

# PNP Epitaxial Silicon Transistor

# **FJV992**

#### **Audio Frequency Low Noise Amplifier**

• Complement to FJV1845

## **MAXIMUM RATINGS** (T<sub>a</sub> = 25°C unless otherwise noted)

Symbol	Rating	Value	Unit
V <sub>CBO</sub>	Collector-Base Voltage	-120	V
V <sub>CEO</sub>	Collector-Emitter Voltage	-120	V
V <sub>EBO</sub>	Emitter-Base Voltage	-5	V
I <sub>C</sub>	Collector Current	-50	mA
P <sub>C</sub>	Collector Power Dissipation	300	mW
TJ	Junction Temperature	150	°C
T <sub>STG</sub>	Storage Temperature	<b>−55</b> ~ <b>150</b>	°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

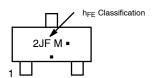
Classification	Р	F	E
h <sub>FE2</sub>	200 ~ 400	300 ~ 600	400 ~ 800



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

SOT-23 (TO-236) CASE 318 STYLE 6

#### MARKING DIAGRAM



2JF = Specific Device Code M = Assembly Operation Month

= Pb-Free Package

(Note: Microdot may be in either location)

#### **ORDERING INFORMATION**

Device	Package	Shipping <sup>†</sup>	
FJV992FMTF	SOT-23 (TO-236)	3000 /	
	(Pb-Free)	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, <a href="https://example.com/BRD8011/D">BRD8011/D</a>.

## **ELECTRICAL CHARACTERISTICS** (T<sub>a</sub> = 25°C unless otherwise noted)

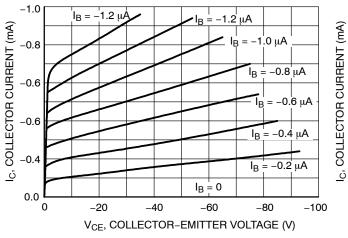
Symbol	Parameter	Test Condition	Min	Тур	Max	Unit
BV <sub>CBO</sub>	Collector-Base Breakdown Voltage	$I_C = -100 \mu\text{A},  I_E = 0$	-120	-	-	V
BV <sub>CEO</sub>	Collector-Emitter Breakdown Voltage	$I_C = -1 \text{ mA}, I_B = 0$	-120	_	-	V
BV <sub>EBO</sub>	Emitter-Emitter Breakdown Voltage	$I_E = -10 \mu A, I_C = 0$	-5	_	-	V
I <sub>EBO</sub>	Emitter-Base Cutoff Current	$V_{EB} = -6 \text{ V}, I_C = 0$	-	-	-30	nA
h <sub>FE1</sub>	DC Current Gain	$V_{CE} = -6 \text{ V}, I_{C} = -0.1 \text{ mA}$	150	_	_	
h <sub>FE2</sub>		$V_{CE} = -6 \text{ V}, I_{C} = -1 \text{ mA}$	200	_	800	
V <sub>CE</sub> (sat)	Collector-Emitter Saturation Voltage	$I_C = -10 \text{ mA}, I_B = -1 \text{ mA}$	-	_	-300	mV
V <sub>BE</sub> (on)	Base-Emitter On Voltage	$V_{CE} = -6 \text{ V}, I_{C} = -1 \text{ mA}$	-0.55	_	-0.65	V
f <sub>T</sub>	Current Gain Bandwidth Product	$V_{CE} = -6 \text{ V}, I_{C} = -1 \text{ mA}$	50	_	_	MHz
C <sub>ob</sub>	Output Capacitance	$V_{CB} = -30 \text{ V}, I_E = 0, f = 1 \text{ MHz}$	-	-	3	pF
NV	Noise Voltage	$V_{CE} = -5.0 \text{ V}, I_{C} = -1.0 \text{ mA}, \\ R_{G} = 100 \text{ k}\Omega, G_{V} = 80 \text{ dB}, \\ f = 10 \text{ Hz to } 1.0 \text{ kHz}$	-	-	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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#### **FJV992**

