuration:

1. Base
2. Collector
3. Emitter

Dimensions	A	B	C	D	E	F	G	H	J	K	L	M	N	O
Min.	14.42	9.63	3.65	-	1.15	3.75	2.29	2.54	-	12.7	2.8	2.03	-	7°
Max.	16.51	10.67	4.83	0.9	1.4	3.88	2.79	3.43	0.56	14.73	4.07	2.92	31.24	

Dimensions : Millimetres

## Part Number Table

Description	Part Number
Transistor, NPN, 10A, 80V, TO-220	D44H10

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