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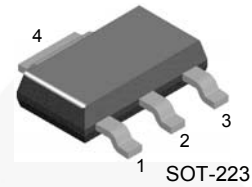
October 2014

# FJT44

## NPN Epitaxial Silicon Transistor

### Features

- High-Voltage Transistor



1. Base 2,4. Collector 3. Emitter

### Ordering Information

Part Number	Marking	Package	Packing Method, Size
FJT44TF	FJT44	SOT-223 4L	Tape and Reel, 4000 pcs
FJT44KTF	FJT44	SOT-223 4L	Tape and Reel, 2500 pcs

### Absolute Maximum Ratings<sup>(1),(2)</sup>

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  $T_A = 25^\circ\text{C}$  unless otherwise noted.

Symbol	Parameter	Value	Unit
$V_{CBO}$	Collector-Base Voltage	500	V
$V_{CEO}$	Collector-Emitter Voltage	400	V
$V_{EBO}$	Emitter-Base Voltage	6	V
$I_C$	Collector Current	300	mA
$T_J$	Junction Temperature	150	$^\circ\text{C}$
$T_{STG}$	Storage Temperature Range	-55 to +150	$^\circ\text{C}$

#### Notes:

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

**Thermal Characteristics<sup>(3)</sup>**

Values are at  $T_A = 25^\circ\text{C}$  unless otherwise noted.

Symbol	Parameter	Max.	Unit
$P_D$	Power Dissipation, $T_C = 25^\circ\text{C}$	2	W
	Derate Above $25^\circ\text{C}$	16	mW/ $^\circ\text{C}$
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	62.5	$^\circ\text{C}/\text{W}$

**Note:**

3. Device is mounted on FR-4 PCB 36 mm × 18 mm × 1.5 mm; mounting pad for the collector lead minimum 6 cm<sup>2</sup>.

**Electrical Characteristics<sup>(4)</sup>**

Values are at  $T_A = 25^\circ\text{C}$  unless otherwise noted.

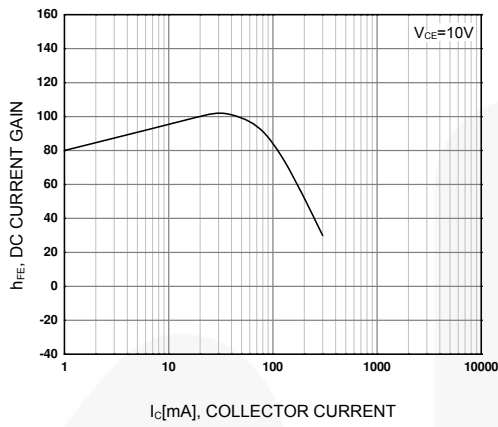
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
$BV_{CBO}$	Collector-Base Breakdown Voltage	$I_C = 100\ \mu\text{A}$ , $I_E = 0$	500			V
$BV_{CEO}$	Collector-Emitter Breakdown Voltage	$I_C = 1\ \text{mA}$ , $I_B = 0$	400			V
$BV_{EBO}$	Emitter-Base Breakdown Voltage	$I_E = 100\ \mu\text{A}$ , $I_C = 0$	6			V
$I_{CBO}$	Collector-Base Cut-Off Current	$V_{CB} = 400\ \text{V}$ , $I_E = 0$			100	nA
$I_{CES}$	Collector-Emitter Cut-Off Current	$V_{CE} = 400\ \text{V}$ , $V_{BE} = 0$			500	nA
$I_{EBO}$	Emitter-Base Cut-Off Current	$V_{EB} = 4\ \text{V}$ , $I_C = 0$			100	nA
$h_{FE}$	DC Current Gain	$V_{CE} = 10\ \text{V}$ , $I_C = 1\ \text{mA}$	40			
		$V_{CE} = 10\ \text{V}$ , $I_C = 10\ \text{mA}$	50		200	
		$V_{CE} = 10\ \text{V}$ , $I_C = 50\ \text{mA}$	45			
		$V_{CE} = 10\ \text{V}$ , $I_C = 100\ \text{mA}$	40			
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = 1\ \text{mA}$ , $I_B = 0.1\ \text{mA}$			0.40	V
		$I_C = 10\ \text{mA}$ , $I_B = 1\ \text{mA}$			0.50	
		$I_C = 50\ \text{mA}$ , $I_B = 5\ \text{mA}$			0.75	
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	$I_C = 10\ \text{mA}$ , $I_B = 1\ \text{mA}$			0.75	V
$C_{obo}$	Output Capacitance	$V_{CB} = 20\ \text{V}$ , $I_E = 0$ , $f = 1.0\ \text{MHz}$			7	pF

