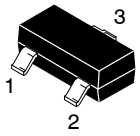
# PNP Epitaxial Silicon Transistor

# FJV992



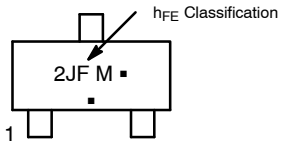

1. Base
2. Emitter
3. Collector

**SOT−23 (TO−236)**
**CASE 318**
**STYLE 6**

### Audio Frequency Low Noise Amplifier

- Complement to FJV1845

### MARKING DIAGRAM




2JF = Specific Device Code
M = Assembly Operation Month
▪ = Pb−Free Package

(Note: Microdot may be in either location)

### MAXIMUM RATINGS ($T_a$ = 25°C unless otherwise noted)

| Symbol | Rating | Value | Unit |
|---|---|---|---|
| $V_{CBO}$ | Collector−Base Voltage | −120 | V |
| $V_{CEO}$ | Collector−Emitter Voltage | −120 | V |
| $V_{EBO}$ | Emitter−Base Voltage | −5 | V |
| $I_C$ | Collector Current | −50 | mA |
| $P_C$ | Collector Power Dissipation | 300 | mW |
| $T_J$ | Junction Temperature | 150 | °C |
| $T_{STG}$ | Storage Temperature | −55 ~ 150 | °C |

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

### $h_{FE2}$ CLASSIFICATION

| Classification | P | F | E |
|---|---|---|---|
| $h_{FE2}$ | 200 ~ 400 | 300 ~ 600 | 400 ~ 800 |

### ORDERING INFORMATION

| Device | Package | Shipping† |
|---|---|---|
| FJV992FMTF | SOT−23 (TO−236) (Pb−Free) | 3000 / Tape & Reel |

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specification Brochure, BRD8011/D.

### ELECTRICAL CHARACTERISTICS ($T_a$ = 25°C unless otherwise noted)

| Symbol | Parameter | Test Condition | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| $BV_{CBO}$ | Collector−Base Breakdown Voltage | $I_C$ = −100 μA, $I_E$ = 0 | −120 | − | − | V |
| $BV_{CEO}$ | Collector−Emitter Breakdown Voltage | $I_C$ = −1 mA, $I_B$ = 0 | −120 | − | − | V |
| $BV_{EBO}$ | Emitter−Emitter Breakdown Voltage | $I_E$ = −10 μA, $I_C$ = 0 | −5 | − | − | V |
| $I_{EBO}$ | Emitter−Base Cutoff Current | $V_{EB}$ = −6 V, $I_C$ = 0 | − | − | −30 | nA |
| $h_{FE1}$ | DC Current Gain | $V_{CE}$ = −6 V, $I_C$ = −0.1 mA | 150 | − | − | |
| $h_{FE2}$ | | $V_{CE}$ = −6 V, $I_C$ = −1 mA | 200 | − | 800 | |
| $V_{CE}$(sat) | Collector−Emitter Saturation Voltage | $I_C$ = −10 mA, $I_B$ = −1 mA | − | − | −300 | mV |
| $V_{BE}$(on) | Base−Emitter On Voltage | $V_{CE}$ = −6 V, $I_C$ = −1 mA | −0.55 | − | −0.65 | V |
| $f_T$ | Current Gain Bandwidth Product | $V_{CE}$ = −6 V, $I_C$ = −1 mA | 50 | − | − | MHz |
| $C_{ob}$ | Output Capacitance | $V_{CB}$ = −30 V, $I_E$ = 0, f = 1 MHz | − | − | 3 | pF |
| NV | Noise Voltage | $V_{CE}$ = −5.0 V, $I_C$ = −1.0 mA, $R_G$ = 100 kΩ, $G_V$ = 80 dB, f = 10 Hz to 1.0 kHz | − | − | 40 | mV |

