

2N5550, 2N5551

Preferred Device

Amplifier Transistors

NPN Silicon

Features

- These are Pb-Free Devices*

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector – Emitter Voltage 2N5550 2N5551	V_{CEO}	140 160	Vdc
Collector – Base Voltage 2N5550 2N5551	V_{CBO}	160 180	Vdc
Emitter – Base Voltage	V_{EBO}	6.0	Vdc
Collector Current – Continuous	I_C	600	mAdc
Total Device Dissipation @ $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D	625 5.0	mW mW/ $^\circ\text{C}$
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C	P_D	1.5 12	W mW/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-55 to +150	$^\circ\text{C}$

THERMAL CHARACTERISTICS

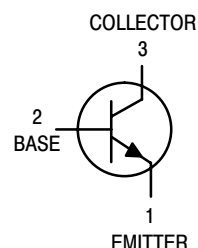
Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	200	$^\circ\text{C}/\text{W}$
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	83.3	$^\circ\text{C}/\text{W}$

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

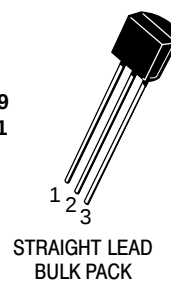


ON Semiconductor®

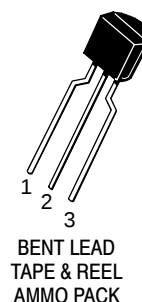
<http://onsemi.com>



TO-92
CASE 29
STYLE 1

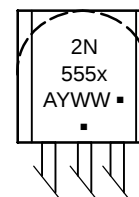


STRAIGHT LEAD
BULK PACK



BENT LEAD
TAPE & REEL
AMMO PACK

MARKING DIAGRAM



x = 0 or 1
A = Assembly Location
Y = Year
WW = Work Week
■ = Pb-Free Package

(Note: Microdot may be in either location)

ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 5 of this data sheet.

Preferred devices are recommended choices for future use and best overall value.

*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

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ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted)

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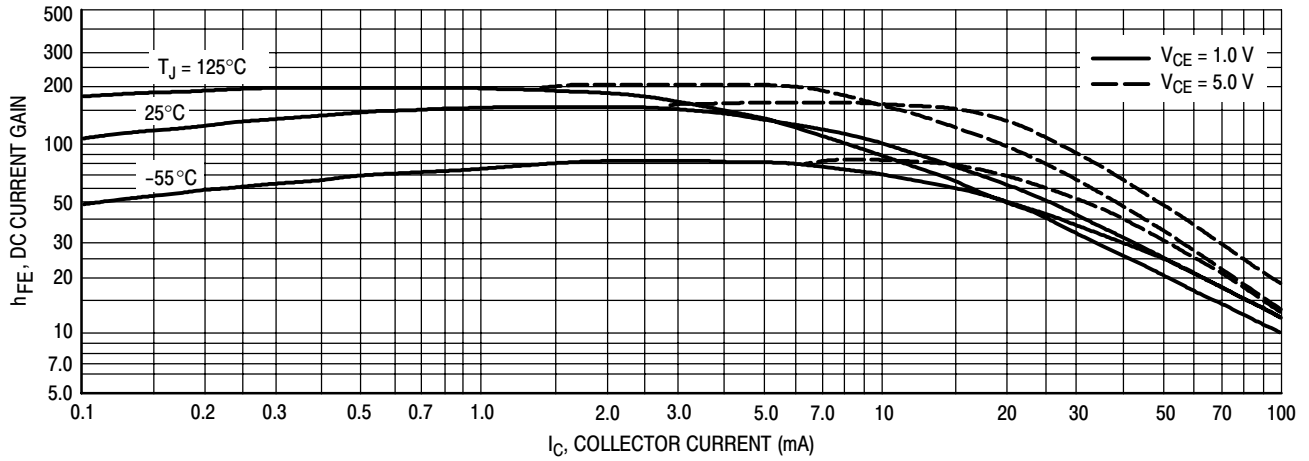


