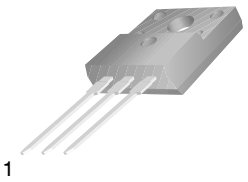
NPN Silicon Transistor

FJPF5021



1. Base
2. Collector
3. Emitter

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

High Voltage and High Reliability

- High Speed Switching: t_F = 0.1 μs (Typ.)
- Wide SOA
- This is a Pb−Free Device

ABSOLUTE MAXIMUM RATINGS (T_C = 25°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°C)	40	W
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.

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

ELECTRICAL CHARACTERISTICS (T_C = 25°C unless otherwise noted)

Symbol	Parameter	Test Condition	Min	Typ	Max	Unit
BV_{CBO}	Collector−Base Breakdown Voltage	I_C = 1 mA, I_E = 0	800	–	–	V
BV_{CEO}	Collector−Emitter Breakdown Voltage	I_C = 5 mA, I_B = 0	500	–	–	V
BV_{EBO}	Emitter−Base Breakdown Voltage	I_E = 1 mA, I_C = 0	7	–	–	V
V_{CEX}(sus)	Collector−Emitter Sustaining Voltage	I_C = 2.5 A, I_{B1} = −I_{B2} = 1 A L = 1 mH, Clamped	500	–	–	V
I_{CBO}	Collector Cut−off Current	V_{CB} = 500 V, I_E = 0	–	–	10	μA
I_{EBO}	Emitter Cut−off Current	V_{EB} = 5 V, I_C = 0	–	–	10	μA
h_{FE1}	DC Current Gain	V_{CE} = 5 V, I_C = 0.6 A	15	–	50	
h_{FE2}		V_{CE} = 5 V, I_C = 3 A	8	–	–	
V_{CE}(sat)	Collector−Emitter Saturation Voltage	I_C = 3 A, I_B = 0.6 A	–	–	1	V
V_{BE}(sat)	Base−Emitter Saturation Voltage	I_C = 3 A, I_B = 0.6 A	–	–	1.5	V
C_{ob}	Output Capacitance	V_{CB} = 10 V, I_E = 0, f = 1 MHz	–	80	–	pF
f_T	Current Gain Bandwidth Product	V_{CE} = 10 V, I_C = 0.6 A	–	15	–	MHz
t_{ON}	Turn On Time	V_{CC} = 200 V I_C = 5 I_{B1} = −2.5 I_{B2} = 4 A, R_L = 50 Ω	–	–	0.5	μs
t_{STG}	Storage Time		–	–	3	μs
t_F	Fall Time		–	0.1	0.3	μs

