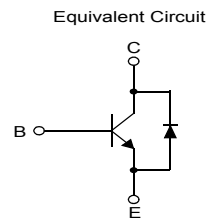
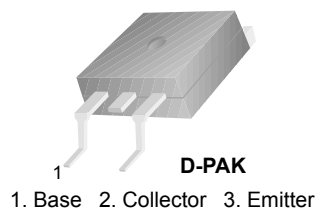


FJD5304D

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



Absolute Maximum Ratings $T_a = 25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Value	Units	
V_{CB0}	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
		$T_a = 25^\circ\text{C}$	1.25	W
T_J	Junction Temperature	150	$^\circ\text{C}$	
T_{STG}	Storage Temperature	-55 to 150	$^\circ\text{C}$	

* Pulse Test: $PW = 300\mu\text{s}$, Duty Cycle = 2% Pulsed

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

Symbol	Parameter	Value	Units
$R_{\theta ja}$	Thermal Resistance Junction-Ambient **	99	$^\circ\text{C/W}$

** Device mounted on minimum pad size.

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 $T_a = 25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Conditions	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	$V_{CB} = 700\text{V}, I_E = 0$			100	μA
I_{CEO}	Collector Cut-off Current	$V_{CB} = 400\text{V}, I_B = 0$			250	μA
I_{EBO}	Emitter Cut-off Current	$V_{EB} = 12\text{V}, I_C = 0$			1	mA
h_{FE}	DC Current Gain	$V_{CE} = 5\text{V}, I_C = 10\text{mA}$ $V_{CE} = 5\text{V}, I_C = 2.0\text{A}$	10 8		40	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = 0.5\text{A}, I_B = 0.1\text{A}$			0.7	V
		$I_C = 1.0\text{A}, I_B = 0.2\text{A}$			1.0	V
		$I_C = 2.5\text{A}, I_B = 0.5\text{A}$			1.5	V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	$I_C = 0.5\text{A}, I_B = 0.1\text{A}$			1.1	V
		$I_C = 1.0\text{A}, I_B = 0.2\text{A}$			1.2	V
		$I_C = 2.5\text{A}, I_B = 0.5\text{A}$			1.3	V
t_{STG}	Storage Time	$V_{CLAMP}=200\text{V}, I_C=2.0\text{A},$ $I_{B1}=0.4\text{A}, V_{BE(off)}=-5\text{V}, L=200\mu\text{H}$		0.6		μs
t_F	Fall Time			0.1		μs
t_{STG}	Storage Time	$V_{CC}=250\text{V}, I_C=2.0\text{A},$ $I_{B1}=0.4\text{A}, I_{B2}=-0.4\text{A}, T_P=30\mu\text{s}$			2.9	μs
t_F	Fall Time			0.2		μs
V_F	Diode Forward Voltage	$I_F = 2\text{A}$			2.5	V

