2N5550, 2N5551

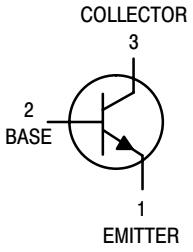
Preferred Device

Amplifier Transistors

NPN Silicon

Features

- Pb−Free Packages are Available*
- Device Marking: Device Type, e.g., 2N5550, Date Code



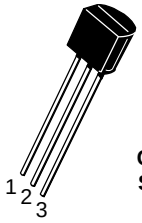
MAXIMUM RATINGS

Rating	Symbol	2N5550	2N5551	Unit
Collector − Emitter Voltage	V_{CEO}	140	160	Vdc
Collector − Base Voltage	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°C Derate above 25°C	P_D	625 5.0		mW mW/°C
Total Device Dissipation @ T_C = 25°C Derate above 25°C	P_D	1.5 12		W mW/°C
Operating and Storage Junction Temperature Range	T_J, T_{stg}	−55 to +150		°C

Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.

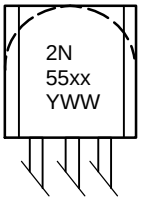
THERMAL CHARACTERISTICS

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



TO−92
CASE 29
STYLE 1

MARKING DIAGRAM



55xx	Specific Device Code
Y	= Year
WW	= Work Week

ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 3 of this data sheet.

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

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

Characteristic		Symbol	Min	Max	Unit
OFF CHARACTERISTICS					
Collector−Emitter Breakdown Voltage (Note 1)		$V_{(BR)CEO}$			Vdc
(I_C = 1.0 mAdc, I_B = 0)	2N5550		140	−	
	2N5551		160	−	
Collector−Base Breakdown Voltage		$V_{(BR)CBO}$			Vdc
(I_C = 100 μAdc, I_E = 0)	2N5550		160	−	
	2N5551		180	−	
Emitter−Base Breakdown Voltage		$V_{(BR)EBO}$	6.0	−	Vdc
(I_E = 10 μAdc, I_C = 0)					
Collector Cutoff Current		I_{CBO}			
(V_{CB} = 100 Vdc, I_E = 0)	2N5550		−	100	nAdc
(V_{CB} = 120 Vdc, I_E = 0)	2N5551		−	50	
(V_{CB} = 100 Vdc, I_E = 0, T_A = 100°C)	2N5550		−	100	μAdc
(V_{CB} = 120 Vdc, I_E = 0, T_A = 100°C)	2N5551		−	50	
Emitter Cutoff Current		I_{EBO}	−	50	nAdc
(V_{EB} = 4.0 Vdc, I_C = 0)					
ON CHARACTERISTICS (Note 1)					
DC Current Gain		h_{FE}			−
(I_C = 1.0 mAdc, V_{CE} = 5.0 Vdc)	2N5550		60	−	
	2N5551		80	−	
(I_C = 10 mAdc, V_{CE} = 5.0 Vdc)	2N5550		60	250	
	2N5551		80	250	
(I_C = 50 mAdc, V_{CE} = 5.0 Vdc)	2N5550		20	−	
	2N5551		30	−	
Collector−Emitter Saturation Voltage		$V_{CE(sat)}$			Vdc
(I_C = 10 mAdc, I_B = 1.0 mAdc)	Both Types		−	0.15	
(I_C = 50 mAdc, I_B = 5.0 mAdc)	2N5550		−	0.25	
	2N5551		−	0.20	
Base−Emitter Saturation Voltage		$V_{BE(sat)}$			Vdc
(I_C = 10 mAdc, I_B = 1.0 mAdc)	Both Types		−	1.0	
(I_C = 50 mAdc, I_B = 5.0 mAdc)	2N5550		−	1.2	
	2N5551		−	1.0	
SMALL−SIGNAL CHARACTERISTICS					
Current−Gain — Bandwidth Product		f_T	100	300	MHz
(I_C = 10 mAdc, V_{CE} = 10 Vdc, f = 100 MHz)					
Output Capacitance		C_{obo}	−	6.0	pF
(V_{CB} = 10 Vdc, I_E = 0, f = 1.0 MHz)					
Input Capacitance		C_{ibo}			pF
(V_{EB} = 0.5 Vdc, I_C = 0, f = 1.0 MHz)	2N5550		−	30	
	2N5551		−	20	
Small−Signal Current Gain		h_{fe}	50	200	−
(I_C = 1.0 mAdc, V_{CE} = 10 Vdc, f = 1.0 kHz)					
Noise Figure		NF			dB
(I_C = 250 μAdc, V_{CE} = 5.0 Vdc, R_S = 1.0 kΩ,	2N5550		−	10	
f = 1.0 kHz)	2N5551		−	8.0	