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_{FE} CLASSIFICATION

Classification	R	O	Y
h_{FE1}	15 ~ 30	20 ~ 40	30 ~ 50

TYPICAL CHARACTERISTICS

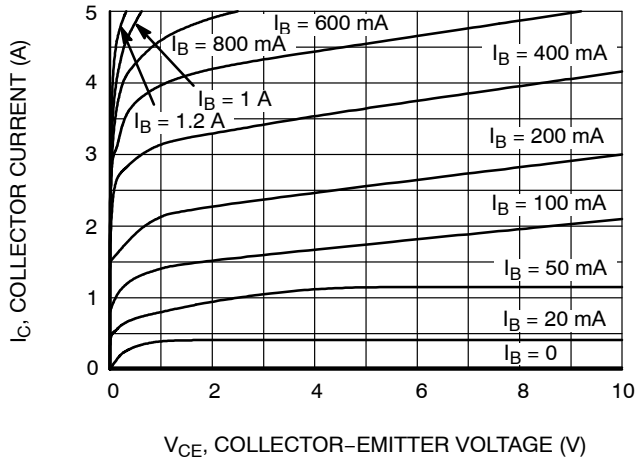


Figure 1. Static Characteristic

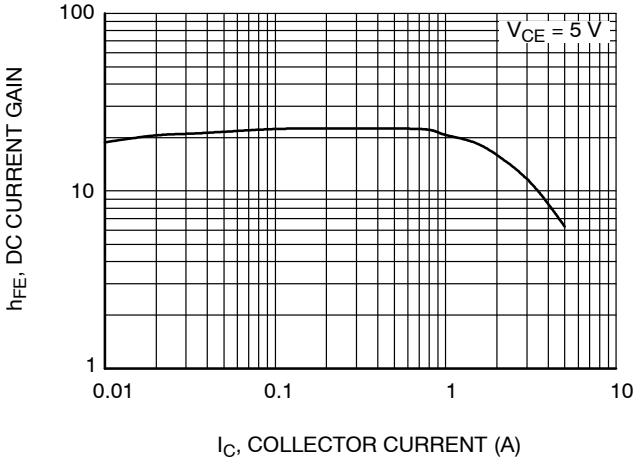


Figure 2. DC Current Gain

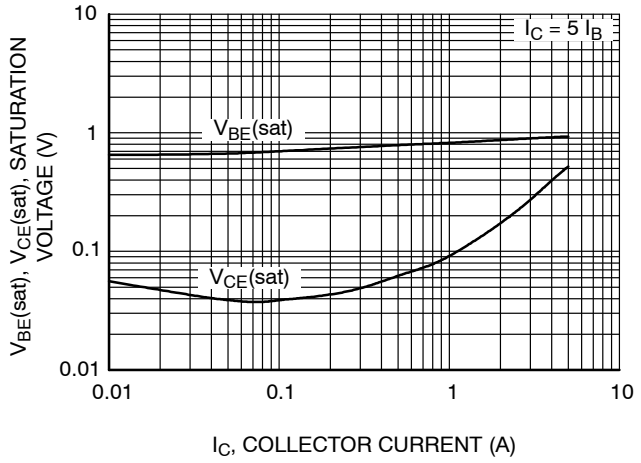


Figure 3. Base−Emitter Saturation Voltage Collector−Emitter Saturation Voltage

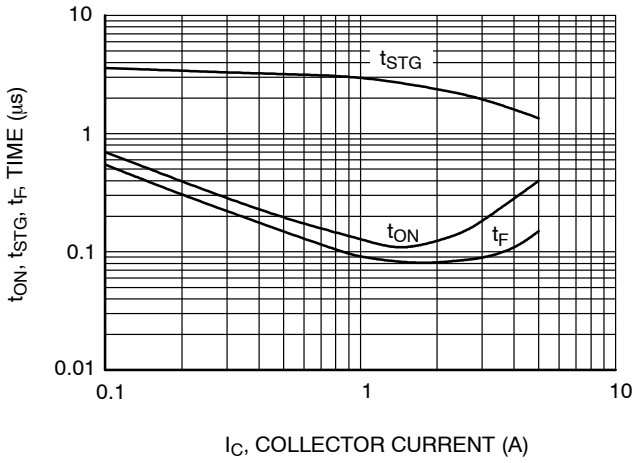


Figure 4. Switching Time

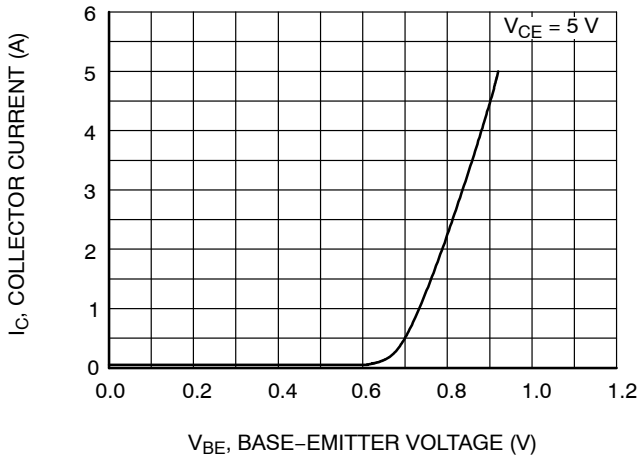


Figure 5. Base−Emitter On Voltage

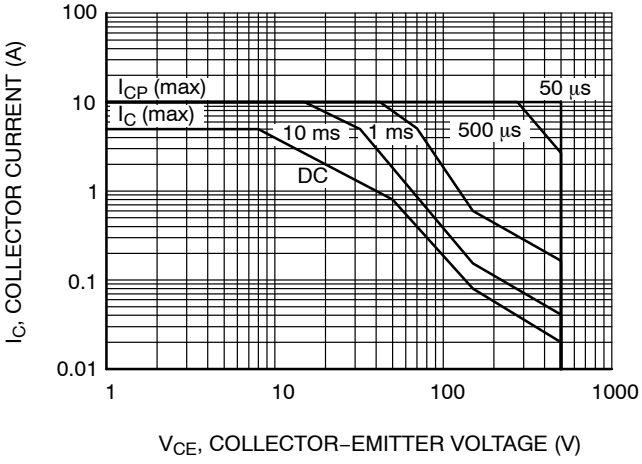


Figure 6. Forward Bias Safe Operating Area

TYPICAL CHARACTERISTICS (continued)

