

2N2907A

Small Signal Switching Transistor

PNP Silicon

Features

- MIL-PRF-19500/291 Qualified
- Available as JAN, JANTX, and JANTXV

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector–Emitter Voltage	V_{CEO}	–60	Vdc
Collector–Base Voltage	V_{CBO}	–60	Vdc
Emitter–Base Voltage	V_{EBO}	–5.0	Vdc
Collector Current – Continuous	I_C	–600	mAdc
Total Device Dissipation @ $T_A = 25^\circ\text{C}$	P_T	500	mW
Total Device Dissipation @ $T_C = 25^\circ\text{C}$	P_T	1.0	W
Operating and Storage Junction Temperature Range	T_J, T_{stg}	–65 to +200	$^\circ\text{C}$

THERMAL CHARACTERISTICS

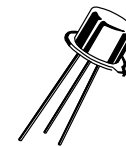
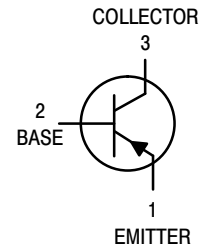
Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction–to–Ambient	$R_{\theta JA}$	325	$^\circ\text{C}/\text{W}$
Thermal Resistance, Junction–to–Case	$R_{\theta JC}$	150	$^\circ\text{C}/\text{W}$

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.



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TO-18
CASE 206AA
STYLE 1

ORDERING INFORMATION

Device	Package	Shipping
JAN2N2907A	TO-18	Bulk
JANTX2N2907A		
JANTXV2N2907A		

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

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector–Emitter Breakdown Voltage ($I_C = -10\text{ mAdc}$)	$V_{(BR)CEO}$	-60	-	Vdc
Collector–Emitter Cutoff Current ($V_{CE} = -50\text{ Vdc}$)	I_{CES}	-	-50	nAdc
Collector–Base Cutoff Current ($V_{CB} = -50\text{ Vdc}, I_E = 0$) ($V_{CB} = -60\text{ Vdc}, I_E = 0$)	I_{CBO}	- -	-10 -10	nAdc μAdc
Emitter–Base Cutoff Current ($V_{EB} = -4.0\text{ Vdc}$) ($V_{EB} = -5.0\text{ Vdc}$)	I_{EBO}	- -	-50 -10	nAdc μAdc

ON CHARACTERISTICS (Note 1)

DC Current Gain ($I_C = -0.1\text{ mAdc}, V_{CE} = -10\text{ Vdc}$) ($I_C = -1.0\text{ mAdc}, V_{CE} = -10\text{ Vdc}$) ($I_C = -10\text{ mAdc}, V_{CE} = -10\text{ Vdc}$) ($I_C = -150\text{ mAdc}, V_{CE} = -10\text{ Vdc}$) ($I_C = -500\text{ mAdc}, V_{CE} = -10\text{ Vdc}$)	h_{FE}	75 100 100 100 50	- 450 - 300 -	-
Collector–Emitter Saturation Voltage ($I_C = -150\text{ mAdc}, I_B = -15\text{ mAdc}$) ($I_C = -500\text{ mAdc}, I_B = -50\text{ mAdc}$)	$V_{CE(sat)}$	- -	-0.4 -1.6	Vdc
Base–Emitter Saturation Voltage ($I_C = -150\text{ mAdc}, I_B = -15\text{ mAdc}$) ($I_C = -500\text{ mAdc}, I_B = -50\text{ mAdc}$)	$V_{BE(sat)}$	-0.6 -	-1.3 -2.6	Vdc

SMALL–SIGNAL CHARACTERISTICS

Magnitude of Small–Signal Current Gain ($I_C = -20\text{ mAdc}, V_{CE} = -20\text{ Vdc}, f = 100\text{ MHz}$)	$ h_{fe} $	2.0	-	-
Small–Signal Current Gain ($I_C = -1.0\text{ mAdc}, V_{CE} = -10\text{ Vdc}, f = 1\text{ kHz}$)	h_{fe}	100	-	-
Output Capacitance ($V_{CB} = -10\text{ Vdc}, I_E = 0, 100\text{ kHz} \leq f \leq 1.0\text{ MHz}$)	C_{obo}	-	8.0	pF
Input Capacitance ($V_{EB} = -2.0\text{ Vdc}, I_C = 0, 100\text{ kHz} \leq f \leq 1.0\text{ MHz}$)	C_{ibo}	-	30	pF

