

2N4400  
2N4401

**SILICON  
NPN TRANSISTORS**



**TO-92 CASE**



[www.centrasemi.com](http://www.centrasemi.com)

**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**

$V_{CBO}$  60  
 $V_{CEO}$  40  
 $V_{EBO}$  6.0  
 $I_C$  600  
 $P_D$  625  
 $T_J, T_{stg}$  -65 to +150

**UNITS**

V  
V  
V  
mA  
mW  
 $^{\circ}\text{C}$

**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

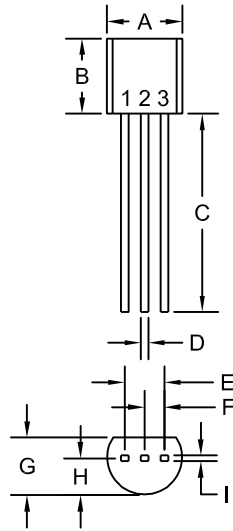
R2 (2-December 2014)

2N4400  
2N4401

SILICON  
NPN TRANSISTORS



# 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

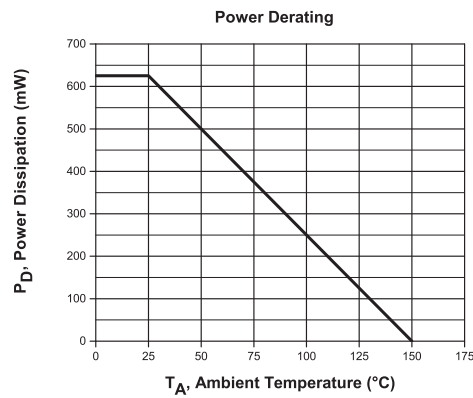
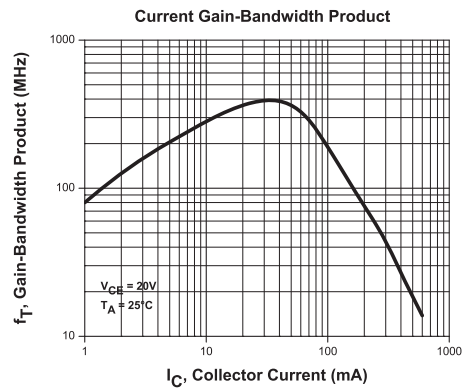
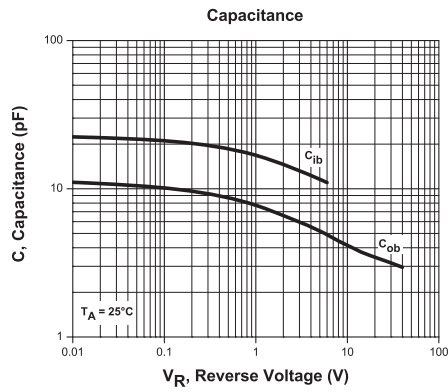
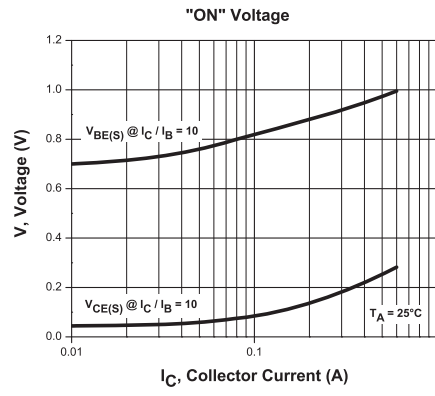
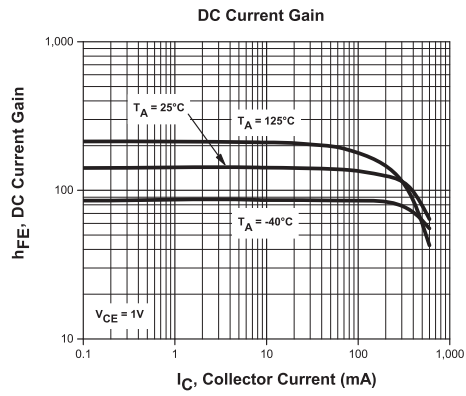
R2 (2-December 2014)

2N4400  
2N4401

SILICON  
NPN TRANSISTORS



### TYPICAL ELECTRICAL CHARACTERISTICS



R2 (2-December 2014)

2N4400  
2N4401  
  
SILICON  
NPN TRANSISTORS



#### **SERVICES**

- Bonded Inventory
- Custom Electrical Screening
- Custom Electrical Characteristic Curves
- SPICE Models
- Custom Packaging
- Package Base Options
- Custom Device Development/ Multi Discrete Modules (MDM™)
- Bare Die Available for Hybrid Applications

---

**LIMITATIONS AND DAMAGES DISCLAIMER:** In no event shall Central be liable for any collateral, indirect, punitive, incidental, consequential, or exemplary damages in connection with or arising out of a purchase order or contract or the use of products provided hereunder, regardless of whether Central has been advised of the possibility of such damages. Excluded damages shall include, but not be restricted to: cost of removal or reinstallation, rework, ancillary costs to the procurement of substitute products, loss of profits, loss of savings, loss of use, loss of data, or business interruption. No claim, suit, or action shall be brought against Central more than two (2) years after the related cause of action has occurred.

In no event shall Central's aggregate liability from any warranty, indemnity, or other obligation arising out of or in connection with a purchase order or contract, or any use of any Central product provided hereunder, exceed the total amount paid to Central for the specific products sold under a purchase order or contract with respect to which losses or damages are claimed. The existence of more than one (1) claim against the specific products sold to Buyer under a purchase order or contract shall not enlarge or extend this limit.

Buyer understands and agrees that the foregoing liability limitations are essential elements of a purchase order or contract and that in the absence of such limitations, the material and economic terms of the purchase order or contract would be substantially different.

R2 (2-December 2014)