



**THE DATASHEET OF**  
**2N5109**



**2N5109**  
**SILICON**  
**NPN RF TRANSISTOR**



**TO-39 CASE**

**DESCRIPTION:**

The CENTRAL SEMICONDUCTOR 2N5109 is a silicon NPN epitaxial planar RF transistor mounted in a hermetically sealed package designed for high frequency amplifier applications.

**MARKING: FULL PART NUMBER**

**MAXIMUM RATINGS:** ( $T_A=25^\circ\text{C}$  unless otherwise noted)

	SYMBOL		UNITS
Collector-Base Voltage	$V_{CBO}$	40	V
Collector-Emitter Voltage	$V_{CEO}$	20	V
Emitter-Base Voltage	$V_{EBO}$	3.0	V
Continuous Collector Current	$I_C$	400	mA
Continuous Base Current	$I_B$	400	mA
Power Dissipation	$P_D$	1.0	W
Power Dissipation ( $T_C=75^\circ\text{C}$ )	$P_D$	2.5	W
Operating and Storage Junction Temperature	$T_J, T_{stg}$	-65 to +200	$^\circ\text{C}$

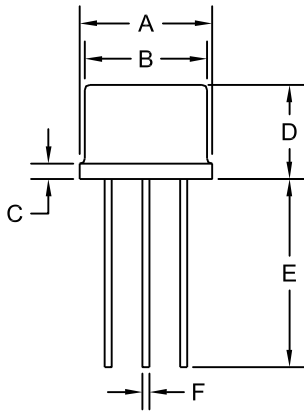
**ELECTRICAL CHARACTERISTICS:** ( $T_A=25^\circ\text{C}$  unless otherwise noted)

SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNITS
$I_{CEV}$	$V_{CE}=35\text{V}, V_{BE}=1.5\text{V}$			5.0	mA
$I_{CEV}$	$V_{CE}=15\text{V}, V_{BE}=1.5\text{V}, T_C=150^\circ\text{C}$			5.0	mA
$I_{CEO}$	$V_{CE}=15\text{V}$			20	$\mu\text{A}$
$I_{EBO}$	$V_{EB}=3.0\text{V}$			100	$\mu\text{A}$
$BV_{CBO}$	$I_C=0.1\text{mA}$	40			V
$BV_{CER}$	$I_C=5.0\text{mA}, R_{BE}=10\Omega$	40			V
$BV_{CEO}$	$I_C=5.0\text{mA}$	20			V
$V_{CE(SAT)}$	$I_C=100\text{mA}, I_B=10\text{mA}$			0.5	V
$h_{FE}$	$V_{CE}=15\text{V}, I_C=50\text{mA}$	40		210	
$h_{FE}$	$V_{CE}=5.0\text{V}, I_C=360\text{mA}$	5.0			
$f_T$	$V_{CE}=15\text{V}, I_C=50\text{mA}, f=200\text{MHz}$	1200			MHz
$C_{ob}$	$V_{CB}=15\text{V}, I_E=0, f=1.0\text{MHz}$			3.5	pF
NF	$V_{CE}=15\text{V}, I_C=10\text{mA}, f=200\text{MHz}$		3.0		dB
GPE	$V_{CE}=15\text{V}, I_C=50\text{mA}, f=200\text{MHz}$	11			dB

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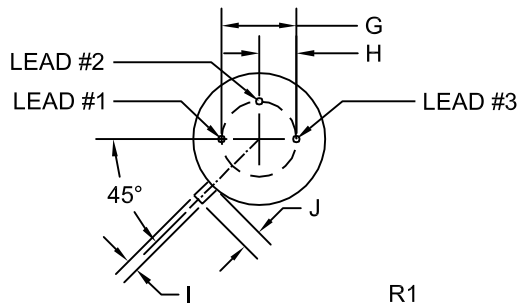


TO-39 CASE - MECHANICAL OUTLINE



SYMBOL	DIMENSIONS			
	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A (DIA)	0.335	0.370	8.51	9.40
B (DIA)	0.315	0.335	8.00	8.51
C	-	0.040	-	1.02
D	0.240	0.260	6.10	6.60
E	0.500	-	12.70	-
F (DIA)	0.016	0.021	0.41	0.53
G (DIA)	0.200		5.08	
H	0.100		2.54	
I	0.028	0.034	0.71	0.86
J	0.029	0.045	0.74	1.14

TO-39 (REV: R1)



LEAD CODE:

