FAIRCHILD SEMICONDUCTOR®

June 2013

FJP5554

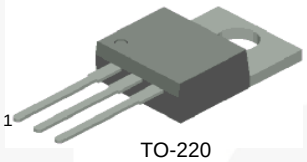
NPN Silicon Transistor

Features

- Fast Speed Switching
- Wide Safe Operating Area
- High Voltage Capability

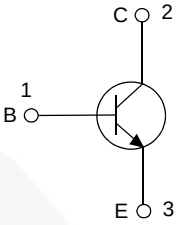
Application

- Electronic Ballast
- Switch Mode Power Supplies



TO-220

1.Base 2.Collector 3.Emitter



Ordering Information

Part Number	Marking	Package	Packing Method
FJP5554TU	J5554	TO-220	Rail

Absolute Maximum Ratings

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°C unless otherwise noted.

Symbol	Parameter	Value	Units
BV_{CBO}	Collector-Base Voltage	1050	V
BV_{CEO}	Collector-Emitter Voltage	400	V
BV_{EBO}	Emitter-Base Voltage	15	V
I_C	Collector Current (DC)	4	A
I_{CP}	Collector Current (Pulse)	8	A
I_B	Base Current (DC)	2	A
I_{BP}	Base Current (Pulse)	4	A
T_J	Junction Temperature	150	°C
T_{STG}	Storage Junction Temperature Range	- 55 to +150	°C

Thermal Characteristics

Values are at T_A = 25°C unless otherwise noted.

Symbol	Parameter		Value	Units
P_D	Total Device Dissipation	T_C = 25°C	70	W
$R_{\theta jc}$(1)	Thermal Resistance, Junction to Case		1.78	°C/W

Note:

1. $R_{\theta jc}$ test fixture under infinite cooling condition.

Electrical Characteristics[2]

Values are at T_A = 25°C unless otherwise noted.

Symbol	Parameter	Conditions	Min.	Typ.	Max	Units
BV_{CBO}	Collector-Base Breakdown Voltage	I_C = 500 μA, I_E = 0	1050			V
BV_{CEO}	Collector-Emitter Breakdown Voltage	I_C = 5 mA, I_B = 0	400			V
BV_{EBO}	Emitter-Base Breakdown Voltage	I_E = 1 mA, I_C = 0	15		23	V
I_{CBO}	Collector Cut-Off Current	V_{CB} = 1050 V, I_E = 0			1	mA
I_{CEO}	Collector Cut-Off Current	V_{CB} = 400 V, I_B = 0			250	μA
I_{EBO}	Emitter Cut-Off Current	V_{EB} = 15 V, I_C = 0			1	mA
h_{FE}	DC Current Gain	V_{CE} = 5 V, I_C = 0.1 A	45		100	
		V_{CE} = 3 V, I_C = 0.8 A	20		50	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	I_C = 1 A, I_B = 0.2 A			0.5	V
		I_C = 3.5 A, I_B = 1.0 A			1.5	V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	I_C = 3.5 A, I_B = 1.0 A			1.5	V
t_{ON}	Turn-On Time	V_{CC} =125 V, I_C =0.5 A, I_{B1} = 45 mA, I_{B2} = 0.5 A, R_L = 250 Ω			1.0	μs
t_{STG}	Storage Time				1.2	μs
t_F	Fall Time				0.3	μs
EAS	Avalanche Energy	L = 2 mH	6			mJ

Note:

