

CentralTM Semiconductor Corp.

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Manufacturers of World Class Discrete Semiconductors

2N4400
2N4401

NPN SILICON TRANSISTOR

JEDEC TO-92 CASE

DESCRIPTION

The CENTRAL SEMICONDUCTOR 2N4400, 2N4401 types are molded epoxy Silicon NPN Transistors designed for general purpose amplifier and switching applications. The PNP complementary types are 2N4402, 2N4403.

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

	SYMBOL		UNIT
Collector-Base Voltage	V_{CB0}	60	V
Collector-Emitter Voltage	V_{CE0}	40	V
Emitter-Base Voltage	V_{EB0}	6.0	V
Collector Current	I_C	600	mA
Power Dissipation	P_D	625	mW
Operating and Storage Junction Temperature	T_J, T_{stg}	-55 TO +150	$^{\circ}\text{C}$

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

SYMBOL	TEST CONDITIONS	2N4400		2N4401		UNIT
		MIN	MAX	MIN	MAX	
I_{CEV}	$V_{CE}=35\text{V}, V_{EB}(\text{OFF})=0.4\text{V}$		0.1		0.1	μA
BV_{CB0}	$I_C=0.1\text{mA}$	60		60		V
BV_{CE0}	$I_C=1.0\text{mA}$	40		40		V
BV_{EB0}	$I_E=0.1\text{mA}$	6.0		6.0		V
$V_{CE}(\text{SAT})$	$I_C=150\text{mA}, I_B=15\text{mA}$		0.4		0.4	V
$V_{CE}(\text{SAT})$	$I_C=500\text{mA}, I_B=50\text{mA}$		0.75		0.75	V
$V_{CE}(\text{SAT})$	$I_C=150\text{mA}, I_B=15\text{mA}$	0.75	0.95	0.75	0.95	V
$V_{CE}(\text{SAT})$	$I_C=500\text{mA}, I_B=50\text{mA}$	-	1.2	-	1.2	V
h_{FE}	$V_{CE}=1.0\text{V}, I_C=0.1\text{mA}$	-		20		
h_{FE}	$V_{CE}=1.0\text{V}, I_C=1.0\text{mA}$	20		40		
h_{FE}	$V_{CE}=1.0\text{V}, I_C=10\text{mA}$	40		80		
h_{FE}	$V_{CE}=1.0\text{V}, I_C=150\text{mA}$	50	150	100	300	
h_{FE}	$V_{CE}=2.0\text{V}, I_C=500\text{mA}$	20		40		
h_{fe}	$V_{CE}=10\text{V}, I_C=1.0\text{mA}, f=1.0\text{kHz}$	20	250	40	500	
f_T	$V_{CE}=10\text{V}, I_C=20\text{mA}, f=100\text{MHz}$	200		250		MHz
C_{ob}	$V_{CB}=5.0\text{V}, f=100\text{kHz}$		6.5		6.5	pF
C_{ib}	$V_{BE}=0.5\text{V}, f=100\text{kHz}$		30		30	pF
t_{on}	$V_{CC}=30\text{V}, V_{EB}(\text{OFF})=2.0\text{V},$ $I_C=150\text{mA}, I_{B1}=15\text{mA}$		35		35	ns
t_{off}	$V_{CC}=30\text{V}, I_C=150\text{mA}, I_{B1}=$ $I_{B2}=15\text{mA}$		255		255	ns

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