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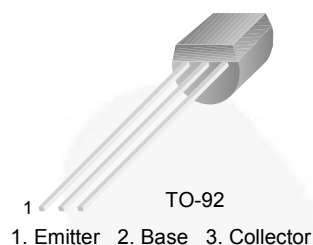


May 2016

2N5401 Amplifier Transistor

Features

- Collector-Emitter Voltage: $V_{CEO} = 150V$
- Collector Dissipation: $P_C (\text{max}) = 625mW$
- Suffix “-C” means Conter Collector (1. Emitter 2. Collector 3. Base)



Ordering Information

Part Number	Top Mark	Package	Packing Method	Pack Quantity
2N5401YBU	2N5401	TO-92 3L	Bulk	10000
2N5401YTA	2N5401	TO-92 3L	Ammo	2000

Absolute Maximum Ratings

Stresses exceeding the absolute maximum ratings may damage the device. The device may not function or be operable above the recommended operating conditions and stressing the parts to these levels is not recommended. In addition, extended exposure to stresses above the recommended operating conditions may affect device reliability. The absolute maximum ratings are stress ratings only. Values are at $T_A = 25^\circ\text{C}$ unless otherwise noted.

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage	-160	V
V_{CEO}	Collector-Emitter Voltage	-150	V
V_{EBO}	Emitter-Base Voltage	-5	V
I_C	Collector Current	-600	mA
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to 150	$^\circ\text{C}$

Thermal Characteristics⁽¹⁾

Values are at $T_A = 25^\circ\text{C}$ unless otherwise noted.

Symbol	Parameter	Max.	Unit
P_D	Total Device Dissipation	625	mW
	Derate above 25°C	5	mW/ $^\circ\text{C}$
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	200	$^\circ\text{C/W}$

Note:

1. PCB size: FR-4, 76 mm x 114 mm x 1.57 mm (3.0 inch x 4.5 inch x 0.062 inch) with minimum land pattern size.

Electrical Characteristics

Values are at $T_A = 25^\circ\text{C}$ unless otherwise noted.

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{CBO}	Collector-Base Breakdown Voltage	$I_C = -100\ \mu\text{A}$, $I_E = 0$	-160			V
BV_{CEO}	Collector-Emitter Breakdown Voltage ⁽²⁾	$I_C = -1\ \text{mA}$, $I_B = 0$	-150			V
BV_{EBO}	Emitter-Base Breakdown Voltage	$I_E = -10\ \mu\text{A}$, $I_C = 0$	-5			V
I_{CBO}	Collector Cut-Off Current	$V_{CB} = -120\ \text{V}$, $I_E = 0$			-50	μA
I_{EBO}	Emitter Cut-Off Current	$V_{EB} = -3\ \text{V}$, $I_C = 0$			-50	μA
h_{FE1}	DC Current Gain ⁽²⁾	$I_C = -1\ \text{mA}$, $V_{CE} = -5\ \text{V}$	30			
		$I_C = -10\ \text{mA}$, $V_{CE} = -5\ \text{V}$ Standard Class	60		240	
		$I_C = -10\ \text{mA}$, $V_{CE} = -5\ \text{V}$ Y Class	120		240	
		$I_C = -50\ \text{mA}$, $V_{CE} = -5\ \text{V}$	50			
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage ⁽²⁾	$I_C = -10\ \text{mA}$, $I_B = -1\ \text{mA}$			-0.2	V
		$I_C = -50\ \text{mA}$, $I_B = -5\ \text{mA}$			-0.5	V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage ⁽²⁾	$I_C = -10\ \text{mA}$, $I_B = -1\ \text{mA}$			-1.0	V
		$I_C = -50\ \text{mA}$, $I_B = -5\ \text{mA}$			-1.0	V
f_T	Current Gain Bandwidth Product	$I_C = -10\ \text{mA}$, $V_{CE} = -10\ \text{V}$, $f = 100\ \text{MHz}$	100		400	MHz
C_{ob}	Output Capacitance	$V_{CB} = -10\ \text{V}$, $I_E = 0$, $f = 1\ \text{MHz}$			6	pF
N_F	Noise Figure	$I_C = -250\ \mu\text{A}$, $V_{CE} = -5\ \text{V}$, $R_S = 1\ \text{k}\Omega$, $f = 10\ \text{Hz to } 15.7\ \text{kHz}$			8	dB

Note:

