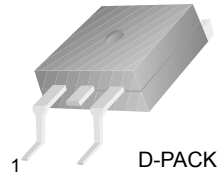
FAIRCHILD
SEMICONDUCTOR®

FJD5304D

High Voltage Fast Switching Transistor

Features

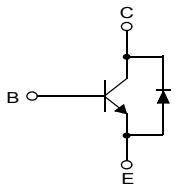
- Built-in Free Wheeling Diode
- Wide Safe Operating Area
- Small Variance in Storage Time
- Suitable for Electronic Ballast Application



D-PACK

1. Base 2. Collector 3. Emitter

Equivalent Circuit



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_J	Junction Temperature	150	°C
T_{STG}	Storage Temperature	-55 ~ 150	°C

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

Package Marking and Ordering Information

Device Marking	Device	Package	Reel Size	Tape Width	Quantity
J5304D	FJD5304DTM	D-PAK	13” Dia	-	2500
J5304D	FJD5304DTF	D-PAK	13” Dia	-	2000

Electrical Characteristics T_C = 25°C unless otherwise noted

Symbol	Parameter	Conditions	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_{CB} = 700V, I_E = 0			100	μA
I_{CEO}	Collector Cut-off Current	V_{CB} = 400V, I_B = 0			250	μA
I_{EBO}	Emitter Cut-off Current	V_{EB} = 12V, I_C = 0			1	mA
h_{FE}	DC Current Gain	V_{CE} = 5V, I_C = 10mA V_{CE} = 5V, I_C = 2.0A	10 8		 40	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	I_C = 0.5A, I_B = 0.1A			0.7	V
		I_C = 1.0A, I_B = 0.2A			1.0	V
		I_C = 2.5A, I_B = 0.5A			1.5	V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	I_C = 0.5A, I_B = 0.1A			1.1	V
		I_C = 1.0A, I_B = 0.2A			1.2	V
		I_C = 2.5A, I_B = 0.5A			1.3	V
t_{STG}	Storage Time	V_{CLAMP}=200V, I_C=2.0A I_{B1}=0.4A, V_{BE}(off)=-5V, L=200μH		0.6		μs
t_F	Fall Time			0.1		μs
t_{STG}	Storage Time	V_{CC}=250V, I_C=2.0A I_{B1}=0.4A, I_{B2}=-0.4A, T_P=30μs			2.9	μs
t_F	Fall Time			0.2		μs

