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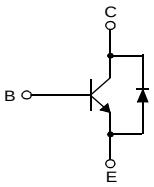
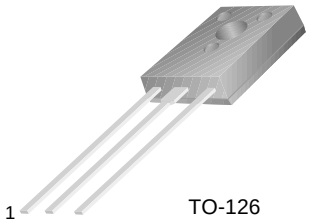
FJE5304D

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

Equivalent Circuit





TO-126

1.Emitter 2.Collector 3.Base

NPN Triple Diffused Planar Silicon Transistor

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	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°C)	30	W
T_{STG}	Storage Temperature	- 65 ~ 150	°C

* Pulse Test Pulse Width = 5ms, Duty Cycle ≤ 1.0%

Electrical Characteristics T_C=25°C unless otherwise noted

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

Electrical Characteristics (Continued) T_C=25°C unless otherwise noted

Symbol	Parameter	Test Condition	Min.	TYP.	Max.	Units
Inductive Load Switching (V_{CC} = 200V)						
t_{stg}	Storage Time	I_C = 2A, I_{B1} = 0.4A V_{BE}(off) = -5V, L = 200µH		0.6		µs
tf	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 = 30µs			2.9	µs
tf	Fall Time			0.2		

* Pulse test: PW≤300µs, Duty cycle≤2%

Thermal Characteristics T_C = 25°C unless otherwise noted

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

Typical Characteristics

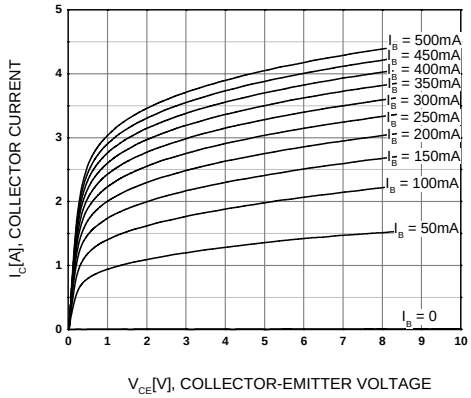


Figure 1. Static Characteristic

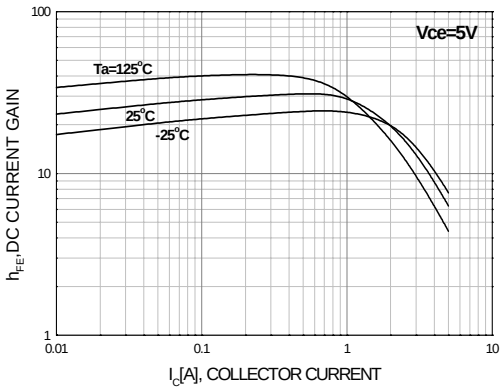


Figure 2. DC Current Gain

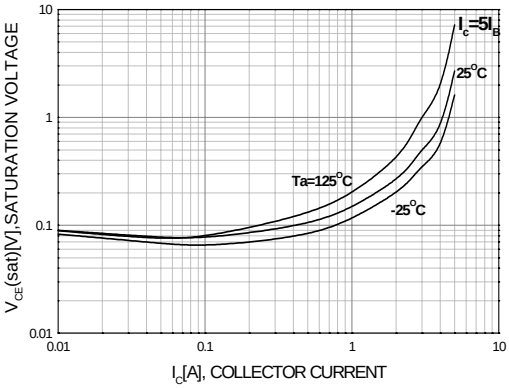


Figure 3. Collector-Emitter Saturation Voltage

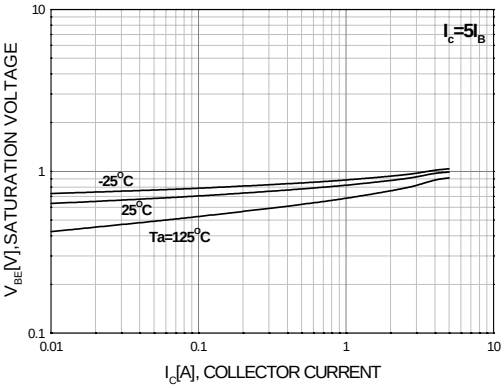


Figure 4. Base-Emitter Saturation Voltage

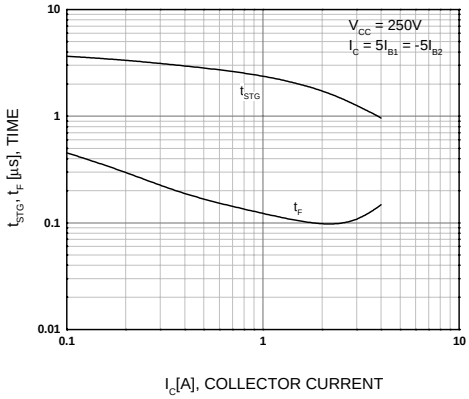


Figure 5. Resitive Load Switching Time

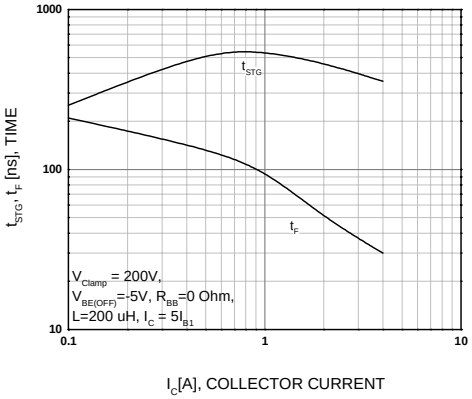


Figure 6. Inductive Load Switching Time

Typical Characteristics (Continued)

