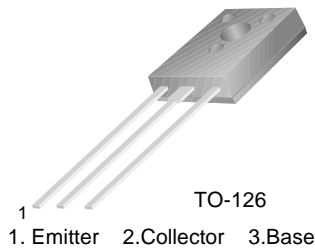


# FJE3303

## High Voltage Fast-Switching NPN Power Transistor

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



### Absolute Maximum Ratings T<sub>C</sub> = 25°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	A
I <sub>CP</sub>	Collector Current (Pulse) *	3	A
I <sub>B</sub>	Base Current (DC)	0.75	A
I <sub>BP</sub>	Base Current (Pulse) *	1.5	A
P <sub>C</sub>	Collector Dissipation (T <sub>C</sub> = 25°C)	20	W
T <sub>J</sub>	Junction Temperature	150	°C
T <sub>STG</sub>	Storage Temperature	-65 ~ 150	°C

\* Pulse Test: Pulse Width = 5ms, Duty Cycle ≤ 10%

### Electrical Characteristics T<sub>C</sub> = 25°C unless otherwise noted

Symbol	Parameter	Conditions	Min.	Typ.	Max	Units
BV <sub>CBO</sub>	Collector-Base Breakdwon Voltage	I <sub>C</sub> = 500μA, I <sub>E</sub> = 0	700			V
BV <sub>CEO</sub>	Collector-Emitter Breakdown Voltage	I <sub>C</sub> = 5mA, I <sub>B</sub> = 0	400			V
BV <sub>EBO</sub>	Emitter-Base Breakdown Voltage	I <sub>E</sub> = 500μA, I <sub>C</sub> = 0	9			V
I <sub>CBO</sub>	Collector Cut-off Current	V <sub>CB</sub> = 700V, I <sub>E</sub> = 0			10	μA
I <sub>EBO</sub>	Emitter Cut-off Current	V <sub>EB</sub> = 9V, I <sub>C</sub> = 0			10	μA
h <sub>FE1</sub> h <sub>FE2</sub>	DC Current Gain *	V <sub>CE</sub> = 2V, I <sub>C</sub> = 0.5A V <sub>CE</sub> = 2V, I <sub>C</sub> = 1.0A	8 5		21	
V <sub>CE(sat)</sub>	Collector-Emitter Saturation Voltage	I <sub>C</sub> = 0.5A, I <sub>B</sub> = 0.1A I <sub>C</sub> = 1.0A, I <sub>B</sub> = 0.25A I <sub>C</sub> = 1.5A, I <sub>B</sub> = 0.5A			0.5 1.0 3.0	V V V
V <sub>BE(sat)</sub>	Base-Emitter Saturation Voltage	I <sub>C</sub> = 0.5A, I <sub>B</sub> = 0.1A I <sub>C</sub> = 1.0A, I <sub>B</sub> = 0.25A			1.0 1.2	V V
f <sub>T</sub>	Current Gain Bandwidth Product	V <sub>CE</sub> = 10V, I <sub>C</sub> = 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 <sub>CC</sub> = 125V, I <sub>C</sub> = 1A I <sub>B1</sub> = 0.2A, I <sub>B2</sub> = -0.2A R <sub>L</sub> = 125Ω			1.1	μs
t <sub>STG</sub>	Storage Time				4.0	μs
t <sub>F</sub>	Fall Time				0.7	μs

