2N3634, 2N3634L, 2N3635, 2N3635L, 2N3636, 2N3636L, 2N3637, 2N3637L

Low Power Transistors

PNP Silicon

ON Semiconductor®

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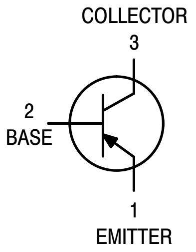
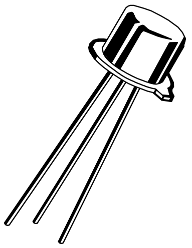
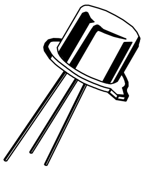




TO−5
CASE 205AA
STYLE 1
2N3634L
2N3635L
2N3636L
2N3637L



TO−39
CASE 205AB
STYLE 1
2N3634
2N3635
2N3636
2N3637

Features

- MIL−PRF−19500/357 Qualified
- Available as JAN, JANTX, JANTXV and JANHC

MAXIMUM RATINGS (T_A = 25°C unless otherwise noted)

Characteristic	Symbol	2N3634/L 2N3635/L	2N3636/L 2N3637/L	Unit
Collector−Emitter Voltage	V_{CEO}	−140	−175	Vdc
Collector−Base Voltage	V_{CBO}	−140	−175	Vdc
Emitter−Base Voltage	V_{EBO}	−5.0		Vdc
Collector Current − Continuous	I_C	1.0		Adc
Total Device Dissipation @ T_A = 25°C	P_T	1.0		W
Total Device Dissipation @ T_C = 25°C	P_T	5.0		W
Operating and Storage Junction Temperature Range	T_J, T_{stg}	−65 to +200		°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	175	°C/W
Thermal Resistance, Junction to Case	$R_{\theta JC}$	35	°C/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.

ORDERING INFORMATION

Level	Device	Package	Shipping
JAN JANTX JANTXV JANHC	2N3634	TO−39	Bulk
	2N3635		
	2N3636		
	2N3637		
	2N3634L	TO−5	Bulk
	2N3635L		
	2N3636L		
	2N3637L		

November, 2013 − Rev. 1

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

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector−Emitter Breakdown Voltage	$V_{(BR)CEO}$			V
(I_C = −10 mA) 2N3634, 2N3635		−140	−	
2N3636, 2N3637		−175	−	
Emitter−Base Cutoff Current	I_{EBO}			
(V_{EB} = −3.0 V)		−	−50	nA
(V_{EB} = −5.0 V)		−	−10	μA
Collector−Emitter Cutoff Current	I_{CEO}			
(V_{CE} = −100 V)		−	−10	μA
Collector−Base Cutoff Current	I_{CBO}			
(V_{CB} = −100 V)		−	−100	nA
(V_{CB} = −140 V) 2N3634, 2N3635		−	−10	μA
(V_{CB} = −175 V) 2N3636, 2N3637		−	−10	μA
ON CHARACTERISTICS (Note 1)				
DC Current Gain 2N3634, 2N3636	h_{FE}			−
(I_C = −0.1 mA, V_{CE} = −10 V)		25	−	
(I_C = −1.0 mA, V_{CE} = −10 V)		45	−	
(I_C = −10 mA, V_{CE} = −10 V)		50	−	
(I_C = −50 mA, V_{CE} = −10 V)		50	150	
(I_C = −150 mA, V_{CE} = −10 V)		30	−	
DC Current Gain 2N3635, 2N3637	h_{FE}			−
(I_C = −0.1 mA, V_{CE} = −10 V)		55	−	
(I_C = −1.0 mA, V_{CE} = −10 V)		90	−	
(I_C = −10 mA, V_{CE} = −10 V)		100	−	
(I_C = −50 mA, V_{CE} = −10 V)		100	300	
(I_C = −150 mA, V_{CE} = −10 V)		60	−	
Collector−Emitter Saturation Voltage	$V_{CE(sat)}$			V
(I_C = −10 mA, I_B = −1.0 mA)		−	−0.3	
(I_C = −50 mA, I_B = −5.0 mA)		−	−0.6	
Base−Emitter Saturation Voltage	$V_{BE(sat)}$			V
(I_C = −10 mA, I_B = −1.0 mA)		−	−0.8	
(I_C = −50 mA, I_B = −5.0 mA)		−0.65	−0.9	
SMALL−SIGNAL CHARACTERISTICS				
Magnitude of Small−Signal Current Gain	$\|h_{fe}\|$			−
(I_C = −30 mA, V_{CE} = −30 V, f = 100 MHz) 2N3634, 2N3636		1.5	8.0	
2N3635, 2N3637		2.0	8.5	
Small−Signal Current Gain	h_{fe}			−
(I_C = −10 mA, V_{CE} = −10 V, f = 1 kHz) 2N3634, 2N3636		40	160	
2N3635, 2N3637		80	320	
Output Capacitance	C_{obo}			pF
(V_{CB} = −20 V, I_E = 0 A, 100 kHz ≤ f ≤ 1.0 MHz)		−	10	
Input Capacitance	C_{ibo}			pF
(V_{EB} = −1.0 V, I_C = 0 A, 100 kHz ≤ f ≤ 1.0 MHz)		−	75	
Noise Figure	NF			dB
(V_{CE} = −10 V, I_C = −0.5 mA, R_g = 1 kΩ, f = 100 Hz)		−	5.0	
(V_{CE} = −10 V, I_C = −0.5 mA, R_g = 1 kΩ, f = 1.0 kHz)		−	3.0	
(V_{CE} = −10 V, I_C = −0.5 mA, R_g = 1 kΩ, f = 10 kHz)		−	3.0	
SWITCHING CHARACTERISTICS				
Delay Time (Reference Figure 11 in MIL−PRF−19500/357)	t_d	−	100	ns
Rise Time (Reference Figure 11 in MIL−PRF−19500/357)	t_r	−	100	ns
Storage Time (Reference Figure 11 in MIL−PRF−19500/357)	t_s	−	500	ns
Fall Time (Reference Figure 11 in MIL−PRF−19500/357)	t_f	−	150	ns
Turn−Off Time (Reference Figure 11 in MIL−PRF−19500/357)	t_{off}	−	600	ns

