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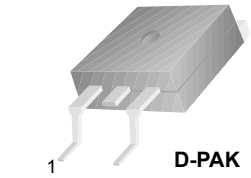
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July 2010

FJD5304D
High Voltage Fast Switching Transistor

Features

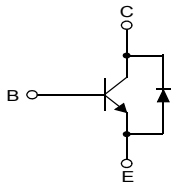
- Built-in Free Wheeling Diode
- Wide Safe Operating Area
- Small Variance in Storage Time
- Suitable for Electronic Ballast Application



D-PAK

1. Base 2. Collector 3. Emitter

Equivalent Circuit



Absolute Maximum Ratings T_a = 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 T_a = 25°C	30 1.25	W W
T_J	Junction Temperature		150	°C
T_{STG}	Storage Temperature		-55 to 150	°C

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

Thermal Characteristics T_a = 25°C unless otherwise noted

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

** Device mounted on minimum pad size.

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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°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
V_F	Diode Forward Voltage	I_F = 2A			2.5	V

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Typical Performance Characteristics

Figure 1. Static Characteristic

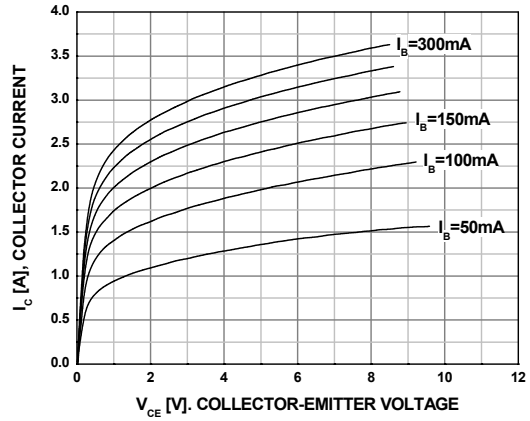


Figure 2. DC Current Gain

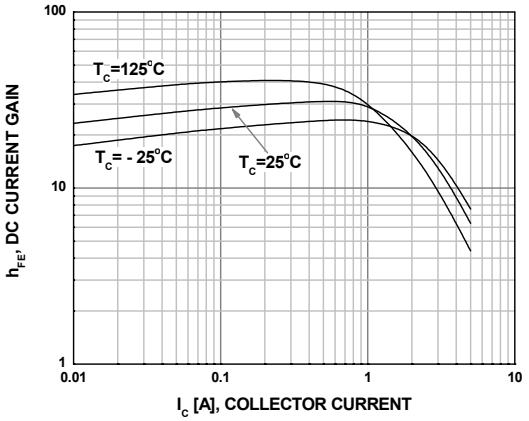


Figure 3. Collector-Emitter Saturation Voltage

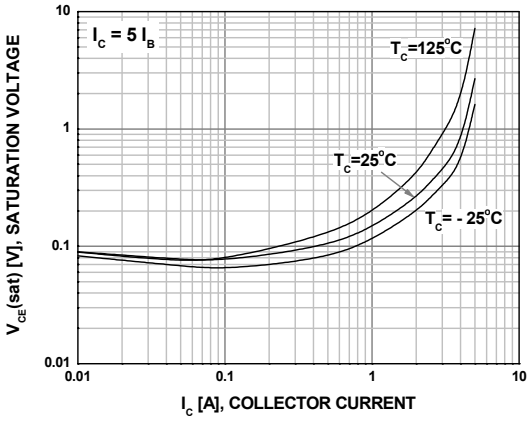


Figure 4. Base-Emitter Saturation Voltage

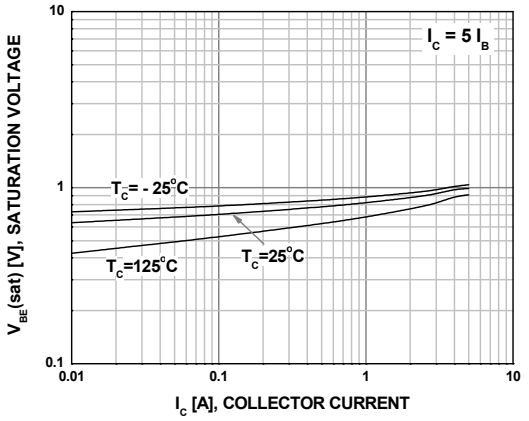


Figure 5. Resistive Load Switching Time

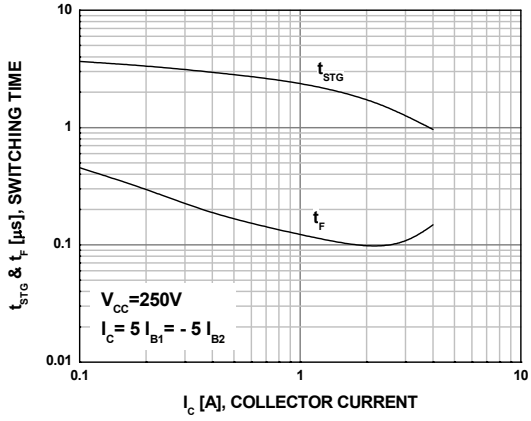
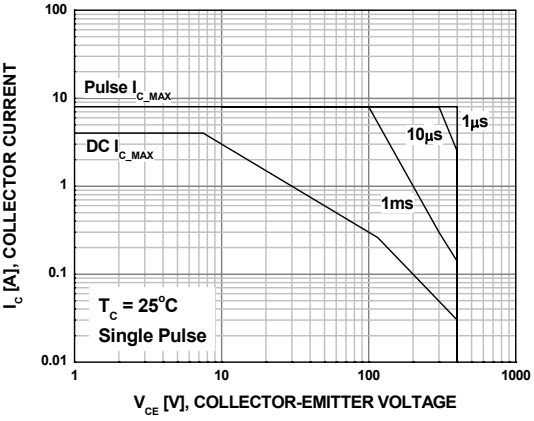


Figure 6. Forward Biased Safe Operating Area



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Typical Performance Characteristics (Continued)

Figure 7. Reverse Biased Safe Operating Area

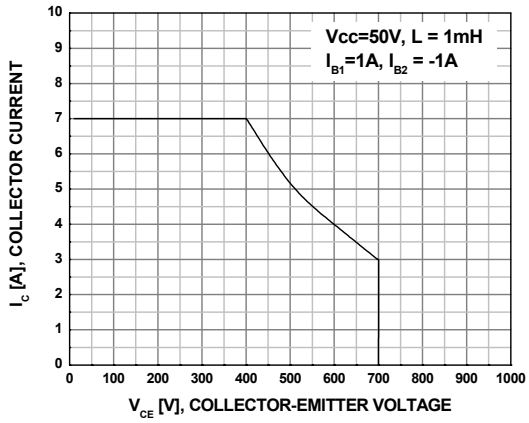
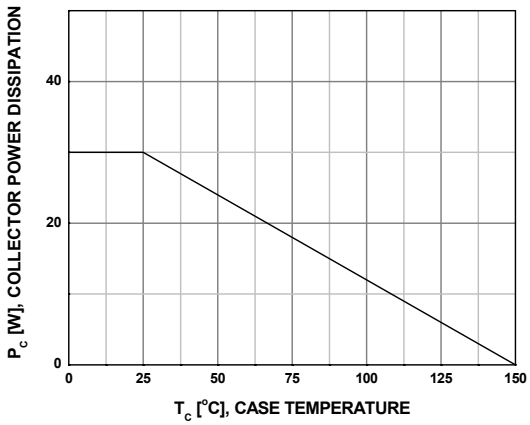
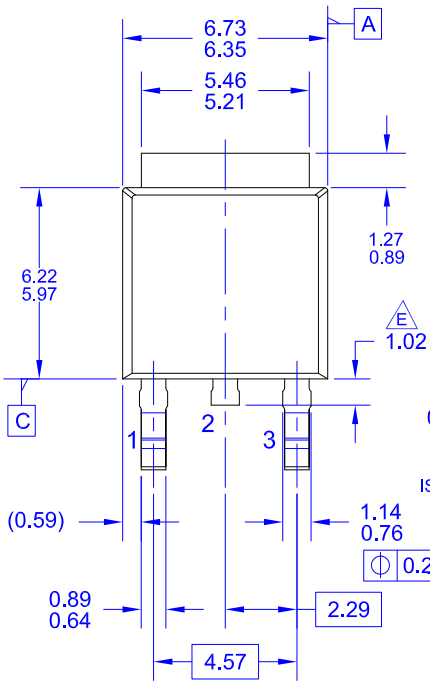