Typical Performance Characteristics

Figure 1. Static Characteristic

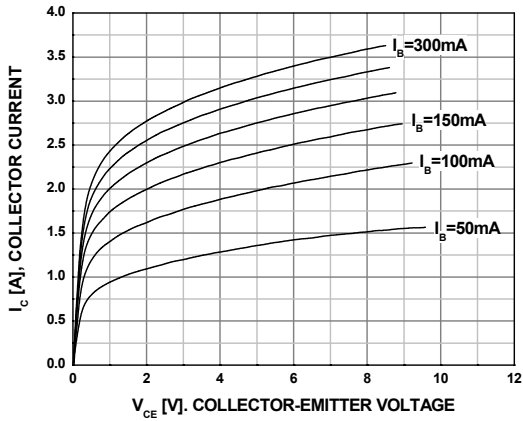


Figure 2. DC Current Gain

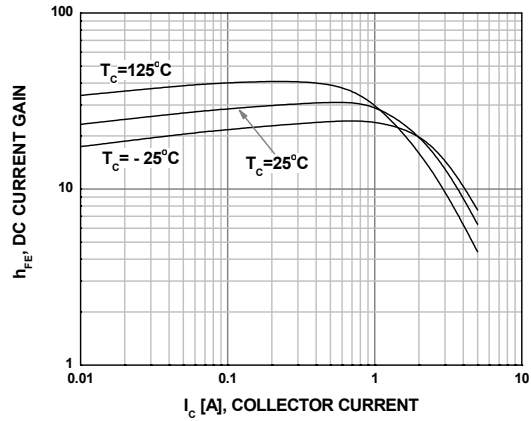


Figure 3. Collector-Emitter Saturation Voltage

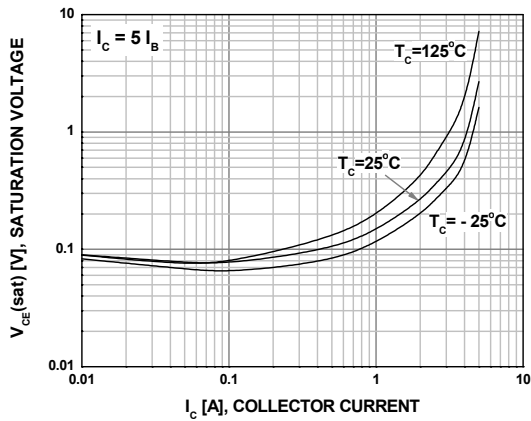


Figure 4. Base-Emitter Saturation Voltage

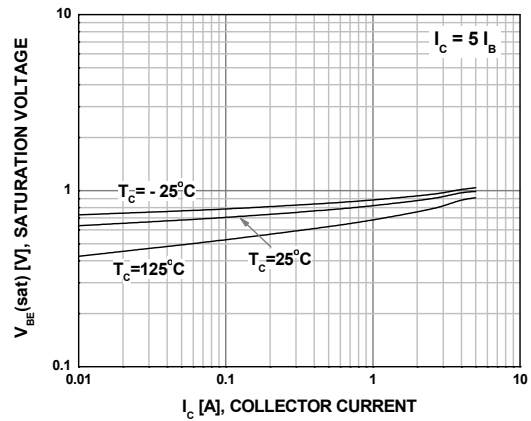


Figure 5. Resistive Load Switching Time

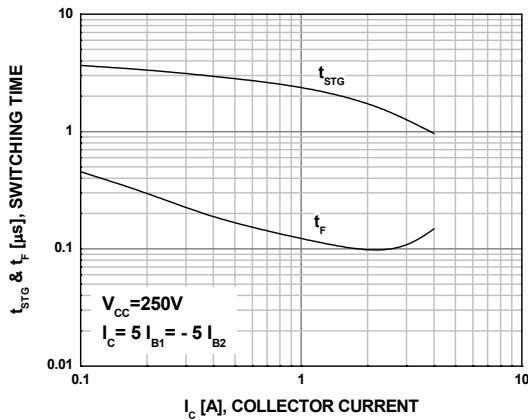
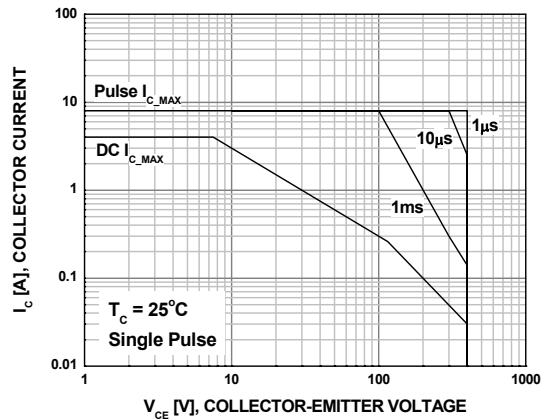


Figure 6. Forward Biased Safe Operating Area



Typical Performance Characteristics (Continued)

