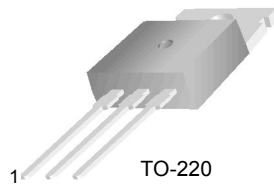


# FJP3305

## High Voltage Fast-Switching NPN Power Transistor

- High Voltage Capability
- High Switching Speed
- Suitable for Electronic Ballast and Switching Regulator



1.Base 2.Collector 3.Emitter

### Absolute Maximum Ratings T<sub>C</sub> = 25°C unless otherwise noted

Symbol	Parameter	Value	Units
V <sub>CB0</sub>	Collector-Base Voltage	700	V
V <sub>CEO</sub>	Collector-Emitter Voltage	400	V
V <sub>EBO</sub>	Emitter-Base Voltage	9	V
I <sub>C</sub>	Collector Current (DC)	4	A
I <sub>CP</sub>	Collector Current (Pulse)	8	A
I <sub>B</sub>	Base Current	2	A
P <sub>C</sub>	Collector Dissipation (T <sub>C</sub> = 25°C)	75	W
T <sub>J</sub>	Junction Temperature	150	°C
T <sub>STG</sub>	Storage Temperature	-65 ~ 150	°C

**Electrical Characteristics**  $T_C = 25^\circ\text{C}$  unless otherwise noted

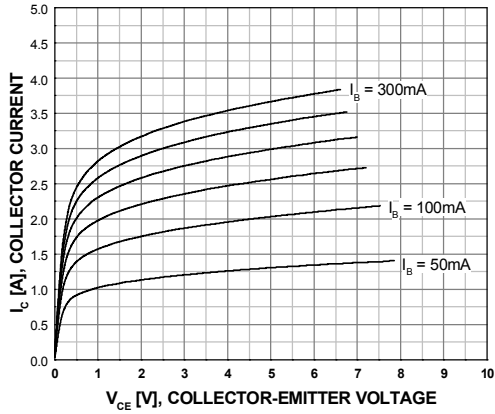
Symbol	Parameter	Conditions	Min.	Typ.	Max	Units
$BV_{CBO}$	Collector-Base Breakdown Voltage	$I_C = 500\mu\text{A}, I_E = 0$	700			V
$BV_{CEO}$	Collector-Emitter Breakdown Voltage	$I_C = 5\text{mA}, I_B = 0$	400			V
$BV_{EBO}$	Emitter-Base Breakdown Voltage	$I_E = 500\mu\text{A}, I_C = 0$	9			V
$I_{CBO}$	Collector Cut-off Current	$V_{CB} = 700\text{V}, I_E = 0$			1	$\mu\text{A}$
$I_{EBO}$	Emitter Cut-off Current	$V_{EB} = 9\text{V}, I_C = 0$			1	$\mu\text{A}$
$h_{FE1}$ $h_{FE2}$	DC Current Gain *	$V_{CE} = 5\text{V}, I_C = 1\text{A}$ $V_{CE} = 5\text{V}, I_C = 2\text{A}$	19 8		35 40	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = 1\text{A}, I_B = 0.2\text{A}$ $I_C = 2\text{A}, I_B = 0.5\text{A}$ $I_C = 4\text{A}, I_B = 1\text{A}$			0.5 0.6 1.0	V V V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	$I_C = 1\text{A}, I_B = 0.2\text{A}$ $I_C = 2\text{A}, I_B = 0.5\text{A}$			1.2 1.6	V V
$f_T$	Current Gain Bandwidth Product	$V_{CE} = 10\text{V}, I_C = 0.5\text{A}$	4			MHz
$C_{ob}$	Output Capacitance	$V_{CB} = 10\text{V}, f = 1\text{MHz}$		65		pF
$t_{ON}$	Turn On Time	$V_{CC} = 125\text{V}, I_C = 2\text{A}$			0.8	$\mu\text{s}$
$t_{STG}$	Storage Time	$I_{B1} = -I_{B2} = 0.4\text{A}$ $R_L = 62.5\Omega$			4.0	$\mu\text{s}$
$t_F$	Fall Time				0.9	$\mu\text{s}$

\* Pulse Test:  $PW \leq 300\mu\text{s}$ , Duty Cycle  $\leq 2\%$  **$h_{FE}$  Classification**

