

CentralTM Semiconductor Corp.

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Manufacturers of World Class Discrete Semiconductors

2N4404
2N4405

PNP SILICON TRANSISTOR

JEDEC TO-39 CASE

DESCRIPTION

The CENTRAL SEMICONDUCTOR 2N4404, 2N4405 types are PNP Silicon Epitaxial Planar Transistors designed for general purpose and switching applications.

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

	<u>SYMBOL</u>		<u>UNITS</u>
Collector-Base Voltage	V_{CBO}	80	V
Collector-Emitter Voltage	V_{CEO}	80	V
Emitter-Base Voltage	V_{EBO}	5.0	V
Collector Current	I_C	1.0	A
Power Dissipation ($T_A = 25^\circ\text{C}$)	P_D	1.25	W
Power Dissipation	P_D	8.75	W
Operating and Storage			
Junction Temperature	T_J, T_{stg}	-65 to +200	$^\circ\text{C}$
Thermal Resistance	θ_{JA}	140	$^\circ\text{C/W}$
Thermal Resistance	θ_{JC}	25	$^\circ\text{C/W}$

ELECTRICAL CHARACTERISTICS ($T_C = 25^\circ\text{C}$ unless otherwise noted)

<u>SYMBOL</u>	<u>TEST CONDITIONS</u>	<u>2N4404</u>		<u>2N4405</u>		<u>UNITS</u>
		<u>MIN</u>	<u>MAX</u>	<u>MIN</u>	<u>MAX</u>	
I_{CBO}	$V_{CB} = 60\text{V}$		25		25	nA
I_{EBO}	$V_{EB} = 3.0\text{V}$		25		25	nA
BV_{CEO}	$I_C = 10\text{mA}$	80		80		V
BV_{CBO}	$I_C = 10\mu\text{A}$	80		80		V
BV_{EBO}	$I_E = 10\mu\text{A}$	5.0		5.0		V
$V_{CE(SAT)}$	$I_C = 10\text{mA}, I_B = 1.0\text{mA}$		0.15		0.15	V
$V_{CE(SAT)}$	$I_C = 150\text{mA}, I_B = 15\text{mA}$		0.2		0.2	V
$V_{CE(SAT)}$	$I_C = 500\text{mA}, I_B = 50\text{mA}$		0.5		0.5	V
$V_{BE(SAT)}$	$I_C = 10\text{mA}, I_B = 1.0\text{mA}$		0.8		0.8	V
$V_{BE(SAT)}$	$I_C = 500\text{mA}, I_B = 50\text{mA}$	0.85	1.2	0.85	1.2	V
$V_{BE(ON)}$	$V_{CE} = 1.0\text{V}, I_C = 150\text{mA}$		0.9		0.9	V
h_{FE}	$V_{CE} = 5.0\text{V}, I_C = 0.1\text{mA}$		30		75	
h_{FE}	$V_{CE} = 5.0\text{V}, I_C = 10\text{mA}$		40		100	
h_{FE}	$V_{CE} = 5.0\text{V}, I_C = 150\text{mA}$		40	120	300	
h_{FE}	$V_{CE} = 5.0\text{V}, I_C = 500\text{mA}$		30		50	

ELECTRICAL CHARACTERISTICS (Continued)

<u>SYMBOL</u>	<u>TEST CONDITIONS</u>	<u>MIN</u>	<u>MAX</u>	<u>UNITS</u>
f_T	$V_{CE} = 20V, I_C = 50mA, f = 100MHz$	150	600	MHz
C_{cb}	$V_{CB} = 10V, I_E = 0, f = 1.0MHz$		20	pF
C_{eb}	$V_{BE} = 0.5V, I_C = 0, f = 1.0MHz$		110	pF
t_d	$V_{CC} = 30V, V_{BE(off)} = 2.0V, I_C = 500mA, I_{B1} = 50mA$		40	ns
t_r	$V_{CC} = 30V, V_{BE(off)} = 2.0V, I_C = 500mA, I_{B1} = 50mA$		60	ns
t_s	$V_{CC} = 30V, I_C = 500mA, I_{B1} = I_{B2} = 50mA$		350	ns
t_f	$V_{CC} = 30V, I_C = 500mA, I_{B1} = I_{B2} = 50mA$		50	ns

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