Typical Performance Characteristics

Figure 1. Static Characterstic

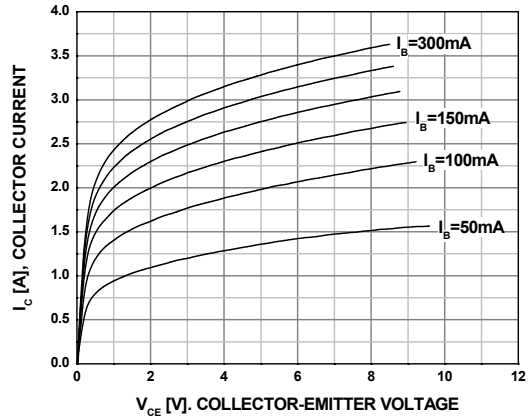


Figure 2. DC Current Gain

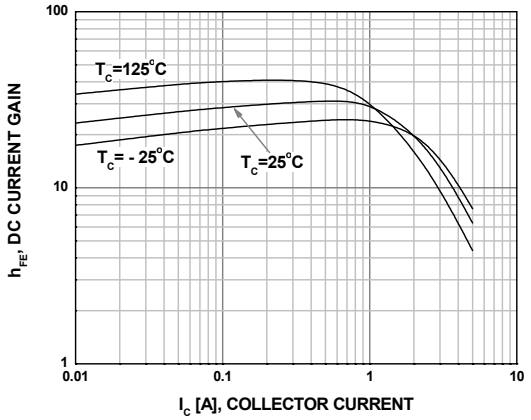


Figure 3. Collector-Emitter Saturation Voltage

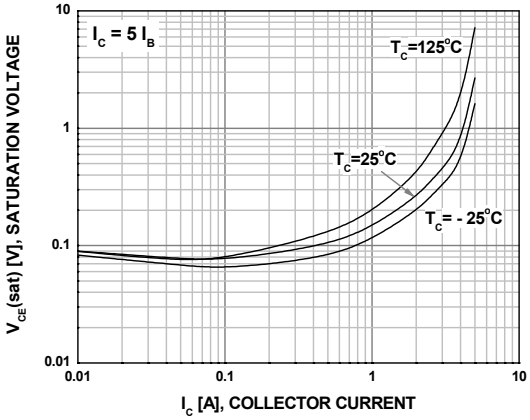


Figure 4. Base-Emitter Saturation Voltage

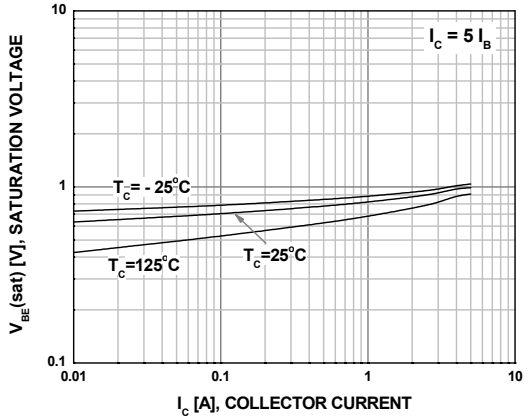


Figure 5. Resistive Load Switching Time

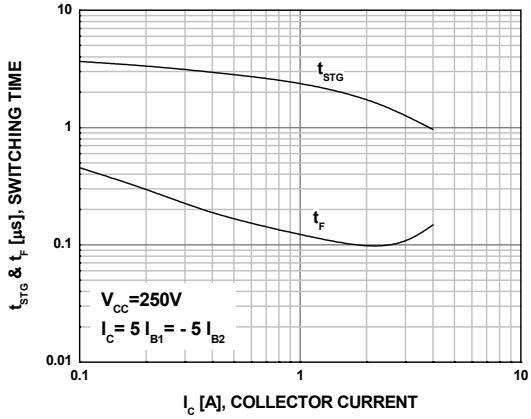
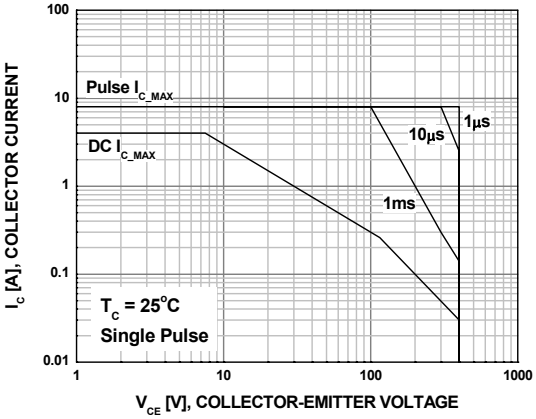


Figure 6. Forward Biased Safe Operating Area



Typical Performance Characteristics (Continued)

