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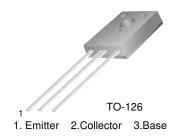
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## **FJE3303**

# **High Voltage Fast-Switching NPN Power Transistor**

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



## Absolute Maximum Ratings $T_C = 25^{\circ}C$ unless otherwise noted

Symbol	Parameter	Value	Units
V <sub>CBO</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)	1.5	Α
I <sub>CP</sub>	Collector Current (Pulse) *	3	Α
I <sub>B</sub>	Base Current (DC)	0.75	Α
I <sub>BP</sub>	Base Current (Pulse) *	1.5	Α
P <sub>C</sub>	Collector Dissipation (T <sub>C</sub> = 25°C)	20	W
TJ	Junction Temperature	150	°C
T <sub>STG</sub>	Storage Temperature	-65 ~ 150	°C

<sup>\*</sup> Pulse Test: Pulse Width = 5ms, Duty Cycle  $\leq$  10%

## **Electrical Characteristics** $T_C = 25$ °C unless otherwise noted

Symbol	Parameter	Conditions	Min.	Тур.	Max	Units
BV <sub>CBO</sub>	Collector-Base Breakdwon Voltage	$I_C = 500 \mu A, I_E = 0$	700			V
BV <sub>CEO</sub>	Collector-Emitter Breakdown Voltage	$I_C = 5mA, I_B = 0$	400			V
BV <sub>EBO</sub>	Emitter-Base Breakdown Voltage	$I_E = 500 \mu A, I_C = 0$	9			V
I <sub>CBO</sub>	Collector Cut-off Current	V <sub>CB</sub> = 700V, I <sub>E</sub> = 0			10	μΑ
I <sub>EBO</sub>	Emitter Cut-off Current	V <sub>EB</sub> = 9V, I <sub>C</sub> = 0			10	μΑ
h <sub>FE1</sub> h <sub>FE2</sub>	DC Current Gain *	$V_{CE} = 2V, I_{C} = 0.5A$ $V_{CE} = 2V, I_{C} = 1.0A$	8 5		21	
V <sub>CE(sat)</sub>	Collector-Emitter Saturation Voltage	$I_C = 0.5A, I_B = 0.1A$ $I_C = 1.0A, I_B = 0.25A$ $I_C = 1.5A, I_B = 0.5A$			0.5 1.0 3.0	V V V
V <sub>BE(sat)</sub>	Base-Emitter Saturation Voltage	$I_C = 0.5A, I_B = 0.1A$ $I_C = 1.0A, I_B = 0.25A$			1.0 1.2	V V
f <sub>T</sub>	Current Gain Bandwidth Product	$V_{CE} = 10V, I_{C} = 0.1A$	4			MHz
C <sub>ob</sub>	Output Capacitance	V <sub>CB</sub> = 10V, f = 0.1MHz		21		pF
t <sub>ON</sub>	Turn On Time	$V_{CC} = 125V, I_C = 1A$ $I_{B1} = 0.2A, I_{B2} = -0.2A$ $R_L = 125\Omega$			1.1	μs
t <sub>STG</sub>	Storge Time				4.0	μs
t <sub>F</sub>	Fall Time				0.7	μs

