

2N2219, 2N2219A, 2N2219AL

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

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector–Emitter Breakdown Voltage ($I_E = 10\text{ mA}$)	$V_{(BR)CEO}$	30 50	– –	Vdc
Emitter–Base Cutoff Current ($V_{EB} = 5.0\text{ Vdc}$) ($V_{EB} = 6.0\text{ Vdc}$) ($V_{EB} = 4.0\text{ Vdc}$)	I_{EBO}	– – –	10 10 10	μAdc μAdc nAdc
Collector–Emitter Cutoff Current ($V_{CE} = 30\text{ Vdc}$) ($V_{CE} = 50\text{ Vdc}$)	I_{CES}	– –	10 10	nAdc nAdc
Collector–Base Cutoff Current ($V_{CB} = 50\text{ Vdc}$) ($V_{CB} = 60\text{ Vdc}$) ($V_{CB} = 60\text{ Vdc}$) ($V_{CB} = 75\text{ Vdc}$)	I_{CBO}	– – – –	10 10 10 10	nAdc μAdc nAdc μAdc

ON CHARACTERISTICS (Note 1)

DC Current Gain ($I_C = 0.1\text{ mA}$, $V_{CE} = 10\text{ Vdc}$) ($I_C = 1.0\text{ mA}$, $V_{CE} = 10\text{ Vdc}$) ($I_C = 10\text{ mA}$, $V_{CE} = 10\text{ Vdc}$) ($I_C = 150\text{ mA}$, $V_{CE} = 10\text{ Vdc}$) ($I_C = 500\text{ mA}$, $V_{CE} = 10\text{ Vdc}$)	2N2219 2N2219A/AL 2N2219 2N2219A/AL 2N2219 2N2219A/AL 2N2219A/AL 2N2219A/AL	h_{FE}	35 50 50 75 75 100 100 30	– – 325 325 – – 300 –	–
Collector–Emitter Saturation Voltage ($I_C = 150\text{ mA}$, $I_B = 15\text{ mA}$) ($I_C = 500\text{ mA}$, $I_B = 50\text{ mA}$)	2N2219 2N2219A/AL 2N2219 2N2219A/AL	$V_{CE(sat)}$	– – – –	0.4 0.3 1.6 1.0	Vdc
Base–Emitter Saturation Voltage ($I_C = 150\text{ mA}$, $I_B = 15\text{ mA}$) ($I_C = 500\text{ mA}$, $I_B = 50\text{ mA}$)	2N2219 2N2219A/AL 2N2219 2N2219A/AL	$V_{BE(sat)}$	0.6 0.6 – –	1.3 1.2 2.6 2.0	Vdc

SMALL–SIGNAL CHARACTERISTICS

Magnitude of Small–Signal Current Gain ($I_C = 20\text{ mA}$, $V_{CE} = 20\text{ Vdc}$, $f = 100\text{ MHz}$)	$ h_{fe} $	2.5	12	–
Small–Signal Current Gain ($I_C = 1.0\text{ mA}$, $V_{CE} = 10\text{ Vdc}$, $f = 1\text{ kHz}$)	h_{fe}	50 75	– –	–
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 ($V_{EB} = 0.5\text{ Vdc}$, $I_C = 0$, $100\text{ kHz} \leq f \leq 1.0\text{ MHz}$)	C_{ibo}	–	25	pF

SWITCHING CHARACTERISTICS

Turn–On Time (Reference Figure in MIL–PRF–19500/251)	t_{on}	– –	40 35	ns
Turn–Off Time (Reference Figure in MIL–PRF–19500/251)	t_{off}	– –	250 300	ns

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

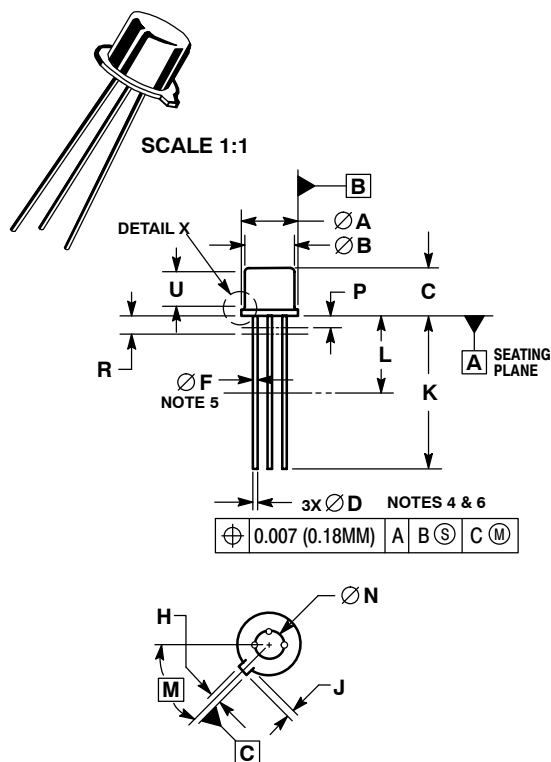
MECHANICAL CASE OUTLINE PACKAGE DIMENSIONS

ON Semiconductor®

ON

TO-5 3-Lead CASE 205AA ISSUE B

DATE 06 JUL 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.
8. DIMENSION B SHALL NOT VARY MORE THAN 0.010 IN ZONE P.

DIM	MILLIMETERS		INCHES	
	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	---

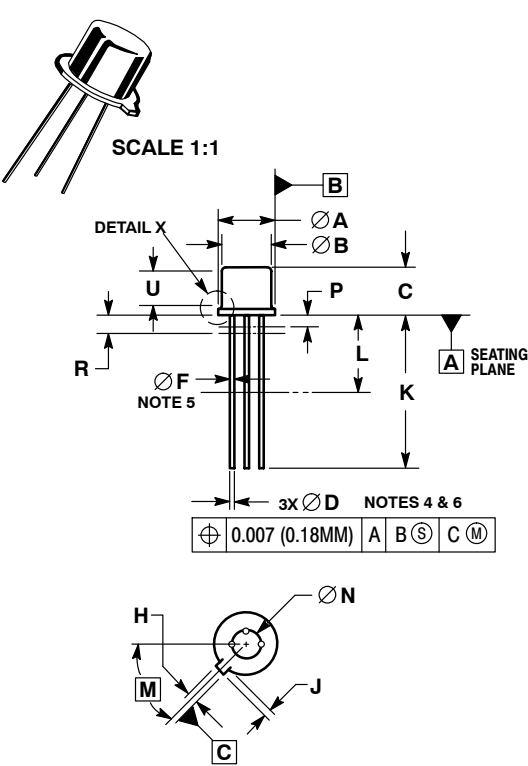
STYLE 1:
PIN 1. EMITTER
2. BASE
3. COLLECTOR

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DESCRIPTION:	TO-5 3-LEAD	
		PAGE 1 OF 2

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MECHANICAL CASE OUTLINE
PACKAGE DIMENSIONS



TO-39 3-Lead
CASE 205AB
ISSUE A


DATE 25 JUN 2012


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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
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