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

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## TYPICAL CHARACTERISTICS

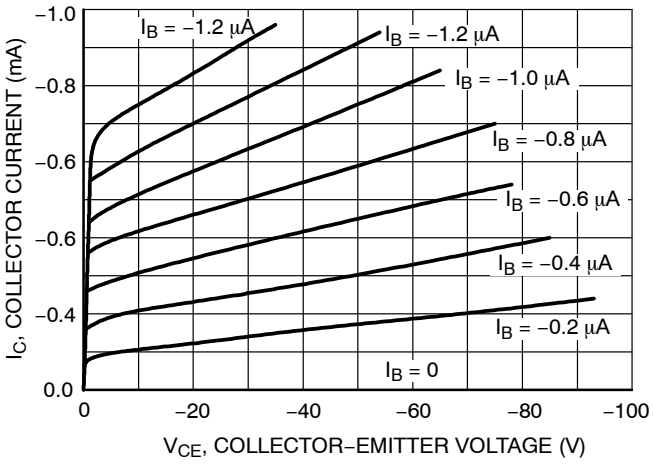


**Figure 1. Static Characteristic**

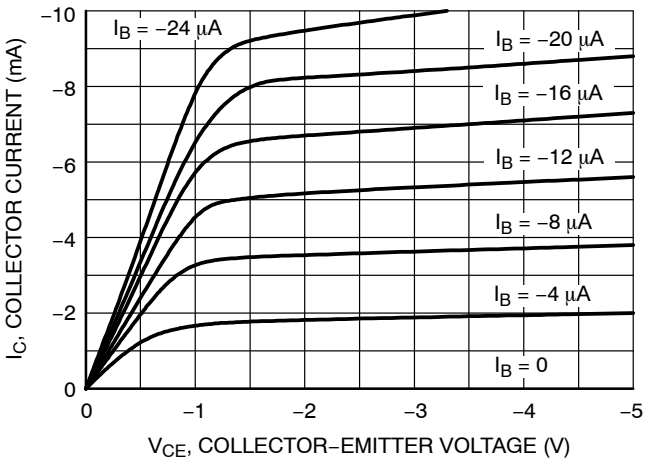


**Figure 2. Static Characteristic**

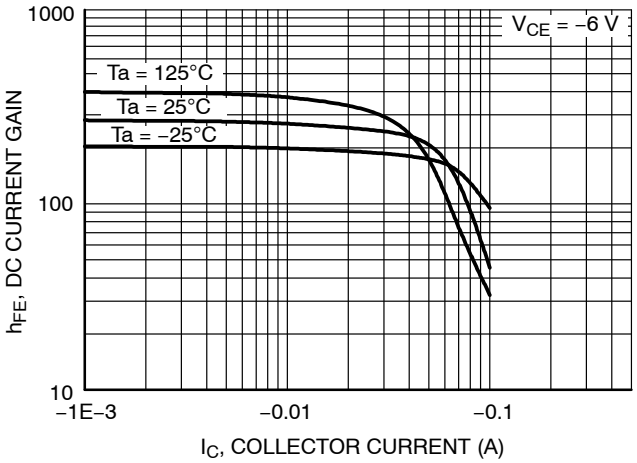


**Figure 3. DC Current Gain**

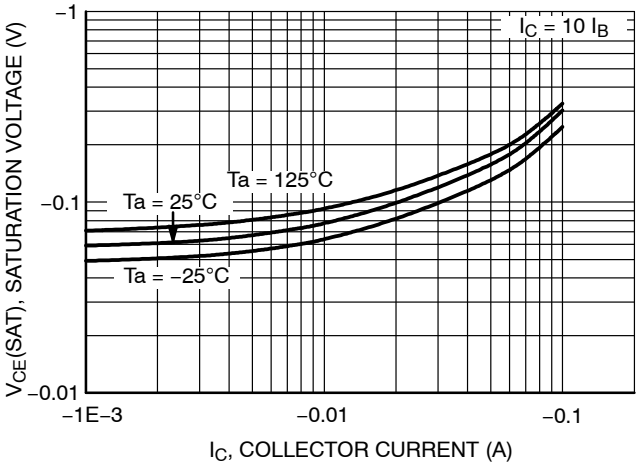


**Figure 4. Collector−Emitter Saturation Voltage**

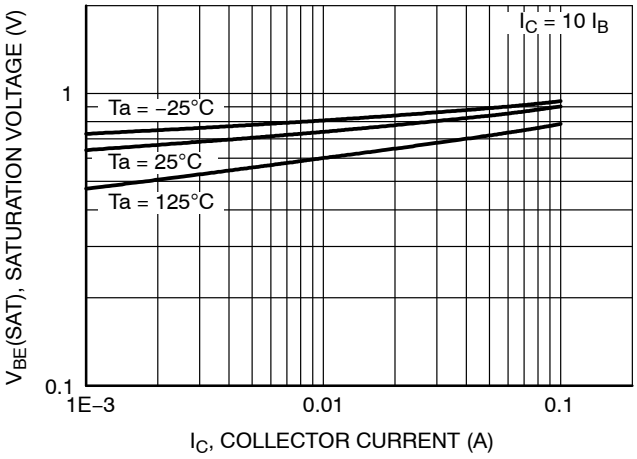


**Figure 5. Base−Emitter Saturation Voltage**

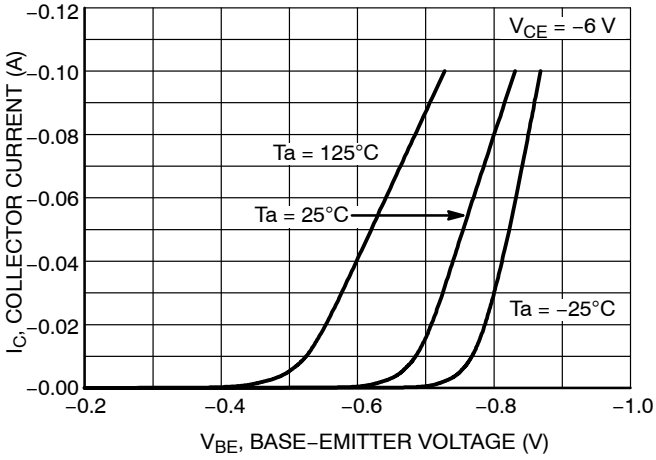