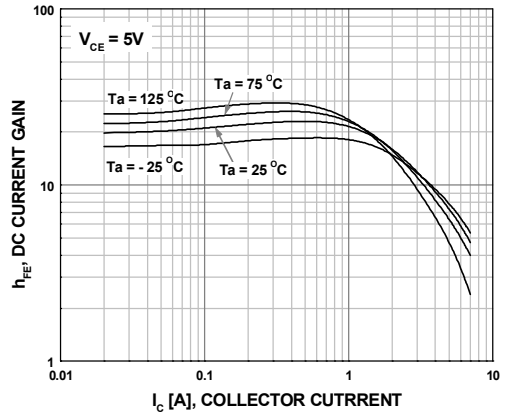
Classification	H1	H2
$h_{FE1}$	19 ~ 28	26 ~ 35

## Typical Performance Characteristics

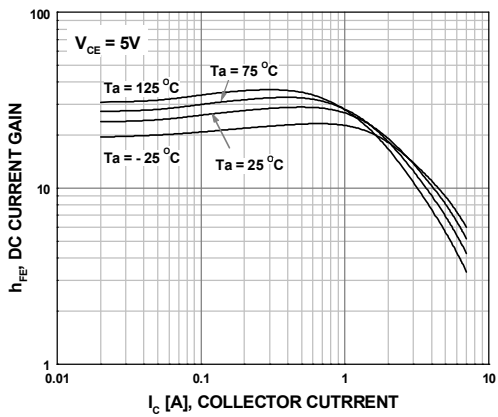
**Figure 1. Static Characteristic**



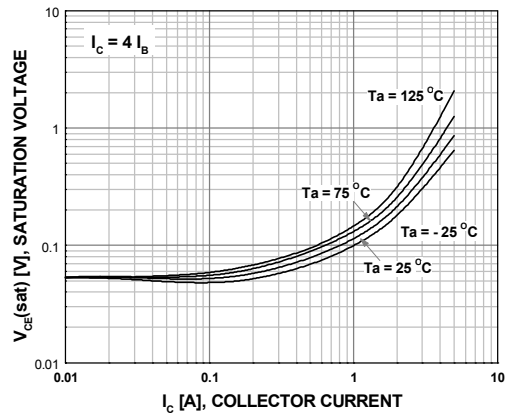
**Figure 2. DC Current Gain (R-Grade)**



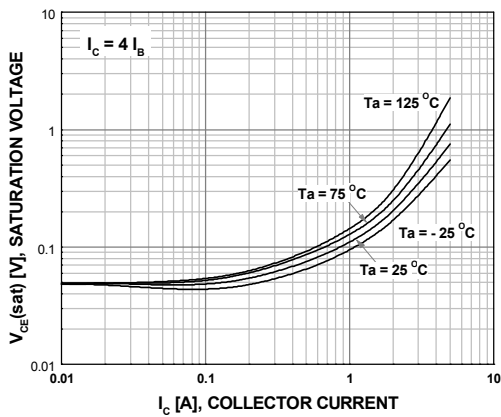
**Figure 3. DC Current Gain (O-Grade)**



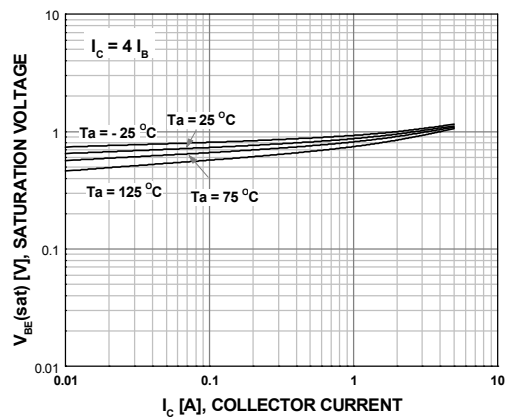
**Figure 4. Saturation Voltage (R-Grade)**