SWITCHING CHARACTERISTICS

Turn–On Time (Reference Figure in MIL–PRF–19500/291)	t_{on}	-	45	ns
Turn–Off Time (Reference Figure in MIL–PRF–19500/291)	t_{off}	-	300	ns

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

1. Pulse Test: Pulse Width = 300 μs , Duty Cycle $\leq 2.0\%$.

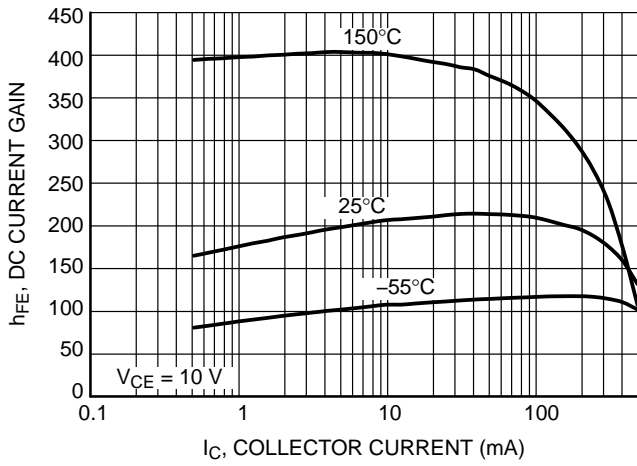


Figure 1. DC Current Gain

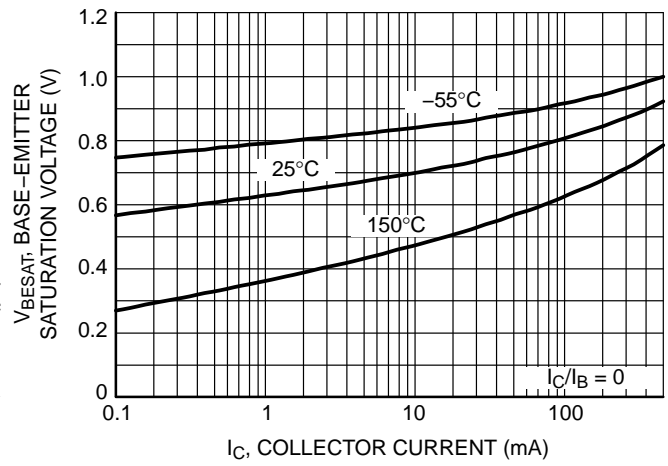


Figure 2. Base-Emitter Saturation Voltage

