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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.

June 2016

FJV3114R
NPN Epitaxial Silicon Transistor with Bias Resistor

Features

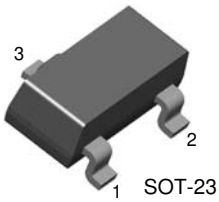
- 100 mA Output Current Capability
- Built-in Bias Resistor (R_1 = 4.7 kΩ, R_2 = 47 kΩ)

Application

- Switching, Interface, and Driver Circuits
- Inverters
- Digital Applications in Industrial Segments

Description

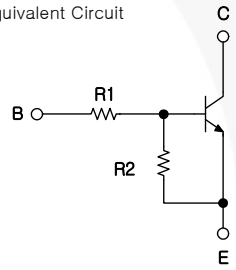
Transistors with built-in resistors can be excellent space- and cost-saving solutions by reducing component count and simplifying circuit design.



SOT-23

1. Base 2. Emitter 3. Collector

Equivalent Circuit



Ordering Information

Part Number	Top Mark	Package	Packing Method
FJV3114RMTF	R34	SOT-23 3L	Tape and Reel

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	50	V
V_{CEO}	Collector-Emitter Voltage	50	V
V_{EBO}	Emitter-Base Voltage	10	V
I_C	Collector Current	100	mA
T_J	Junction Temperature	150	°C
T_{STG}	Storage Temperature	-55 to 150	°C

Thermal Characteristics[1]

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

Symbol	Parameter	Value	Unit
P_D	Power Dissipation	200	mW
	Derate Above T_A = 25°C	1.60	mW/°C
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	625	°C/W

Note:

1. FR-4 76 x 114 x 0.6T mm^3 (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 = 10 μA, I_E = 0	50			V
BV_{CEO}	Collector-Emitter Breakdown Voltage	I_C = 100 μA, I_B = 0	50			V
I_{CBO}	Collector Cut-Off Current	V_{CB} = 40 V, I_E = 0			0.1	μA
h_{FE}	DC Current Gain	V_{CE} = 5 V, I_C = 5 mA	68			
V_{CE}(sat)	Collector-Emitter Saturation Voltage	I_C = 10 mA, I_B = 0.5 mA			0.3	V
f_T	Current Gain Bandwidth Product	V_{CE} = 10 V, I_C = 5 mA		250		MHz
C_{ob}	Output Capacitance	V_{CB} = 10 V, I_E = 0, f = 1.0 MHz		3.7		pF
V_I(off)	Input-Off Voltage	V_{CE} = 5 V, I_C = 100 μA			0.5	V
V_I(on)	Input-On Voltage	V_{CE} = 0.2 V, I_C = 5 mA	1.3			V
R_1	Input Resistor		3.2	4.7	6.2	kΩ
R_1/R_2	Resistor Ratio		0.09	0.10	0.11	

