

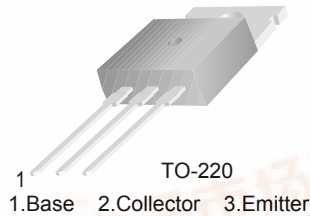
**FAIRCHILD**  
SEMICONDUCTOR®

# FJP3307D

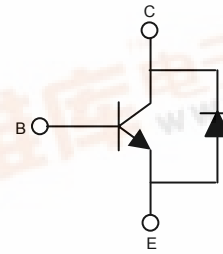
## High Voltage Fast Switching NPN Power Transistor

### Features

- Built-in Diode between Collector and Emitter
- Suitable for Electronic Ballast and Switch Mode Power Supplies



Internal Schematic Diagram



### Absolute Maximum Ratings

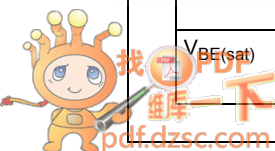
Symbol	Parameter	Value	Units
$V_{CBO}$	Collector-Base Voltage	700	V
$V_{CEO}$	Collector-Emitter Voltage	400	V
$V_{EBO}$	Emitter-Base Voltage	9	V
$I_C$	Collector Current (DC)	8	A
$I_{CP}$	* Collector Current (Pulse)	16	A
$I_B$	Base Current (DC)	4	A
$P_C$	Collector Dissipation ( $T_C = 25^\circ\text{C}$ )	80	W
$T_J$	Junction Temperature	150	$^\circ\text{C}$
$T_{STG}$	Storage Temperature	-55 ~ 150	$^\circ\text{C}$

\* Pulse Test: PW = 300 $\mu\text{s}$ , Duty Cycle = 2% Pulsed

### 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
$I_{EBO}$	Emitter Cut-off Current	$V_{EB} = 9\text{V}, I_C = 0$			1	mA
$h_{FE1}$ $h_{FE2}$	DC Current Gain	$V_{CE} = 5\text{V}, I_C = 2\text{A}$ $V_{CE} = 5\text{V}, I_C = 5\text{A}$	8 5		40 30	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = 2\text{A}, I_B = 0.4\text{A}$			1	V
		$I_C = 5\text{A}, I_B = 1\text{A}$			2	V
		$I_C = 8\text{A}, I_B = 2\text{A}$			3	V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	$I_C = 2\text{A}, I_B = 0.4\text{A}$			1.2	V
		$I_C = 5\text{A}, I_B = 1\text{A}$			1.6	V

FJP3307D High Voltage Fast Switching NPN Power Transistor



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

Symbol	Parameter	Conditions	Min.	Typ.	Max	Units
$V_F$	Diode Forward Voltage	$I_C = 3\text{A}$			2.5	V
$C_{ob}$	Output Capacitance	$V_{CB} = 10\text{V}, I_E = 0, f = 1\text{MHz}$		60		pF
$t_{STG}$	Storage Time	$V_{CC} = 125\text{V}, I_C = 5\text{A}$			3	$\mu\text{s}$
$t_F$	Fall Time	$I_{B1} = -I_{B2} = 1\text{A}, R_L = 50\Omega$			0.7	$\mu\text{s}$
$t_{STG}$	Storage Time	$V_{CC} = 30\text{V}, I_C = 5\text{A}, L=200\mu\text{H}$			2.3	$\mu\text{s}$
$t_F$	Fall Time	$I_{B1}=1\text{A}, R_{BB} = 0\Omega, V_{BE(OFF)} = -5\text{V}$ $V_{CLAMP} = 250\text{V}$			150	ns

\* Pulse test:  $PW=300\mu\text{s}$ , Duty cycle=2%

**$h_{FE}$  Classification**

Classification	H1	H2
$h_{FE1}$	15 ~ 28	26 ~ 39

## Typical Performance Characteristics

Figure 1. Static Characteristic

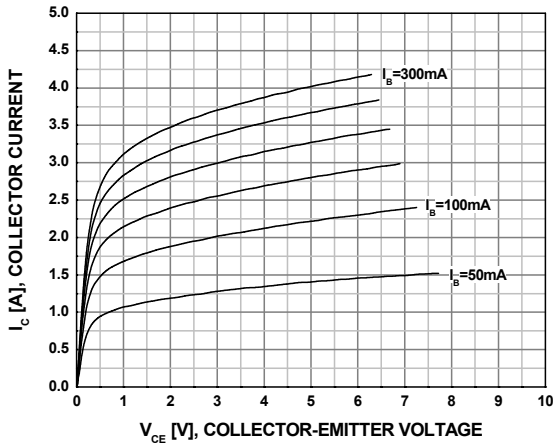


Figure 2. DC Current Gain (H1 Grade)