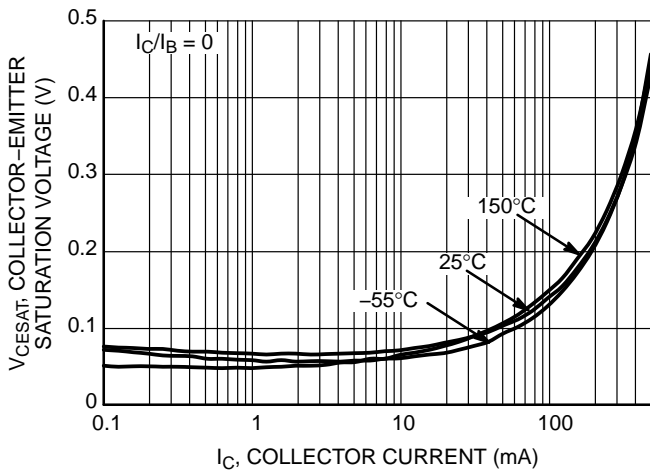


Figure 3. Collector-Emitter Saturation Voltage

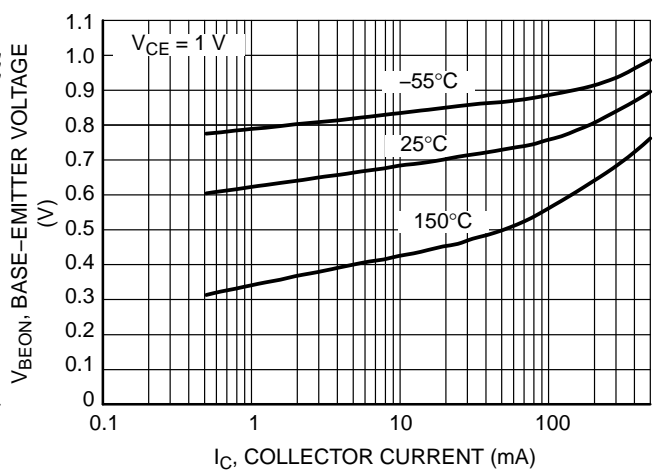


Figure 4. Base-Emitter Voltage

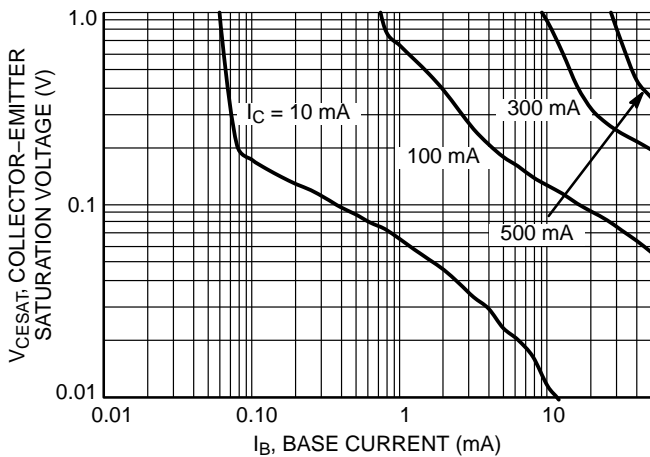


Figure 5. Collector Saturation Region

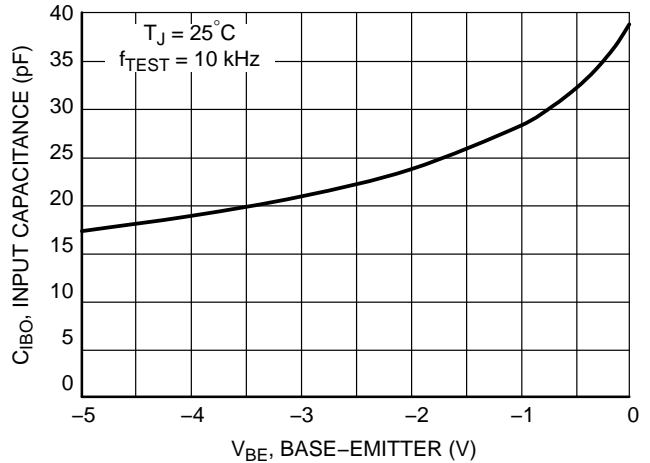


Figure 6. Input Capacitance

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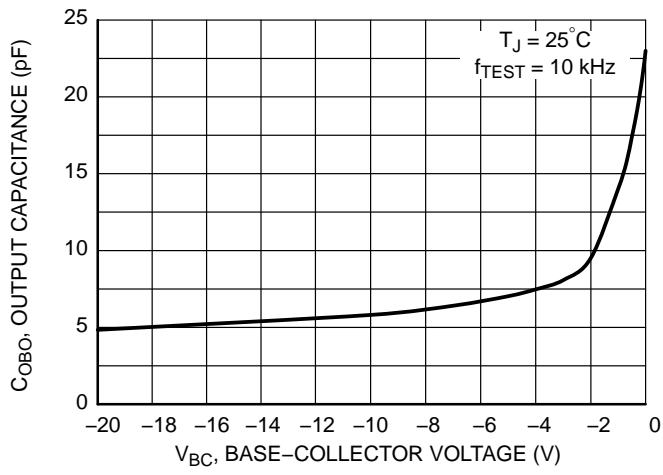