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

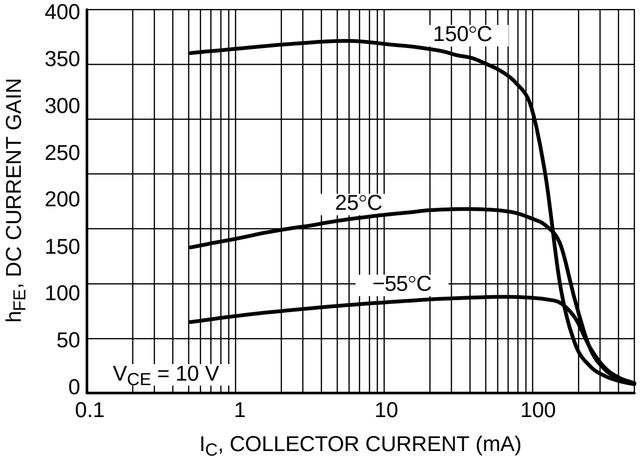


Figure 1. DC Current Gain

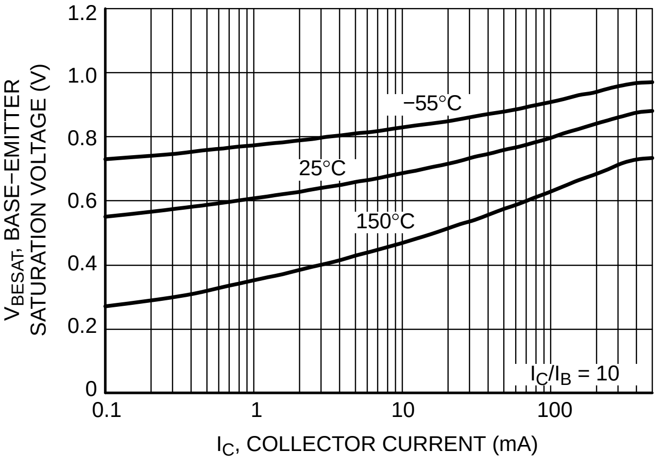


Figure 2. Base−Emitter Saturation Voltage

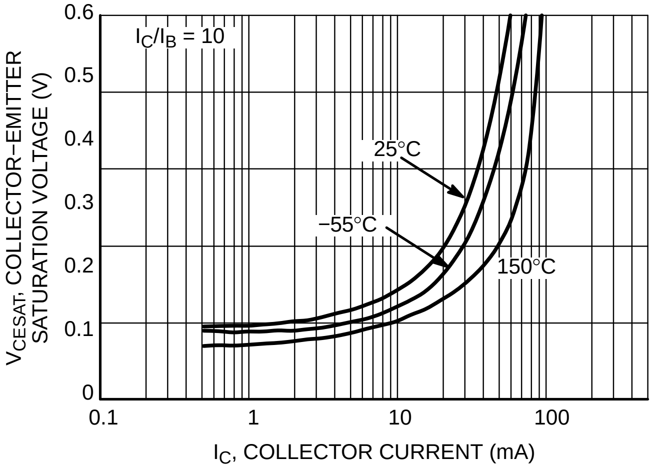


Figure 3. Collector−Emitter Saturation Voltage

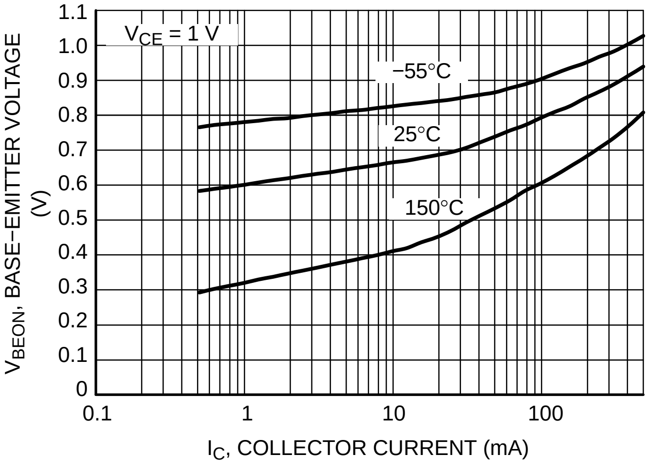


Figure 4. Base−Emitter Voltage

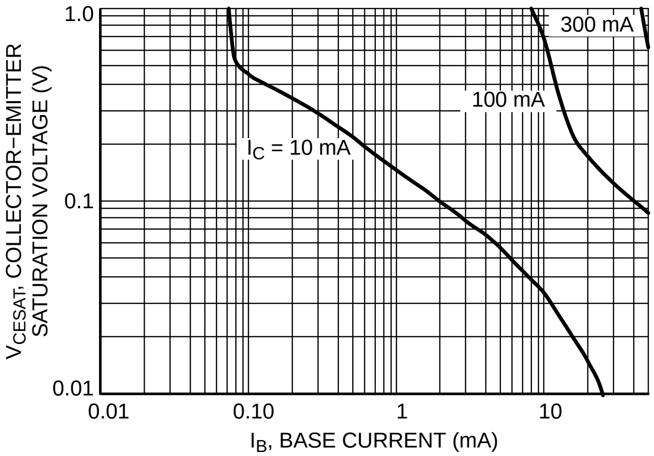


Figure 5. Collector Saturation Region

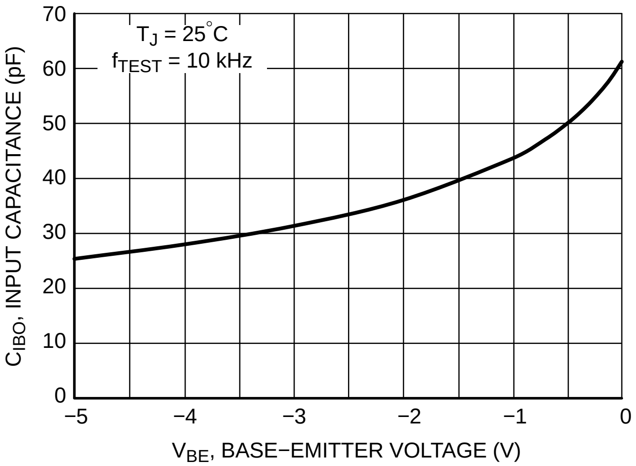


Figure 6. Input Capacitance

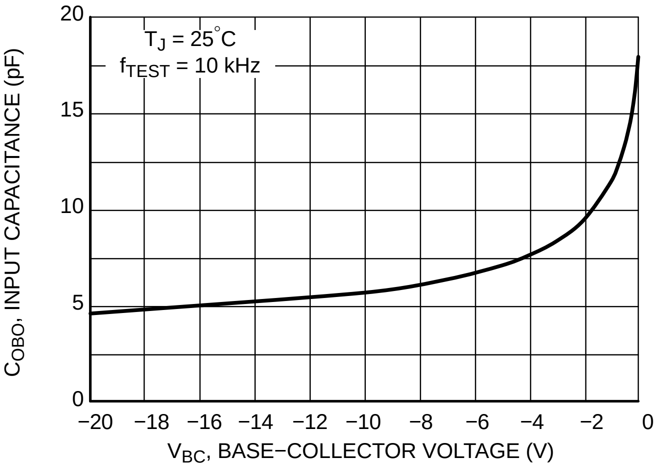


Figure 7. Output Capacitance

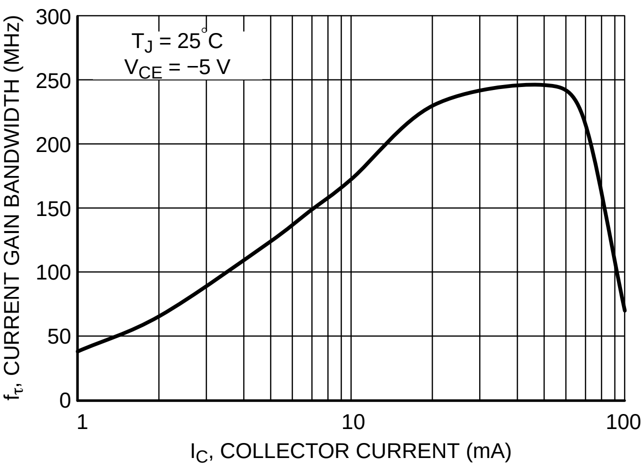
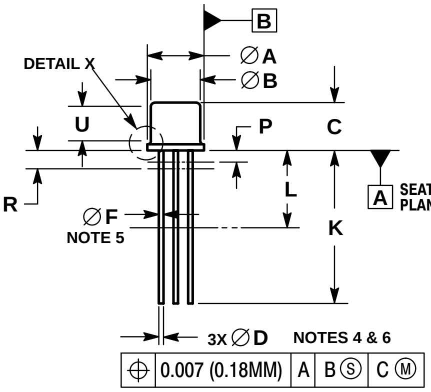


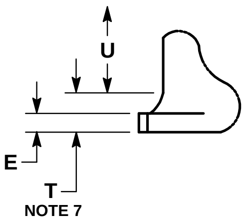
Figure 8. Current Gain Bandwidth Product