\* Pulse Test: PW ≤ 300μs, Duty Cycle ≤ 2%

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

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

## Typical Performance Characteristics

Figure 1. Static Characteristic

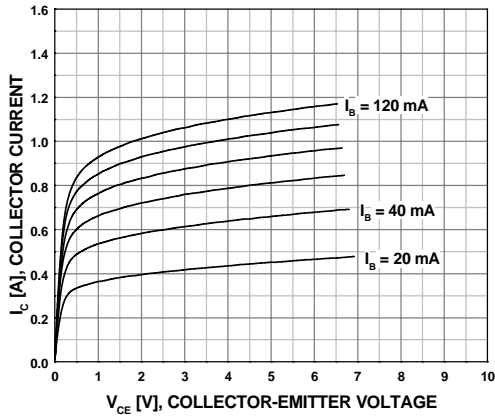


Figure 2. DC Current Gain

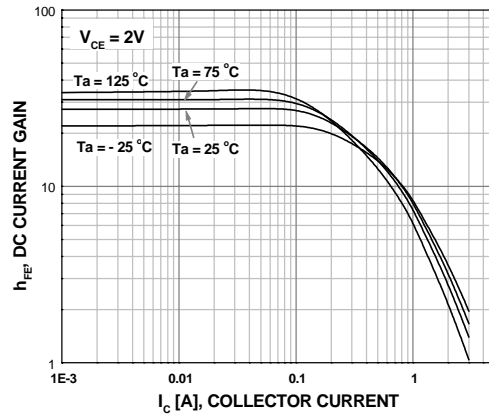


Figure 3. Collector-Emitter Saturation Voltage

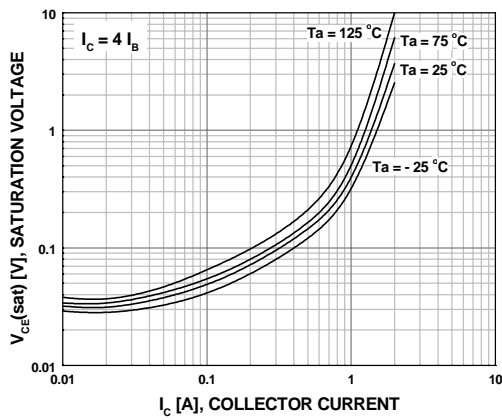


Figure 4. Base-Emitter Saturation Voltage

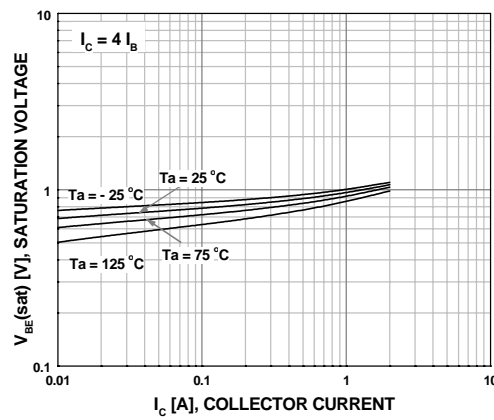


Figure 5. Resistive Load Switching Time

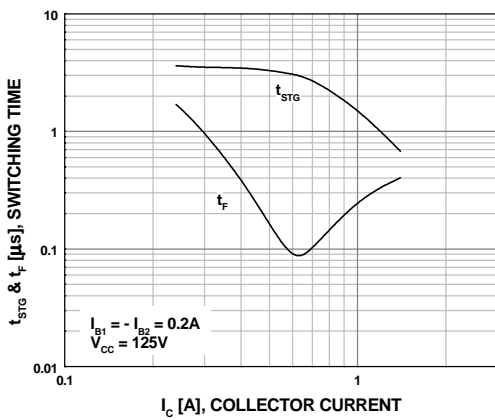
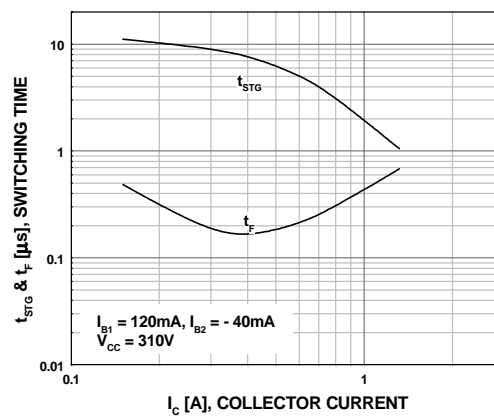
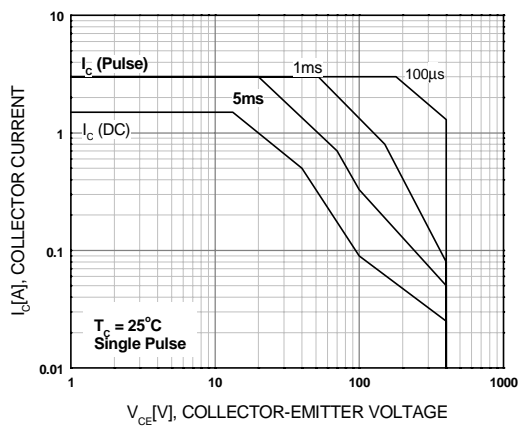


