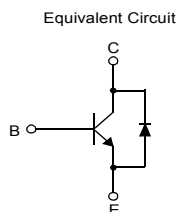
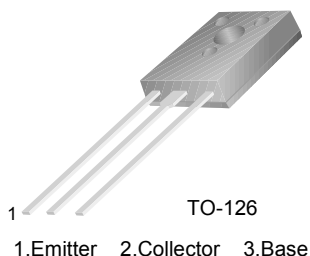


FJE5304D

NPN Triple Diffused Planar Silicon Transistor

High Voltage High Speed Power Switch Application

- Wide Safe Operating Area
- Built-in Free Wheeling diode
- Suitable for Electronic Ballast Application
- Small Variance in Storage Time



Absolute Maximum Ratings $T_C = 25^\circ\text{C}$ 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	12	V
I_C	Collector Current (DC)	4	A
I_{CP}	* Collector Current (Pulse)	8	A
I_B	Base Current (DC)	2	A
I_{BP}	* Base Current (Pulse)	4	A
P_C	Collector Dissipation ($T_C=25^\circ\text{C}$)	30	W
T_{STG}	Storage Temperature	- 65 ~ 150	$^\circ\text{C}$

* Pulse Test Pulse Width = 5ms, Duty Cycle $\geq 1.0\%$

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

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
BV_{CBO}	Collector-Base Breakdown Voltage	$I_C = 1\text{mA}, I_E = 0$	700			V
BV_{CEO}	Collector-Emitter Breakdown Voltage	$I_C = 5\text{mA}, I_B = 0$	400			V
BV_{EBO}	Emitter-Base Breakdown Voltage	$I_E = 1\text{mA}, I_C = 0$	12			V
I_{CES}	Collector Cut-off Current	$V_{CE} = 700\text{V}, V_{EB} = 0$			100	μA
I_{CEO}	Collector Cut-off Current	$V_{CE} = 400\text{V}, I_B = 0$			250	μA
I_{EBO}	Emitter Cut-off Current	$V_{EB} = 12\text{V}, I_C = 0$			100	μA
h_{FE}	DC Current Gain	$V_{CE} = 5\text{V}, I_C = 10\text{mA}$ $V_{CE} = 5\text{V}, I_C = 2\text{A}$	10 8		40	

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

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = 0.5A, I_B = 0.1A$ $I_C = 1A, I_B = 0.2A$ $I_C = 2.5A, I_B = 0.5A$			0.7 1.0 1.5	V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	$I_C = 0.5A, I_B = 0.1A$ $I_C = 1A, I_B = 0.2A$ $I_C = 2.5A, I_B = 0.5A$			1.1 1.2 1.3	V
V_f	Internal Diode Forward Voltage Drop	$I_F = 2A$			2.5	V
Inductive Load Switching ($V_{CC} = 200V$)						
t_{stg}	Storage Time	$I_C = 2A, I_{B1} = 0.4A$ $V_{BE(off)} = -5V,$ $L = 200\mu H$		0.6		μs
t_f	Fall Time			0.1		
Resistive Load Switching ($V_{CC} = 250V$)						
t_{stg}	Storage Time	$I_C = 2A, I_{B1} = I_{B2} = 0.4A$ $T_P = 30\mu s$			2.9	μs
t_f	Fall Time			0.2		

* Pulse test: $PW \leq 300\mu s$, Duty cycle $\leq 2\%$

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

Symbol	Parameter	Max.	Units
$R_{\theta JC}$	Thermal Resistance, Junction to Case	4.17	$^\circ\text{C/W}$
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	83.3	$^\circ\text{C/W}$

Package Marking and Ordering Information

Device Marking	Device	Package	Reel Size	Tape Width	Quantity
FJE5304D	FJE5304D	TO-126	--	--	--

