2N2221A
2N2222A

SILICON
NPN TRANSISTORS

TO-18 CASE

Central Semiconductor Corp.

www.centralsemi.com

DESCRIPTION:

The CENTRAL SEMICONDUCTOR 2N2221A and 2N2222A are silicon NPN epitaxial planar transistors designed for small signal, general purpose switching applications.

MARKING: FULL PART NUMBER

MAXIMUM RATINGS: (T_A=25°C)	**SYMBOL**		**UNITS**
Collector-Base Voltage	V_{CBO}	75	V
Collector-Emitter Voltage	V_{CEO}	40	V
Emitter-Base Voltage	V_{EBO}	6.0	V
Continuous Collector Current	I_C	800	mA
Power Dissipation	P_D	500	mW
Power Dissipation (T_C=25°C)	P_D	1.8	W
Operating and Storage Junction Temperature	T_J, T_{stg}	-65 to +200	°C
Thermal Resistance	Θ_{JA}	350	°C/W
Thermal Resistance	Θ_{JC}	97	°C/W

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

SYMBOL	**TEST CONDITIONS**	**MIN**	**MAX**	**UNITS**
I_{CBO}	V_{CB}=60V		10	nA
I_{CBO}	V_{CB}=60V, T_A=150°C		10	µA
I_{CEV}	V_{CE}=60V, V_{EB}=3.0V		10	nA
I_{EBO}	V_{EB}=3.0V		10	nA
BV_{CBO}	I_C=10µA	75		V
BV_{CEO}	I_C=10mA	40		V
BV_{EBO}	I_E=10µA	6.0		V
$V_{CE(SAT)}$	I_C=150mA, I_B=15mA		0.3	V
$V_{CE(SAT)}$	I_C=500mA, I_B=50mA		1.0	V
$V_{BE(SAT)}$	I_C=150mA, I_B=15mA	0.6	1.2	V
$V_{BE(SAT)}$	I_C=500mA, I_B=50mA		2.0	V

		2N2221A		**2N2222A**	
		MIN	**MAX**	**MIN**	**MAX**
h_{FE}	V_{CE}=10V, I_C=0.1mA	20	-	35	-
h_{FE}	V_{CE}=10V, I_C=1.0mA	25	-	50	-
h_{FE}	V_{CE}=10V, I_C=10mA	35	-	75	-
h_{FE}	V_{CE}=10V, I_C=10mA, T_A=-55°C	15	-	35	-
h_{FE}	V_{CE}=10V, I_C=150mA	40	120	100	300
h_{FE}	V_{CE}=1.0V, I_C=150mA	20	-	50	-
h_{FE}	V_{CE}=10V, I_C=500mA	25	-	40	-

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2N2221A
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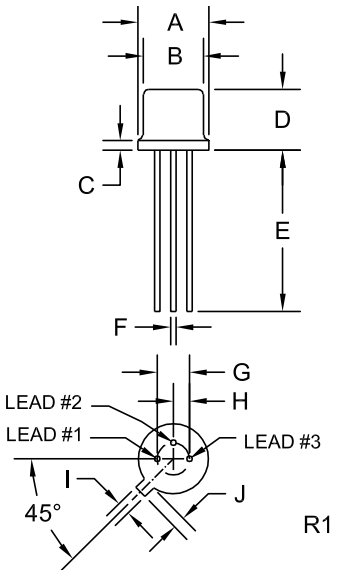
ELECTRICAL CHARACTERISTICS - Continued: (T_A=25°C)