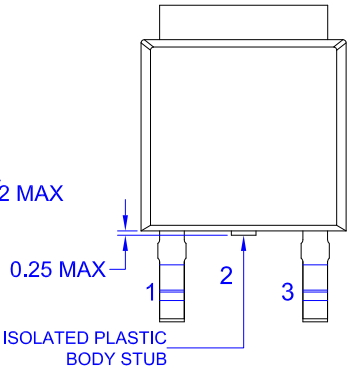
Figure 8. Power Derating Curve



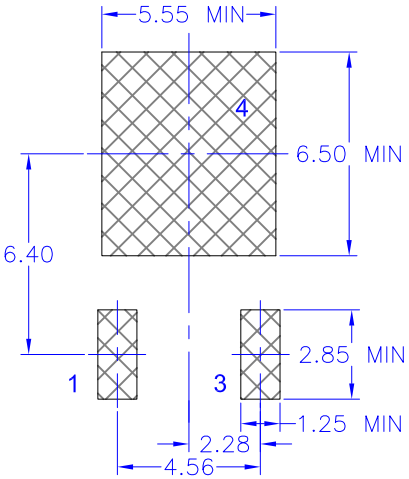
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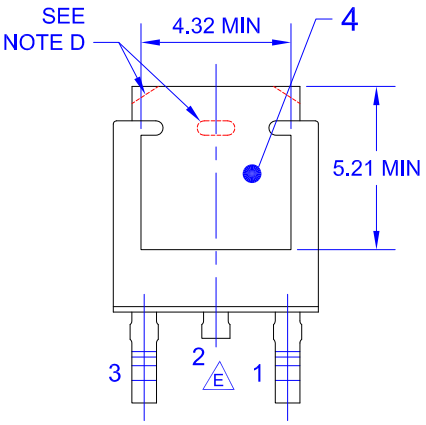
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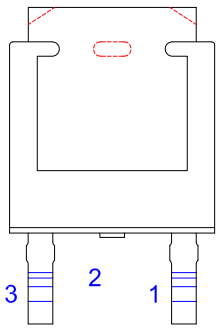
DIODE PRODUCTS VERSION



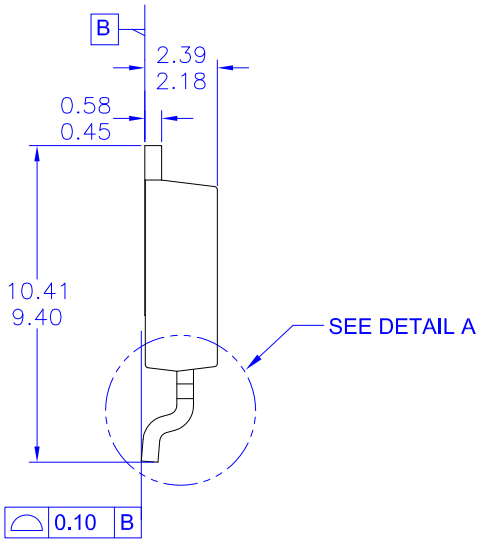
LAND PATTERN RECOMMENDATION



NON-DIODE PRODUCTS VERSION

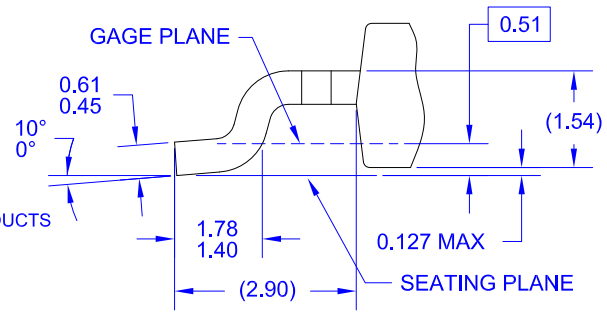


DIODE PRODUCTS VERSION



NOTES: UNLESS OTHERWISE SPECIFIED

A) THIS PACKAGE CONFORMS TO JEDEC, TO-252, ISSUE C, VARIATION AA.
B) ALL DIMENSIONS ARE IN MILLIMETERS.
C) DIMENSIONING AND TOLERANCING PER ASME Y14.5M-2009.
D) SUPPLIER DEPENDENT MOLD LOCKING HOLES OR CHAMFERED CORNERS OR EDGE PROTRUSION.
E) TRIMMED METAL CENTER LEAD IS PRESENT ON FOR NON-DIODE PRODUCTS
F) DIMENSIONS ARE EXCLUSIVE OF BURS, MOLD FLASH AND TIE BAR EXTRUSIONS.
G) LAND PATTERN RECOMMENDATION IS BASED ON IPC7351A STD TO228P991X239-3N.
H) DRAWING NUMBER AND REVISION: MKT-TO252A03REV11



DETAIL A
(ROTATED -90°)
SCALE: 12X

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