

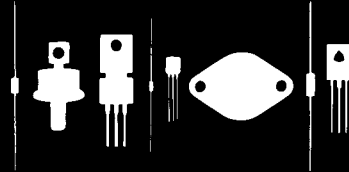
Central Semiconductor Corp.

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145 Adams Avenue  
Hauppauge, New York 11788



2N1302  
2N1304  
2N1306  
2N1308

NPN GERMANIUM TRANSISTOR

JEDEC TO 5 CASE

DESCRIPTION

The CENTRAL SEMICONDUCTOR 2N1302, 2N1304, 2N1306 and 2N1308 are Germanium NPN Transistors designed for computer and switching applications.

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

Collector Base Voltage	$V_{CB0}$	25V
Emitter Base Voltage	$V_{EB0}$	25V
Collector Current	$I_C$	300 mA
Power Dissipation	$P_T$	150 mW
Operating Junction Temperature	$T_J$	85°C
Storage Temperature	$T_{stg}$	-65 to 100°C

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

<u>Symbol</u>	<u>Test Conditions</u>	<u>Type</u>	<u>Min</u>	<u>Max</u>	<u>Unit</u>
$I_{CBO}$	$V_{CB} = 25V$	All		6.0	$\mu A$
$I_{EBO}$	$V_{EB} = 25V$	All		6.0	$\mu A$
$V_{CB0}$	$I_C = 100 \mu A$	All	25		v
$V_{EB0}$	$I_E = 100 \mu A$	All	25		v
$h_{fe}$	$V_{CE} = 1V, I_C = 10 mA$	2N1302	20		-
		2N1304	40	200	-
		2N1306	60	300	-
		2N1308	80		-
$h_{FE}$	$V_{CE} = 0.35V, I_C = 200 mA$	2N1302	10		-
		2N1304	15		-
		2N1306	20		-
		2N1308	20		-
$V_{CE} (s)$	$I_C = 10 mA, I_B = 0.5 mA$	2N1302		0.2	v
	$I_C = 10 mA, I_B = 0.25 mA$	2N1304		0.2	v
	$I_C = 10 mA, I_B = 0.17 mA$	2N1306		0.2	v
	$I_C = 10 mA, I_B = 0.13 mA$	2N1308		0.2	v
$V_{BE} (s)$	$I_C = 10 mA, I_B = 0.5 mA$	2N1302	0.15	0.40	v
		2N1304	0.15	0.35	v
		2N1306	0.15	0.35	v
		2N1308	0.15	0.35	v

**Central**<sup>TM</sup>  
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ELECTRICAL CHARACTERISTICS ( T<sub>A</sub> = 25° C ) continued

<u>Symbol</u>	<u>Test Conditions</u>	<u>Type</u>	<u>Min-</u>	<u>Max</u>	<u>Unit</u>
h <sub>ib</sub>	V <sub>CB</sub> = 5v	All	28 typ.		ohm
h <sub>rb</sub>	I <sub>E</sub> = 1 mA	All	5 typ.		X10 <sup>-4</sup>
h <sub>ob</sub>	f = 1 KHz	All	0.34 typ.		u mho
h <sub>fe</sub>		All	140 typ.		-
NF		All	3 typ.		db
C <sub>ob</sub>	V <sub>CB</sub> = 5V f = 1MHZ	All	20 typ.		pf
C <sub>ib</sub>	V <sub>EB</sub> = 5V f = 1 MHZ	All	13 tyu.		pf
t <sub>d</sub>	I <sub>c</sub> = 10 mA, I <sub>B1</sub> = 1.3 mA	All	0.07 typ.		u sec
t <sub>r</sub>	I <sub>Bz</sub> = 0.7 mA	All	0.2 typ.		u sec
t <sub>s</sub>	V <sub>BE</sub> ( off ) = 0.8V	All	0.7 typ.		u sec
t <sub>f</sub>	R <sub>L</sub> = 1K ohm	All	0.4 typ.		u sec
f <sub>hfb</sub>	V <sub>CB</sub> = 5V, I <sub>E</sub> = 1 mA	2N1302	3		MHz
		2N1304	5		MHz
		2N1306	10		MHz
		2N1308	15		MHz

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