2. Pulse test: pulse width ≤ 300 μs, duty cycle ≤ 2%.

Typical Performance Characteristics

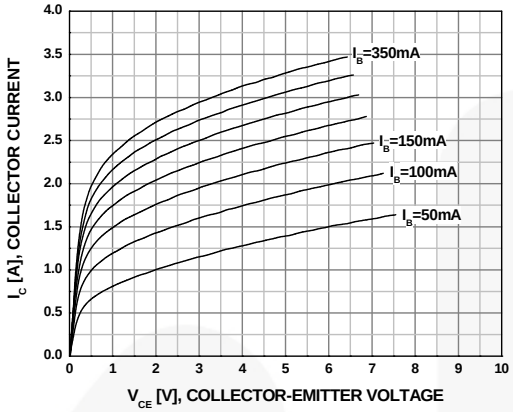


Figure 1. Static Characterstic

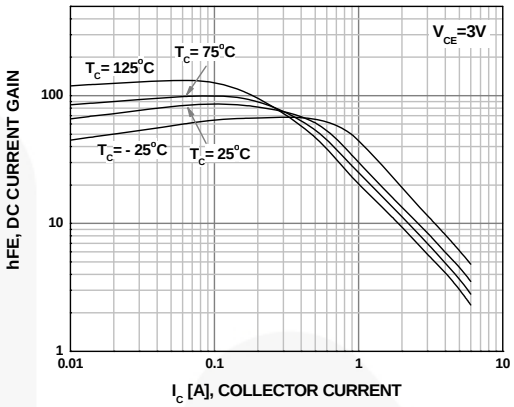


Figure 2. DC Current Gain

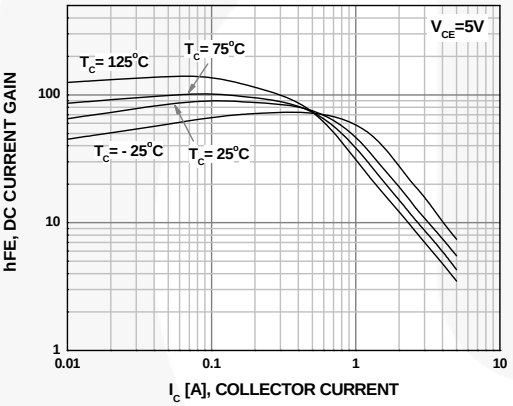


Figure 3. DC Current Gain

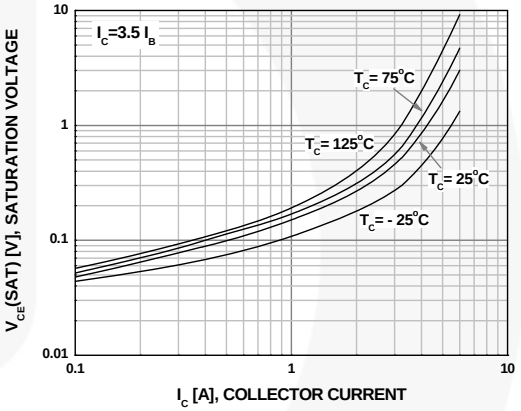


Figure 4. Collector-Emitter Saturation Voltage

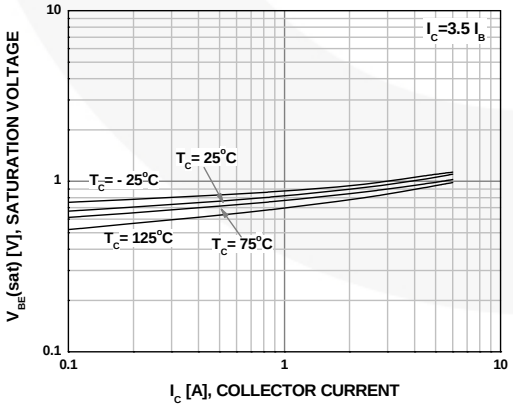


Figure 5. Base-Emitter Saturation Voltage

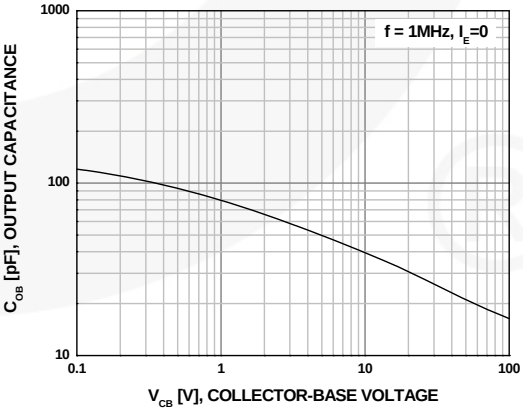


Figure 6. Output Capacitance

Typical Performance Characteristics (Continued)