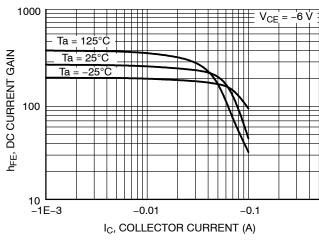
#### **TYPICAL CHARACTERISTICS**



 $I_B = -24 \mu A$  $I_B = -20 \; \mu A$ -8 -16 μA I<sub>B</sub> =  $I_B$ -12 μA -6 -8 μA -4  $I_B = -4 \mu A$ -2  $I_B = 0$ 0 0 -1 -2 -3 -4 -5 V<sub>CE</sub>, COLLECTOR-EMITTER VOLTAGE (V)

Figure 1. Static Characteristic

Figure 2. Static Characteristic



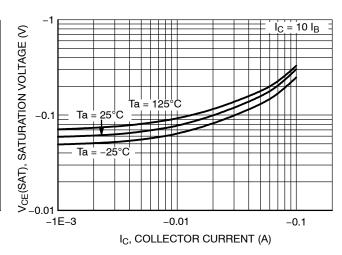
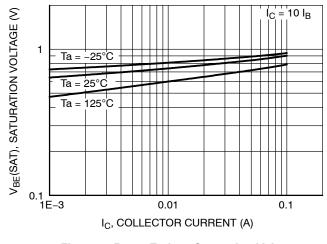


Figure 3. DC Current Gain

Figure 4. Collector-Emitter Saturation Voltage



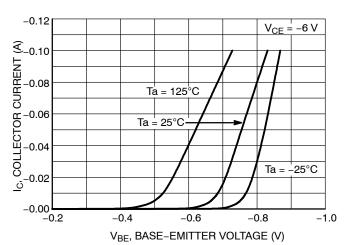


Figure 5. Base-Emitter Saturation Voltage

Figure 6. Base-Emitter Voltage

## TYPICAL CHARACTERISTICS (continued)

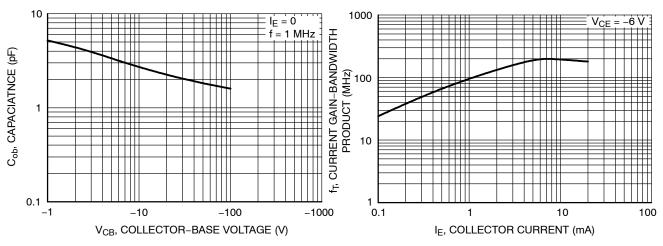


Figure 7. Collector Output Capacitance

Figure 8. Current Gain Bandwidth Product

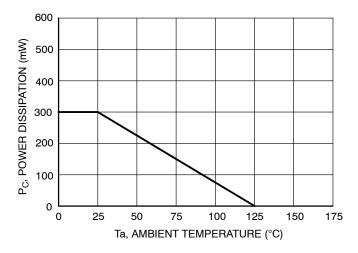


Figure 9. Power Derating

**MILLIMETERS** 

MIN

0.89

0.01

0.37

0.08

2.80

1.20

1.78

0.30

0.35

2.10

O°

NOM

1.00

0.06

0.44

0.14

2.90

1.30

1.90

0.43

0.54

2.40

\_\_\_





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

**DATE 14 AUG 2024** 

MAX

1.11

0.10

0.50

0.20

3.04

1.40

2.04

0.55

0.69

2.64

10°





DETAIL "A" Scale 3:1







#### NOTES:

DIM

Α

Α1

b

С

D

Ε

е L

L1

HE

Τ

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

## **GENERIC MARKING DIAGRAM\***



XXX = Specific Device Code

= Date Code

= Pb-Free Package

### 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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<sup>\*</sup>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.

# 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 9: PIN 1. ANODE 2. ANODE 3. CATHODE	STYLE 10: PIN 1. DRAIN 2. SOURCE 3. GATE	2. CATHODE 2.	2: STYLE 13: CATHODE PIN 1. SOURCE CATHODE 2. DRAIN ANODE 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	2. ANODE 2.	3: STYLE 19: NO CONNECTION PIN 1. CATHODE CATHODE 2. ANODE 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 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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