Typical Performance Characteristics

Figure 1. Static Characteristic

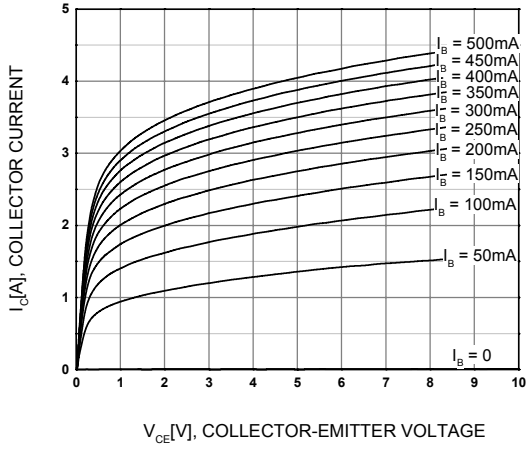


Figure 2. DC Current Gain

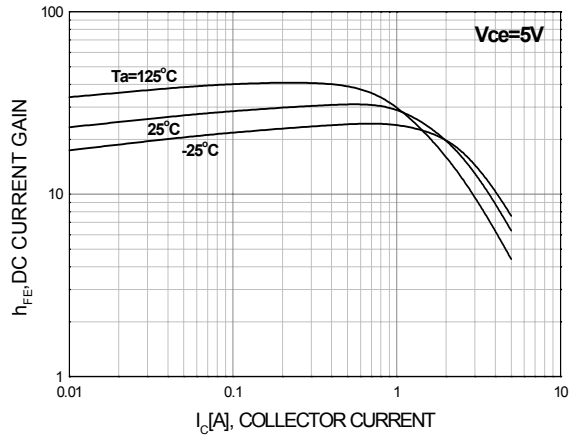


Figure 3. Collector-Emitter Saturation Voltage

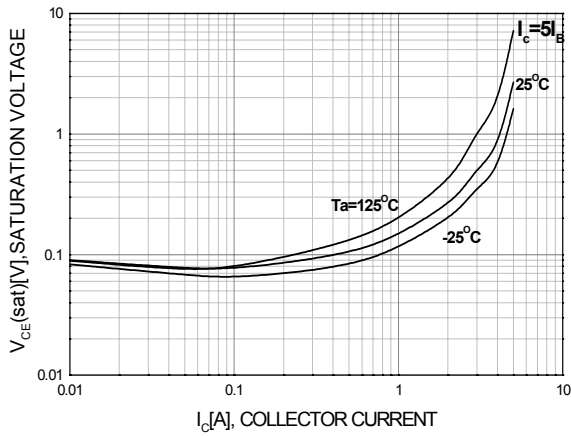


Figure 4. Base-Emitter Saturation Voltage

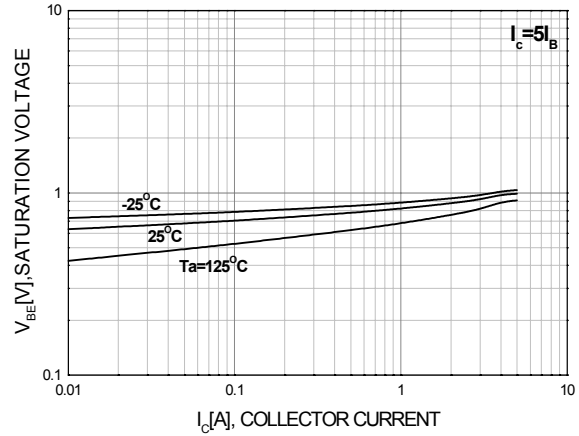


Figure 5. Resistive Load Switching Time

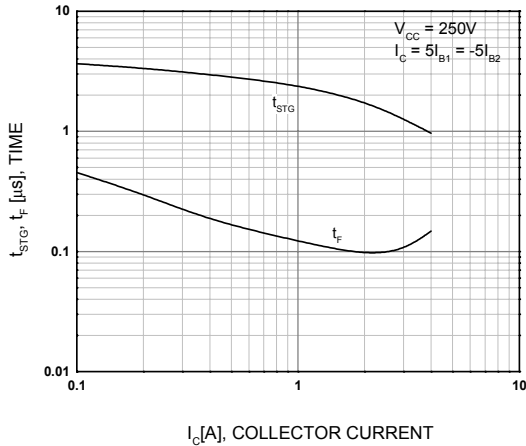
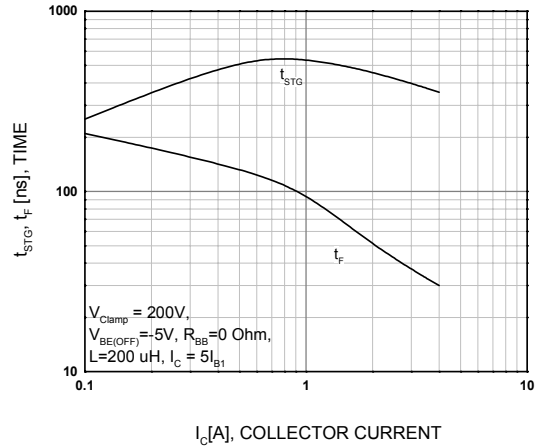