**Note:**

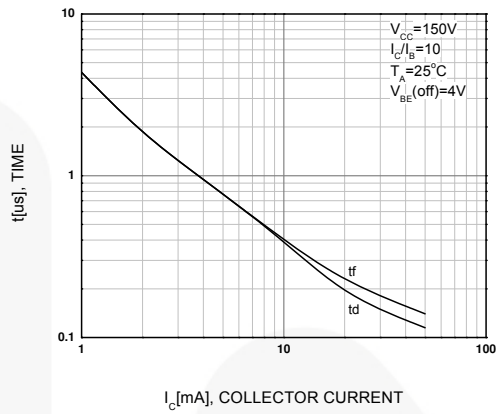
4. Pulse test: pulse width  $\leq 300\ \mu\text{s}$ , duty cycle  $\leq 2.0\%$



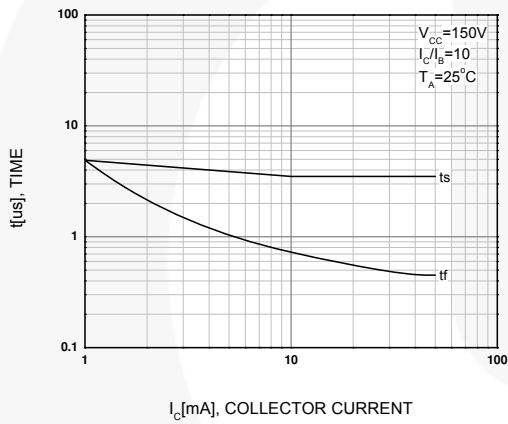
## Typical Performance Characteristics



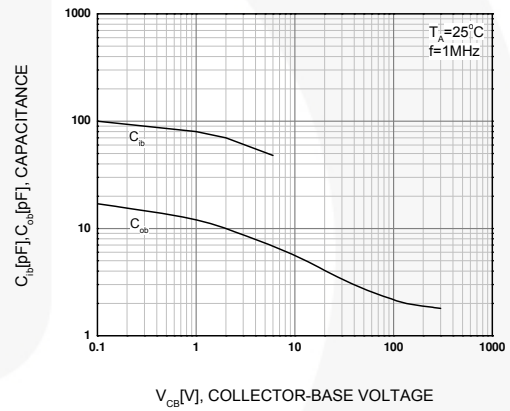
**Figure 1. DC Current Gain**



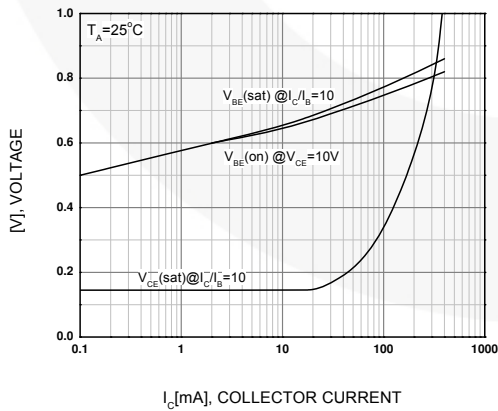
**Figure 2. Turn-On Switching Times**



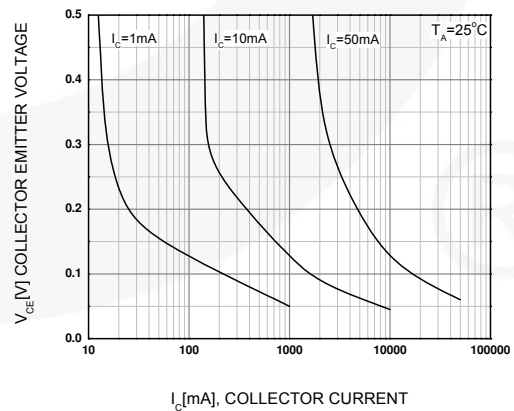
**Figure 3. Turn-Off Switching Times**



**Figure 4. Capacitance**



**Figure 5. On Voltage**



**Figure 6. Collector Saturation Region**

Typical Performance Characteristics (Continued)

