

2N4400  
2N4401

SILICON  
NPN TRANSISTORS



TO-92 CASE



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**DESCRIPTION:**

The CENTRAL SEMICONDUCTOR 2N4400 and 2N4401 are silicon NPN transistors designed for general purpose amplifier and switching applications. PNP complementary types are 2N4402 and 2N4403.

**MARKING: FULL PART NUMBER**

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

Collector-Base Voltage  
Collector-Emitter Voltage  
Emitter-Base Voltage  
Continuous Collector Current  
Power Dissipation  
Operating and Storage Junction Temperature

SYMBOL		UNITS
$V_{CBO}$	60	V
$V_{CEO}$	40	V
$V_{EBO}$	6.0	V
$I_C$	600	mA
$P_D$	625	mW
$T_J, T_{stg}$	-65 to +150	$^\circ\text{C}$

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

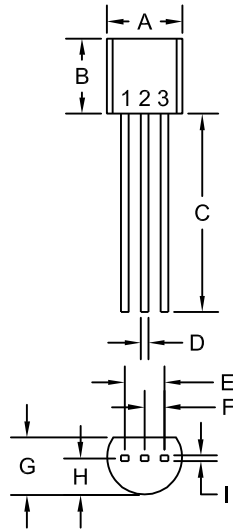
SYMBOL	TEST CONDITIONS	2N4400		2N4401		UNITS
		MIN	MAX	MIN	MAX	
$I_{CEV}$	$V_{CE}=35\text{V}, V_{EB}=0.4\text{V}$	-	100	-	100	nA
$BV_{CBO}$	$I_C=0.1\text{mA}$	60	-	60	-	V
$BV_{CEO}$	$I_C=1.0\text{mA}$	40	-	40	-	V
$BV_{EBO}$	$I_E=0.1\text{mA}$	6.0	-	6.0	-	V
$V_{CE(SAT)}$	$I_C=150\text{mA}, I_B=15\text{mA}$	-	0.40	-	0.40	V
$V_{CE(SAT)}$	$I_C=500\text{mA}, I_B=50\text{mA}$	-	0.75	-	0.75	V
$V_{BE(SAT)}$	$I_C=150\text{mA}, I_B=15\text{mA}$	0.75	0.95	0.75	0.95	V
$V_{BE(SAT)}$	$I_C=500\text{mA}, I_B=50\text{mA}$	-	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
$C_{ob}$	$V_{CB}=5.0\text{V}, I_E=0, f=100\text{kHz}$	-	6.5	-	6.5	pF
$C_{ib}$	$V_{BE}=0.5\text{V}, I_C=0, f=100\text{kHz}$	-	30	-	30	pF
$t_{on}$	$V_{CC}=30\text{V}, V_{EB(OFF)}=2.0\text{V}, I_C=150\text{mA}, I_{B1}=15\text{mA}$	-	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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TO-92 CASE - MECHANICAL OUTLINE



R1

SYMBOL	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A (DIA)	0.175	0.205	4.45	5.21
B	0.170	0.210	4.32	5.33
C	0.500	-	12.70	-
D	0.016	0.022	0.41	0.56
E	0.100		2.54	
F	0.050		1.27	
G	0.125	0.165	3.18	4.19
H	0.080	0.105	2.03	2.67
I	0.015		0.38	

TO-92 (REV: R1)

LEAD CODE:

- 1) Emitter
- 2) Base
- 3) Collector

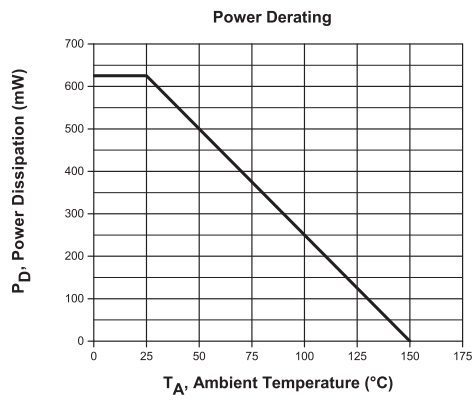
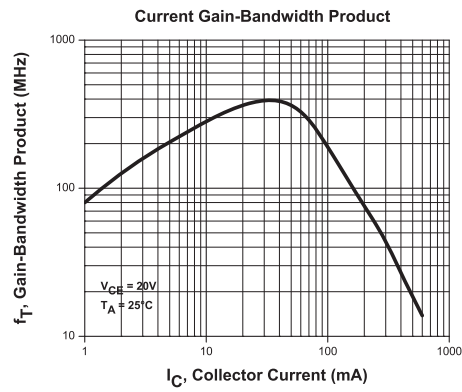
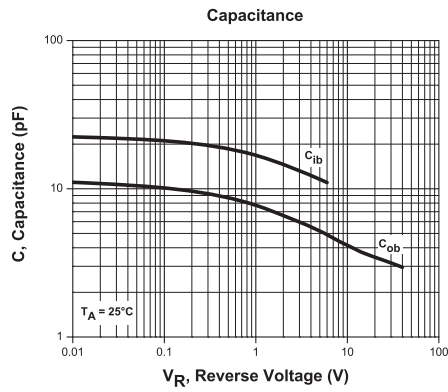
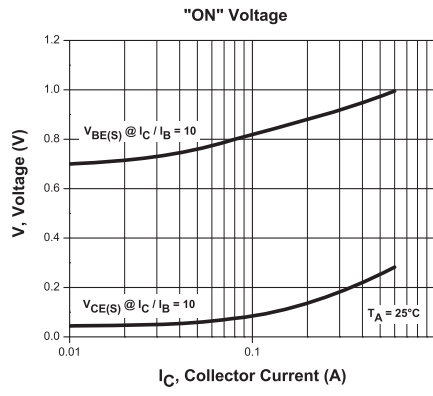
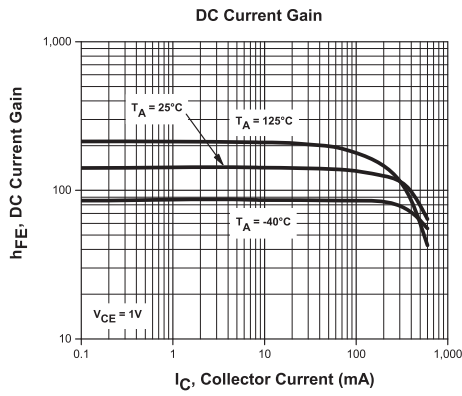
MARKING:  
FULL PART NUMBER

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TYPICAL ELECTRICAL CHARACTERISTICS



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