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

Characteristic		Symbol	Min	Max	Unit
OFF CHARACTERISTICS					
Collector−Emitter Breakdown Voltage		$V_{(BR)CEO}$			Vdc
(I_E = 10 mAdc)	2N2219		30	–	
	2N2219A/AL		50	–	
Emitter−Base Cutoff Current		I_{EBO}			
(V_{EB} = 5.0 Vdc)	2N2219		–	10	μAdc
(V_{EB} = 6.0 Vdc)	2N2219A/AL		–	10	μAdc
(V_{EB} = 4.0 Vdc)	All		–	10	nAdc
Collector−Emitter Cutoff Current		I_{CES}			
(V_{CE} = 30 Vdc)	2N2219		–	10	nAdc
(V_{CE} = 50 Vdc)	2N2219A/AL		–	10	nAdc
Collector−Base Cutoff Current		I_{CBO}			
(V_{CB} = 50 Vdc)	2N2219		–	10	nAdc
(V_{CB} = 60 Vdc)	2N2219		–	10	μAdc
(V_{CB} = 60 Vdc)	2N2219A/AL		–	10	nAdc
(V_{CB} = 75 Vdc)	2N2219A/AL		–	10	μAdc
ON CHARACTERISTICS (Note 1)					
DC Current Gain		h_{FE}			–
(I_C = 0.1 mAdc, V_{CE} = 10 Vdc)	2N2219		35	–	
	2N2219A/AL		50	–	
(I_C = 1.0 mAdc, V_{CE} = 10 Vdc)	2N2219		50	325	
	2N2219A/AL		75	325	
(I_C = 10 mAdc, V_{CE} = 10 Vdc)	2N2219		75	–	
	2N2219A/AL		100	–	
(I_C = 150 mAdc, V_{CE} = 10 Vdc)	2N2219/A/AL		100	300	
(I_C = 500 mAdc, V_{CE} = 10 Vdc)	2N2219/A/AL		30	–	
Collector−Emitter Saturation Voltage		$V_{CE(sat)}$			Vdc
(I_C = 150 mAdc, I_B = 15 mAdc)	2N2219		–	0.4	
	2N2219A/AL		–	0.3	
(I_C = 500 mAdc, I_B = 50 mAdc)	2N2219		–	1.6	
	2N2219A/AL		–	1.0	
Base−Emitter Saturation Voltage		$V_{BE(sat)}$			Vdc
(I_C = 150 mAdc, I_B = 15 mAdc)	2N2219		0.6	1.3	
	2N2219A/AL		0.6	1.2	
(I_C = 500 mAdc, I_B = 50 mAdc)	2N2219		–	2.6	
	2N2219A/AL		–	2.0	
SMALL−SIGNAL CHARACTERISTICS					
Magnitude of Small−Signal Current Gain		$\|h_{fe}\|$			–
(I_C = 20 mAdc, V_{CE} = 20 Vdc, f = 100 MHz)			2.5	12	
Small−Signal Current Gain		h_{fe}			–
(I_C = 1.0 mAdc, V_{CE} = 10 Vdc, f = 1 kHz)	2N2219		50	–	
	2N2219A/AL		75	–	
Output Capacitance		C_{obo}			pF
(V_{CB} = 10 Vdc, I_E = 0, 100 kHz ≤ f ≤ 1.0 MHz)			–	8.0	
Input Capacitance		C_{ibo}			pF
(V_{EB} = 0.5 Vdc, I_C = 0, 100 kHz ≤ f ≤ 1.0 MHz)			–	25	
SWITCHING CHARACTERISTICS					
Turn−On Time		t_{on}			ns
(Reference Figure in MIL−PRF−19500/251)	2N2219		–	40	
	2N2219A/AL		–	35	
Turn−Off Time		t_{off}			ns
(Reference Figure in MIL−PRF−19500/251)	2N2219		–	250	
	2N2219A/AL		–	300	

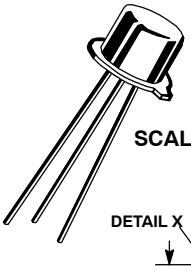
1. Pulse Test: Pulse Width = 300 μs, Duty Cycle ≤ 2.0%.

