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June 2013

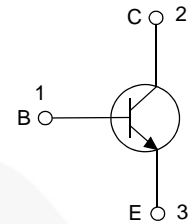
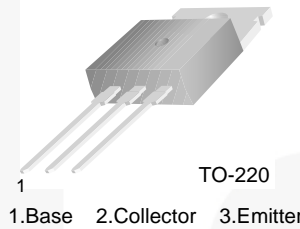
# FJP5555 NPN Silicon Transistor

## 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
FJP5555TU	J5555	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	14	V
$I_C$	Collector Current (DC)	5	A
$I_{CP}$	Collector Current (Pulse)	10	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 Temperature	- 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	$T_A = 25^\circ\text{C}$	1.38	W
		$T_C = 25^\circ\text{C}$	75	W
$R_{\theta ja}^{(1)}$	Thermal Resistance, Junction to Ambient	90	$^\circ\text{C}/\text{W}$	
$R_{\theta jc}^{(2)}$	Thermal Resistance, Junction to Case	1.66	$^\circ\text{C}/\text{W}$	

### Notes:

1.  $R_{\theta ja}$  test board and fixture under natural convection, JESD51-10 recommended thermal test board.
2.  $R_{\theta jc}$  test fixture under infinite cooling condition.

**Electrical Characteristics<sup>(3)</sup>**Values are at  $T_A = 25^\circ\text{C}$  unless otherwise noted.

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Units
$BV_{CBO}$	Collector-Base Voltage	$I_C = 500 \mu\text{A}, I_E = 0$	1050			V
$BV_{CEO}$	Collector-Emitter Voltage	$I_C = 5 \text{ mA}, I_B = 0$	400			V
$BV_{EBO}$	Emitter-Base Voltage	$I_E = 500 \mu\text{A}, I_C = 0$	14			V
$h_{FE}$	DC Current Gain	$V_{CE} = 5 \text{ V}, I_C = 10 \text{ mA}$	10			
		$V_{CE} = 3 \text{ V}, I_C = 0.8 \text{ A}$	20		40	
$V_{CE(sat)}$	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	$I_C = 3.5 \text{ A}, I_B = 1.0 \text{ A}$			1.2	V
$C_{ob}$	Output Capacitance	$V_{CB} = 10 \text{ V}, f = 1 \text{ MHz}$		45		pF
$t_{ON}$	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	$\mu\text{s}$
$t_{ON}$	Turn-On Time	$V_{CC} = 250 \text{ V}, I_C = 2.5 \text{ A},$ $I_{B1} = 0.5 \text{ A}, I_{B2} = 1.0 \text{ A},$ $R_L = 100 \Omega$			2.0	$\mu\text{s}$
$t_{STG}$	Storage Time				2.5	$\mu\text{s}$
$t_F$	Fall Time				0.3	$\mu\text{s}$
EAS	Avalanche Energy	$L = 2 \text{ mH}$	6			mJ