**Figure 5. Saturatin Voltage (O-Grade)**

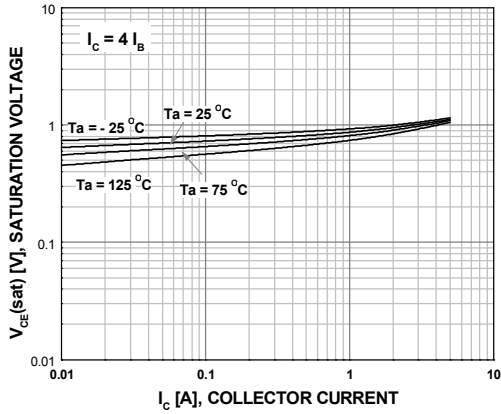


**Figure 6. Saturation Voltage (R-Grade)**

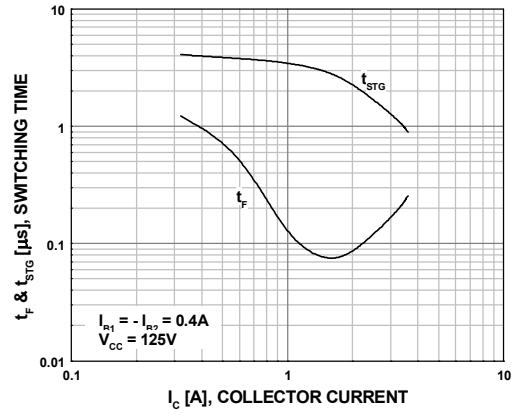


**Typical Performance Characteristics** (Continued)

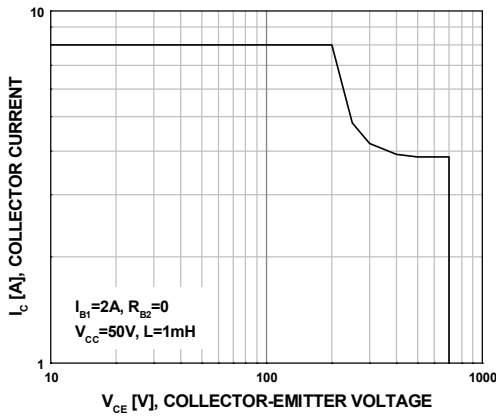
**Figure 7. Saturation Voltage (O-Grade)**



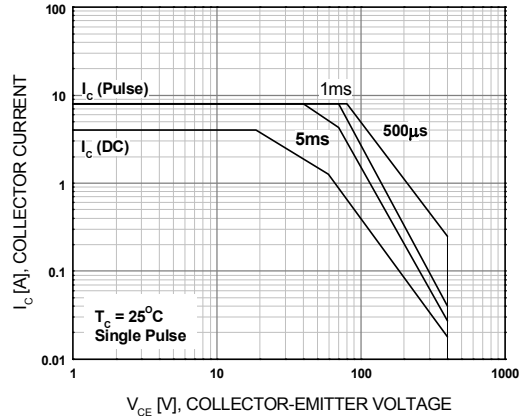
**Figure 8. Switching Time**



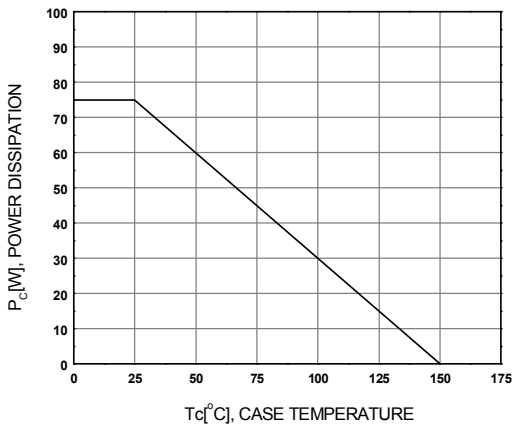
**Figure 9. Reverse Biased Safe Operating Area**