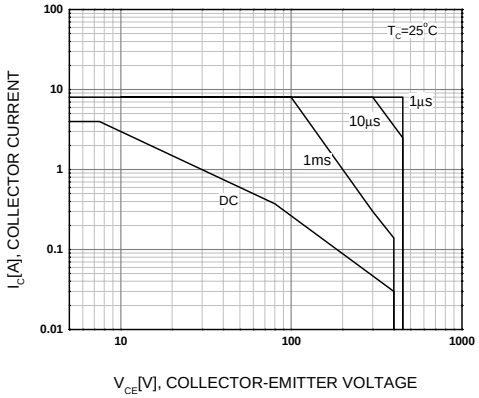


Figure 7. Forward Bias Safe Operating Area

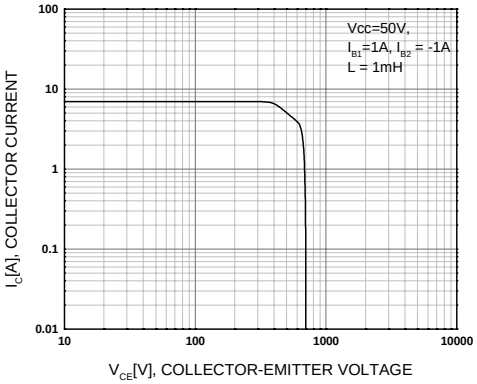


Figure 8. Reverse Bias Safe Operating Area

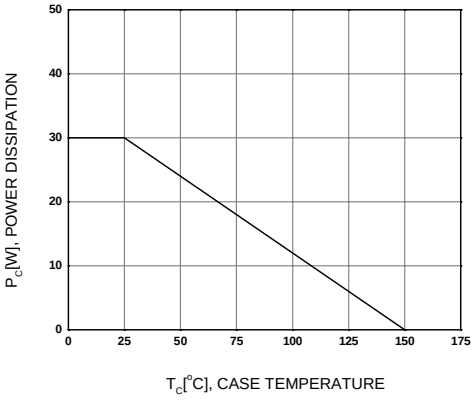
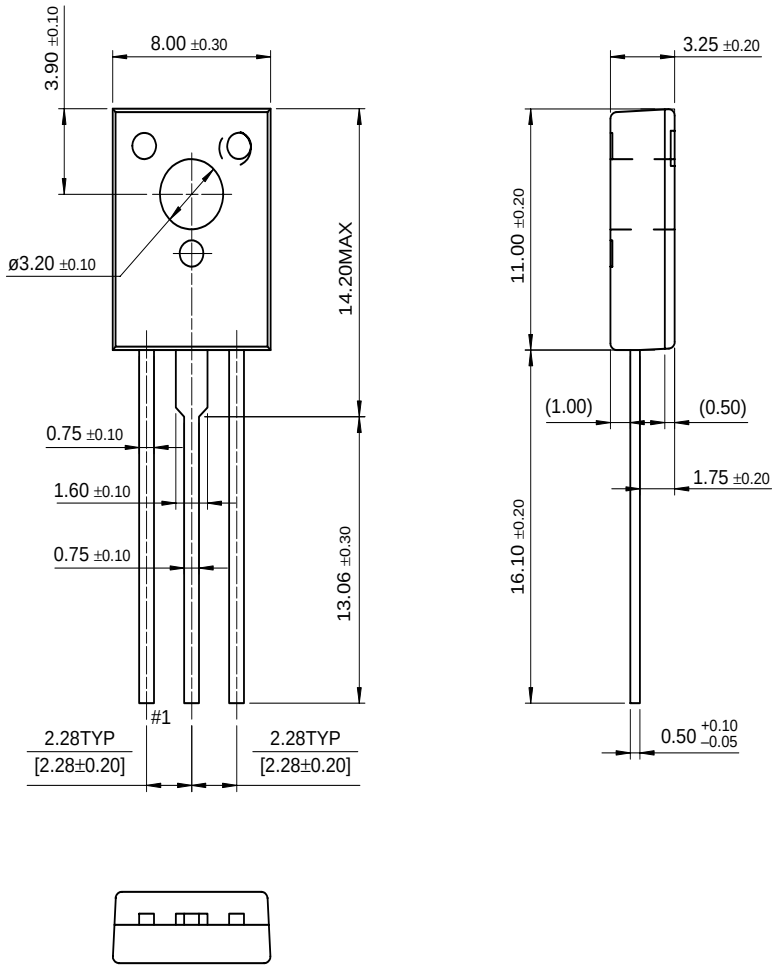


Figure 9. Power Derating

Package Dimensions

TO-126



Dimensions in Millimeters

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CoolFET™	FRFET™	MicroFET™	QFET®	SuperSOT™-8
CROSSVOLT™	GlobalOptoisolator™	MicroPak™	QS™	SyncFET™
DOME™	GTO™	MICROWIRE™	QT Optoelectronics™	TinyLogic®
EcoSPARK™	HiSeC™	MSX™	Quiet Series™	TINYOPTO™
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FACT™	ImpliedDisconnect™	OCXPro™	µSerDes™	UltraFET®
FACT Quiet Series™		OPTOLOGIC®	SILENT SWITCHER®	VCX™
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PRODUCT STATUS DEFINITIONS

Definition of Terms

Datasheet Identification	Product Status	Definition
Advance Information	Formative or In Design	This datasheet contains the design specifications for product development. Specifications may change in any manner without notice.
Preliminary	First Production	This datasheet contains preliminary data, and supplementary data will be published at a later date. Fairchild Semiconductor reserves the right to make changes at any time without notice in order to improve design.
No Identification Needed	Full Production	This datasheet contains final specifications. Fairchild Semiconductor reserves the right to make changes at any time without notice in order to improve design.
Obsolete	Not In Production	This datasheet contains specifications on a product that has been discontinued by Fairchild semiconductor. The datasheet is printed for reference information only.