**Note:**3. Pulse test: pulse width  $\leq 300 \mu\text{s}$ , duty cycle  $\leq 2\%$ .

## Typical Performance Characteristics

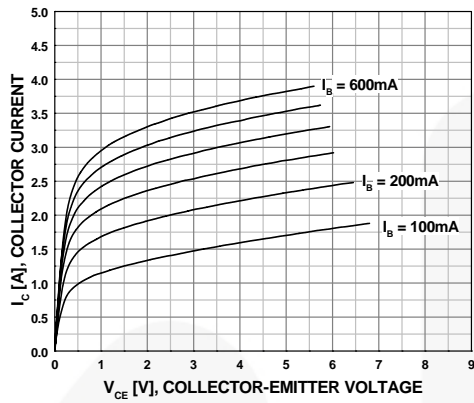


Figure 1. Static Characteristics

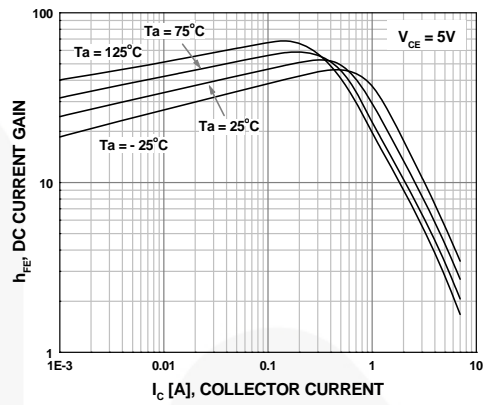


Figure 2. DC Current Gain

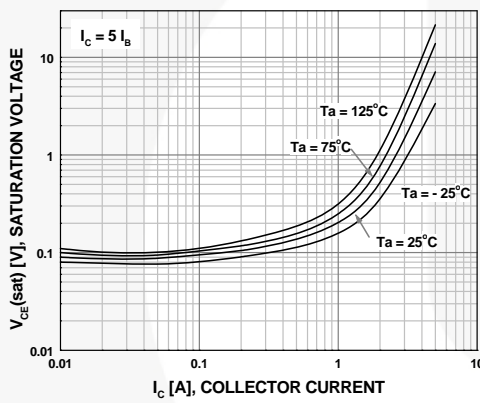


Figure 3. Saturation Voltage

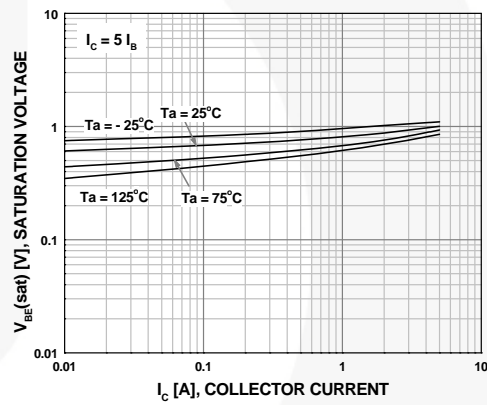


Figure 4. Saturation Voltage

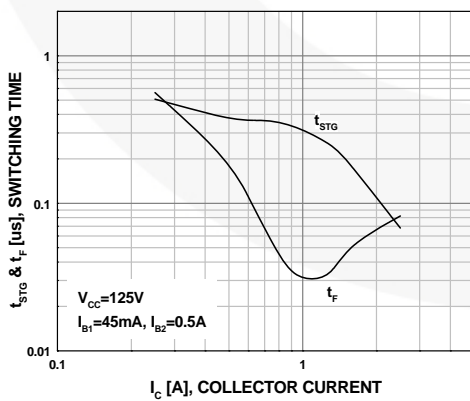


Figure 5. Resistive Load Switching

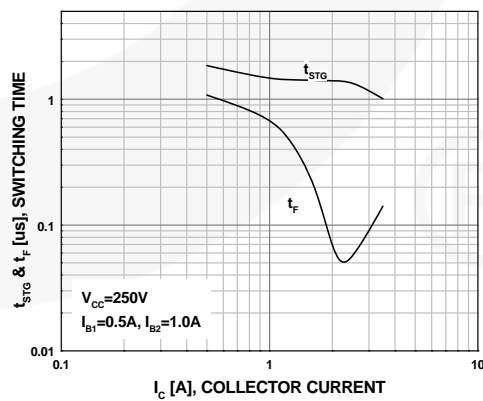


Figure 6. Resistive Load Switching

Typical Performance Characteristics (Continued)