<sup>\*</sup> Pulse Test: PW  $\leq$  300 $\mu$ s, Duty Cycle  $\leq$  2%

## **h**<sub>FE</sub> Classification

Classification	H1	H2
h <sub>FE1</sub>	8 ~ 16	14 ~ 21

#### **Typical Performance Characteristics**

Figure 1. Static Characteristic

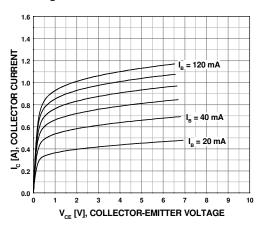


Figure 2. DC Current Gain

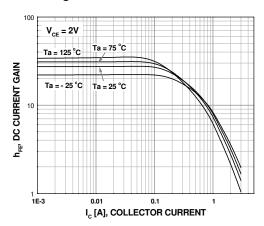


Figure 3. Collector-Emitter Saturation Voltage

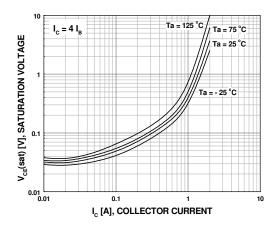


Figure 4. Base-Emitter Saturation Voltage

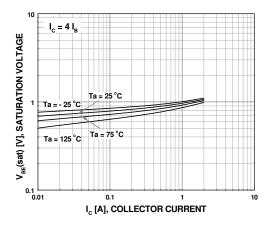


Figure 5. Resistive Load Switching Time

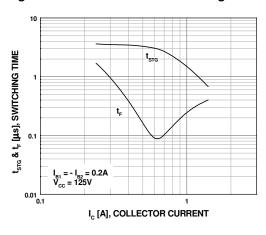
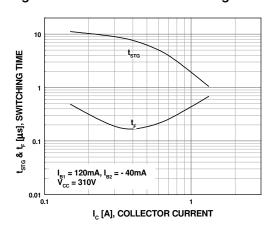


Figure 6. Resistive Load Switching Time



## Typical Performance Characteristics (Continued)

Figure 7. Forward Biased Safe Operating Area Figure

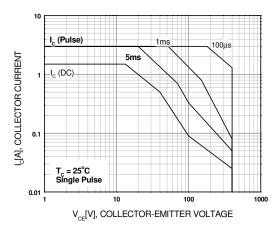


Figure 8. Reverse Biased Safe Operating Area

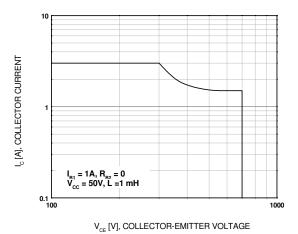
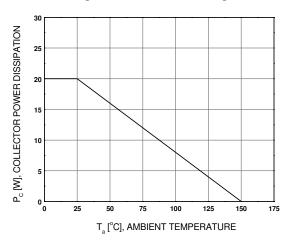
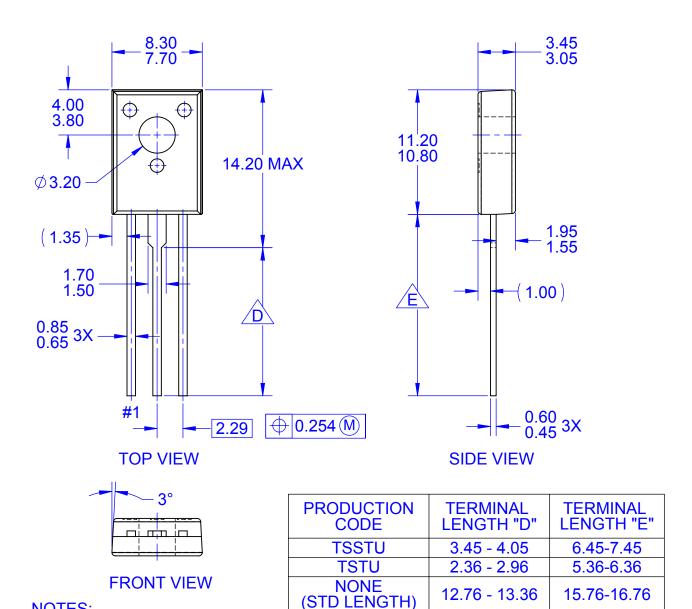


Figure 9. Power Derating



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- Α. NO INDUSTRY STANDARD APPLIES TO THIS **PACKAGE**
- ALL DIMENSIONS ARE IN MILLIMETERS B.
- C. DIMENSIONS ARE EXCLUSIVE OF BURRS, MOLD FLASH, AND TIE BAR PROTRUSIONS







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