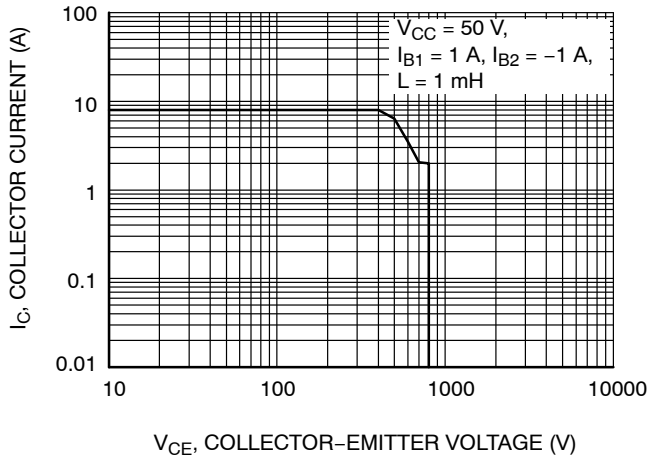


Figure 7. Reverse Bias Safe Operating Area

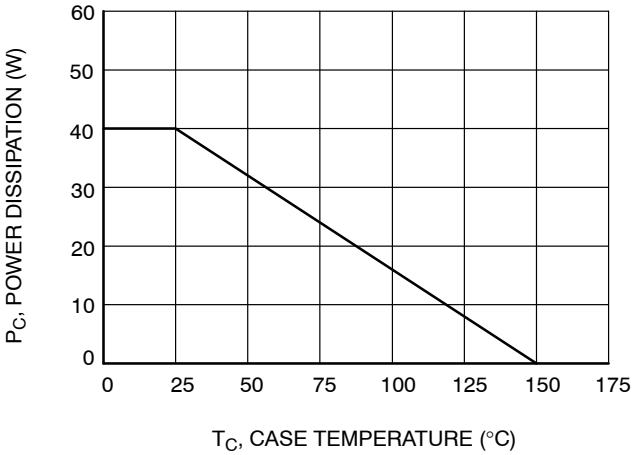


Figure 8. Power Derating

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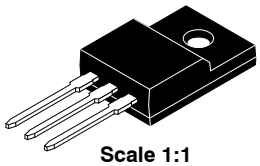
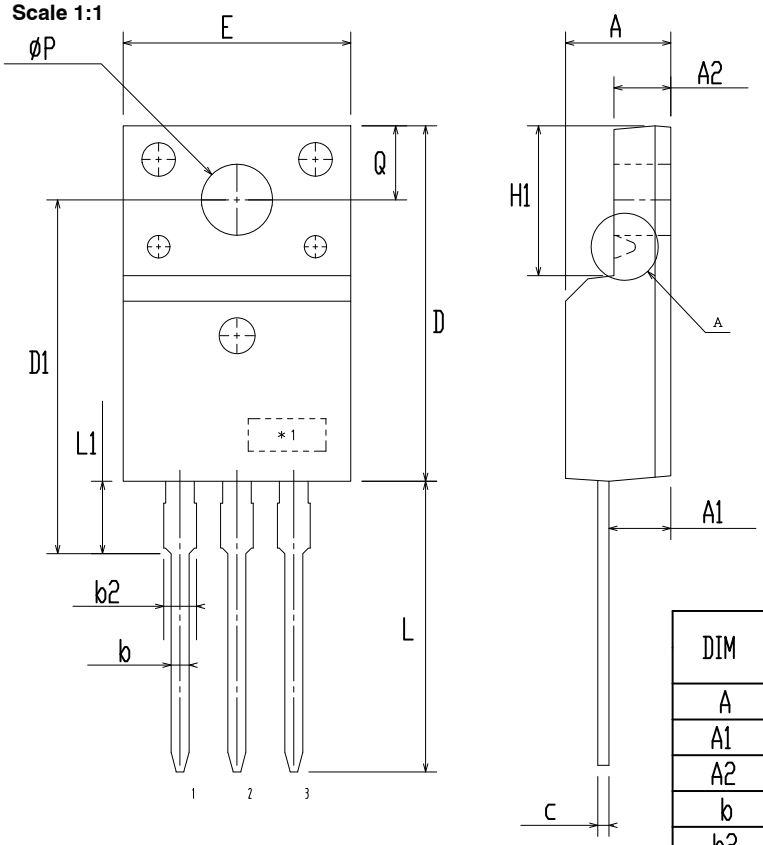
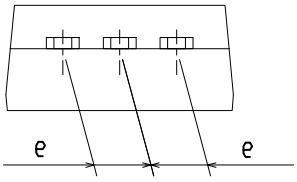
ISSUE B

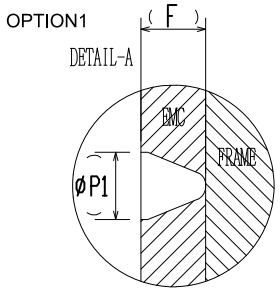
DATE 19 JAN 2021



Scale 1:1







DIM	MILLIMITERS		
	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
ø P	2.98	3.18	3.38
ø 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 PROTRUCSIONS.
C. OPTION 1 - WITH SUPPORT PIN HOLE
OPTION 2 - NO SUPPORT PIN HOLE

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DESCRIPTION:	**TO−220 FULLPACK, 3−LEAD / TO−220F−3SG**		**PAGE 1 OF 1**

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