MECHANICAL CASE OUTLINE
PACKAGE DIMENSIONS

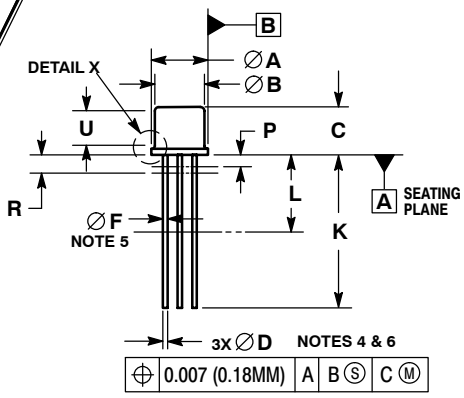
ON Semiconductor®

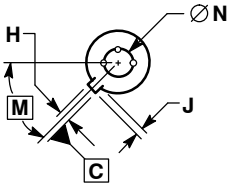
TO–5 3–Lead
CASE 205AA
ISSUE B

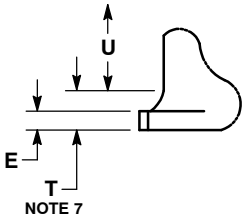
DATE 06 JUL 2012



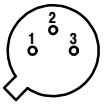
SCALE 1:1







DETAIL X



LEAD IDENTIFICATION DETAIL

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

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	---

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STATUS:	**ON SEMICONDUCTOR STANDARD**	
NEW STANDARD:		
DESCRIPTION:	**TO–5 3–LEAD**	**PAGE 1 OF 2**

ISSUE	REVISION	DATE
O	RELEASED FOR PRODUCTION. REQ. BY B. JENSEN.	18 MAR 2010
A	CHANGED DIMENSION “D” MAX TO 0.53 MM (0.021 IN). REQ. BY B. JENSEN.	10 AUG 2010
B	MADE ISOMETRIC IMAGE LARGER TO REFLECT ACTUAL SIZE. REQ. BY J. FULTON.	06 JUL 2012

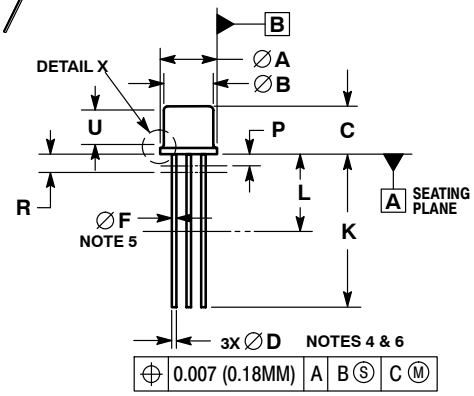
MECHANICAL CASE OUTLINE
PACKAGE DIMENSIONS

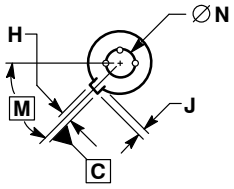
ON Semiconductor®

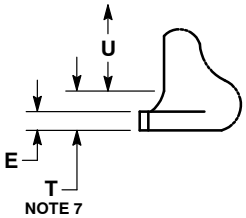
TO−39 3−Lead
CASE 205AB
ISSUE A

DATE 25 JUN 2012

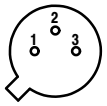
SCALE 1:1







DETAIL X



LEAD IDENTIFICATION DETAIL

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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
U	2.54	---	0.100	---

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STATUS:	ON SEMICONDUCTOR STANDARD	
NEW STANDARD:		
DESCRIPTION:	TO−39 3−LEAD	PAGE 1 OF 2

ISSUE	REVISION	DATE
O	RELEASED FOR PRODUCTION. REQ. BY B. JENSEN.	18 MAR 2010
A	MADE ISOMETRIC IMAGE LARGER TO REFLECT ACTUAL SIZE. REQ. BY J. FULTON.	25 JUN 2012

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