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

ORDERING INFORMATION

Device	Package	Shipping†
2N5550	TO−92	5,000 Unit / Bulk
2N5550RLRA	TO−92	2,000 Tape & Reel
2N5550RLRP	TO−92	2,000 Tape & Ammo Box
2N5550RLRPG	TO−92 (Pb−Free)	2,000 Tape & Ammo Box
2N5551	TO−92	5,000 Unit / Bulk
2N5551G	TO−92 (Pb−Free)	5,000 Unit / Bulk
2N5551RL1	TO−92	2,000 Tape & Reel
2N5551RLRA	TO−92	2,000 Tape & Reel
2N5551RLRM	TO−92	2,000 Tape & Ammo Box
2N5551RLRP	TO−92	2,000 Tape & Ammo Box
2N55551ZL1	TO−92	2,000 Tape & Ammo Box

†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.

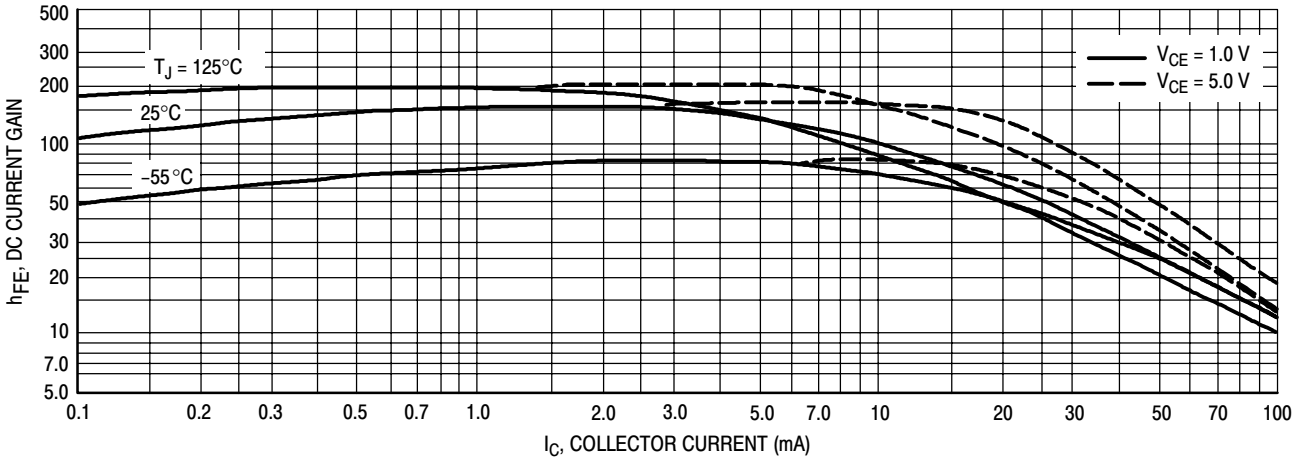


Figure 1. DC Current Gain

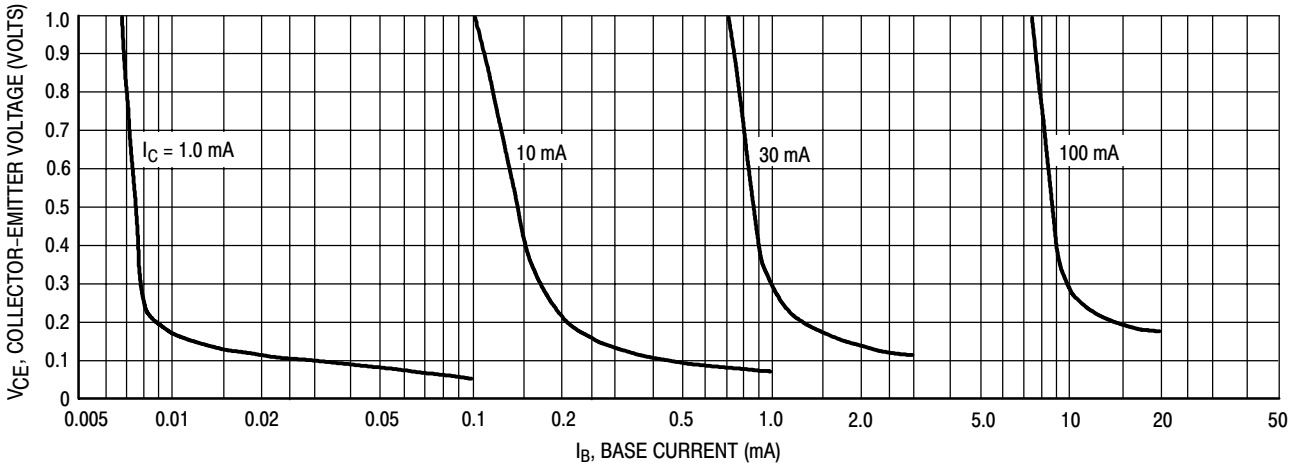


Figure 2. Collector Saturation Region

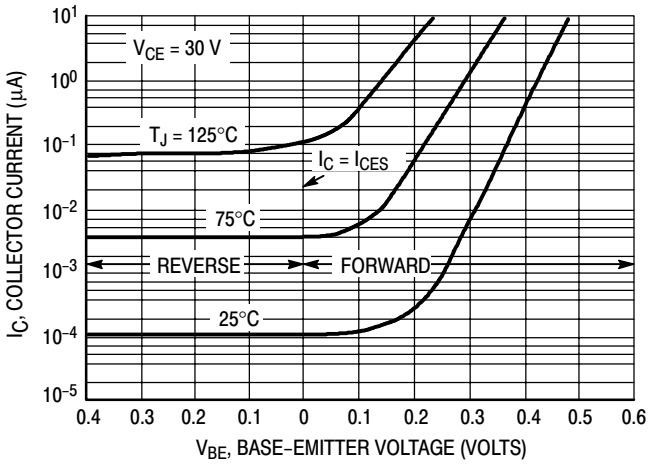


Figure 3. Collector Cut−Off Region

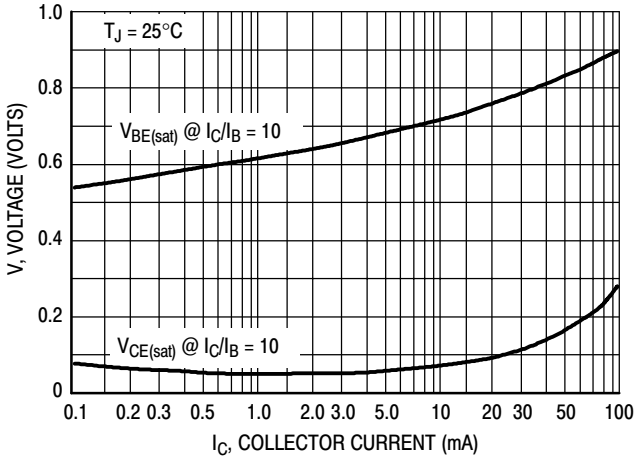


Figure 4. “On” Voltages

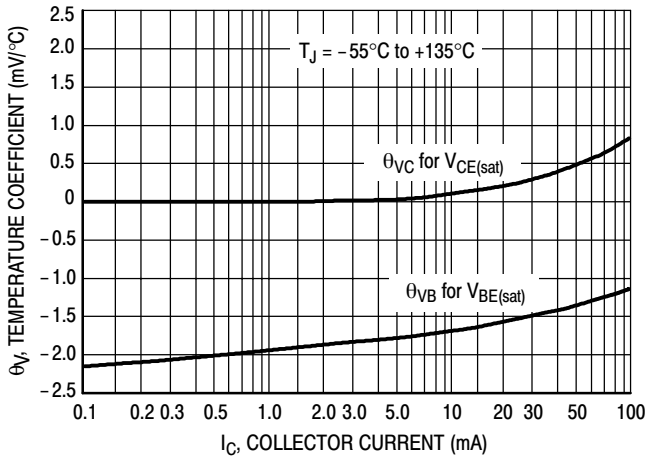
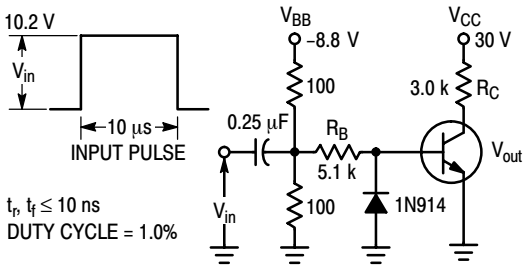