2. Pulse Test: Pulse Width $\leq 300\ \mu\text{s}$, Duty Cycle $\leq 2\%$.

Typical Characteristics

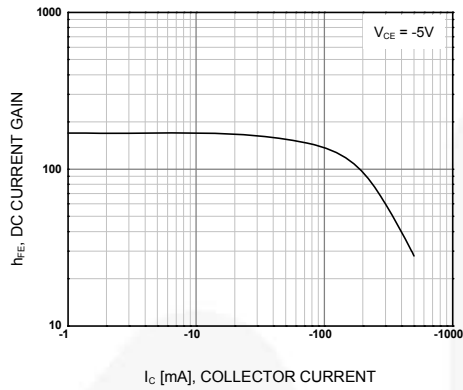


Figure 1. DC current Gain

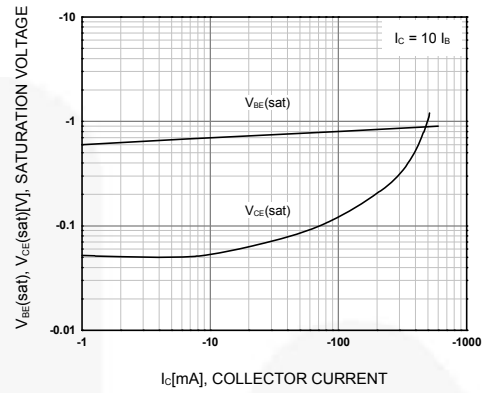


Figure 2. Base-Emitter Saturation Voltage
Collector-Emitter Saturation Voltage

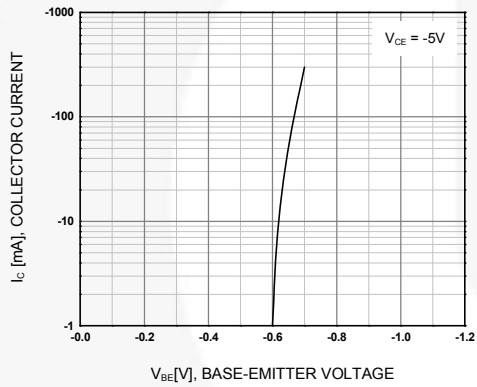


Figure 3. Base-Emitter On Voltage

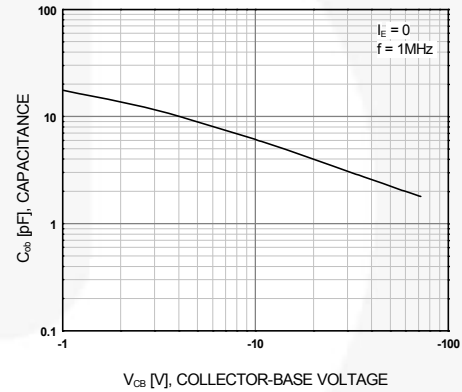


Figure 4. Output Capacitance

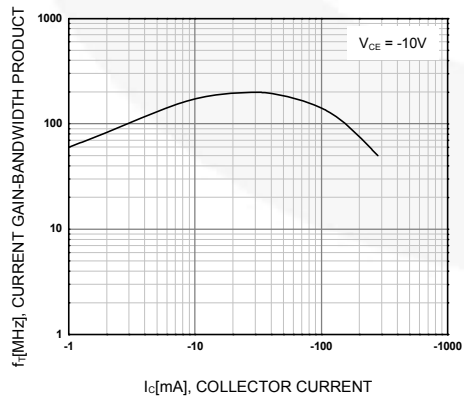
