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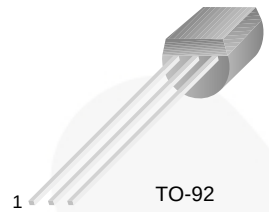
Please note: As part of the Fairchild Semiconductor integration, some of the Fairchild orderable part numbers will need to change in order to meet ON Semiconductor's system requirements. Since the ON Semiconductor product management systems do not have the ability to manage part nomenclature that utilizes an underscore (_), the underscore (_) in the Fairchild part numbers will be changed to a dash (-). This document may contain device numbers with an underscore (_). Please check the ON Semiconductor website to verify the updated device numbers. The most current and up-to-date ordering information can be found at www.onsemi.com. Please email any questions regarding the system integration to Fairchild_questions@onsemi.com.

May 2016

2N5401
Amplifier Transistor

Features

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



TO-92

1. Emitter 2. Base 3. Collector

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°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	°C

Thermal Characteristics[1]

Values are at T_A = 25°C unless otherwise noted.

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

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

Note:

2. Pulse Test: Pulse Width≤300μs, Duty Cycle≤2%.

Typical Characteristics

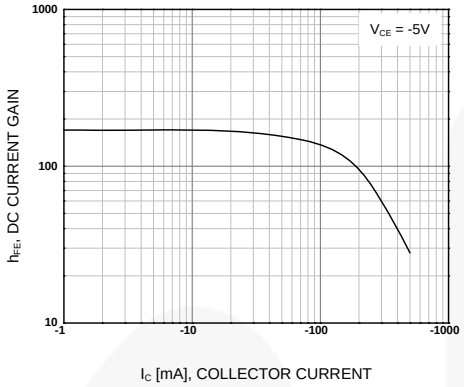


Figure 1. DC current Gain

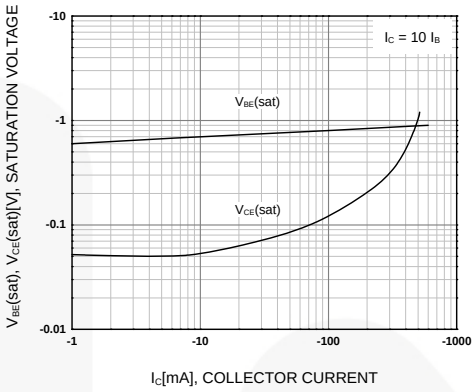


Figure 2. Base-Emitter Saturation Voltage Collector-Emitter Saturation Voltage

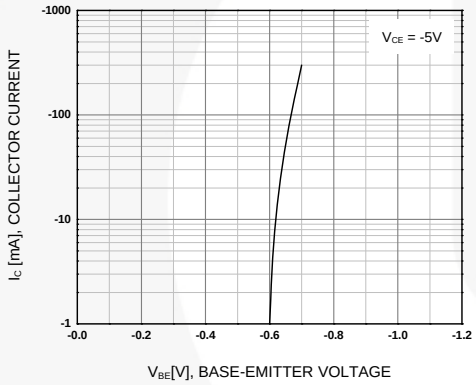


Figure 3. Base-Emitter On Voltage

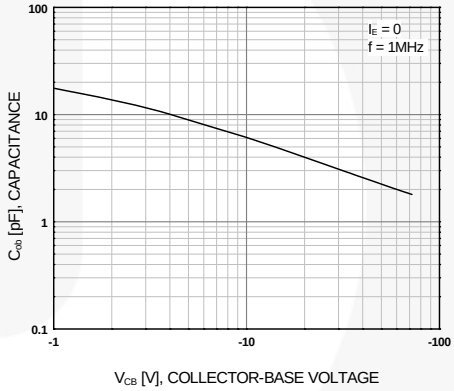


Figure 4. Output Capacitance

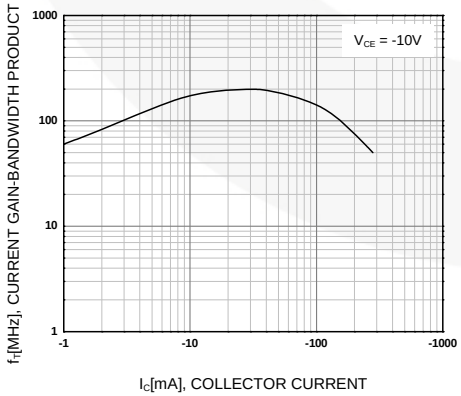
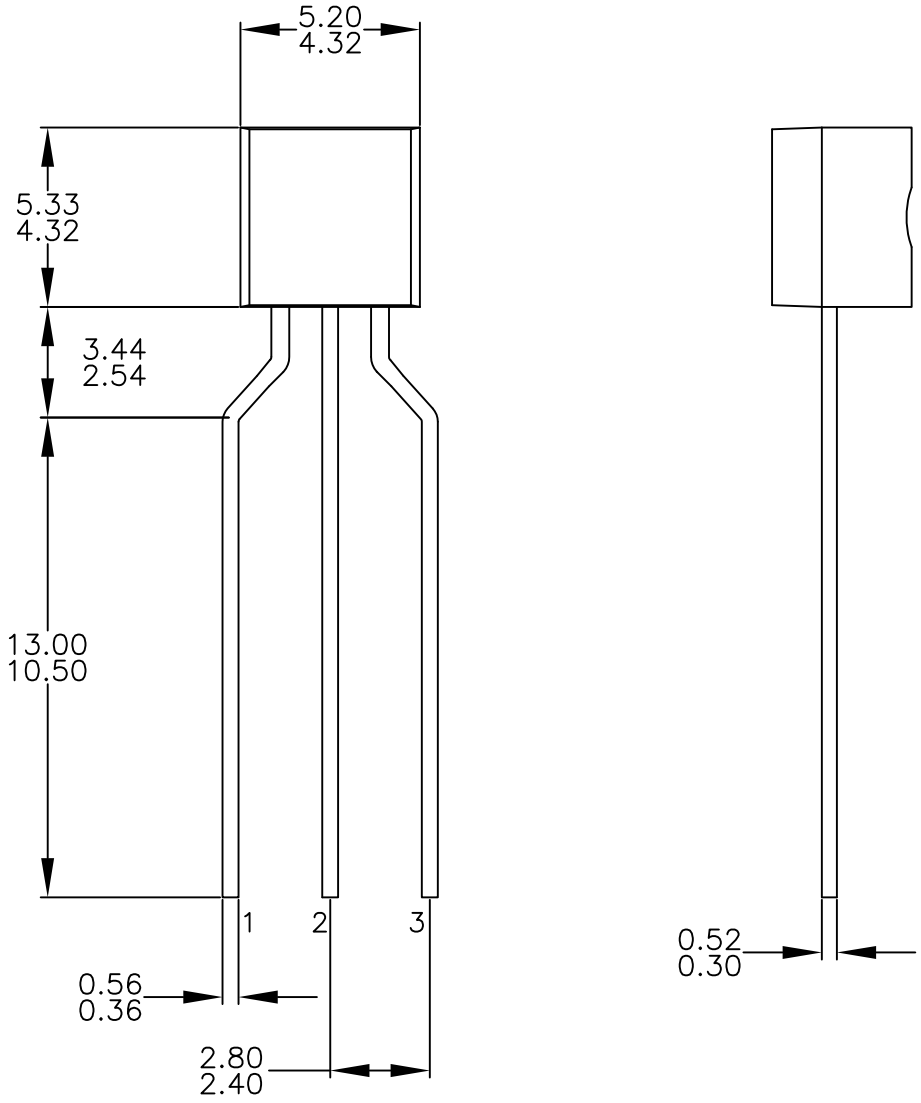
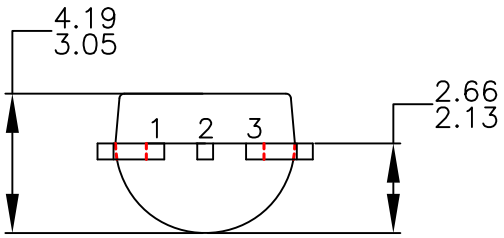


