

# 2N5550, 2N5551

## ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = 25°C unless otherwise noted)

Characteristic	Symbol	Min	Max	Unit
<b>OFF CHARACTERISTICS</b>				
Collector–Emitter Breakdown Voltage (Note 1) (I <sub>C</sub> = 1.0 mA <sub>dc</sub> , I <sub>B</sub> = 0)	V <sub>(BR)CEO</sub>	140 160	– –	V <sub>dc</sub>
Collector–Base Breakdown Voltage (I <sub>C</sub> = 100 µA <sub>dc</sub> , I <sub>E</sub> = 0)	V <sub>(BR)CBO</sub>	160 180	– –	V <sub>dc</sub>
Emitter–Base Breakdown Voltage (I <sub>E</sub> = 10 µA <sub>dc</sub> , I <sub>C</sub> = 0)	V <sub>(BR)EBO</sub>	6.0	–	V <sub>dc</sub>
Collector Cutoff Current (V <sub>CB</sub> = 100 V <sub>dc</sub> , I <sub>E</sub> = 0) (V <sub>CB</sub> = 120 V <sub>dc</sub> , I <sub>E</sub> = 0) (V <sub>CB</sub> = 100 V <sub>dc</sub> , I <sub>E</sub> = 0, T <sub>A</sub> = 100°C) (V <sub>CB</sub> = 120 V <sub>dc</sub> , I <sub>E</sub> = 0, T <sub>A</sub> = 100°C)	I <sub>CBO</sub>	– – – –	100 50 100 50	nA <sub>dc</sub> µA <sub>dc</sub>
Emitter Cutoff Current (V <sub>EB</sub> = 4.0 V <sub>dc</sub> , I <sub>C</sub> = 0)	I <sub>EBO</sub>	–	50	nA <sub>dc</sub>
<b>ON CHARACTERISTICS (Note 1)</b>				
DC Current Gain (I <sub>C</sub> = 1.0 mA <sub>dc</sub> , V <sub>CE</sub> = 5.0 V <sub>dc</sub> ) (I <sub>C</sub> = 10 mA <sub>dc</sub> , V <sub>CE</sub> = 5.0 V <sub>dc</sub> ) (I <sub>C</sub> = 50 mA <sub>dc</sub> , V <sub>CE</sub> = 5.0 V <sub>dc</sub> )	h <sub>FE</sub>	60 80 60 80 20 30	– – 250 250 – –	–
Collector–Emitter Saturation Voltage (I <sub>C</sub> = 10 mA <sub>dc</sub> , I <sub>B</sub> = 1.0 mA <sub>dc</sub> ) (I <sub>C</sub> = 50 mA <sub>dc</sub> , I <sub>B</sub> = 5.0 mA <sub>dc</sub> )	V <sub>CE(sat)</sub>	– – –	0.15 0.25 0.20	V <sub>dc</sub>
Base–Emitter Saturation Voltage (I <sub>C</sub> = 10 mA <sub>dc</sub> , I <sub>B</sub> = 1.0 mA <sub>dc</sub> ) (I <sub>C</sub> = 50 mA <sub>dc</sub> , I <sub>B</sub> = 5.0 mA <sub>dc</sub> )	V <sub>BE(sat)</sub>	– – –	1.0 1.2 1.0	V <sub>dc</sub>
<b>SMALL–SIGNAL CHARACTERISTICS</b>				
Current–Gain — Bandwidth Product (I <sub>C</sub> = 10 mA <sub>dc</sub> , V <sub>CE</sub> = 10 V <sub>dc</sub> , f = 100 MHz)	f <sub>T</sub>	100	300	MHz
Output Capacitance (V <sub>CB</sub> = 10 V <sub>dc</sub> , I <sub>E</sub> = 0, f = 1.0 MHz)	C <sub>obo</sub>	–	6.0	pF
Input Capacitance (V <sub>EB</sub> = 0.5 V <sub>dc</sub> , I <sub>C</sub> = 0, f = 1.0 MHz)	C <sub>ibo</sub>	– –	30 20	pF
Small–Signal Current Gain (I <sub>C</sub> = 1.0 mA <sub>dc</sub> , V <sub>CE</sub> = 10 V <sub>dc</sub> , f = 1.0 kHz)	h <sub>fe</sub>	50	200	–
Noise Figure (I <sub>C</sub> = 250 µA <sub>dc</sub> , V <sub>CE</sub> = 5.0 V <sub>dc</sub> , R <sub>S</sub> = 1.0 kΩ, f = 1.0 kHz)	NF	– –	10 8.0	dB