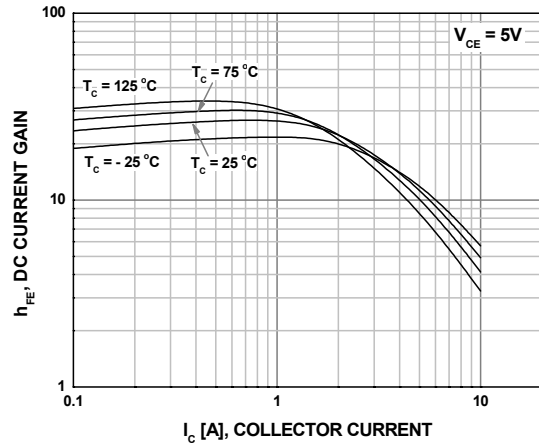


Figure 3. DC Current Gain (H2 Grade)

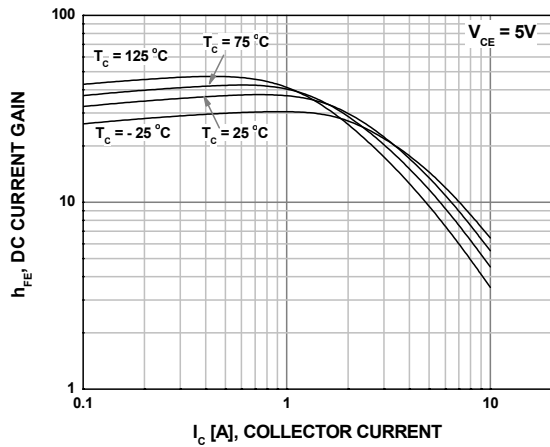


Figure 4. Collector-Emitter Saturation Voltage

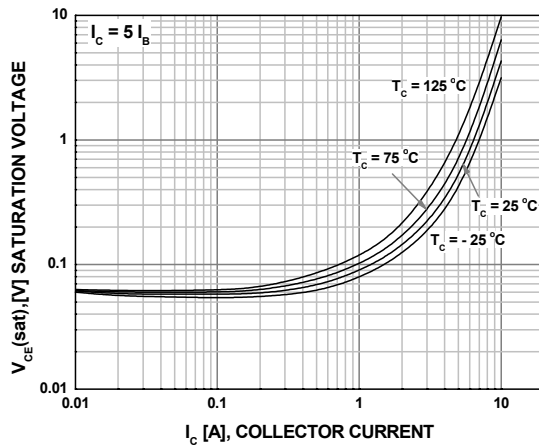


Figure 5. Base-Emitter Saturation Voltage

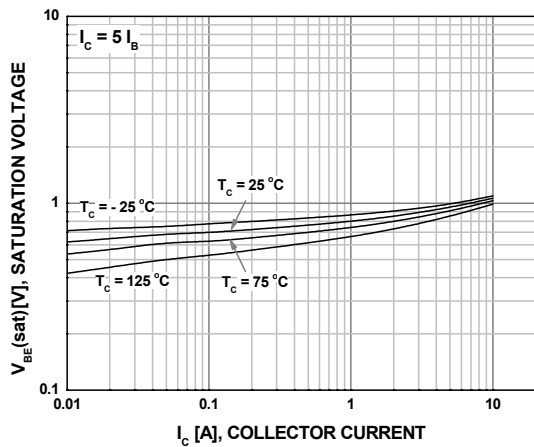
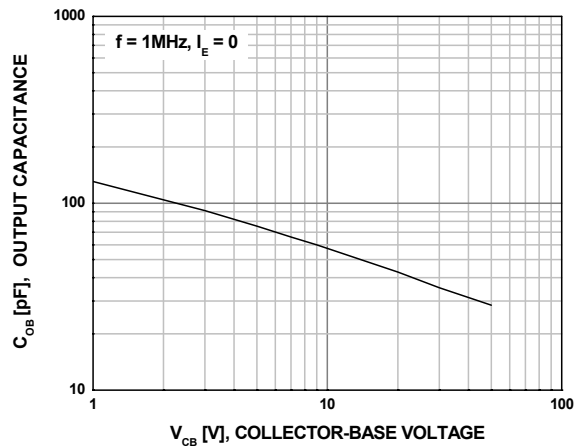
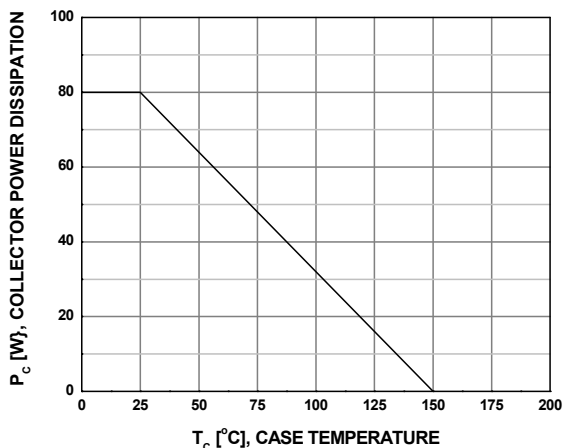