Figure 7. Output Capacitance

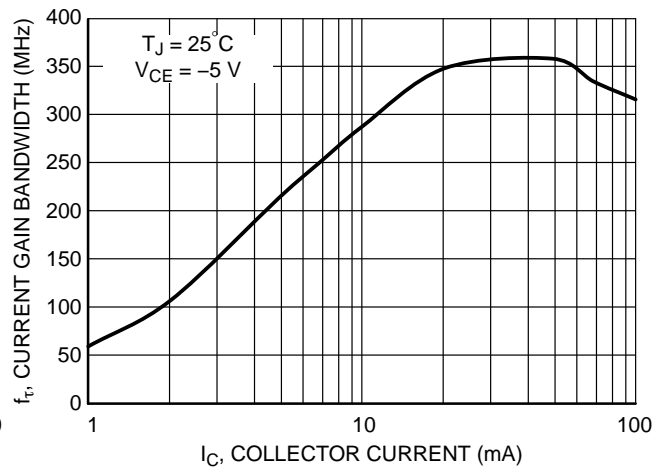


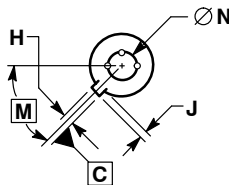
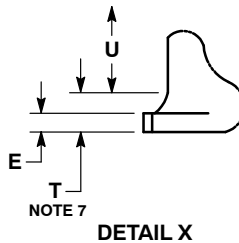
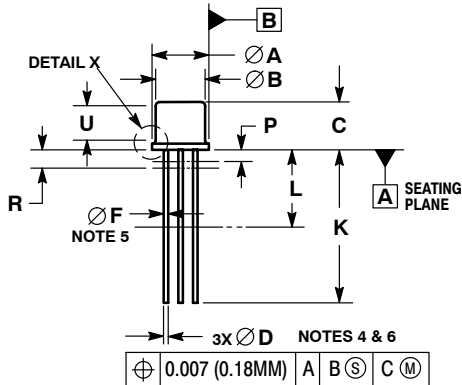
Figure 8. Current Gain Bandwidth Product



SCALE 1:1

TO-18
CASE 206AA
ISSUE A

DATE 21 AUG 2012



NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: INCHES.
3. DIMENSION J MEASURED FROM DIAMETER A TO EDGE.
4. LEAD TRUE POSITION TO BE DETERMINED AT THE GAUGE PLANE DEFINED BY DIMENSION R.
5. DIMENSION F APPLIES BETWEEN DIMENSION P AND L.
6. DIMENSION D APPLIES BETWEEN DIMENSION L AND K.
7. BODY CONTOUR OPTIONAL WITHIN ZONE DEFINED BY DIMENSIONS A, B, AND T.

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	5.31	5.84	0.209	0.230
B	4.52	4.95	0.178	0.195
C	4.32	5.33	0.170	0.210
D	0.41	0.53	0.016	0.021
E	---	0.76	---	0.030
F	0.41	0.48	0.016	0.019
H	0.91	1.17	0.036	0.046
J	0.71	1.22	0.028	0.048
K	12.70	19.05	0.500	0.750
L	6.35	---	0.250	---
M	45° BSC		45° BSC	
N	2.54 BSC		0.100 BSC	
P	---	1.27	---	0.050
R	1.37 BSC		0.054 BSC	
T	---	0.76	---	0.030
U	2.54	---	0.100	---

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

STYLE 4:
PIN 1. SOURCE
2. DRAIN
3. GATE & CASE

STYLE 7:
PIN 1. ANODE
2. BASE
3. CATHODE

STYLE 10:
PIN 1. BASE
2. EMITTER
3. BASE

STYLE 2:
PIN 1. SOURCE, SUBSTRATE
& CASE
2. GATE
3. DRAIN

STYLE 5:
PIN 1. EMITTER
2. BASE 1
3. BASE 2

STYLE 8:
PIN 1. GATE
2. ANODE 1
3. ANODE 2

STYLE 11:
PIN 1. DRAIN
2. GATE
3. SOURCE, SUBSTRATE

STYLE 3:
PIN 1. SOURCE
2. DRAIN
3. GATE

STYLE 6:
PIN 1. CATHODE
2. GATE
3. ANODE

STYLE 9:
PIN 1. ANODE 2
2. ANODE 1
3. GATE
(CONNECTED TO CASE)

STYLE 12:
PIN 1. SOURCE
2. GATE
3. DRAIN (CASE)

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