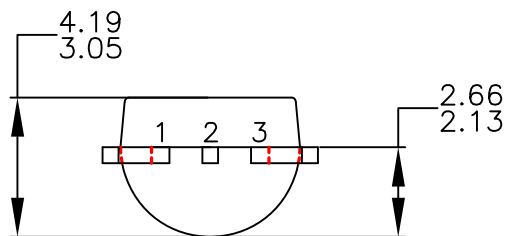
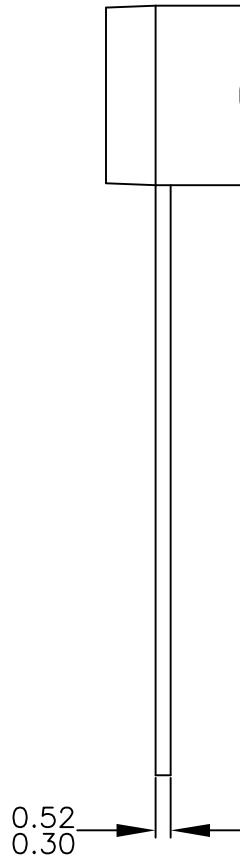
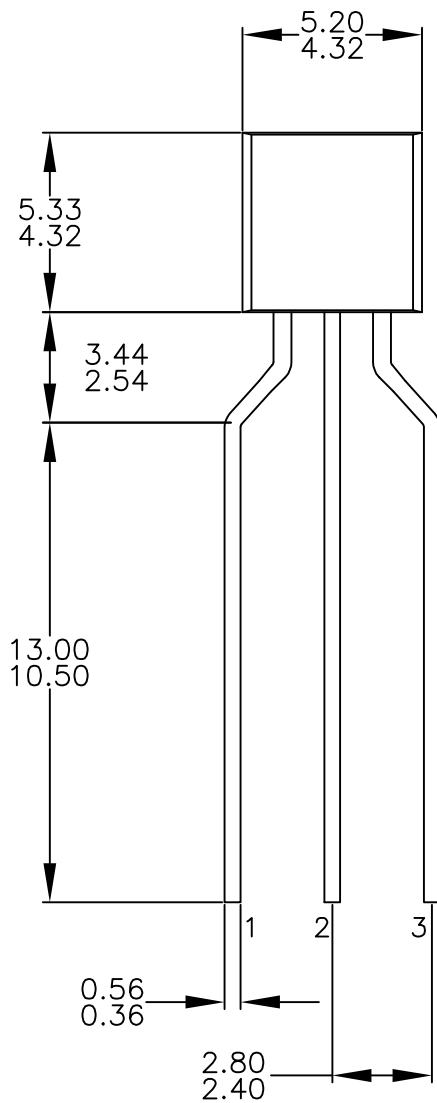
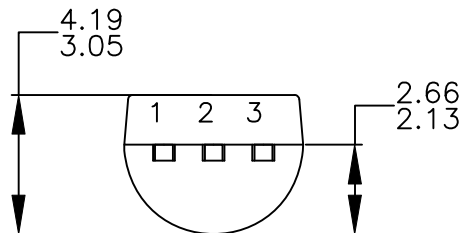
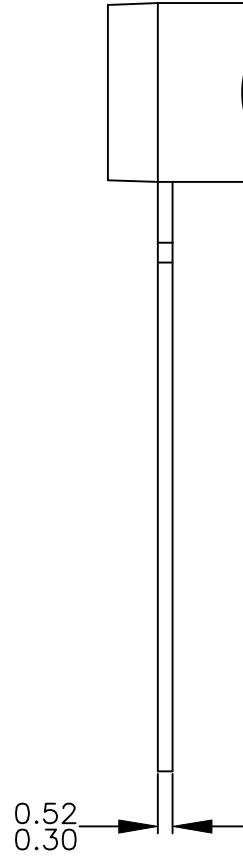
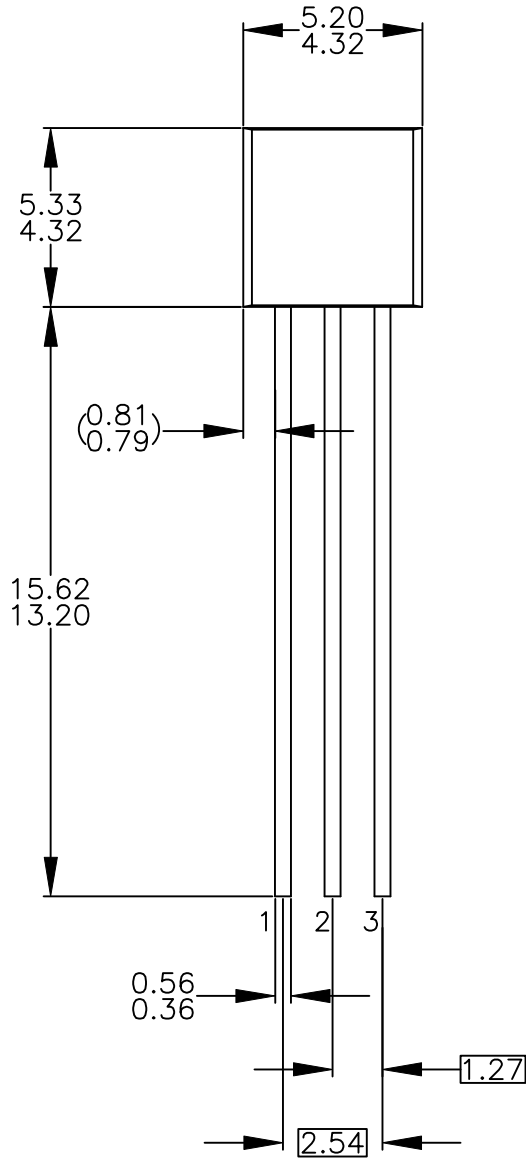


Figure 5. Current Gain Bandwidth Product



NOTES: UNLESS OTHERWISE SPECIFIED

- A. DRAWING CONFORMS TO JEDEC MS-013, VARIATION AC.
- B. ALL DIMENSIONS ARE IN MILLIMETERS.
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