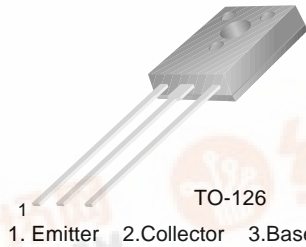


FAIRCHILD
SEMICONDUCTOR®

FJE3303

High Voltage Fast-Switching NPN Power Transistor

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

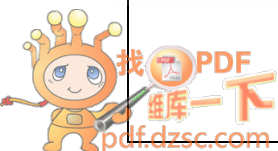


Absolute Maximum Ratings T_C = 25°C unless otherwise noted

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)	1.5	A
I _{CP}	Collector Current (Pulse) *	3	A
I _B	Base Current (DC)	0.75	A
I _{BP}	Base Current (Pulse) *	1.5	A
P _C	Collector Dissipation (T _C = 25°C)	20	W
T _J	Junction Temperature	150	°C
T _{STG}	Storage Temperature	-65 ~ 150	°C

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

FJE3303 High Voltage Fast-Switching NPN Power Transistor



Electrical Characteristics T_C = 25°C unless otherwise noted

Symbol	Parameter	Conditions	Min.	Typ.	Max	Units
BV _{CBO}	Collector-Base Breakdwon Voltage	I _C = 500μA, I _E = 0	700			V
BV _{CEO}	Collector-Emitter Breakdown Voltage	I _C = 5mA, I _B = 0	400			V
BV _{EBO}	Emitter-Base Breakdown Voltage	I _E = 500μA, I _C = 0	9			V
I _{CBO}	Collector Cut-off Current	V _{CB} = 700V, I _E = 0			10	μA
I _{EBO}	Emitter Cut-off Current	V _{EB} = 9V, I _C = 0			10	μA
h _{FE1} h _{FE2}	DC Current Gain *	V _{CE} = 2V, I _C = 0.5A V _{CE} = 2V, I _C = 1.0A	8 5		21	
V _{CE(sat)}	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 _{BE(sat)}	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 _T	Current Gain Bandwidth Product	V _{CE} = 10V, I _C = 0.1A	4			MHz
C _{ob}	Output Capacitance	V _{CB} = 10V, f = 0.1MHz		21		pF
t _{ON}	Turn On Time	V _{CC} = 125V, I _C = 1A I _{B1} = 0.2A, I _{B2} = -0.2A R _L = 125Ω			1.1	μs
t _{STG}	Storage Time				4.0	μs
t _F	Fall Time				0.7	μs