1. Pulse Test: Pulse Width ≤ 300 µs, Duty Cycle ≤ 2.0%.

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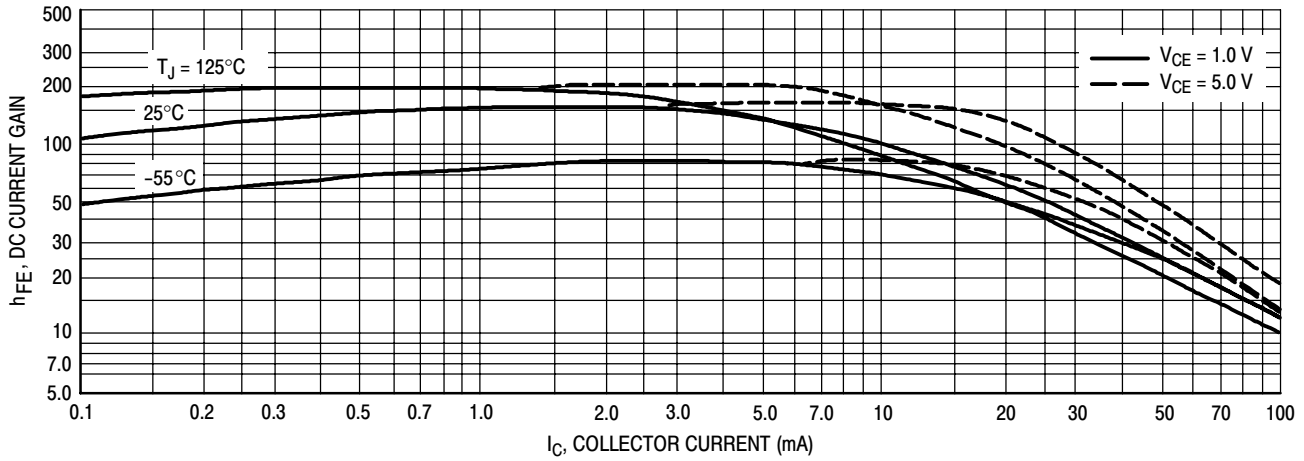