Figure 5. Current Gain Bandwidth Product





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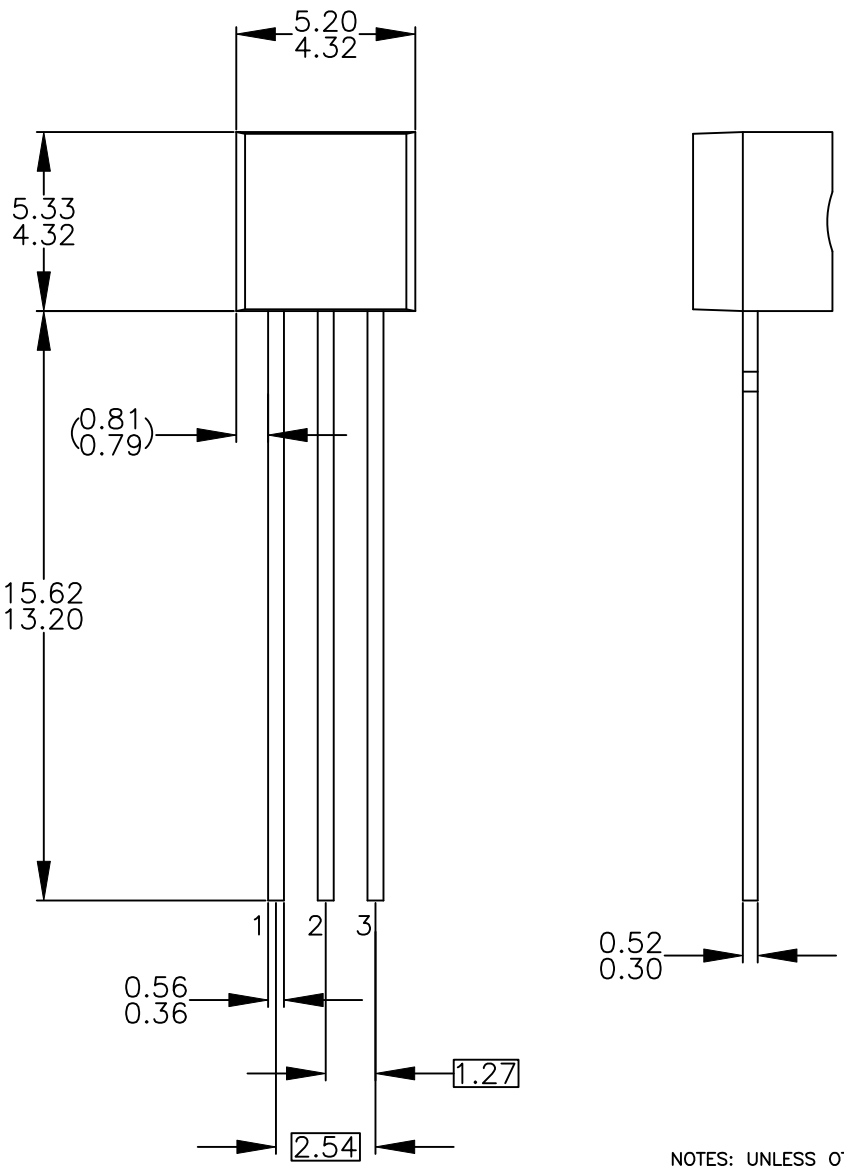

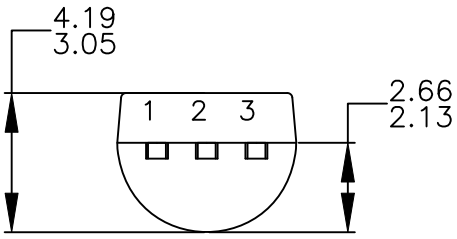

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