

PN2221 PN2221A  
PN2222 PN2222A

**NPN SILICON TRANSISTOR**



**TO-92 CASE**



[www.centra-semi.com](http://www.centra-semi.com)

**DESCRIPTION:**

The CENTRAL SEMICONDUCTOR PN2221, PN2222 series types are silicon NPN epitaxial planar transistors designed for small signal, general purpose switching applications.

**MARKING: FULL PART NUMBER**

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

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

SYMBOL	PN2221	PN2221A	UNITS
	PN2222	PN2222A	
$V_{CBO}$	60	75	V
$V_{CEO}$	30	40	V
$V_{EBO}$	5.0	6.0	V
$I_C$		800	mA
$P_D$		625	mW
$T_J, T_{stg}$	-65 to +150		$^\circ\text{C}$

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

SYMBOL	TEST CONDITIONS	PN2221		PN2221A		UNITS
		PN2222	PN2222A	PN2221	PN2221A	
		MIN	MAX	MIN	MAX	
$I_{CBO}$	$V_{CB}=50\text{V}$	-	10	-	-	nA
$I_{CBO}$	$V_{CB}=60\text{V}$	-	-	-	10	nA
$I_{CEV}$	$V_{CE}=60\text{V}, V_{EB}=3.0\text{V}$	-	-	-	10	nA
$I_{EBO}$	$V_{EB}=3.0\text{V}$	-	10	-	10	nA
$BV_{CBO}$	$I_C=10\mu\text{A}$	60	-	75	-	V
$BV_{CEO}$	$I_C=10\text{mA}$	30	-	40	-	V
$BV_{EBO}$	$I_E=10\mu\text{A}$	5.0	-	6.0	-	V
$V_{CE(SAT)}$	$I_C=150\text{mA}, I_B=15\text{mA}$	-	0.4	-	0.3	V
$V_{CE(SAT)}$	$I_C=500\text{mA}, I_B=50\text{mA}$	-	1.6	-	1.0	V
$V_{BE(SAT)}$	$I_C=150\text{mA}, I_B=15\text{mA}$	-	1.3	-	1.2	V
$V_{BE(SAT)}$	$I_C=500\text{mA}, I_B=50\text{mA}$	-	2.6	-	2.0	V
		PN2221		PN2222		
		PN2221A		PN2222A		
		MIN	MAX	MIN	MAX	
$h_{FE}$	$V_{CE}=10\text{V}, I_C=0.1\text{mA}$	20	-	35	-	
$h_{FE}$	$V_{CE}=10\text{V}, I_C=1.0\text{mA}$	25	-	50	-	
$h_{FE}$	$V_{CE}=10\text{V}, I_C=10\text{mA}$	35	-	75	-	
$h_{FE}$	$V_{CE}=10\text{V}, I_C=150\text{mA}$	40	120	100	300	
$h_{FE}$	$V_{CE}=1.0\text{V}, I_C=150\text{mA}$	20	-	50	-	
$h_{FE}$	$V_{CE}=10\text{V}, I_C=500\text{mA}$ (PN2221, PN2222)	20	-	30	-	
$h_{FE}$	$V_{CE}=10\text{V}, I_C=500\text{mA}$ (PN2221A, PN2222A)	25	-	40	-	
$f_T$	$V_{CE}=20\text{V}, I_C=20\text{mA}, f=100\text{MHz}$ (except PN2222A)	250	-	250	-	MHz
$f_T$	$V_{CE}=20\text{V}, I_C=20\text{mA}, f=100\text{MHz}$ (PN2222A)	-	-	300	-	MHz
$C_{ob}$	$V_{CB}=10\text{V}, f=100\text{kHz}$	-	8.0	-	8.0	pF
$t_{on}$	$V_{CC}=30\text{V}, I_C=150\text{mA}, I_B=15\text{mA}$	-	35	-	35	ns
$t_{off}$	$V_{CC}=30\text{V}, I_C=150\text{mA}, I_{B1}=I_{B2}=15\text{mA}$	-	285	-	285	ns

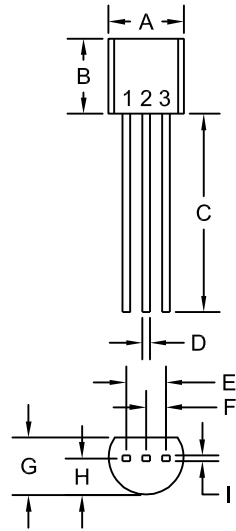
R1 (30-January 2012)

PN2221 PN2221A  
 PN2222 PN2222A

NPN SILICON TRANSISTOR



TO-92 CASE - MECHANICAL OUTLINE



R1

SYMBOL	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A (DIA)	0.175	0.205	4.45	5.21
B	0.170	0.210	4.32	5.33
C	0.500	-	12.70	-
D	0.016	0.022	0.41	0.56
E	0.100		2.54	
F	0.050		1.27	
G	0.125	0.165	3.18	4.19
H	0.080	0.105	2.03	2.67
I	0.015		0.38	

TO-92 (REV: R1)

LEAD CODE:

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

MARKING: FULL PART NUMBER

R1 (30-January 2012)

## 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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