SYMBOL	TEST CONDITIONS	2N2221A MIN	2N2221A MAX	2N2222A MIN	2N2222A MAX	UNITS
f_T	V_{CE}=20V, I_C=20mA, f=100MHz	250	-	300	-	MHz
C_{ob}	V_{CB}=10V, I_E=0, f=100kHz	-	8.0	-	8.0	pF
C_{ib}	V_{EB}=0.5V, I_C=0, f=100kHz	-	25	-	25	pF
h_{ie}	V_{CE}=10V, I_C=1.0mA, f=1.0kHz	1.0	3.5	2.0	8.0	kΩ
h_{ie}	V_{CE}=10V, I_C=10mA, f=1.0kHz	0.2	1.0	0.25	1.25	kΩ
h_{re}	V_{CE}=10V, I_C=1.0mA, f=1.0kHz	-	5.0	-	8.0	$x10^{-4}$
h_{re}	V_{CE}=10V, I_C=10mA, f=1.0kHz	-	2.5	-	4.0	$x10^{-4}$
h_{fe}	V_{CE}=10V, I_C=1.0mA, f=1.0kHz	30	150	50	300	
h_{fe}	V_{CE}=10V, I_C=10mA, f=1.0kHz	50	300	75	375	
h_{oe}	V_{CE}=10V, I_C=1.0mA, f=1.0kHz	3.0	15	5.0	35	µS
h_{oe}	V_{CE}=10V, I_C=10mA, f=1.0kHz	10	100	25	200	µS
$rb'C_c$	V_{CB}=10V, I_E=20mA, f=31.8MHz	-	150	-	150	ps
NF	V_{CE}=10V, I_C=100µA, R_S=1.0kΩ, f=1.0kHz	-	-	-	4.0	dB
t_d	V_{CC}=30V, V_{BE}=0.5V, I_C=150mA, I_{B1}=15mA	-	10	-	10	ns
t_r	V_{CC}=30V, V_{BE}=0.5V, I_C=150mA, I_{B1}=15mA	-	25	-	25	ns
t_s	V_{CC}=30V, I_C=150mA, I_{B1}=I_{B2}=15mA	-	225	-	225	ns
t_f	V_{CC}=30V, I_C=150mA, I_{B1}=I_{B2}=15mA	-	60	-	60	ns

TO-18 CASE - MECHANICAL OUTLINE



DIMENSIONS				
	INCHES		MILLIMETERS	
SYMBOL	MIN	MAX	MIN	MAX
A (DIA)	0.209	0.230	5.31	5.84
B (DIA)	0.178	0.195	4.52	4.95
C	-	0.030	-	0.76
D	0.170	0.210	4.32	5.33
E	0.500	-	12.70	-
F (DIA)	0.016	0.019	0.41	0.48
G (DIA)	0.100		2.54	
H	0.050		1.27	
I	0.036	0.046	0.91	1.17
J	0.028	0.048	0.71	1.22

TO-18 (REV: R1)

LEAD CODE:
1) Emitter
2) Base
3) Collector

MARKING: FULL PART NUMBER

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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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Product End of Life Notification

PDN ID:	PDN01195
Notification Date:	10/20/21
Last Buy Date:	4/20/22
Last Shipment Date	10/20/22

Summary:The CP225 wafer process is discontinued and now classified as End of Life (EOL).

Although Central Semiconductor Corp. makes every effort to continue to produce devices that have been proclaimed EOL (End of Life) by other manufacturers, it is an accepted industry practice to discontinue certain devices when customer demand falls below a minimum level of sustainability. Accordingly, the following product(s) have been transitioned to End of Life status as part of Central's ongoing Product Management Process. Any replacement products are noted below. The effective date for placing last purchase orders will be six (6) months from the date of this notice and twelve (12) months from the notice date for final shipments, and minimum order quantities may apply. The last purchase and shipment dates may be extended if inventory is available.

*** All Plating types (PBFREE,TIN/LEAD) for each item listed are included in this notice.**

Central Part Number	Suggested Replacement
CP225-2N2218A-WN	N/A
2N2218A	N/A
2N2221A	N/A

Central would be happy to assist you by providing additional information or technical data to help locate an alternate source if we have no replacement available. If you would like assistance, please visit https://my.centralsemi.com/submit-inquiry?type=ER to submit an online inquiry.