Figure 7. Reverse Biased Safe Operating Area

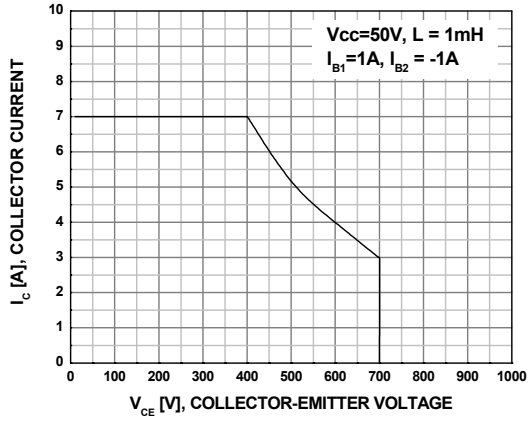
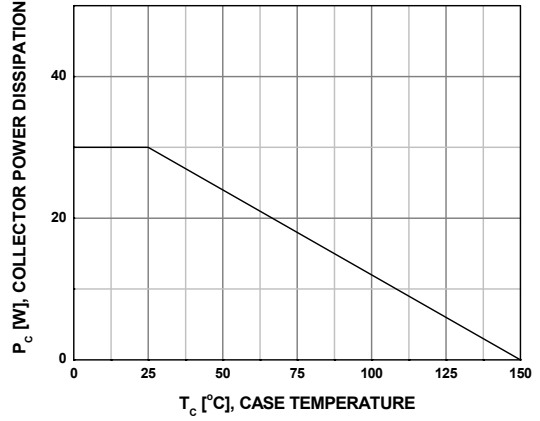
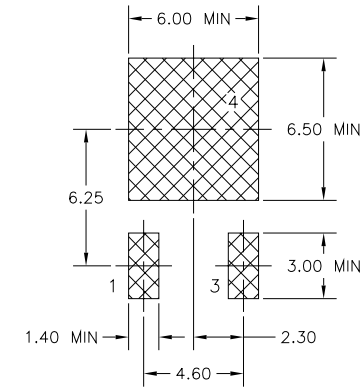
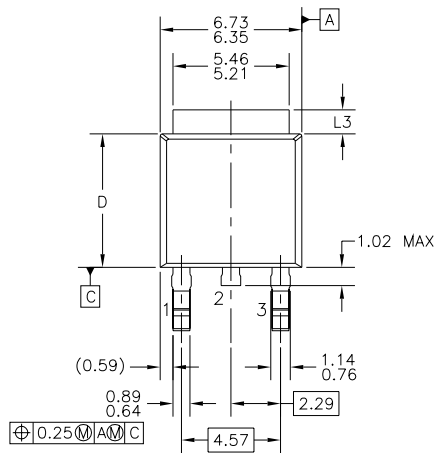


Figure 8. Power Derating Curve

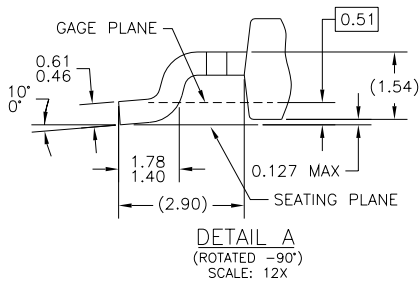
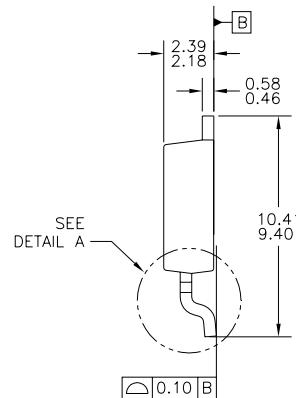
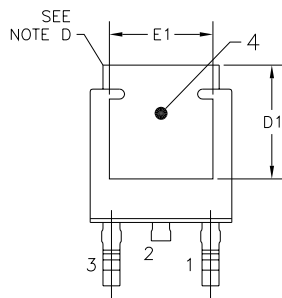


Mechanical Dimensions

D-PAK



LAND PATTERN RECOMMENDATION








- 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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