Figure 1. DC Current Gain

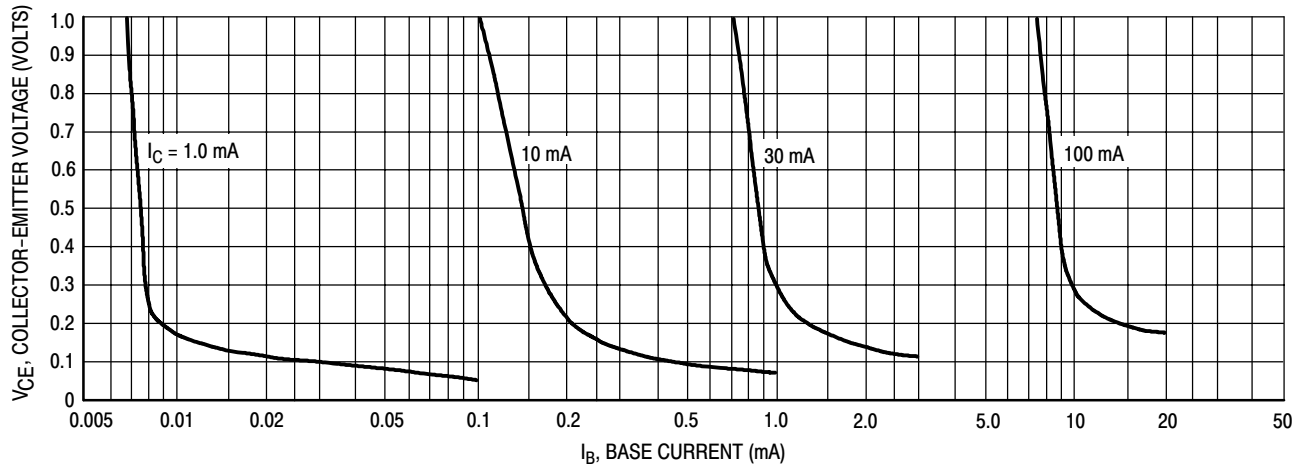


Figure 2. Collector Saturation Region

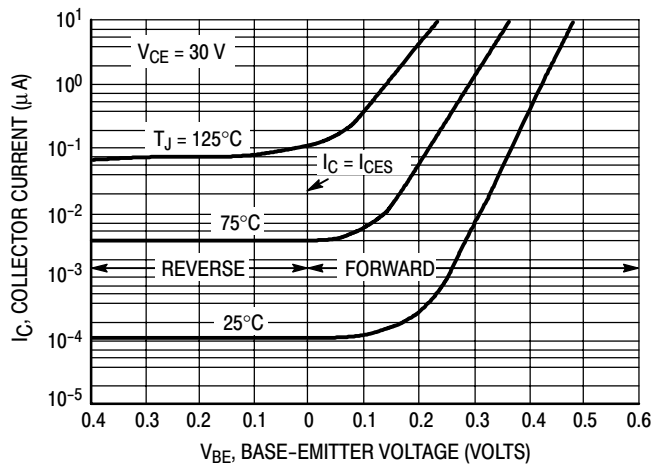


Figure 3. Collector Cut-Off Region

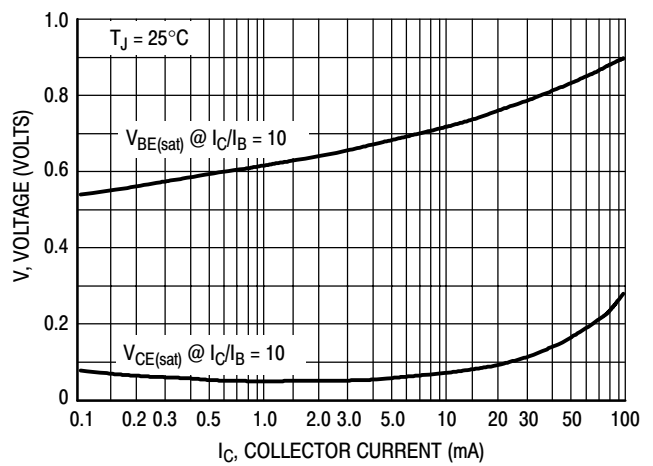


Figure 4. "On" Voltages

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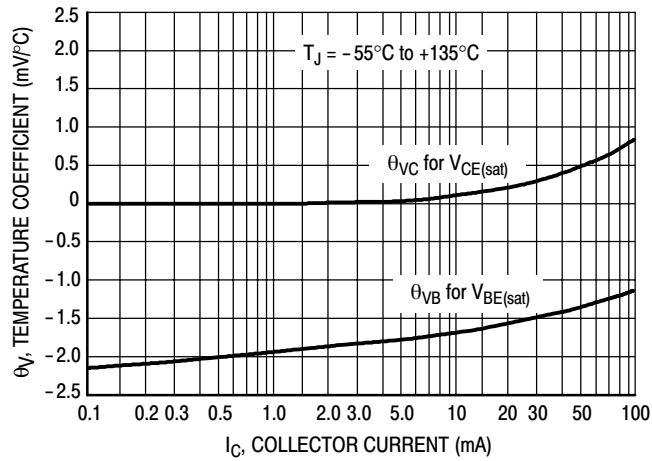
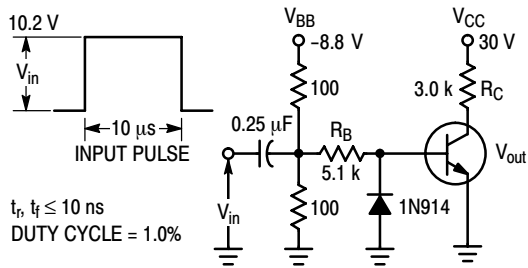