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

h_{FE} Classification

Classification	H1	H2
h _{FE1}	8 ~ 16	14 ~ 21

Typical Performance Characteristics

Figure 1. Static Characteristic

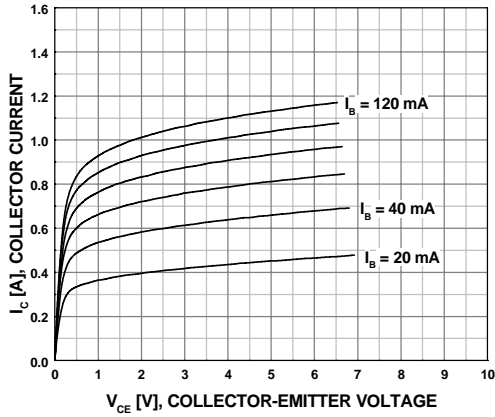


Figure 2. DC Current Gain

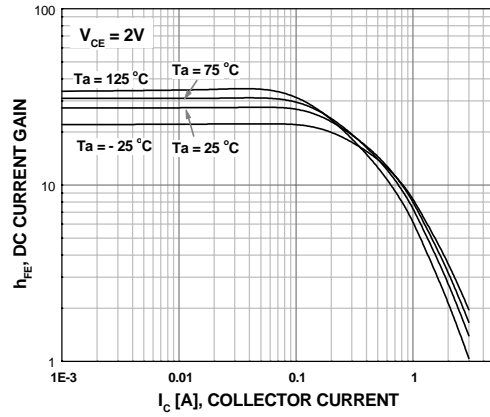


Figure 3. Collector-Emitter Saturation Voltage

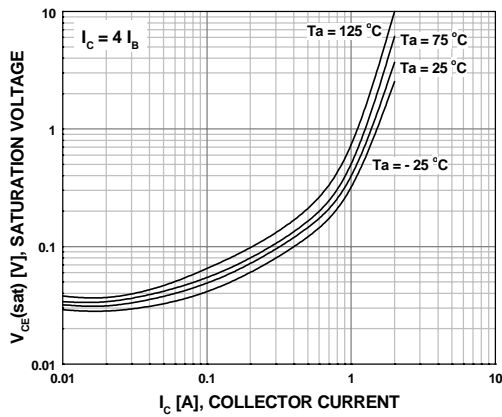


Figure 4. Base-Emitter Saturation Voltage

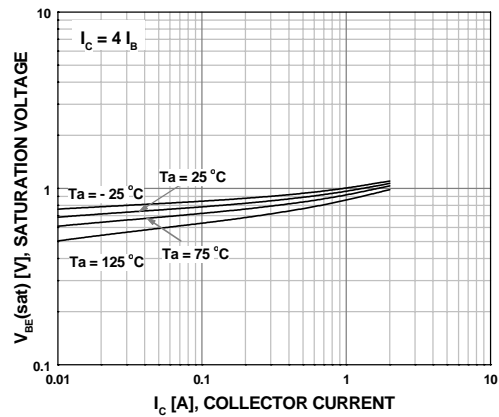


Figure 5. Resistive Load Switching Time

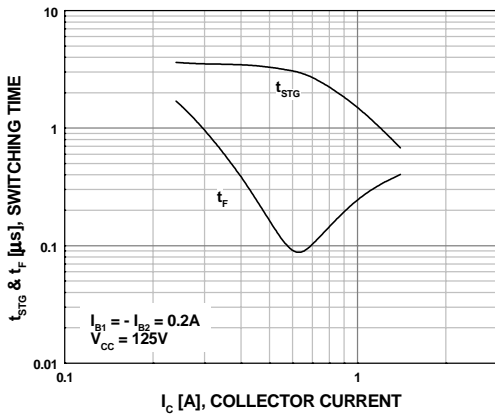
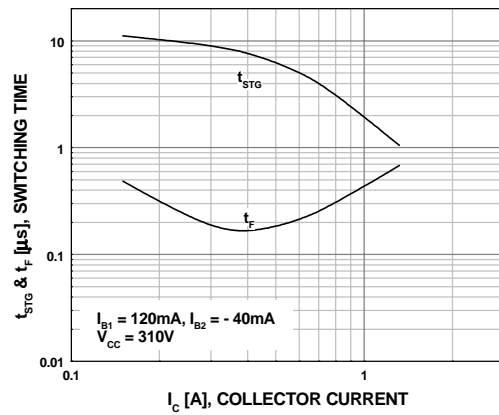


Figure 6. Resistive Load Switching Time



Typical Performance Characteristics (Continued)