Figure 6. Inductive Load Switching Time



Typical Performance Characteristics

Figure 7. Forward Bias Safe Operating Area

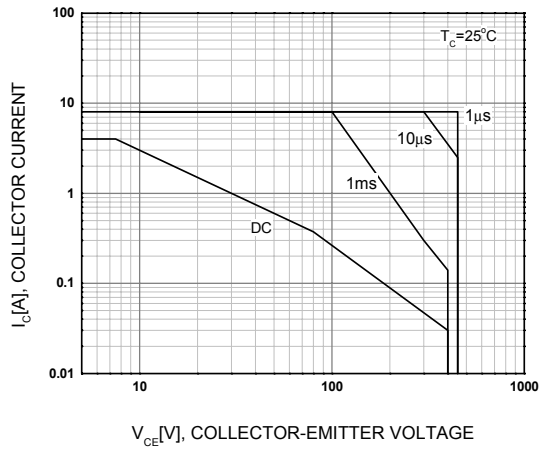


Figure 8. Reverse Bias Safe Operating Area

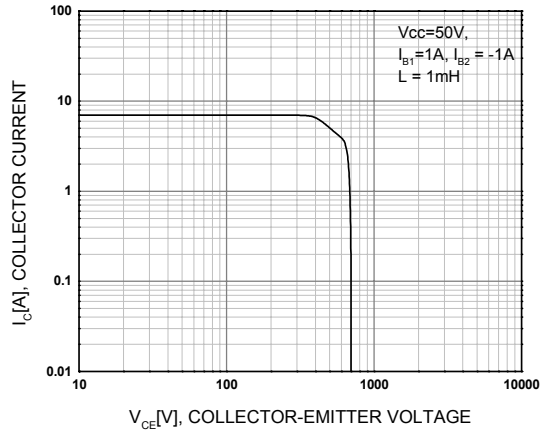
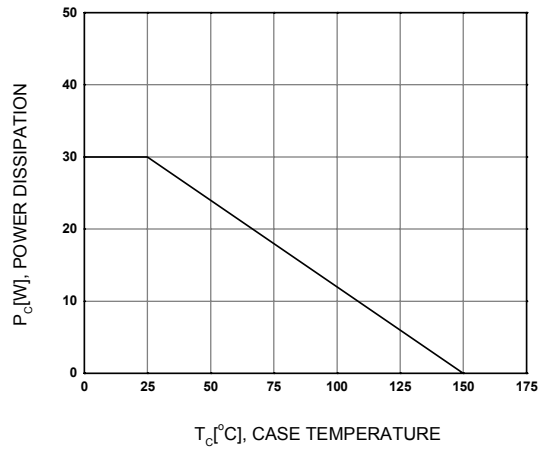
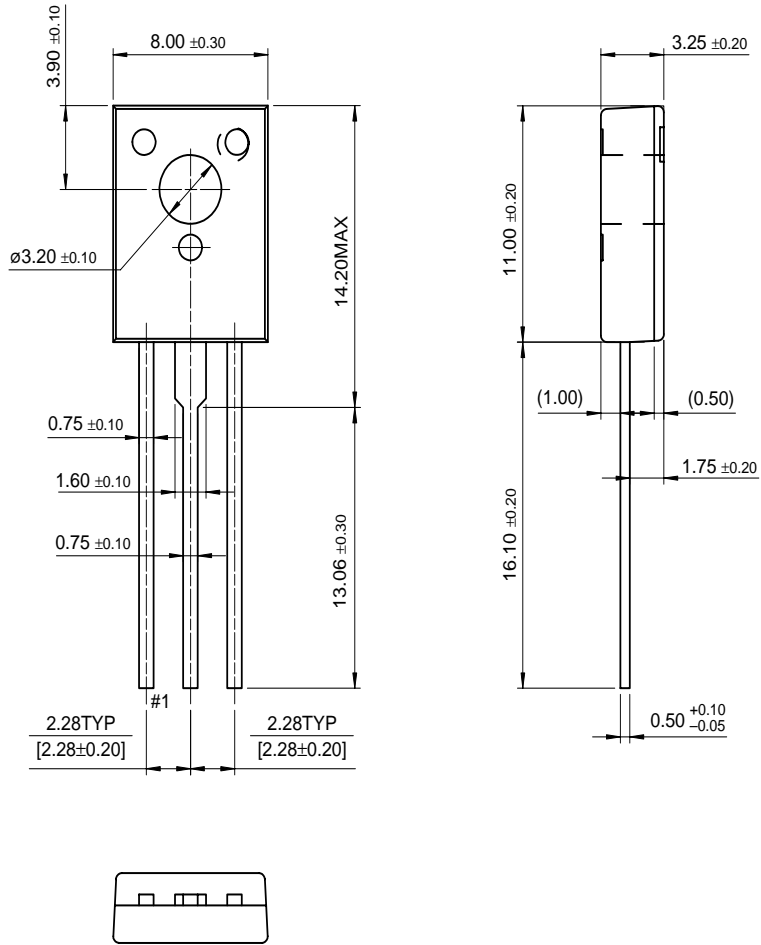


Figure 9. Power Derating



Mechanical Dimensions

TO-126



Dimensions in Millimeters

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Rev. 116



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Телефон: +7 812 627 14 35

Электронная почта: sales@st-electron.ru

Адрес: 198099, Санкт-Петербург,
Промышленная ул, дом № 19, литера Н,
помещение 100-Н Офис 331