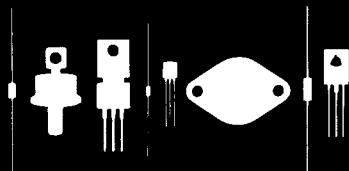


**Central
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145 Adams Avenue
Hauppauge, New York 11788



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°C
Storage Temperature	T_{stg}	- 65 to 100°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	μA
I_{EBO}	$V_{EB} = 25\text{V}$	All		10	μA
V_{CBO}	$I_C = 100\text{ }\mu\text{A}$	All	30		v
V_{EBO}	$I_E = 100\text{ }\mu\text{A}$	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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