Figure 5. Temperature Coefficients



Values Shown are for I_C @ 10 mA

Figure 6. Switching Time Test Circuit

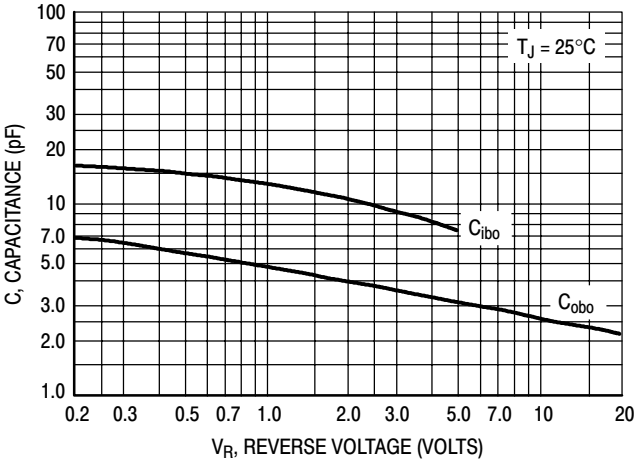


Figure 7. Capacitances

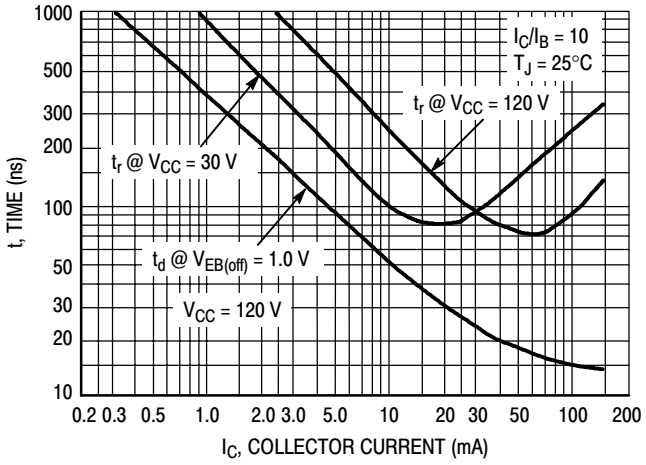


Figure 8. Turn−On Time

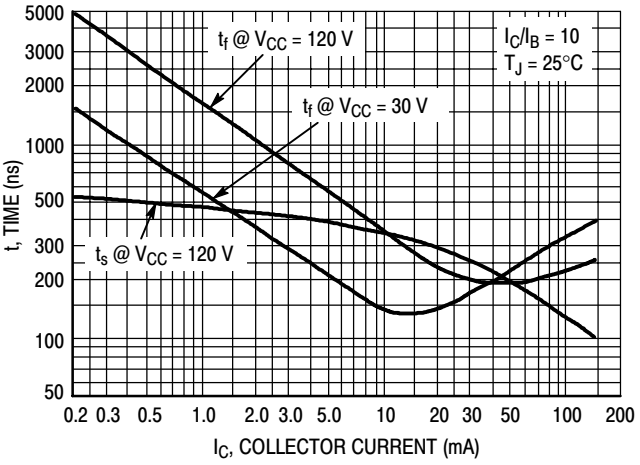
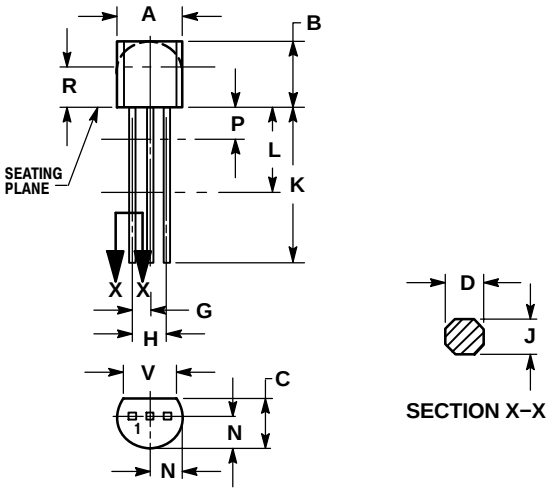


Figure 9. Turn−Off Time

2N5550

PACKAGE DIMENSIONS

TO−92
TO−226AA
CASE 29−11
ISSUE AL



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.

	INCHES		MILLIMETERS	
DIM	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	---

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