Typical Performance Characteristics

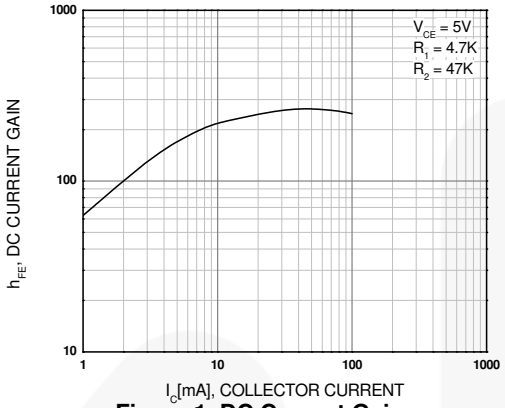


Figure 1. DC Current Gain

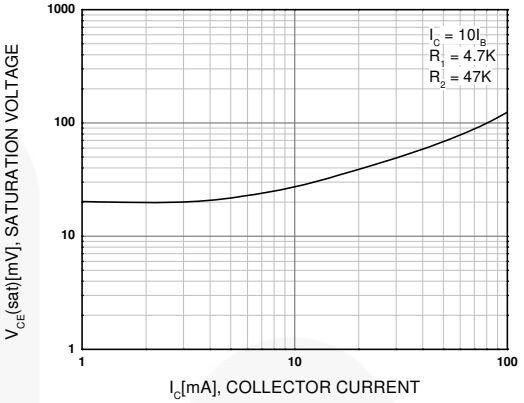


Figure 2. Collector-Emitter Saturation Voltage

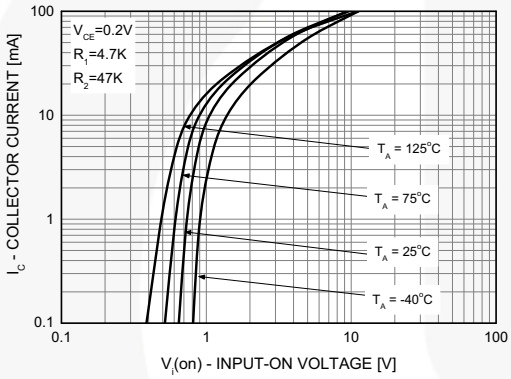


Figure 3. Input-On Voltage

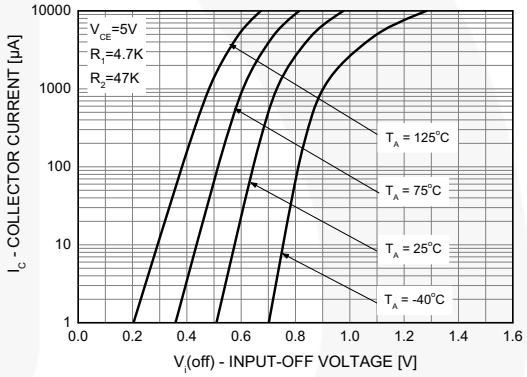


Figure 4. Collector Current vs. Input Off Voltage

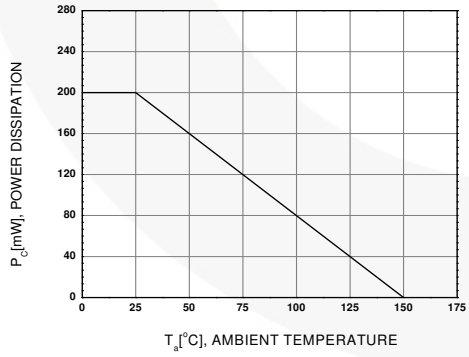
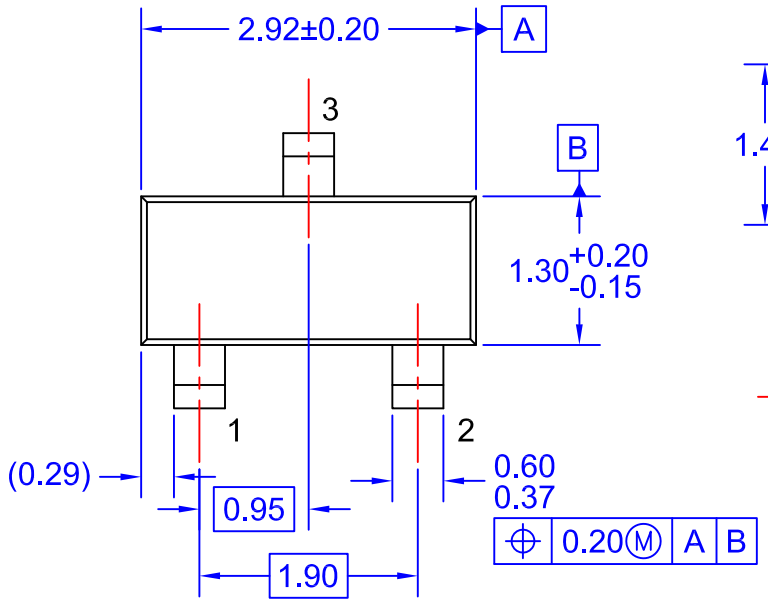
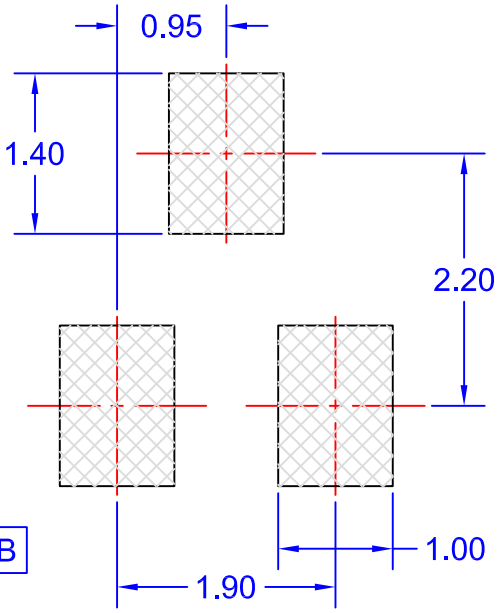
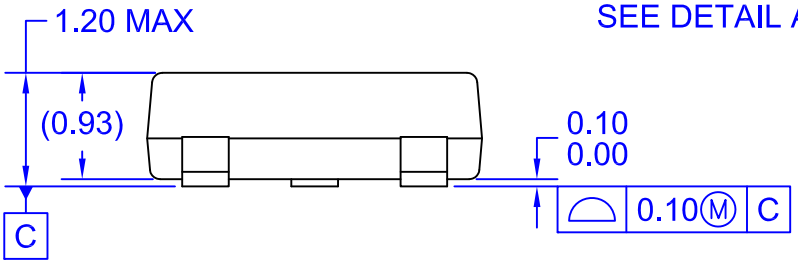