- 1) Emitter
- 2) Base
- 3) Collector

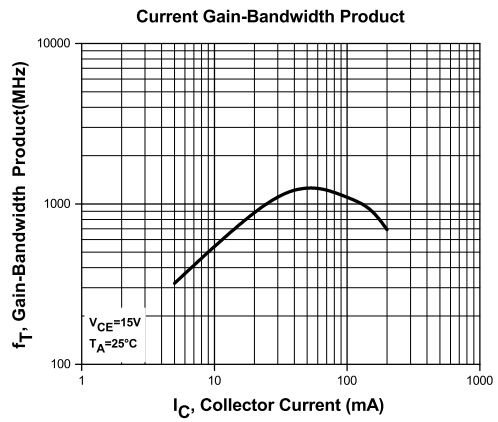
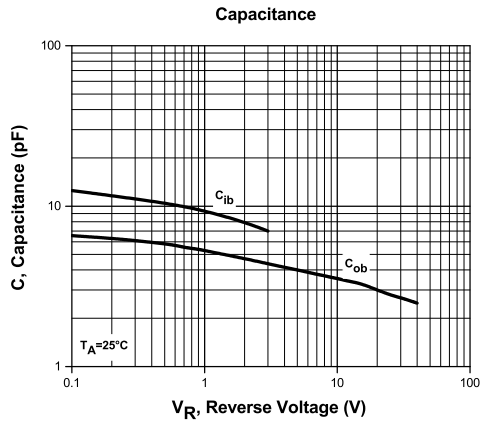
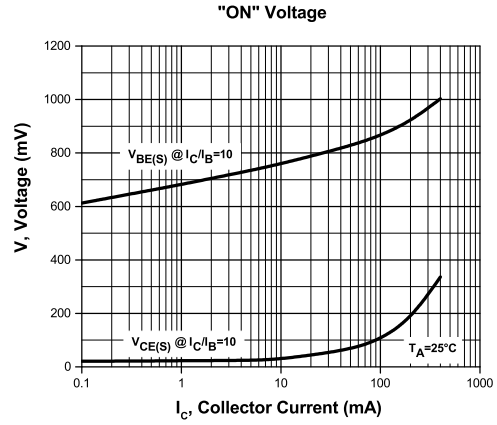
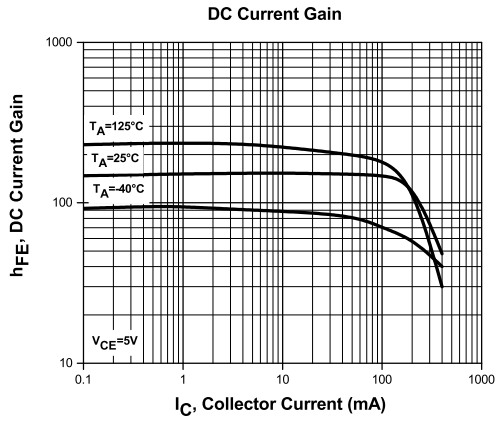
MARKING: FULL PART NUMBER

R5 (4-February 2016)

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TYPICAL ELECTRICAL CHARACTERISTICS

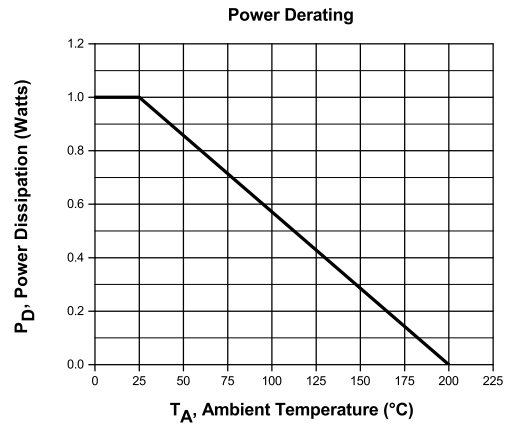


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### TYPICAL ELECTRICAL CHARACTERISTICS



R5 (4-February 2016)

## OUTSTANDING SUPPORT AND SUPERIOR SERVICES



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### PRODUCT SUPPORT

Central's operations team provides the highest level of support to insure product is delivered on-time.

- Supply management (Customer portals)
- Inventory bonding
- Consolidated shipping options
- Custom bar coding for shipments
- Custom product packing

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### DESIGNER SUPPORT/SERVICES

Central's applications engineering team is ready to discuss your design challenges. Just ask.

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- SPICE models
- Custom electrical curves
- Environmental regulation compliance
- Customer specific screening
- Up-screening capabilities
- Special wafer diffusions
- PbSn plating options
- Package details
- Application notes
- Application and design sample kits
- Custom product and package development

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### REQUESTING PRODUCT PLATING

1. If requesting Tin/Lead plated devices, add the suffix "TIN/LEAD" to the part number when ordering (example: 2N2222A TIN/LEAD).
2. If requesting Lead (Pb) Free plated devices, add the suffix "PBFREE" to the part number when ordering (example: 2N2222A PBFREE).

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### CONTACT US

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