PACKAGE DIMENSIONS

TO−5 3−Lead

CASE 205AA
ISSUE B



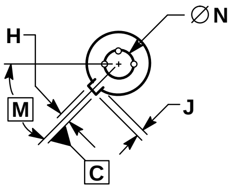


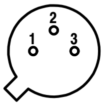
DETAIL X

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 GUAGE 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.
8. DIMENSION B SHALL NOT VARY MORE THAN 0.010 IN ZONE P.

	MILLIMETERS		INCHES	
DIM	MIN	MAX	MIN	MAX
A	8.89	9.40	0.350	0.370
B	8.00	8.51	0.315	0.335
C	6.10	6.60	0.240	0.260
D	0.41	0.53	0.016	0.021
E	0.23	3.18	0.009	0.125
F	0.41	0.48	0.016	0.019
H	0.71	0.86	0.028	0.034
J	0.73	1.02	0.029	0.040
K	38.10	44.45	1.500	1.750
L	6.35	---	0.250	---
M	45° BSC		45° BSC	
N	5.08 BSC		0.200 BSC	
P	---	1.27	---	0.050
R	1.37 BSC		0.054 BSC	
T	---	0.76	---	0.030
U	2.54	---	0.100	---



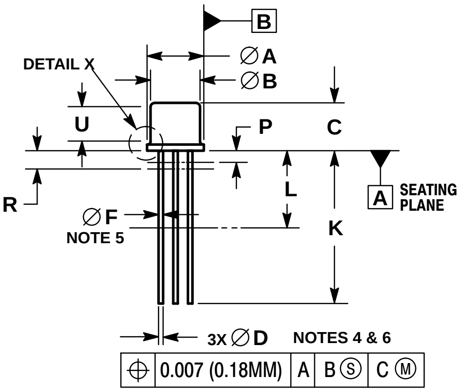


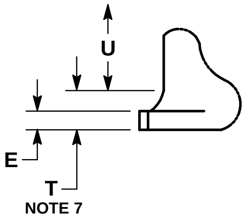
LEAD IDENTIFICATION
DETAIL

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

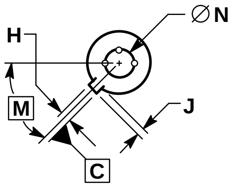
PACKAGE DIMENSIONS

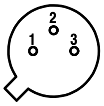
TO−39 3−Lead
CASE 205AB
ISSUE A





DETAIL X





LEAD IDENTIFICATION DETAIL

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	MILLIMETERS		INCHES	
DIM	MIN	MAX	MIN	MAX
A	8.89	9.40	0.350	0.370
B	8.00	8.51	0.315	0.335
C	6.10	6.60	0.240	0.260
D	0.41	0.48	0.016	0.019
E	0.23	3.18	0.009	0.125
F	0.41	0.48	0.016	0.019
H	0.71	0.86	0.028	0.034
J	0.73	1.02	0.029	0.040
K	12.70	14.73	0.500	0.580
L	6.35	---	0.250	---
M	45° BSC		45° BSC	
N	5.08 BSC		0.200 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

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