Figure 6. Resistive Load Switching Time

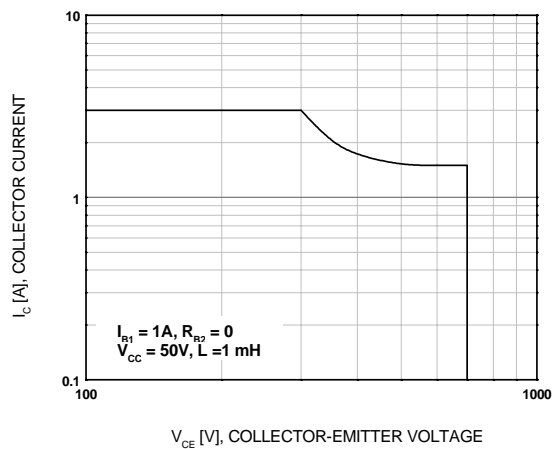


**Typical Performance Characteristics** (Continued)

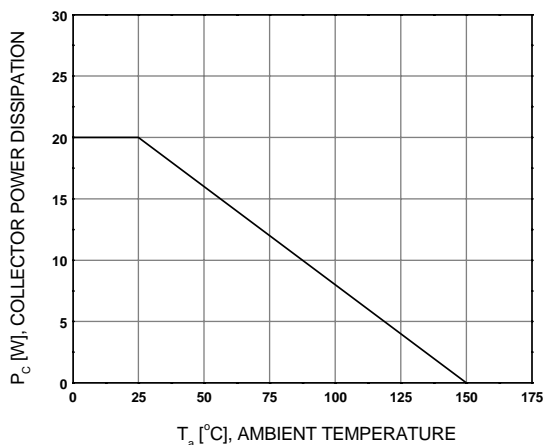
**Figure 7. Forward Biased Safe Operating Area**



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

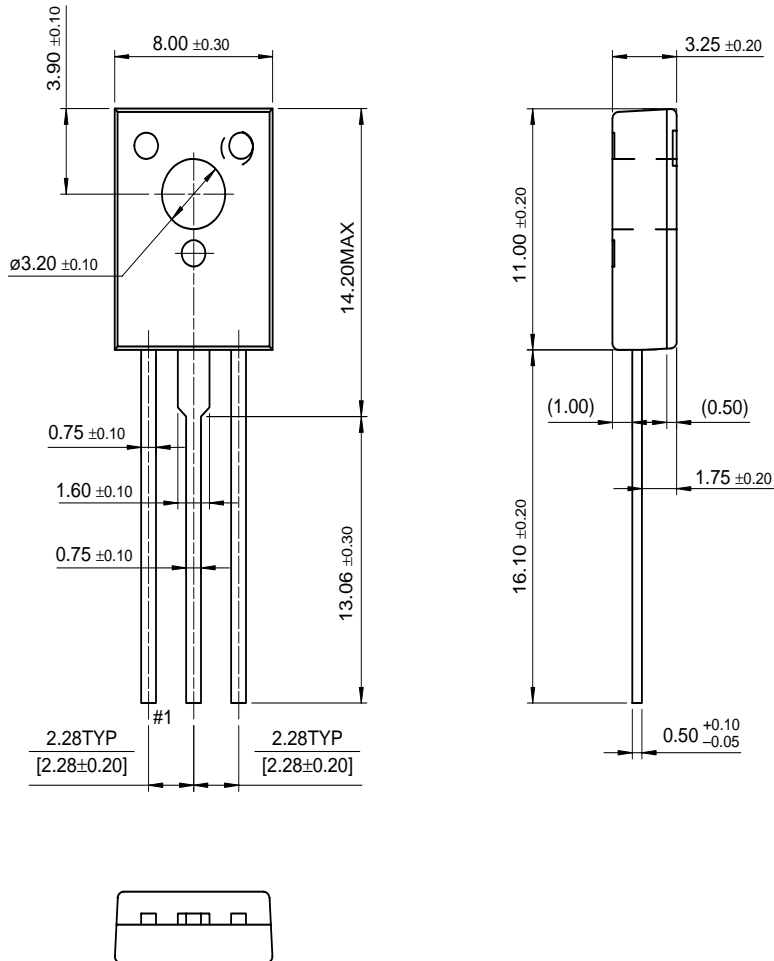


**Figure 9. Power Derating**



Mechanical Dimensions

TO-126



Dimensions in Millimeters

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E <sup>2</sup> CMOST™	I <sup>2</sup> C™	MSX™	QT Optoelectronics™	TinyLogic <sup>®</sup>
EnSigna™	<i>i-Lo</i> ™	MSXPro™	Quiet Series™	TINYOPTO™
FACT™	ImpliedDisconnect™	OCX™	RapidConfigure™	TruTranslation™
FACT Quiet Series™		OCXPro™	RapidConnect™	UHC™
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