Figure 7. Forward Biased Safe Operating Area

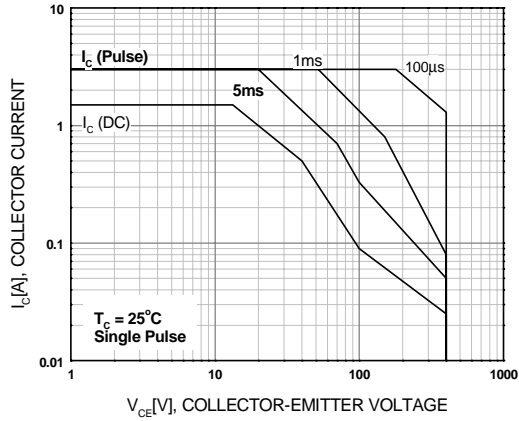


Figure 8. Reverse Biased Safe Operating Area

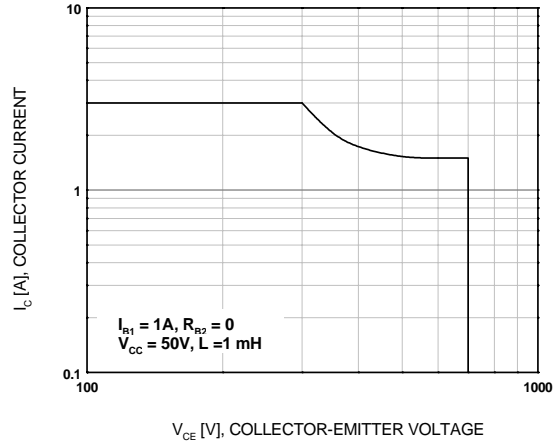
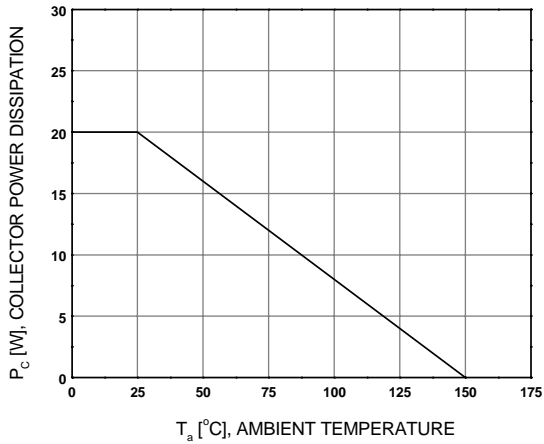
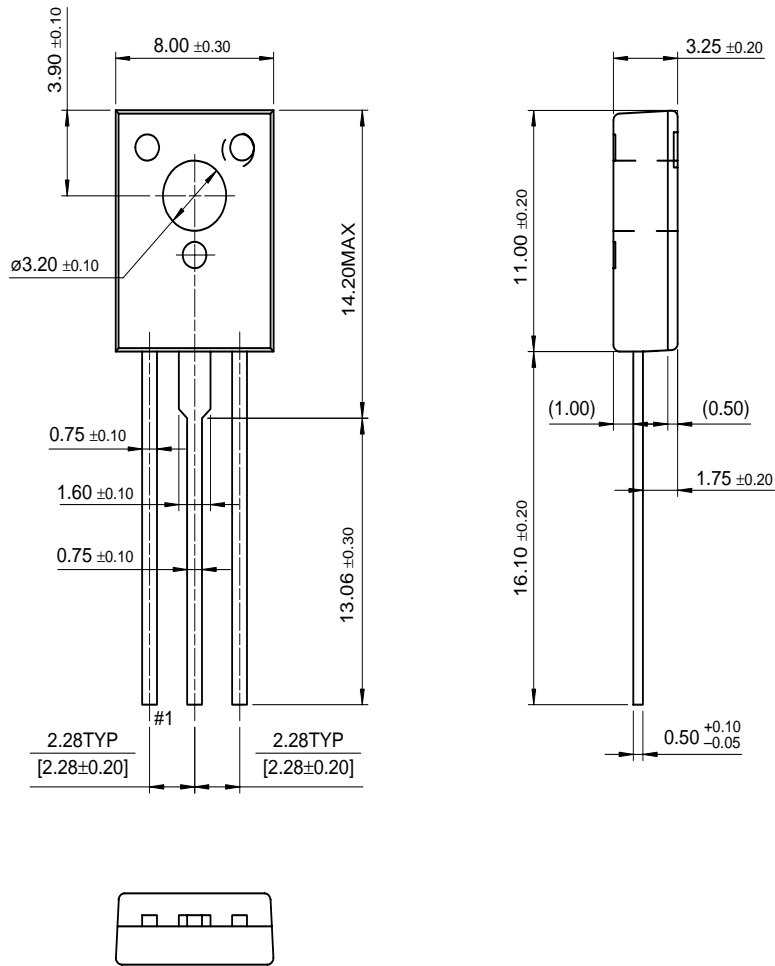


Figure 9. Power Derating



Mechanical Dimensions

TO-126



Dimensions in Millimeters

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E ² CMOSTM	I ² C™	MSX™	QT Optoelectronics™	TinyLogic®
EnSigna™	<i>i-Lo</i> ™	MSXPro™	Quiet Series™	TINYOPTO™
FACT™	ImpliedDisconnect™	OCX™	RapidConfigure™	TruTranslation™
FACT Quiet Series™		OCXPro™	RapidConnect™	UHC™
Across the board. Around the world.™		OPTOLOGIC®	μSerDes™	UltraFET®
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