**Figure 10. Forward Biased Safe Operating Area**



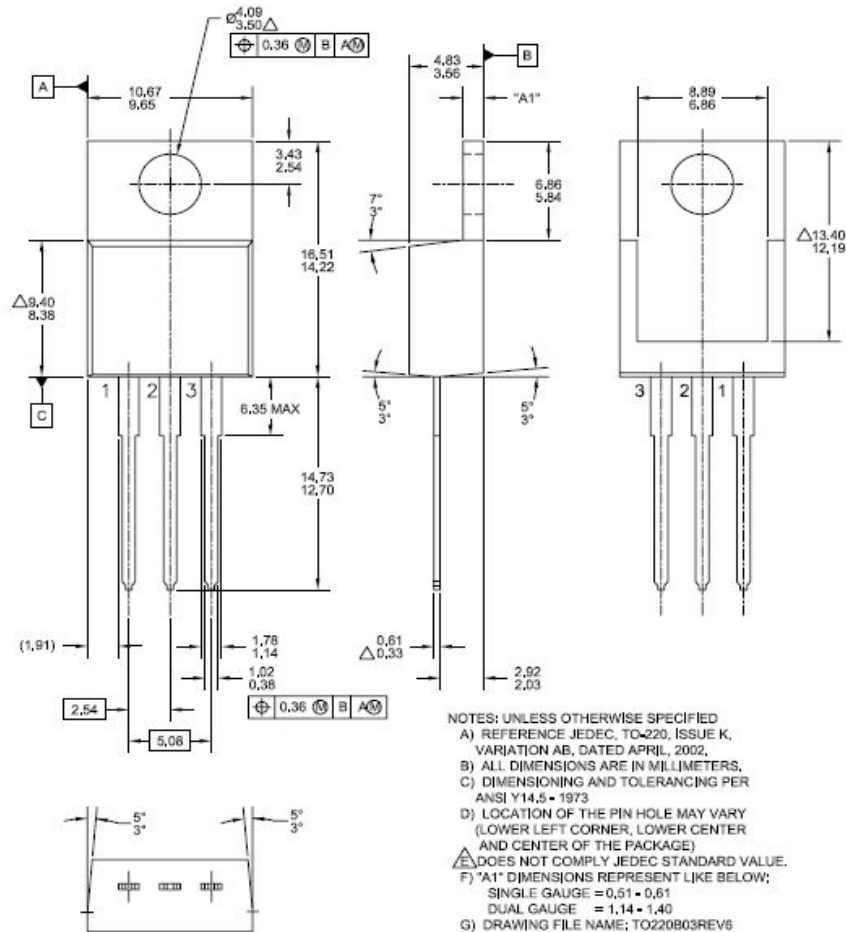
**Figure 11. Power Derating**



# Package Dimension

## TO-220

Dimensions are in mm



- NOTES: UNLESS OTHERWISE SPECIFIED
- A) REFERENCE JEDEC, TO-220, ISSUE K, VARIATION AB, DATED APRIL, 2002.
  - B) ALL DIMENSIONS ARE IN MILLIMETERS.
  - C) DIMENSIONING AND TOLERANCING PER ANSI Y14.5 - 1973
  - D) LOCATION OF THE PIN HOLE MAY VARY (LOWER LEFT CORNER, LOWER CENTER AND CENTER OF THE PACKAGE)
  - E) DOES NOT COMPLY JEDEC STANDARD VALUE.
  - F) "A1" DIMENSIONS REPRESENT LIKE BELOW:  
 SINGLE GAUGE = 0.51 ± 0.61  
 DUAL GAUGE = 1.14 ± 1.40
  - G) DRAWING FILE NAME: TO220B03REV6

Dimensions in Millimeters



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| Build it Now <sup>™</sup>            | Green FPS <sup>™</sup> e-Series <sup>™</sup>   | POWEREDGE <sup>®</sup>                 | SyncFET <sup>™</sup>             |
| CorePLUS <sup>™</sup>                | GTO <sup>™</sup>   | Power-SPM <sup>™</sup>                 | The Power Franchise <sup>®</sup> |
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| FACT <sup>®</sup>                    | Motion-SPM <sup>™</sup>  | SPM <sup>®</sup>                       | μSerDes <sup>™</sup>             |
| FAST <sup>®</sup>                    | OPTOLOGIC <sup>®</sup>   | STEALTH <sup>™</sup>                   | UHC <sup>®</sup>                 |
| FastvCore <sup>™</sup>               | OPTOPLANAR <sup>®</sup>  | SuperFET <sup>™</sup>                  | UniFET <sup>™</sup>              |
| FPS <sup>™</sup>                     |  <sup>®</sup> | SuperSOT <sup>™</sup> -3               | VCX <sup>™</sup>                 |
| FRFET <sup>®</sup>                   | PDP-SPM <sup>™</sup>   | SuperSOT <sup>™</sup> -6               |                                  |
| Global Power Resource <sup>SM</sup>  | Power220 <sup>®</sup>  |  |                                  |

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Rev. I31



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