

# NPN Silicon Transistor

## FJPF5021

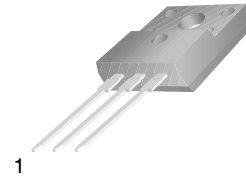
### High Voltage and High Reliability

- High Speed Switching:  $t_F = 0.1 \mu s$  (Typ.)
- Wide SOA
- This is a Pb-Free Device

### ABSOLUTE MAXIMUM RATINGS ( $T_C = 25^\circ C$ , unless otherwise noted)

Symbol	Parameter	Value	Unit
$V_{CBO}$	Collector-Base Voltage	800	V
$V_{CEO}$	Collector-Emitter Voltage	500	V
$V_{EBO}$	Emitter-Base Voltage	7	V
$I_C$	Collector Current (DC)	5	A
$I_{CP}$	Collector Current (Pulse)	10	A
$I_B$	Base Current	2	A
$P_C$	Collector Dissipation ( $T_C = 25^\circ C$ )	40	W
$T_J$	Junction Temperature	150	$^\circ C$
$T_{STG}$	Storage Temperature	-55 ~ 150	$^\circ C$

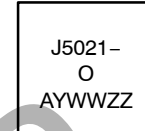
Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.



1. Base
2. Collector
3. Emitter

TO-220 Fullpack, 3-Lead / TO-220F-3SG  
CASE 221AT

### MARKING DIAGRAM



- J5021- = Specific Device Code
- O =  $h_{FE}$  Grade
- A = Assembly Site
- YWW = Date Code (Year & Week)
- ZZ = Assembly Lot Code

### ORDERING INFORMATION

Device	Package	Shipping
FJPF5021OTU	TO-220 Fullpack, 3-Lead	1000 Units / Tube

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

Symbol	Parameter	Test Condition	Min	Typ	Max	Unit
BV <sub>CBO</sub>	Collector-Base Breakdown Voltage	I <sub>C</sub> = 1 mA, I <sub>E</sub> = 0	800	-	-	V
BV <sub>CEO</sub>	Collector-Emitter Breakdown Voltage	I <sub>C</sub> = 5 mA, I <sub>B</sub> = 0	500	-	-	V
BV <sub>EBO</sub>	Emitter-Base Breakdown Voltage	I <sub>E</sub> = 1 mA, I <sub>C</sub> = 0	7	-	-	V
V <sub>CEX(sus)</sub>	Collector-Emitter Sustaining Voltage	I <sub>C</sub> = 2.5 A, I <sub>B1</sub> = -I <sub>B2</sub> = 1 A L = 1 mH, Clamped	500	-	-	V
I <sub>CBO</sub>	Collector Cut-off Current	V <sub>CB</sub> = 500 V, I <sub>E</sub> = 0	-	-	10	μA
I <sub>EBO</sub>	Emitter Cut-off Current	V <sub>EB</sub> = 5 V, I <sub>C</sub> = 0	-	-	10	μA
h <sub>FE1</sub>	DC Current Gain	V <sub>CE</sub> = 5 V, I <sub>C</sub> = 0.6 A	15	-	50	
h <sub>FE2</sub>		V <sub>CE</sub> = 5 V, I <sub>C</sub> = 3 A	8	-	-	
V <sub>CE(sat)</sub>	Collector-Emitter Saturation Voltage	I <sub>C</sub> = 3 A, I <sub>B</sub> = 0.6 A	-	-	1	V
V <sub>BE(sat)</sub>	Base-Emitter Saturation Voltage	I <sub>C</sub> = 3 A, I <sub>B</sub> = 0.6 A	-	-	1.5	V
C <sub>ob</sub>	Output Capacitance	V <sub>CB</sub> = 10 V, I <sub>E</sub> = 0, f = 1 MHz	-	80	-	pF
f <sub>T</sub>	Current Gain Bandwidth Product	V <sub>CE</sub> = 10 V, I <sub>C</sub> = 0.6 A	-	15	-	MHz
t <sub>ON</sub>	Turn On Time	V <sub>CC</sub> = 200 V I <sub>C</sub> = 5 A, I <sub>B1</sub> = -2.5 A, I <sub>B2</sub> = 4 A, R <sub>L</sub> = 50 Ω	-	-	0.5	μs
t <sub>STG</sub>	Storage Time		-	-	3	μs
t <sub>F</sub>	Fall Time		-	-	0.1	0.3

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.