Figure 1. DC Current Gain

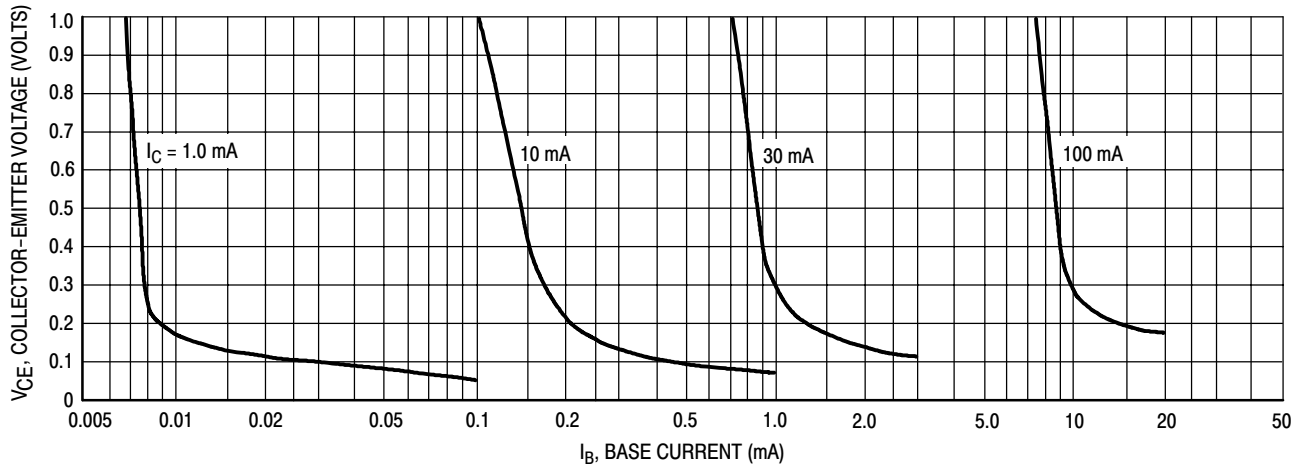


Figure 2. Collector Saturation Region

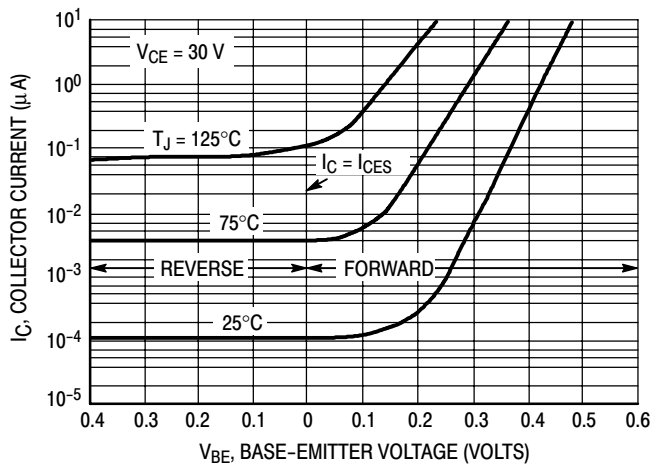


Figure 3. Collector Cut-Off Region

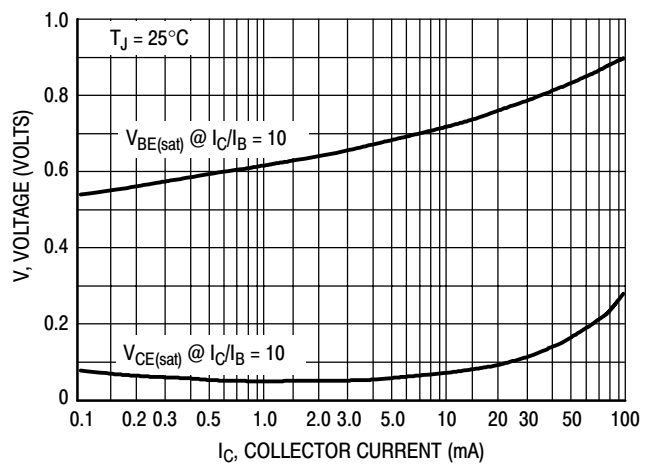


Figure 4. "On" Voltages

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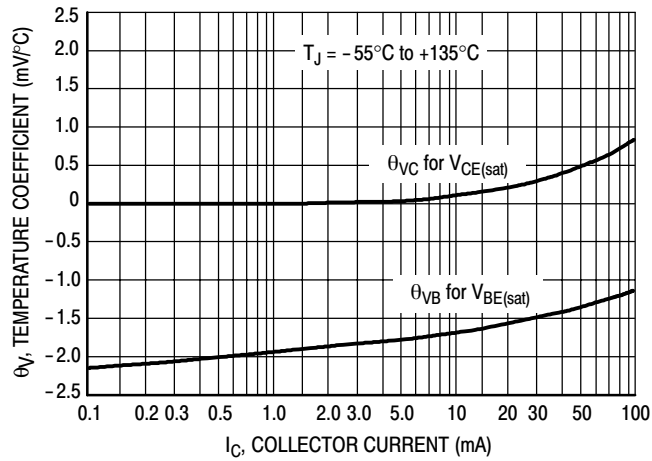
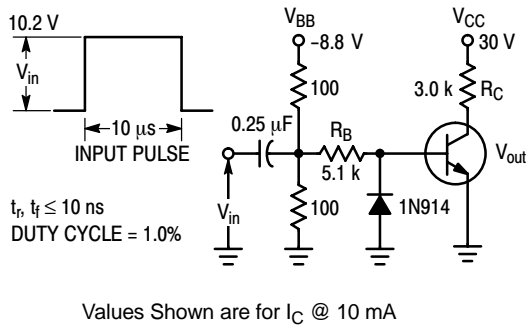