Figure 6. Output Capacitance

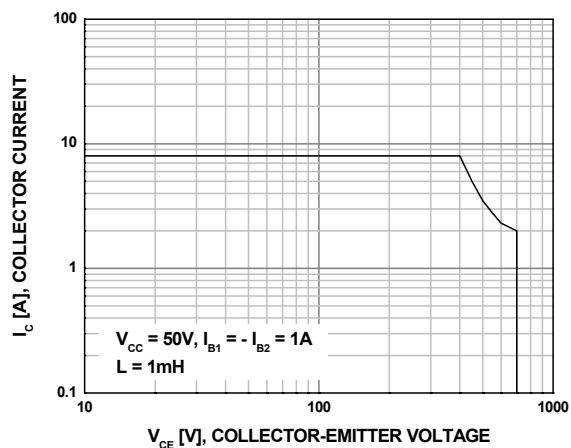


**Typical Performance Characteristics (Continued)**

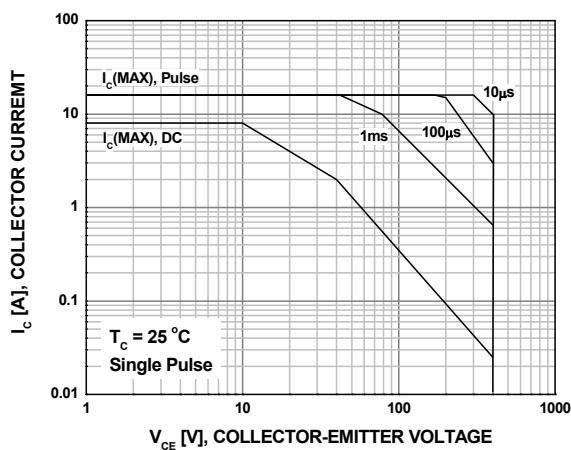
**Figure 7. Power Derating**



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

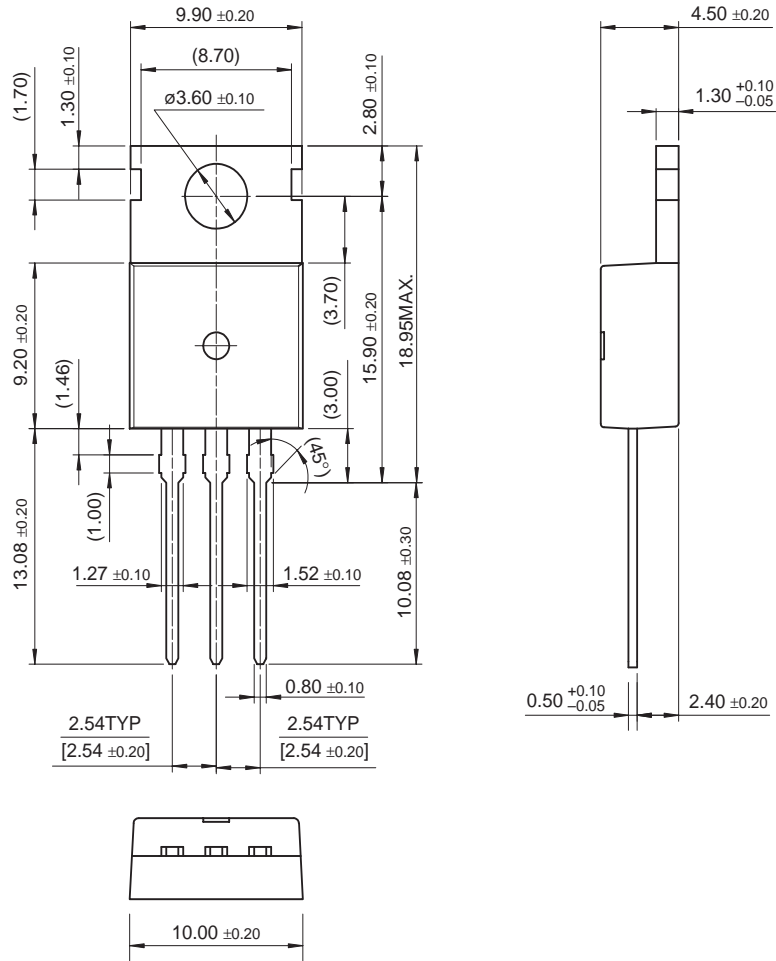


**Figure 9. Forward Biased Safe Operating Area**



Mechanical Dimensions

TO-220



Dimensions in Millimeters

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