**Figure 6. Base−Emitter Voltage**



Share Feedback
Your Opinion Matters

## TYPICAL CHARACTERISTICS (continued)

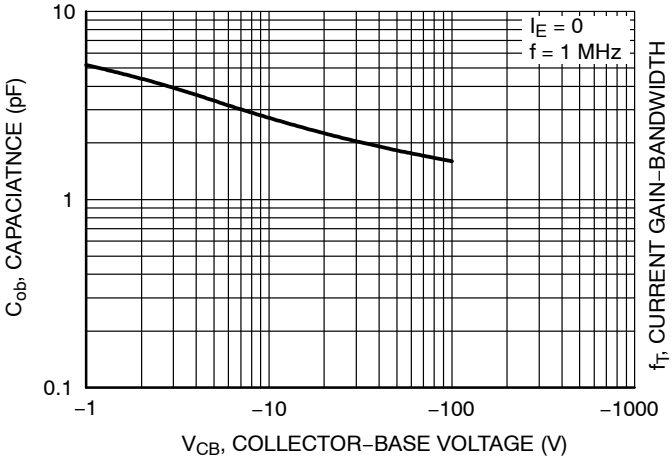


**Figure 7. Collector Output Capacitance**

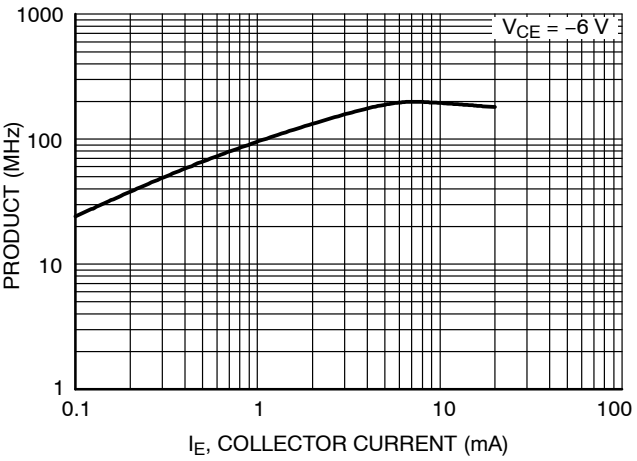


**Figure 8. Current Gain Bandwidth Product**

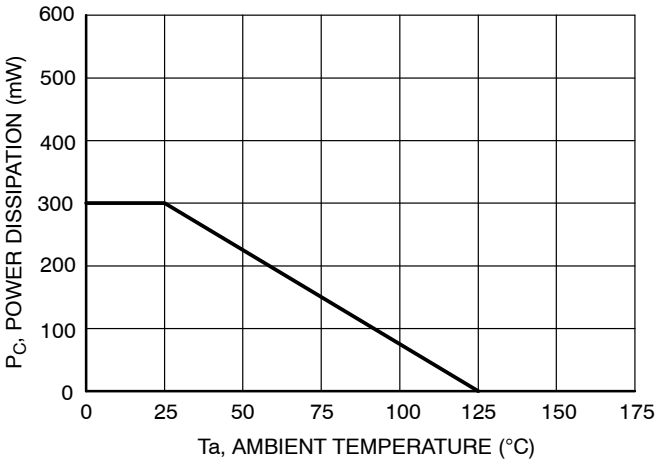


**Figure 9. Power Derating**



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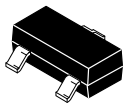
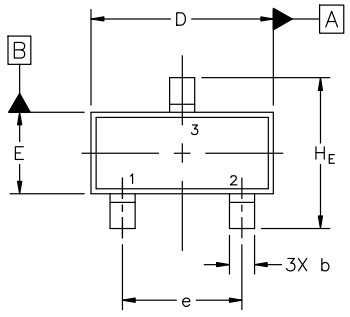
Your Opinion Matters