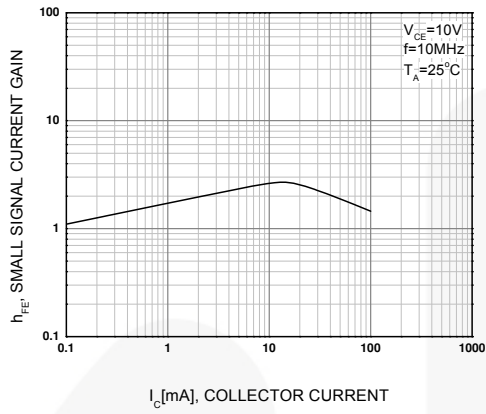
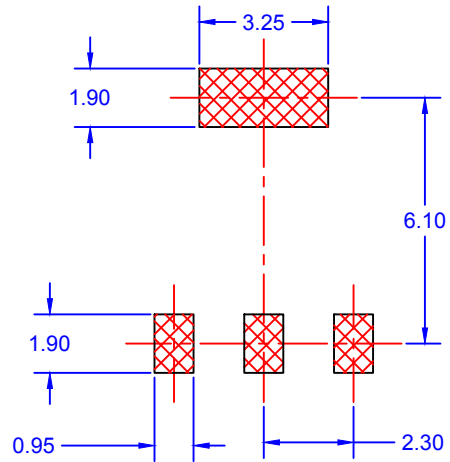
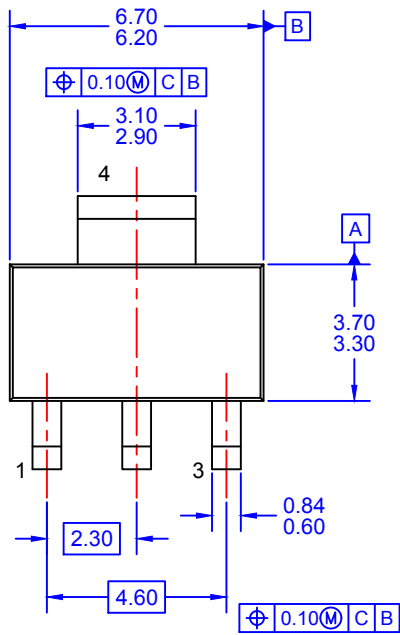
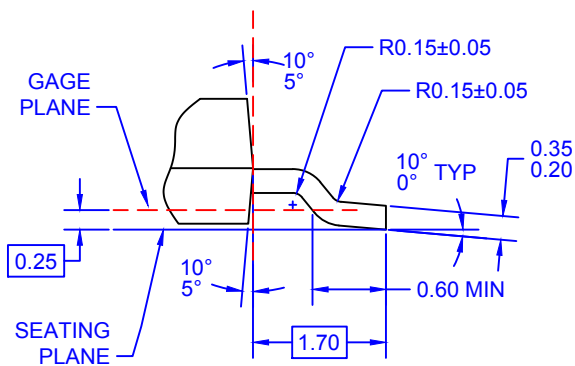
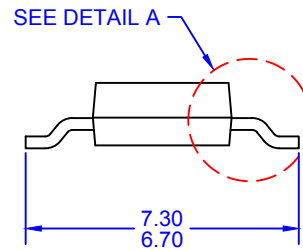
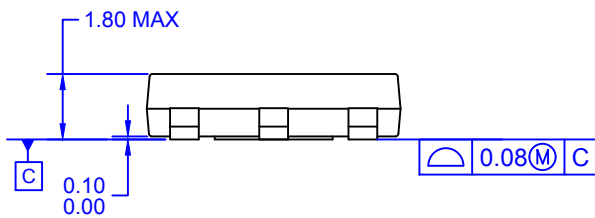


Figure 7. High Frequency Current Gain





LAND PATTERN RECOMMENDATION



DETAIL A  
SCALE: 2:1

- NOTES: UNLESS OTHERWISE SPECIFIED  
 A) DRAWING BASED ON JEDEC REGISTRATION TO-261C, VARIATION AA.  
 B) ALL DIMENSIONS ARE IN MILLIMETERS.  
 C) DIMENSIONS DO NOT INCLUDE BURRS OR MOLD FLASH. MOLD FLASH OR BURRS DOES NOT EXCEED 0.10MM.  
 D) DIMENSIONING AND TOLERANCING PER ASME Y14.5M-2009.  
 E) LANDPATTERN NAME: SOT230P700X180-4BN  
 F) DRAWING FILENAME: MKT-MA04AREV3



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