Figure 7. Reverse Biased Safe Operating Area

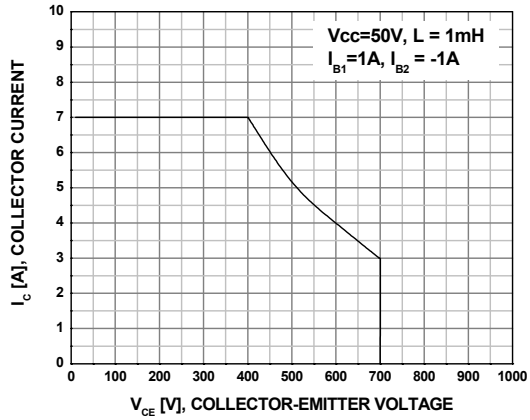
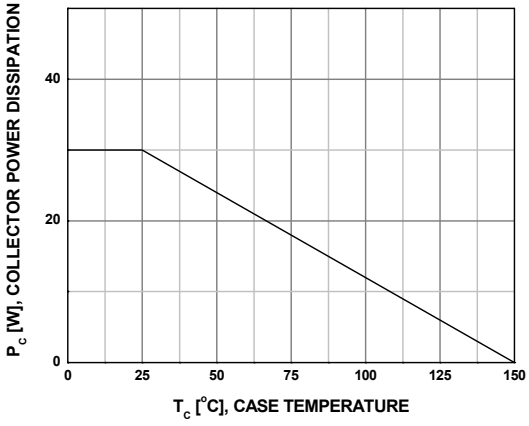
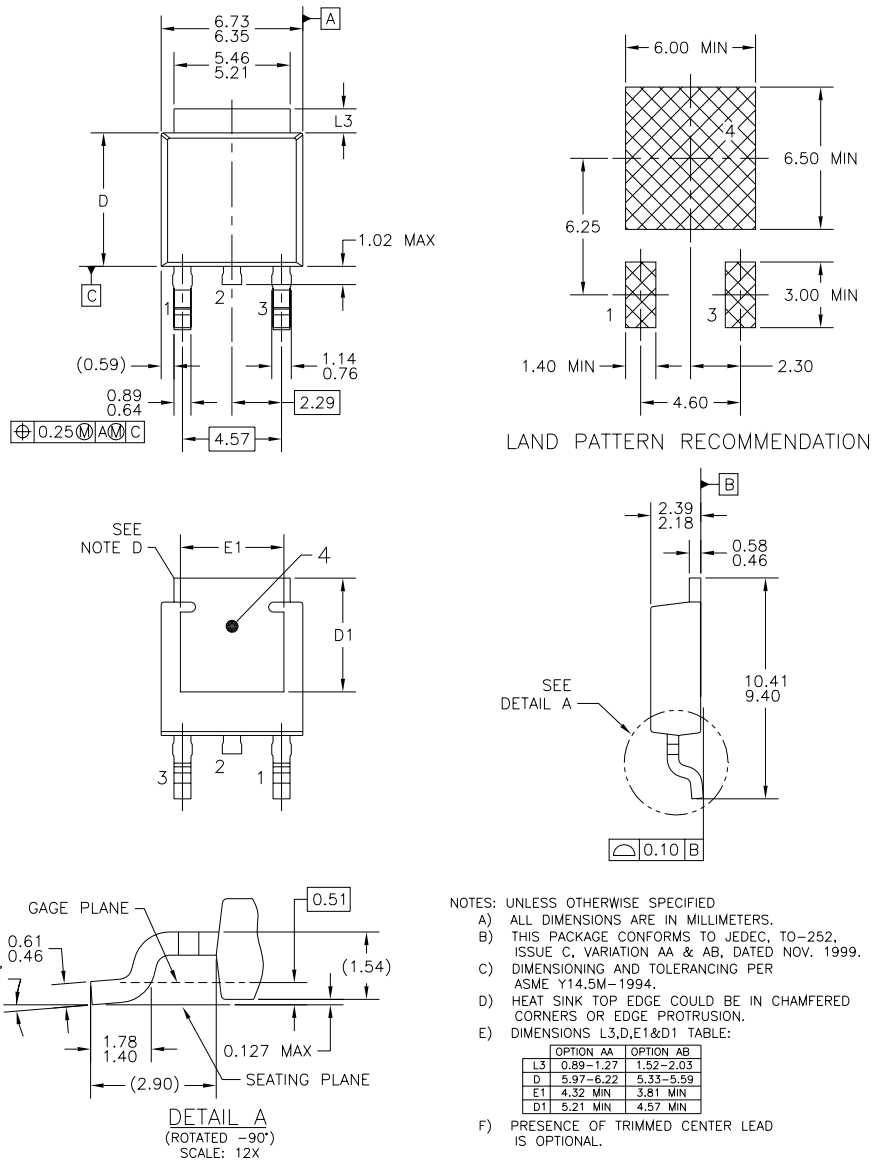


Figure 8. Power Derating Curve



Mechanical Dimensions

D-PAK



NOTES: UNLESS OTHERWISE SPECIFIED

A) ALL DIMENSIONS ARE IN MILLIMETERS.

B) THIS PACKAGE CONFORMS TO JEDEC, TO-252, ISSUE C, VARIATION AA & AB, DATED NOV. 1999.

C) DIMENSIONING AND TOLERANCING PER ASME Y14.5M-1994.

D) HEAT SINK TOP EDGE COULD BE IN CHAMFERED CORNERS OR EDGE PROTRUSION.

E) DIMENSIONS L3,D,E1&D1 TABLE:

	OPTION AA	OPTION AB
L3	0.89-1.27	1.52-2.03
D	5.97-6.22	5.33-5.59
E1	4.32 MIN	3.81 MIN
D1	5.21 MIN	4.57 MIN

F) PRESENCE OF TRIMMED CENTER LEAD IS OPTIONAL.

Dimensions in Millimeters

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ImpliedDisconnect™
ISOPLANAR™
LittleFET™
MICROCOUPLER™
MicroFET™
MicroPak™
MICROWIRE™
MSX™
MSXPro™
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SuperSOT™-6
SuperSOT™-8
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2. A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

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.
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