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MPSA29
NPN Darlington Transistor

Description

This device is designed for applications requiring extremely high current gain at collector currents to 500 mA. Sourced from process 03. See MPSA28 for characteristics.

Straight Lead
Bulk Packing

Bent Lead
Tape & Reel
Ammo Packing

TO-92
1. Emitter
2. Base
3. Collector

Ordering Information

Part Number	Top Mark	Package	Packing Method
MPSA29	MPSA29	TO-92 3L	Bulk
MPSA29_D26Z	MPSA29	TO-92 3L	Tape and Reel

Absolute Maximum Ratings(1), (2)

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_{CEO}	Collector-Emitter Voltage	100	V
V_{CBO}	Collector-Base Voltage	100	V
V_{EBO}	Emitter-Base Voltage	12	V
I_C	Collector Current - Continuous	800	mA
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +150	°C

Notes:

1. These ratings are based on a maximum junction temperature of 150°C.
2. These are steady-state limits. Fairchild Semiconductor should be consulted on applications involving pulsed or low-duty-cycle operations.

Thermal Characteristics[3]

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	5.0	mW/°C
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case	83.3	°C/W
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	200	°C/W

Note:

3. 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[4]

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

Symbol	Parameter	Conditions	Min.	Max.	Unit
BV_{CEO}	Collector-Emitter Breakdown Voltage	I_C = 100 µA, I_B = 0	100		V
BV_{CBO}	Collector-Base Breakdown Voltage	I_C = 100 µA, I_E = 0	100		V
BV_{EBO}	Emitter-Base Breakdown Voltage	I_E = 10 µA, I_C = 0	12		V
I_{CBO}	Collector Cut-Off Current	V_{CB} = 80 V, I_E = 0		100	nA
I_{CES}	Collector Cut-Off Current	V_{CE} = 80 V, I_E = 0		500	nA
I_{EBO}	Emitter Cut-Off Current	V_{EB} = 10 V, I_C = 0		100	nA
h_{FE}	DC Current Gain	V_{CE} = 5.0 V, I_C = 10 mA	10,000		
		V_{CE} = 5.0 V, I_C = 100 mA	10,000		
V_{CE}(sat)	Collector-Emitter Saturation Voltage	I_C = 10 mA, I_B = 0.01 mA		1.2	V
		I_C = 100 mA, I_B = 0.1 mA		1.5	
V_{BE}(on)	Base-Emitter On Voltage	I_C = 100 mA, V_{CE} = 5.0V		2.0	V
f_T	Current Gain - Bandwidth Product	I_C = 10 mA, V_{CE} = 5.0 V, f = 100 MHz	125		MHz
C_{obo}	Output Capacitance	V_{CB} = 10 V, I_E = 0, f = 1.0 MHz		8.0	pF

Note:

4. Pulse test: pulse width ≤ 300 µs, duty cycle ≤ 2.0%

Physical Dimensions

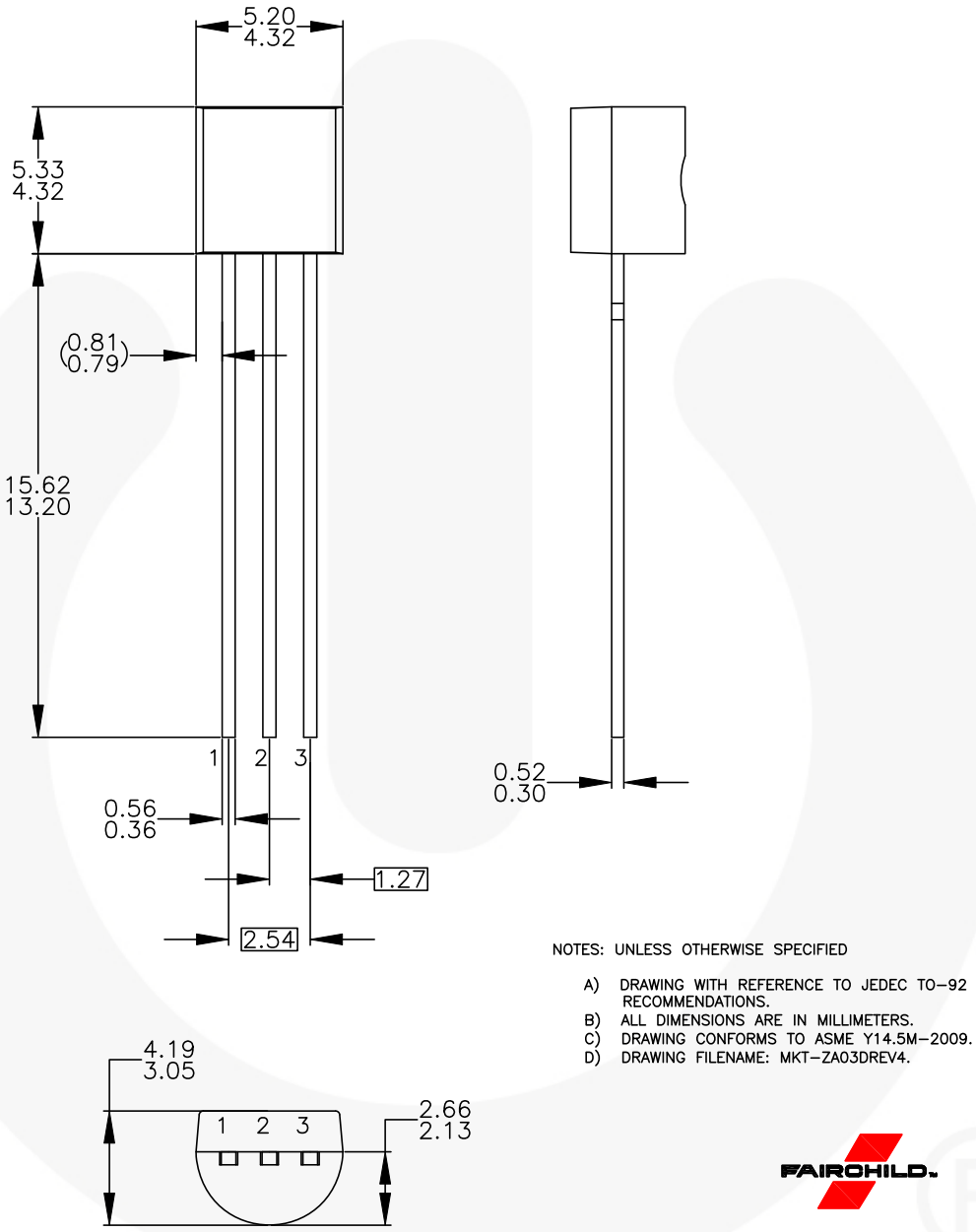

Figure 1. 3-Lead, TO-92, Molded, STD Straight Lead, Bulk Type

Physical Dimensions (Continued)

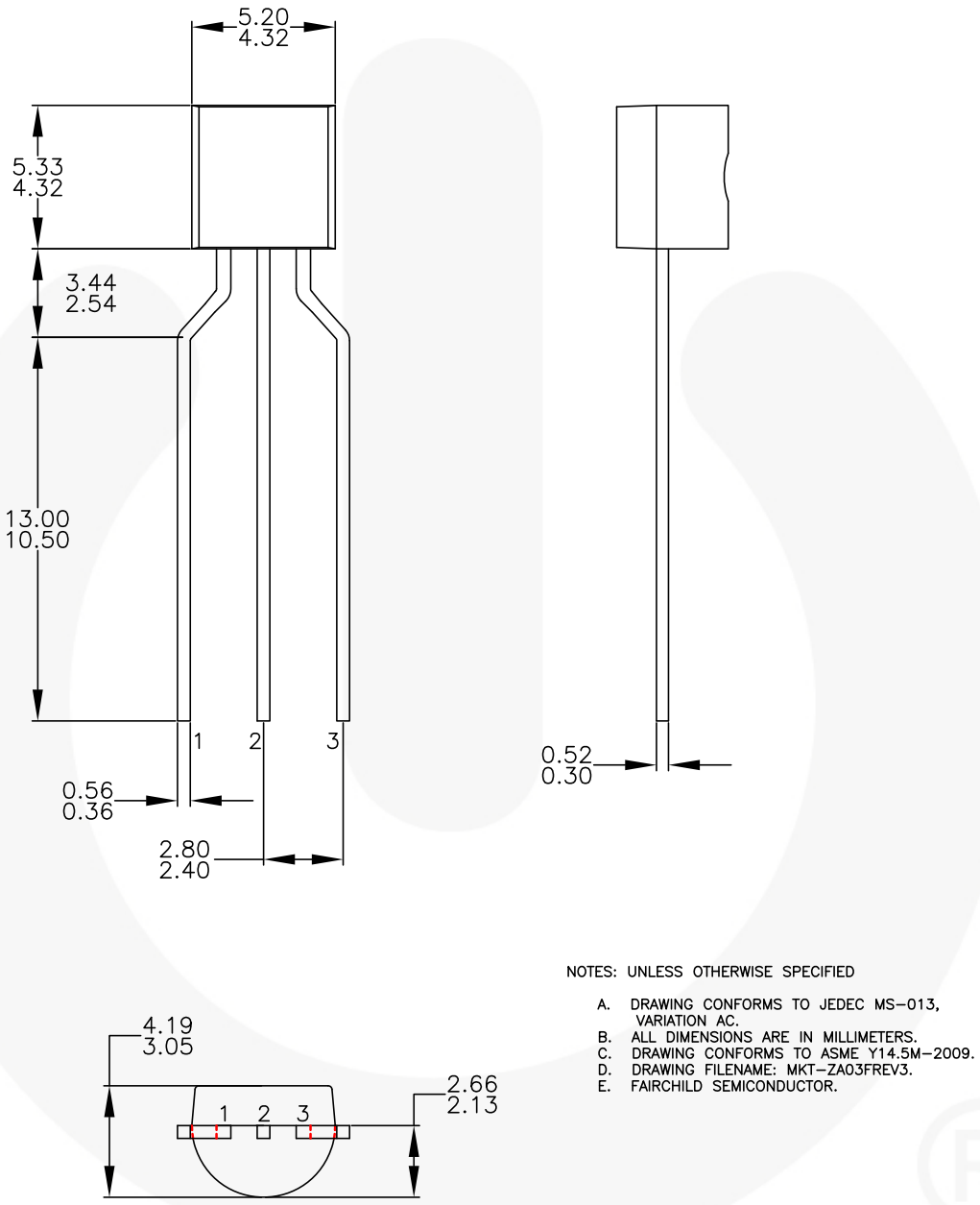

Figure 2. 3-Lead, TO-92, Molded, 0.2 In Line Spacing Lead Form, Ammo, Tape and Reel Type

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No Identification Needed	Full Production	Datasheet contains final specifications. Fairchild Semiconductor reserves the right to make changes at any time without notice to improve the design.
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