### h<sub>FE</sub> CLASSIFICATION

Classification	R	O	Y
h <sub>FE1</sub>	15 ~ 30	20 ~ 40	30 ~ 50

TYPICAL CHARACTERISTICS

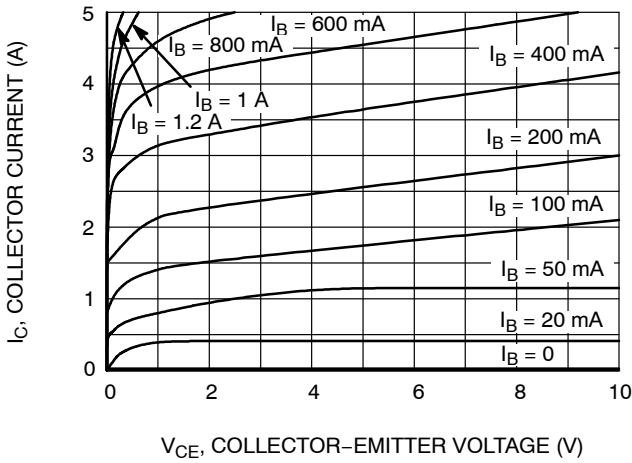


Figure 1. Static Characteristic

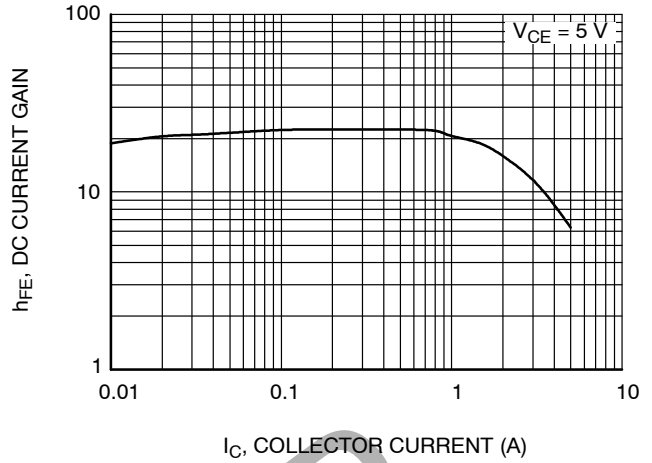


Figure 2. DC Current Gain

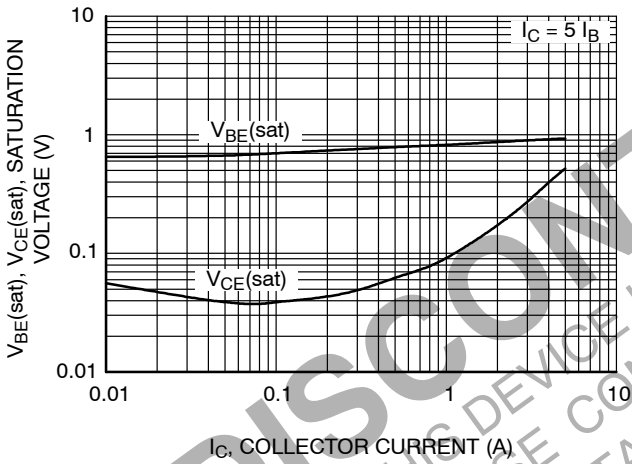


Figure 3. Base-Emitter Saturation Voltage  
Collector-Emitter Saturation Voltage

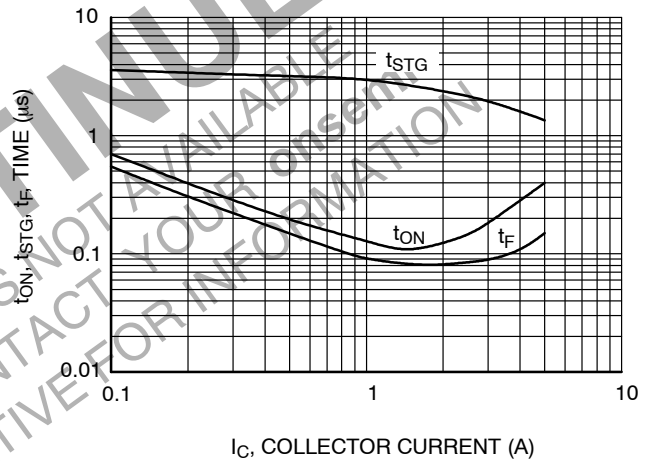


Figure 4. Switching Time

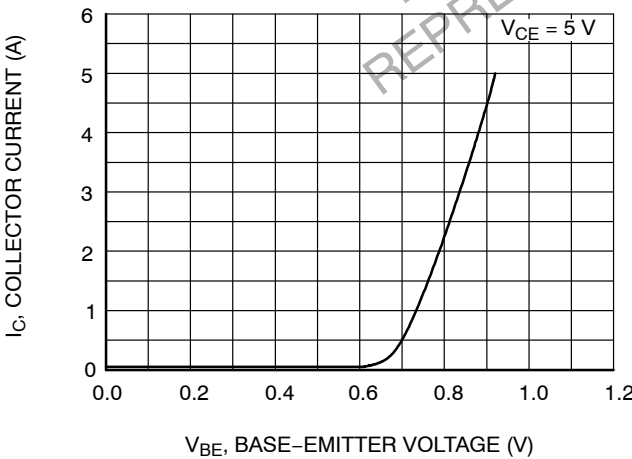


Figure 5. Base-Emitter On Voltage

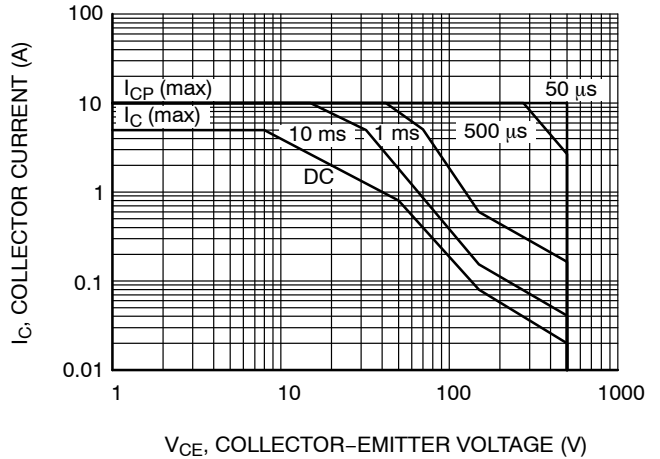


Figure 6. Forward Bias Safe Operating Area