Figure 5. Temperature Coefficients



Values Shown are for I_C @ 10 mA

Figure 6. Switching Time Test Circuit

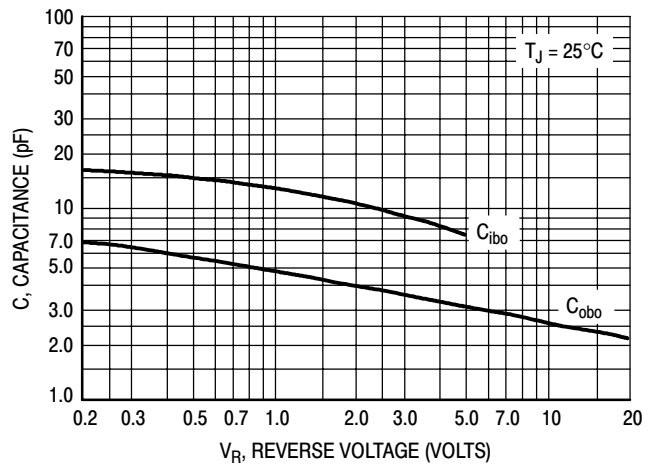


Figure 7. Capacitances

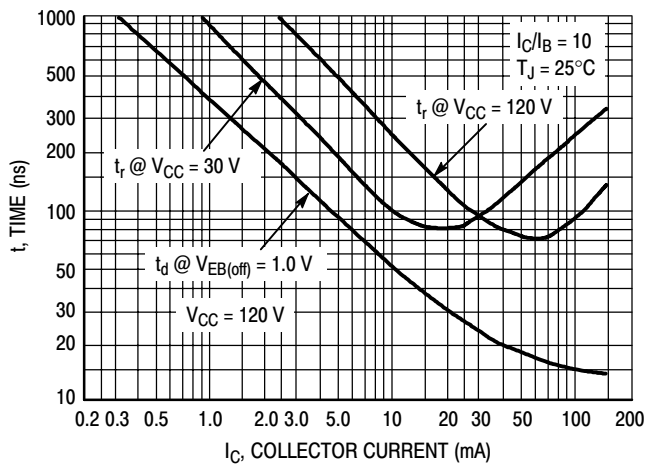


Figure 8. Turn-On Time

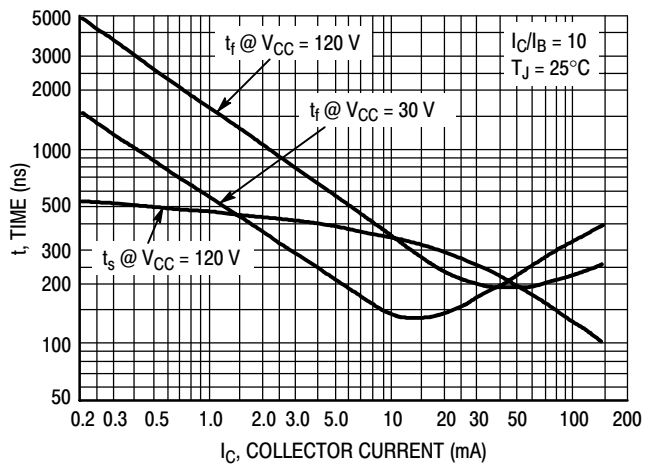


Figure 9. Turn-Off Time

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ORDERING INFORMATION

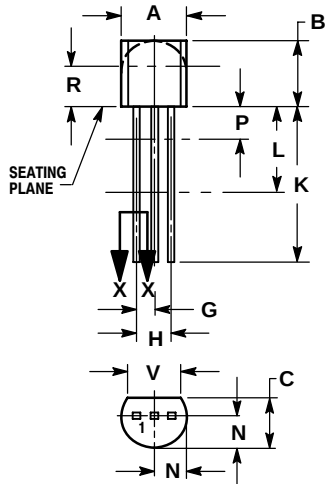
Device	Package	Shipping†
2N5550G	TO-92 (Pb-Free)	5000 Units / Bulk
2N5550RLRPG	TO-92 (Pb-Free)	2000 / Tape & Ammo Box
2N5551G	TO-92 (Pb-Free)	5000 Units / Bulk
2N5551RL1G	TO-92 (Pb-Free)	2000 / Tape & Reel
2N5551RLRAG	TO-92 (Pb-Free)	
2N5551RLRPG	TO-92 (Pb-Free)	2000 / Tape & Ammo Box
2N5551ZL1G	TO-92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

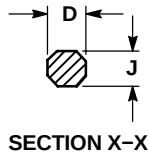
2N5550, 2N5551

PACKAGE DIMENSIONS

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



STRAIGHT LEAD
BULK PACK

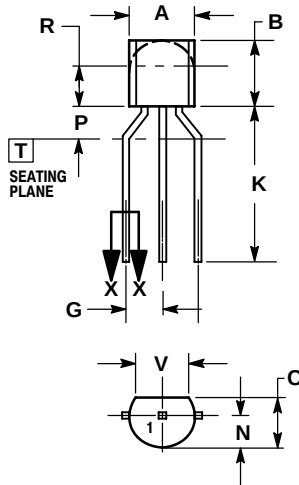


SECTION X-X

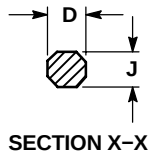
NOTES:

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



SECTION X-X

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. EMITTER
2. BASE
3. COLLECTOR

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