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June 2013

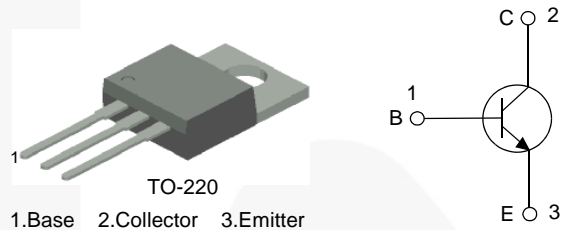
# FJP5554 NPN Silicon Transistor

## Features

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

## Application

- Electronic Ballast
- Switch Mode Power Supplies



## 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  $T_A = 25^\circ\text{C}$  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	$^\circ\text{C}$
$T_{STG}$	Storage Junction Temperature Range	- 55 to +150	$^\circ\text{C}$

## Thermal Characteristics

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

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

### Note:

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

**Electrical Characteristics<sup>(2)</sup>**Values are at  $T_A = 25^\circ\text{C}$  unless otherwise noted.

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

**Note:**2. Pulse test: pulse width  $\leq 300 \mu\text{s}$ , duty cycle  $\leq 2\%$ .

## Typical Performance Characteristics

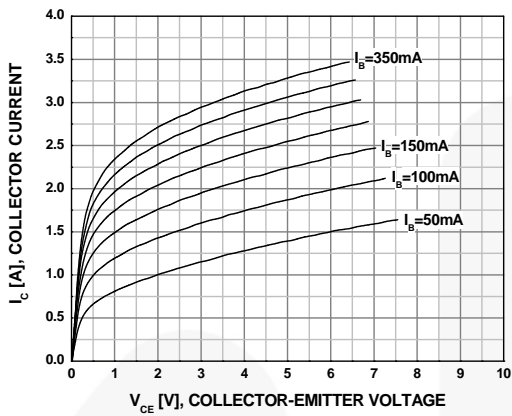


Figure 1. Static Characteristic

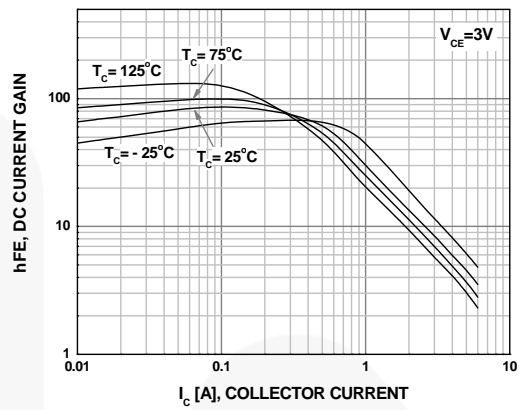


Figure 2. DC Current Gain

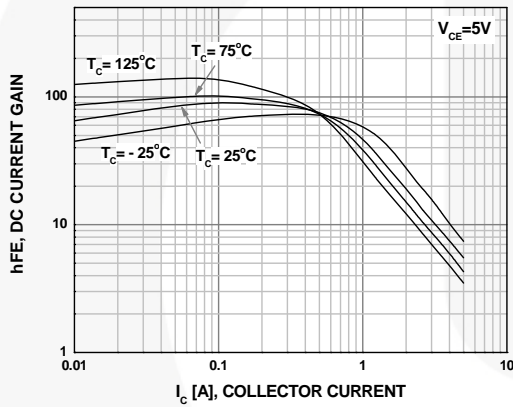


Figure 3. DC Current Gain

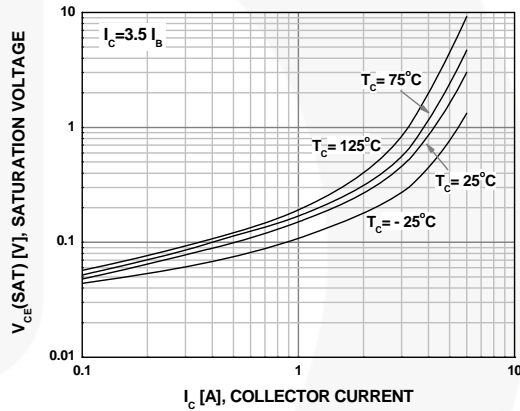


Figure 4. Collector-Emitter Saturation Voltage

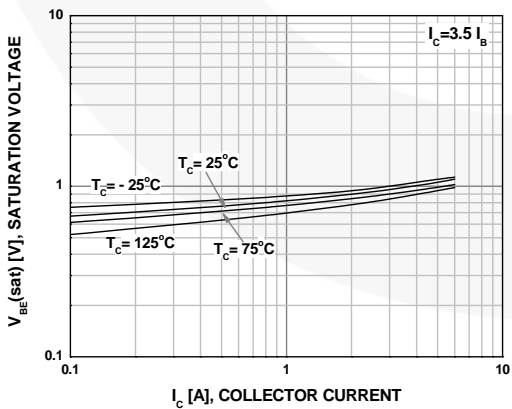


Figure 5. Base-Emitter Saturation Voltage

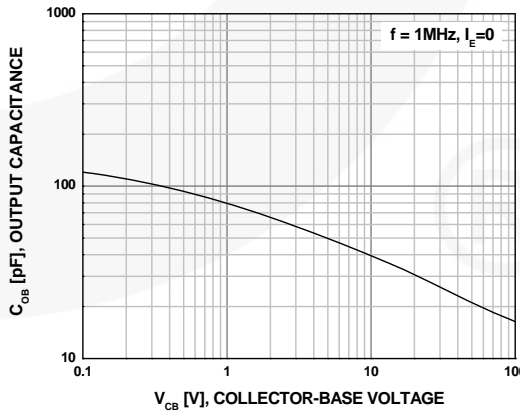
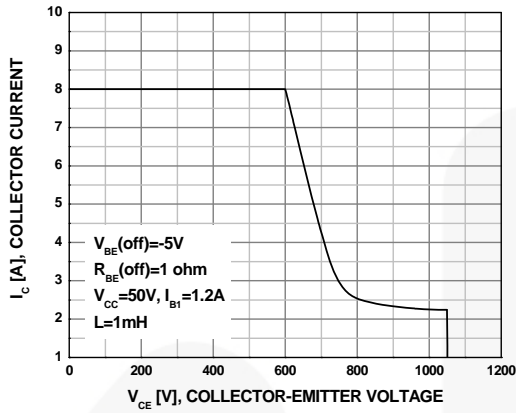
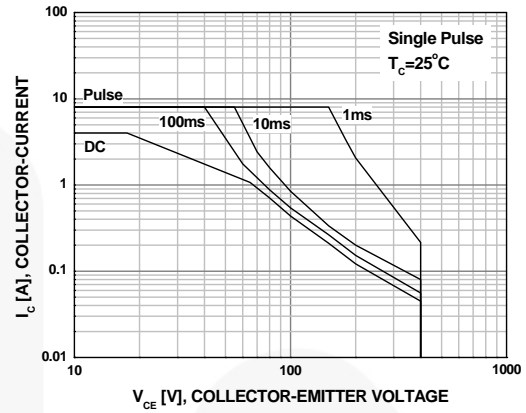


Figure 6. Output Capacitance

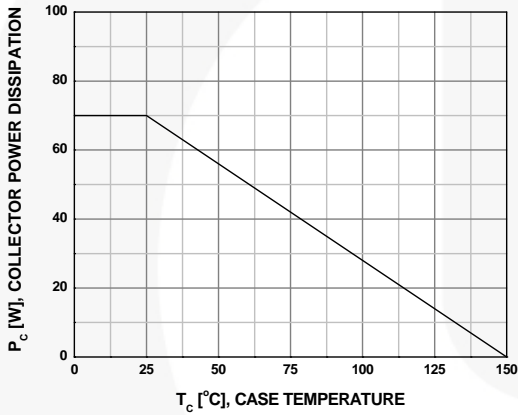
**Typical Performance Characteristics** (Continued)



