

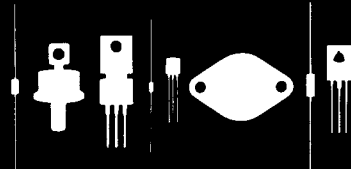
Central  
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145 Adams Avenue  
Hauppauge, New York 11788



2N1303  
2N1305  
2N1307  
2N1309

PNP GERMANIUM TRANSISTOR

JEDEC TO-5 CASE

## DESCRIPTION

The CENTRAL SEMICONDUCTOR 2N1303, 2N1305, 2N1307 and 2N1309 are Germanium PNP Transistors designed for computer and switching applications.

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

Collector Base Voltage	$V_{CB0}$	30V
Emitter Base Voltage	$V_{EB0}$	25V
Collector Current	$I_C$	300 mA
Power Dissipation	$P_T$	150 mW
Operating Junction Temperature	$T_J$	$85^\circ\text{C}$
Storage Temperature	$T_{stg}$	-65 to $100^\circ\text{C}$

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

<u>Symbol</u>	<u>Test Conditions</u>	<u>Type</u>	<u>Min</u>	<u>Max</u>	<u>Unit</u>
$I_{CBO}$	$V_{CB} = 25\text{V}$	All		10	$\mu\text{A}$
$I_{EBO}$	$V_{EB} = 25\text{V}$	All		10	$\mu\text{A}$
$V_{CB0}$	$I_C = 100\ \mu\text{A}$	All	30		v
$V_{EB0}$	$I_E = 100\ \mu\text{A}$	All	25		v
$H_{FE}$	$V_{CE} = 1\text{V}, I_C = 10\ \text{mA}$	2N1303	20		-
		2N1305	40	200	-
		2N1307	60	300	-
		2N1309	80		-
$H_{FE}$	$V_{CE} = 0.35\text{V}, I_C = 200\ \text{mA}$	2N1303	10		-
		2N1305	15		-
		2N1307	20		-
		2N1309	20		-
$V_{CE}(s)$	$I_C = 10\ \text{mA}, I_B = 0.5\ \text{mA}$	2N1303		0.2	v
	$I_C = 10\ \text{mA}, I_B = 0.25\ \text{mA}$	2N1305		0.2	v
	$I_C = 10\ \text{mA}, I_B = 0.17\ \text{mA}$	2N1307		0.2	V
	$I_C = 10\ \text{mA}, I_B = 0.13\ \text{mA}$	2N1309		0.2	v
$V_{BE}(s)$	$I_C = 10\ \text{mA}, I_B = 0.5\ \text{mA}$	2N1303	0.15	0.40	v
		2N1305	0.15	0.35	v
		2N1307	0.15	0.35	v
		2N1309	0.15	0.35	v

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

<u>Symbol</u>	<u>Test Conditions</u>	<u>Type</u>	<u>Min</u>	<u>Max</u>	<u>Unit</u>
$h_{ib}$	$V_{CB} = 5V$ $I_E = 1 \text{ mA}$ $f = 1 \text{ KHZ}$	All	29 typ.		ohm
$h_{rb}$		All	7 typ.		X10-4
$h_{ob}$		All	0.40 typ.		u mho
$h_{fe}$		All	140 typ.		-
NF		All	3 typ.		db
$C_{ob}$	$V_{CB} = 5V, f = 1 \text{ MHz}$	All	20 max.		pf
$C_{ib}$	$V_{EB} = 5V f = 1 \text{ MHz}$	All	9 typ.		pf
$t_d$	$I_c = 10 \text{ mA}, I_{B1} = 1.3 \text{ mA}$	All	0.06 typ.		u sec
$t_r$	$I_{Bz} = 0.7 \text{ mA}$	All	0.16 typ.		u sec
$t_s$	$V_{BE} (\text{off}) = 0.8V$	All	0.75 typ.		u sec
$t_f$	$R_L = 1K \text{ ohm}$	All	0.35 typ.		u sec
$f_{hfb}$	$V_{CB} = 5V, I_E = 1 \text{ mA}$	2N1303	3		MHz
		2N1305	5		MHz
		2N1307	10		MHz
		2N1309	15		MHz

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