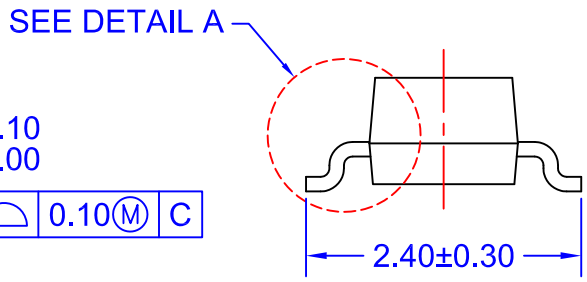
Figure 5. Power Derating

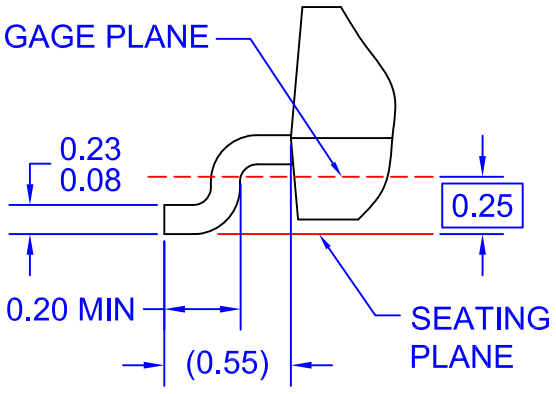




LAND PATTERN
RECOMMENDATION







DETAIL A
SCALE: 2X

NOTES: UNLESS OTHERWISE SPECIFIED

A) REFERENCE JEDEC REGISTRATION TO-236, VARIATION AB, ISSUE H.
B) ALL DIMENSIONS ARE IN MILLIMETERS.
C) DIMENSIONS ARE INCLUSIVE OF BURRS, MOLD FLASH AND TIE BAR EXTRUSIONS.
D) DIMENSIONING AND TOLERANCING PER ASME Y14.5M - 2009.
E) DRAWING FILE NAME: MA03DREV12

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