

2N4231A	2N4232A	2N4233A	NPN
2N6312	2N6313	2N6314	PNP

**COMPLEMENTARY
SILICON POWER TRANSISTORS**



TO-66 CASE



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DESCRIPTION:

The CENTRAL SEMICONDUCTOR 2N4231A, 2N6312 series devices are complementary silicon power transistors, manufactured by the epitaxial base process, designed for general purpose amplifier and switching applications.

MARKING: FULL PART NUMBER

MAXIMUM RATINGS: ($T_C=25^\circ\text{C}$)

Collector-Base Voltage
Collector-Emitter Voltage
Emitter-Base Voltage
Continuous Collector Current
Peak Collector Current
Continuous Base Current
Power Dissipation
Operating and Storage Junction Temperature
Thermal Resistance

SYMBOL	2N4231A	2N4232A	2N4233A	UNITS
	2N6312	2N6313	2N6314	
V_{CBO}	40	60	80	V
V_{CEO}	40	60	80	V
V_{EBO}		5.0		V
I_C		5.0		A
I_{CM}		10		A
I_B		2.0		A
P_D		75		W
T_J, T_{stg}		-65 to +200		$^\circ\text{C}$
Θ_{JC}		2.32		$^\circ\text{C/W}$

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

SYMBOL	TEST CONDITIONS	MIN	MAX	UNITS
I_{CBO}	$V_{CB}=\text{Rated } V_{CBO}$		50	μA
I_{CEO}	$V_{CE}=30\text{V}$ (2N4231A, 2N6312)		1.0	mA
I_{CEO}	$V_{CE}=50\text{V}$ (2N4232A, 2N6313)		1.0	mA
I_{CEO}	$V_{CE}=70\text{V}$ (2N4233A, 2N6314)		1.0	mA
I_{CEV}	$V_{CE}=\text{Rated } V_{CEO}, V_{BE}=1.5\text{V}$		0.1	mA
I_{CEV}	$V_{CE}=\text{Rated } V_{CEO}, V_{BE}=1.5\text{V}, T_C=150^\circ\text{C}$		1.0	mA
I_{EBO}	$V_{EB}=5.0\text{V}$		0.5	mA
BV_{CEO}	$I_C=100\text{mA}$, (2N4231A, 2N6312)	40		V
BV_{CEO}	$I_C=100\text{mA}$, (2N4232A, 2N6313)	60		V
BV_{CEO}	$I_C=100\text{mA}$, (2N4233A, 2N6314)	80		V
$V_{CE(\text{SAT})}$	$I_C=1.5\text{A}, I_B=0.15\text{A}$		0.7	V
$V_{CE(\text{SAT})}$	$I_C=3.0\text{A}, I_B=0.3\text{A}$		2.0	V
$V_{CE(\text{SAT})}$	$I_C=5.0\text{A}, I_B=1.25\text{A}$		4.0	V
$V_{BE(\text{ON})}$	$V_{CE}=2.0\text{V}, I_C=1.5\text{A}$		1.4	V
h_{FE}	$V_{CE}=2.0\text{V}, I_C=0.5\text{A}$	40		
h_{FE}	$V_{CE}=2.0\text{V}, I_C=1.5\text{A}$	25	100	
h_{FE}	$V_{CE}=2.0\text{V}, I_C=3.0\text{A}$	10		
h_{FE}	$V_{CE}=4.0\text{V}, I_C=5.0\text{A}$	4.0		
h_{fe}	$V_{CE}=10\text{V}, I_C=0.5\text{A}, f=1.0\text{kHz}$	20		
f_T	$V_{CE}=10\text{V}, I_C=0.5\text{A}, f=1.0\text{MHz}$	4.0		MHz
C_{ob}	$V_{CB}=10\text{V}, I_E=0, f=100\text{kHz}$		300	pF

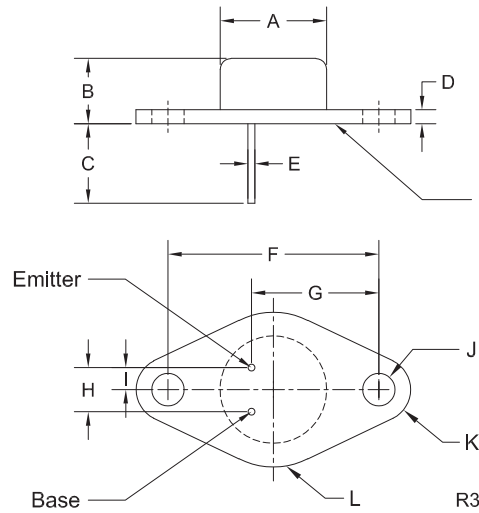
R1 (2-September 2014)

2N4231A 2N4232A 2N4233A NPN
2N6312 2N6313 2N6314 PNP

**COMPLEMENTARY
SILICON POWER TRANSISTORS**



TO-66 CASE - MECHANICAL OUTLINE



Seating Plane:
The seating plane must be
within 0.001" concave to
0.004" convex within
0.600" diameter from the
center of the device.

**MARKING:
FULL PART NUMBER**

DIMENSIONS				
SYMBOL	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A (DIA)	0.470	0.500	11.94	12.70
B	0.250	0.340	6.35	8.64
C	0.360	-	9.14	-
D	0.050	0.075	1.27	1.91
E (DIA)	0.028	0.034	0.71	0.86
F	0.956	0.964	24.28	24.48
G	0.570	0.590	14.48	14.99
H	0.190	0.210	4.83	5.33
I	0.093	0.107	2.36	2.72
J (DIA)	0.142	0.152	3.61	3.86
K (RAD)	0.141		3.58	
L (RAD)	0.345		8.76	

TO-66 (REV:R3)

R1 (2-September 2014)

OUTSTANDING SUPPORT AND SUPERIOR SERVICES



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

DESIGNER SUPPORT/SERVICES

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

- Free quick ship samples (2nd day air)
- Online technical data and parametric search
- 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

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).

CONTACT US

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[TIN/LEAD](#)