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## TYPICAL CHARACTERISTICS (continued)

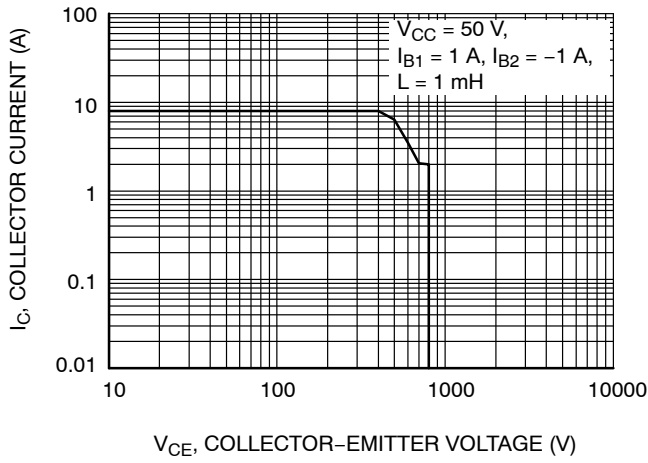


Figure 7. Reverse Bias Safe Operating Area

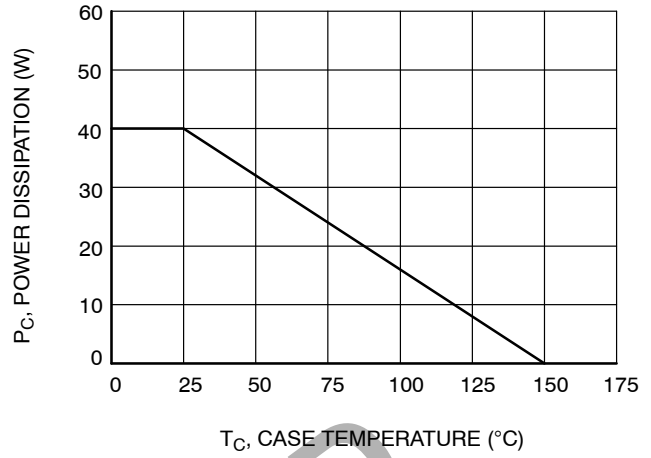


Figure 8. Power Derating

**DISCONTINUED**  
THIS DEVICE IS NOT AVAILABLE  
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## REVISION HISTORY

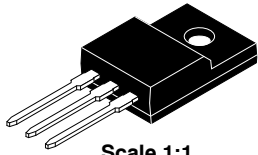
Revision	Description of Changes	Date
2	Document Discontinued.	1/15/2026

This document has undergone updates prior to the inclusion of this revision history table. The changes tracked here only reflect updates made on the noted approval dates.