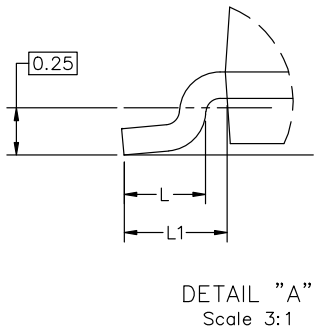
**SCALE 4:1**

**SOT−23 (TO−236) 2.90x1.30x1.00 1.90P**
CASE 318
ISSUE AU

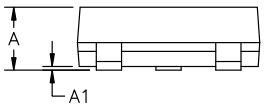
DATE 14 AUG 2024



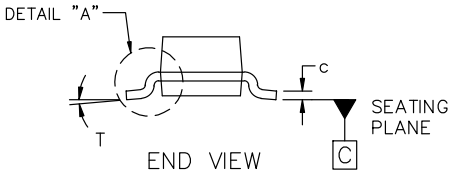

TOP VIEW




DETAIL "A"
Scale 3:1




SIDE VIEW

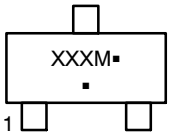



END VIEW

| MILLIMETERS | | | |
|---|---|---|---|
| DIM | MIN | NOM | MAX |
| A | 0.89 | 1.00 | 1.11 |
| A1 | 0.01 | 0.06 | 0.10 |
| b | 0.37 | 0.44 | 0.50 |
| c | 0.08 | 0.14 | 0.20 |
| D | 2.80 | 2.90 | 3.04 |
| E | 1.20 | 1.30 | 1.40 |
| e | 1.78 | 1.90 | 2.04 |
| L | 0.30 | 0.43 | 0.55 |
| L1 | 0.35 | 0.54 | 0.69 |
| $H_E$ | 2.10 | 2.40 | 2.64 |
| T | 0° | −−− | 10° |

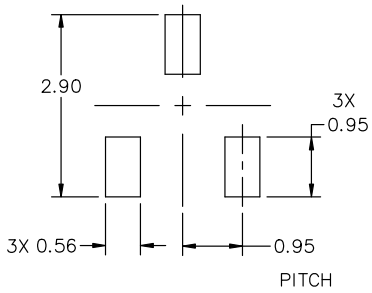
NOTES:
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 2018.
2. CONTROLLING DIMENSIONS: MILLIMETERS.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF THE BASE MATERIAL.
4. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH, PROTRUSIONS, OR GATE BURRS.

**GENERIC**
**MARKING DIAGRAM***




XXX = Specific Device Code
M = Date Code
▪ = Pb−Free Package

*This information is generic. Please refer to device data sheet for actual part marking. Pb−Free indicator, "G" or microdot "▪", may or may not be present. Some products may not follow the Generic Marking.




RECOMMENDED
MOUNTING FOOTPRINT

* For additional information on our Pb−Free strategy and soldering details, please download the onsemi Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

**STYLES ON PAGE 2**



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**SOT−23 (TO−236) 2.90x1.30x1.00 1.90P**
CASE 318
ISSUE AU

DATE 14 AUG 2024

STYLE 1 THRU 5:
CANCELLED

STYLE 6:
PIN 1. BASE
2. EMITTER
3. COLLECTOR

STYLE 7:
PIN 1. EMITTER
2. BASE
3. COLLECTOR

STYLE 8:
PIN 1. ANODE
2. NO CONNECTION
3. CATHODE

STYLE 9:
PIN 1. ANODE
2. ANODE
3. CATHODE

STYLE 10:
PIN 1. DRAIN
2. SOURCE
3. GATE

STYLE 11:
PIN 1. ANODE
2. CATHODE
3. CATHODE−ANODE

STYLE 12:
PIN 1. CATHODE
2. CATHODE
3. ANODE

STYLE 13:
PIN 1. SOURCE
2. DRAIN
3. GATE

STYLE 14:
PIN 1. CATHODE
2. GATE
3. ANODE

STYLE 15:
PIN 1. GATE
2. CATHODE
3. ANODE

STYLE 16:
PIN 1. ANODE
2. CATHODE
3. CATHODE

STYLE 17:
PIN 1. NO CONNECTION
2. ANODE
3. CATHODE

STYLE 18:
PIN 1. NO CONNECTION
2. CATHODE
3. ANODE

STYLE 19:
PIN 1. CATHODE
2. ANODE
3. CATHODE−ANODE

STYLE 20:
PIN 1. CATHODE
2. ANODE
3. GATE

STYLE 21:
PIN 1. GATE
2. SOURCE
3. DRAIN

STYLE 22:
PIN 1. RETURN
2. OUTPUT
3. INPUT

STYLE 23:
PIN 1. ANODE
2. ANODE
3. CATHODE

STYLE 24:
PIN 1. GATE
2. DRAIN
3. SOURCE

STYLE 25:
PIN 1. ANODE
2. CATHODE
3. GATE

STYLE 26:
PIN 1. CATHODE
2. ANODE
3. NO CONNECTION

STYLE 27:
PIN 1. CATHODE
2. CATHODE
3. CATHODE

STYLE 28:
PIN 1. ANODE
2. ANODE
3. ANODE




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