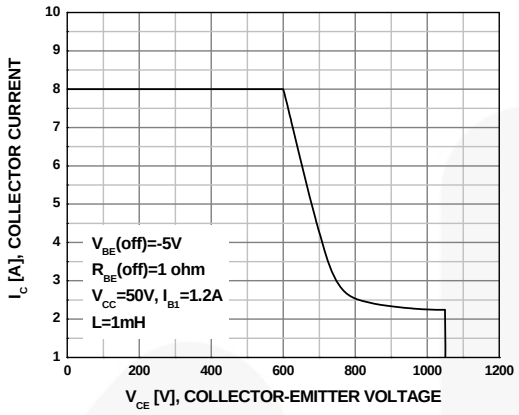


Figure 7. Reverse Biased Safe Operating Area

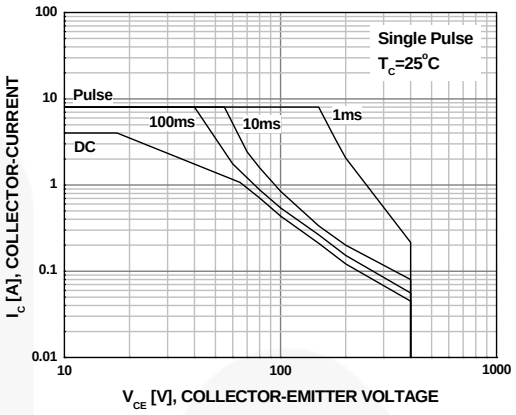


Figure 8. Forward Biased Safe Operating Area

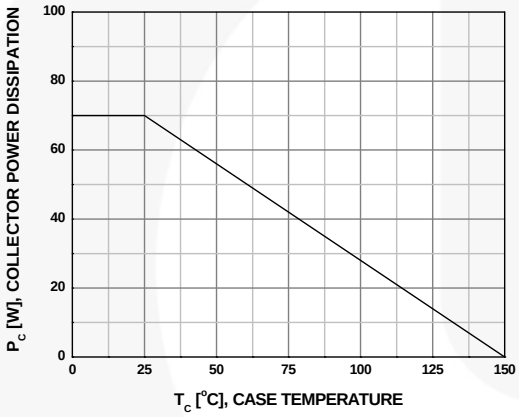


Figure 9. Power Derating Curve

Physical Dimensions

TO-220

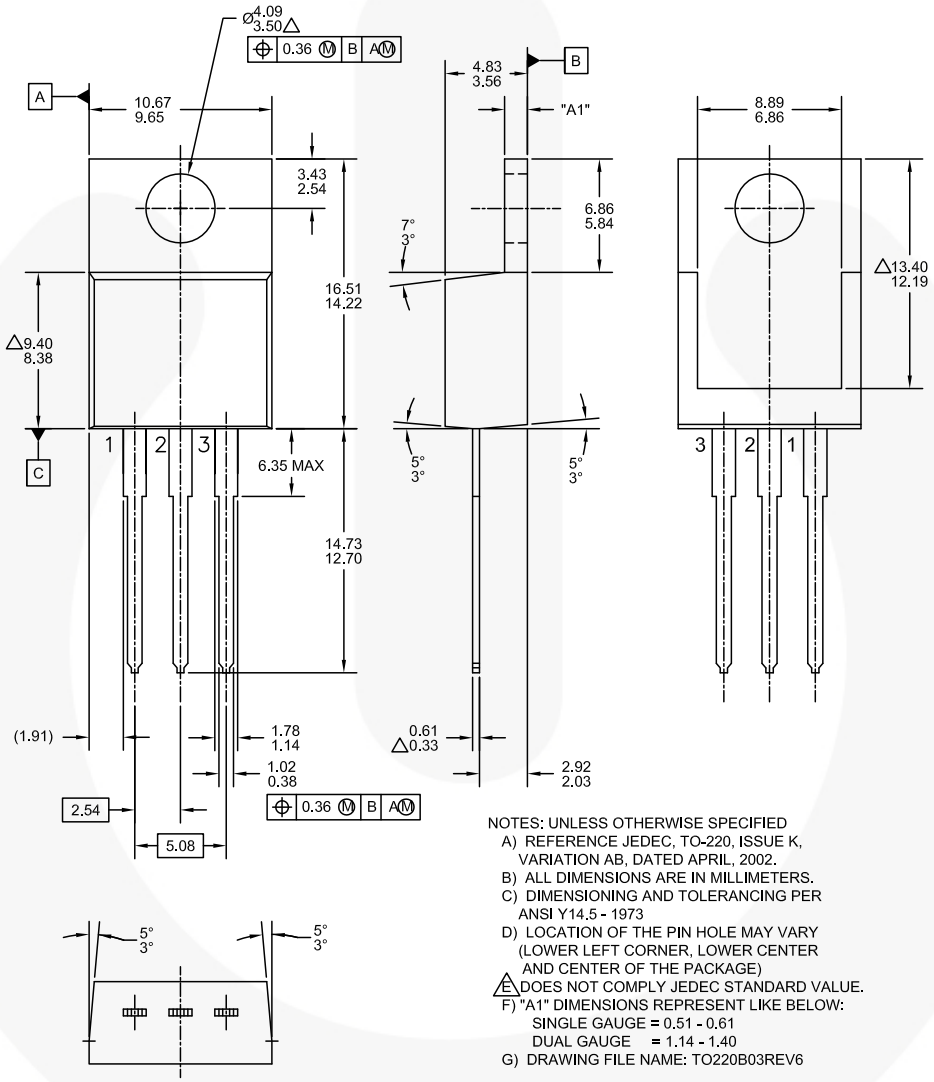


Figure 10. TO220, MOLDED, 3-LEAD, JEDEC VARIATION AB (ACTIVE)

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