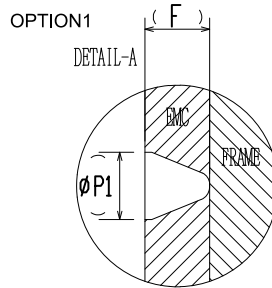
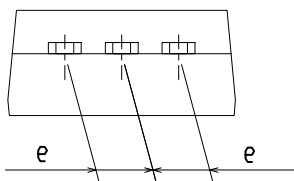
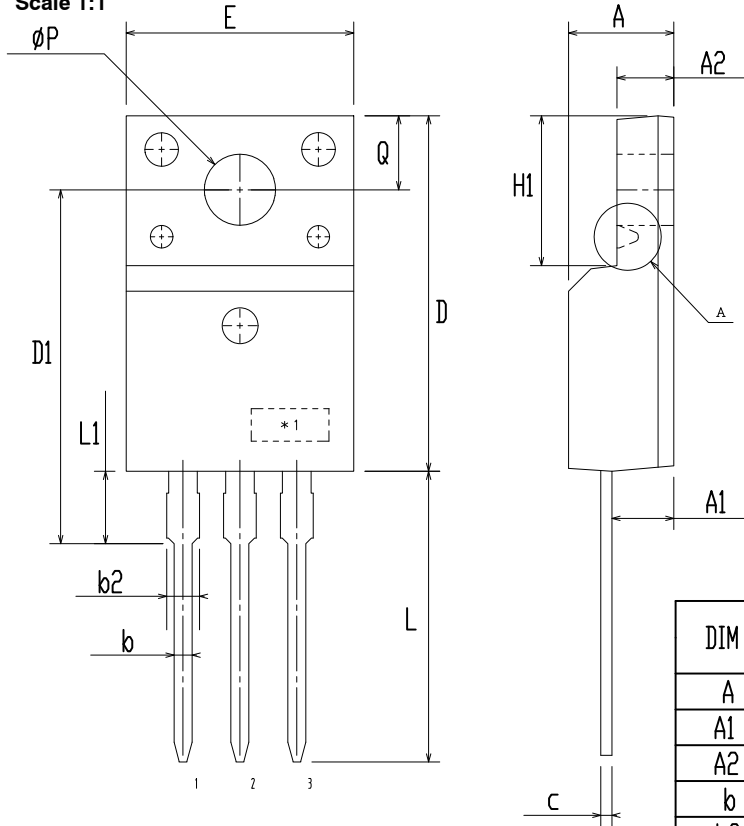
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**TO-220 Fullpack, 3-Lead / TO-220F-3SG**  
**CASE 221AT**  
**ISSUE B**

DATE 19 JAN 2021



Scale 1:1



DIM	MILLIMETERS		
	MIN	NOM	MAX
A	4.50	4.70	4.90
A1	2.56	2.76	2.96
A2	2.34	2.54	2.74
b	0.70	0.80	0.90
b2	~	~	1.47
c	0.45	0.50	0.60
D	15.67	15.87	16.07
D1	15.60	15.80	16.00
E	9.96	10.16	10.36
e	2.34	2.54	2.74
F	~	0.84	~
H1	6.48	6.68	6.88
L	12.78	12.98	13.18
L1	3.03	3.23	3.43
∅ P	2.98	3.18	3.38
∅ P1	~	1.00	~
Q	3.20	3.30	3.40

**NOTES:**

- A. DIMENSION AND TOLERANCE AS ASME Y14.5-2009
- B. DIMENSIONS ARE EXCLUSIVE OF BURRS, MOLD FLASH AND TIE BAR PROTRUCTIONS.
- C. OPTION 1 - WITH SUPPORT PIN HOLE  
OPTION 2 - NO SUPPORT PIN HOLE

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<b>DESCRIPTION:</b>	<b>TO-220 FULLPACK, 3-LEAD / TO-220F-3SG</b>	<b>PAGE 1 OF 1</b>

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