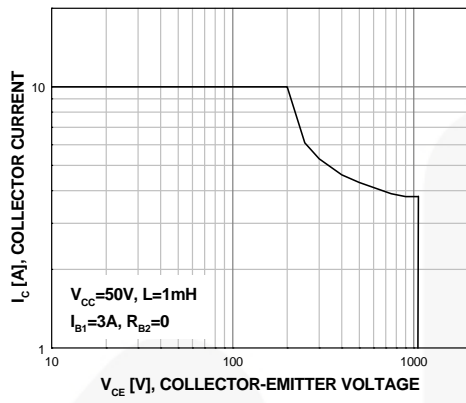


Figure 7. Reverse Biased Safe Operating Area

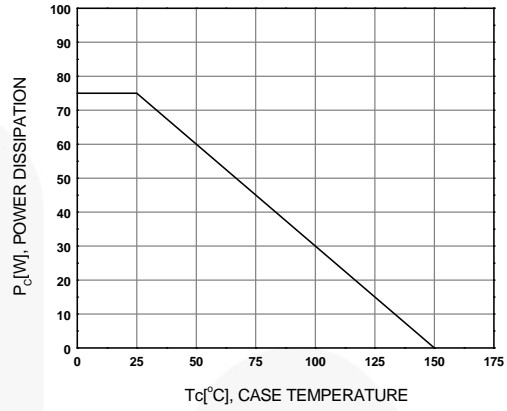


Figure 8. Power Derating

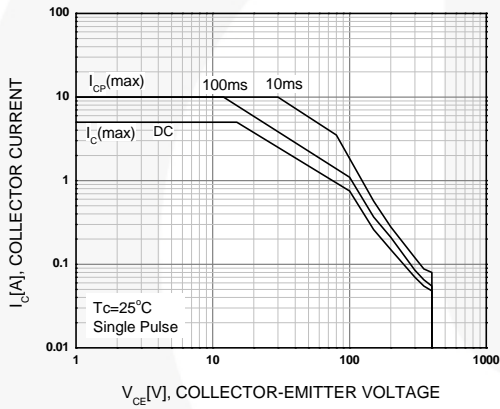
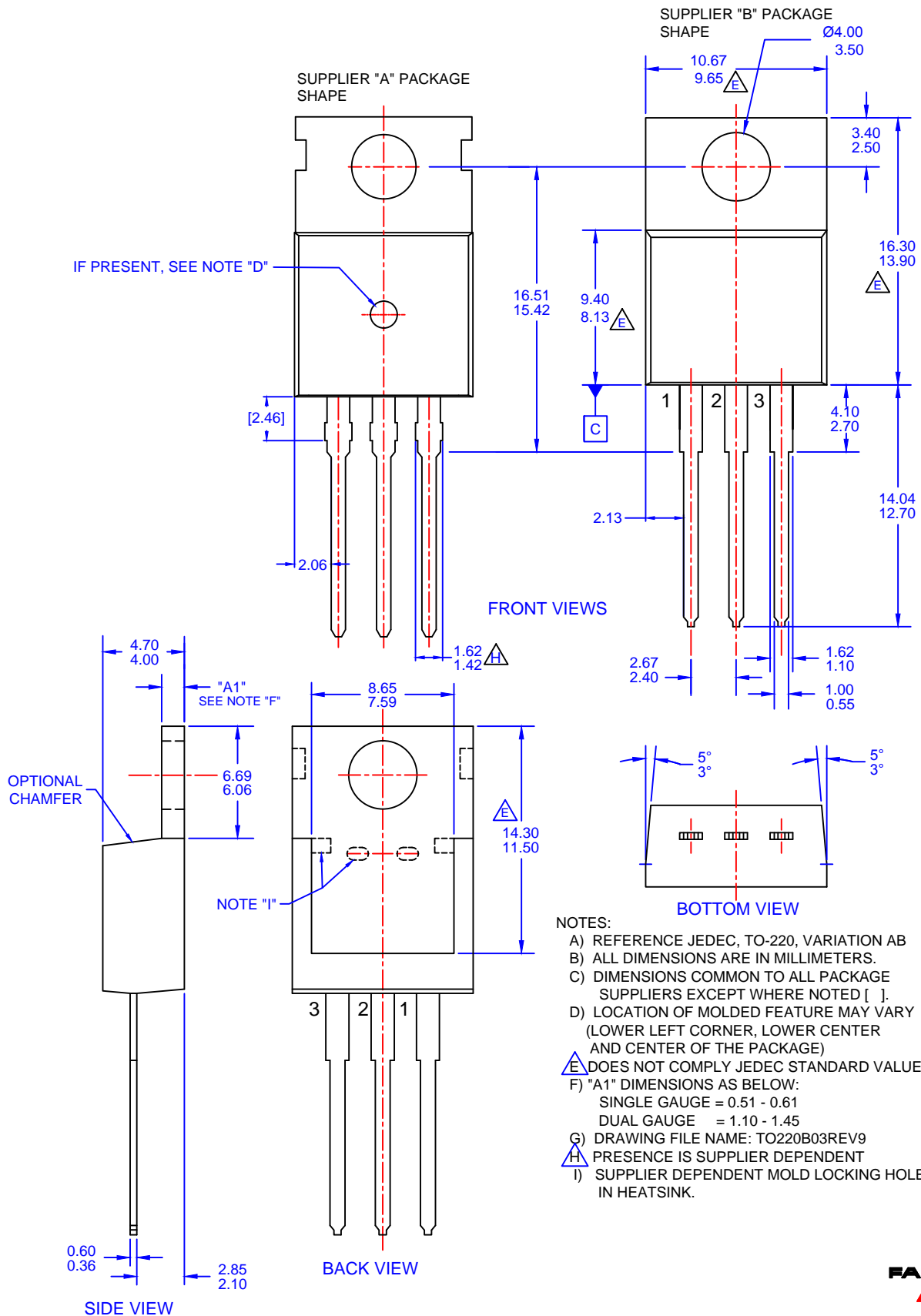


Figure 9. Forward Biased Safe Operating Area



- 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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