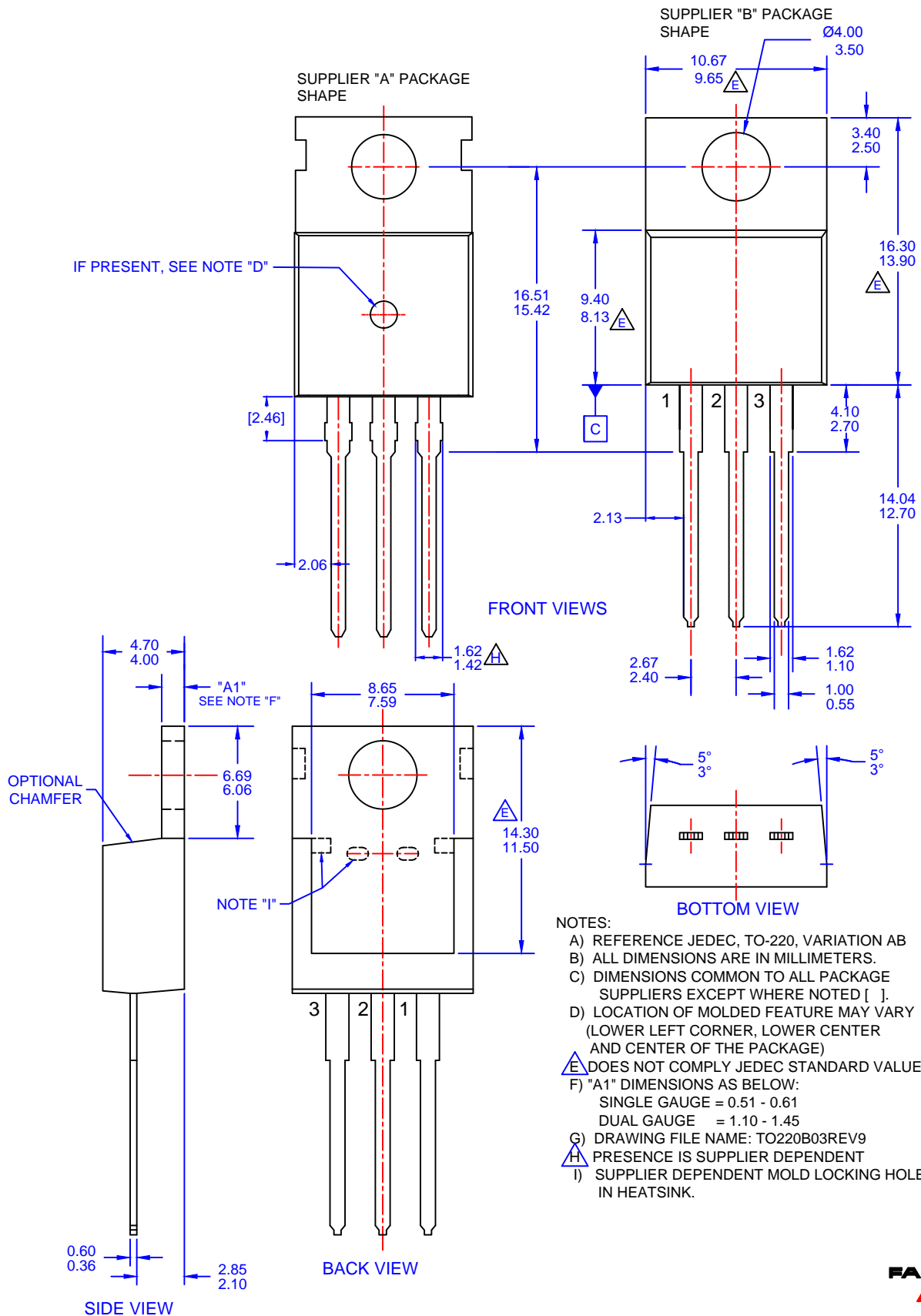
**Figure 7. Reverse Biased Safe Operating Area**



**Figure 8. Forward Biased Safe Operating Area**



**Figure 9. Power Derating Curve**



- NOTES:
- A) REFERENCE JEDEC, TO-220, VARIATION AB
  - B) ALL DIMENSIONS ARE IN MILLIMETERS.
  - C) DIMENSIONS COMMON TO ALL PACKAGE SUPPLIERS EXCEPT WHERE NOTED [ ].
  - D) LOCATION OF MOLDED FEATURE MAY VARY (LOWER LEFT CORNER, LOWER CENTER AND CENTER OF THE PACKAGE)
  - E) DOES NOT COMPLY JEDEC STANDARD VALUE.
  - F) "A1" DIMENSIONS AS BELOW:  
SINGLE GAUGE = 0.51 - 0.61  
DUAL GAUGE = 1.10 - 1.45
  - G) DRAWING FILE NAME: TO220B03REV9
  - H) PRESENCE IS SUPPLIER DEPENDENT
  - I) SUPPLIER DEPENDENT MOLD LOCKING HOLES IN HEATSINK.

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