Figure 5. Temperature Coefficients



Values Shown are for  $I_C$  @ 10 mA

Figure 6. Switching Time Test Circuit

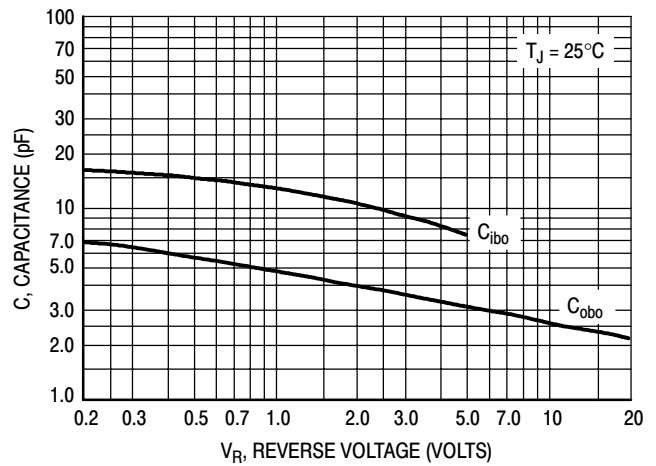


Figure 7. Capacitances

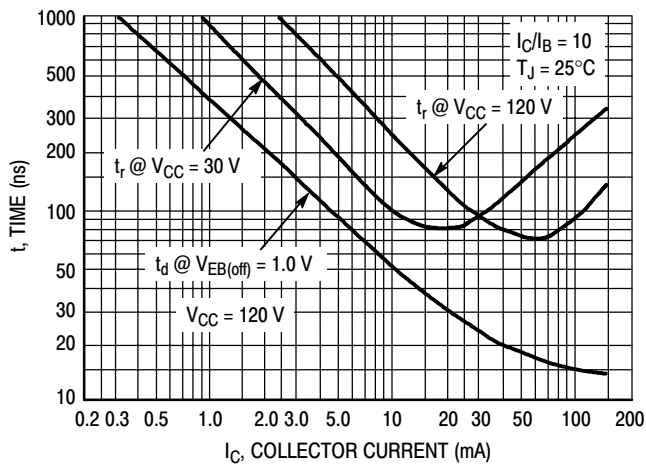


Figure 8. Turn-On Time

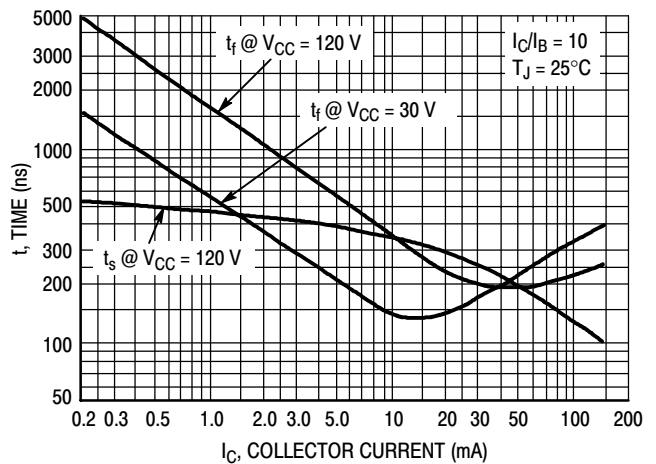


Figure 9. Turn-Off Time

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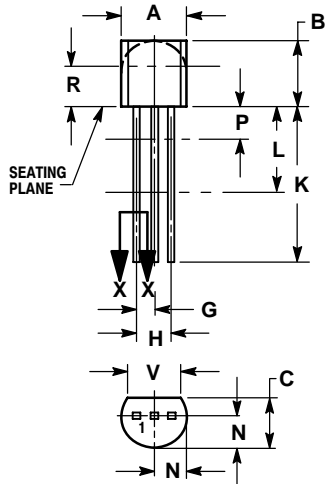
Device	Package	Shipping†
2N5550G	TO-92 (Pb-Free)	5000 Units / Bulk
2N5550RLRPG	TO-92 (Pb-Free)	2000 / Tape & Ammo Box
2N5551G	TO-92 (Pb-Free)	5000 Units / Bulk
2N5551RL1G	TO-92 (Pb-Free)	2000 / Tape & Reel
2N5551RLRAG	TO-92 (Pb-Free)	
2N5551RLRPG	TO-92 (Pb-Free)	2000 / Tape & Ammo Box
2N5551ZL1G	TO-92 (Pb-Free)	

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

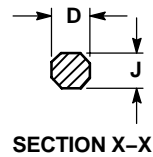
# 2N5550, 2N5551

## PACKAGE DIMENSIONS

### TO-92 (TO-226) CASE 29-11 ISSUE AM



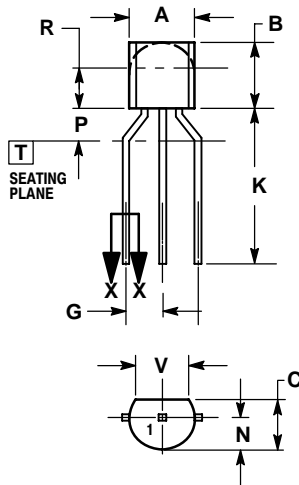
STRAIGHT LEAD  
BULK PACK



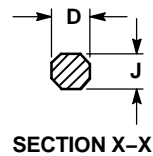
#### NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. CONTOUR OF PACKAGE BEYOND DIMENSION R IS UNCONTROLLED.
4. LEAD DIMENSION IS UNCONTROLLED IN P AND BEYOND DIMENSION K MINIMUM.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.175	0.205	4.45	5.20
B	0.170	0.210	4.32	5.33
C	0.125	0.165	3.18	4.19
D	0.016	0.021	0.407	0.533
G	0.045	0.055	1.15	1.39
H	0.095	0.105	2.42	2.66
J	0.015	0.020	0.39	0.50
K	0.500	---	12.70	---
L	0.250	---	6.35	---
N	0.080	0.105	2.04	2.66
P	---	0.100	---	2.54
R	0.115	---	2.93	---
V	0.135	---	3.43	---



BENT LEAD  
TAPE & REEL  
AMMO PACK




#### NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. CONTOUR OF PACKAGE BEYOND DIMENSION R IS UNCONTROLLED.
4. LEAD DIMENSION IS UNCONTROLLED IN P AND BEYOND DIMENSION K MINIMUM.

DIM	MILLIMETERS	
	MIN	MAX
A	4.45	5.20
B	4.32	5.33
C	3.18	4.19
D	0.40	0.54
G	2.40	2.80
J	0.39	0.50
K	12.70	---
N	2.04	2.66
P	1.50	4.00
R	2.93	---
V	3.43	---

#### STYLE 1:

1. PIN 1. EMITTER
2. BASE
3. COLLECTOR

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