

High Voltage Fast Switching Transistor

FJD5304D

Features

- Built-in Free Wheeling Diode
- Wide Safe Operating Area
- Small Variance in Storage Time
- Suitable for Electronic Ballast Application
- This is a Pb-Free Device

ABSOLUTE MAXIMUM RATINGS ($T_a = 25^\circ\text{C}$, unless otherwise noted)

Symbol	Parameter	Value	Unit
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) (Note 1)	8	A
I_B	Base Current (DC)	2	A
I_{BP}	Base Current (Pulse) (Note 1)	4	A
P_C	Total Device 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 Junction Temperature Range	-55 to 150	$^\circ\text{C}$

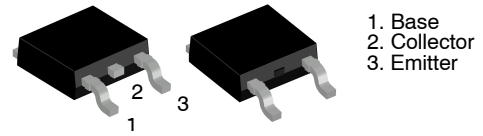
Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

1. Pulse test: $PW = 300\ \mu\text{s}$, Duty Cycle = 2% Pulsed

THERMAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$, unless otherwise noted)

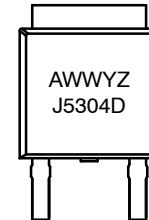
Symbol	Parameter	Value	Unit
$R_{\theta ja}$	Thermal Resistance Junction to Ambient (Note 2)	99	$^\circ\text{C/W}$

2. Device mounted on minimum pad side.



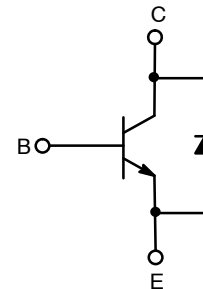
DPAK3 6.10x6.54x2.29, 4.57P
CASE 369AS

MARKING DIAGRAM



A = Assembly Location
 WW = Work Week
 Y = Year
 Z = Lot Traceability
 J5304D = Specific Device Code

EQUIVALENT CIRCUIT



ORDERING INFORMATION

Device	Package	Shipping [†]
FJD5304DTF	DPAK3	2000 / Tape & Reel

[†]For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specification Brochure, [BRD8011/D](#).

FJD5304D

ELECTRICAL CHARACTERISTICS (T_a = 25 °C unless otherwise noted)

Symbol	Parameter	Test Condition	Min	Typ	Max	Unit
BV _{CBO}	Collector-Base Breakdown Voltage	I _C = 1 mA, I _E = 0	700	–	–	V
BV _{CEO}	Collector-Emitter Breakdown Voltage	I _C = 5 mA, I _B = 0	400	–	–	V
BV _{EBO}	Emitter-Base Breakdown Voltage	I _E = 1 mA, I _C = 0	12	–	–	V
I _{CES}	Collector Cut-off Current	V _{CB} = 700 V, I _E = 0	–	–	100	μA
I _{CEO}	Collector Cut-off Current	V _{CB} = 400 V, I _B = 0	–	–	250	μA
I _{EBO}	Emitter Cut-off Current	V _{EB} = 12 V, I _C = 0	–	–	1	mA
h _{FE}	DC Current Gain	V _{CE} = 5 V, I _C = 10 mA	10	–	–	
		V _{CE} = 5 V, I _C = 2.0 A	8	–	40	
V _{CE(sat)}	Collector-Emitter Saturation Voltage	I _C = 0.5 A, I _B = 0.1 A	–	–	0.7	V
		I _C = 1.0 A, I _B = 0.2 A	–	–	1.0	V
		I _C = 2.5 A, I _B = 0.5 A	–	–	1.5	V
V _{BE(sat)}	Base-Emitter Saturation Voltage	I _C = 0.5 A, I _B = 0.1 A	–	–	1.1	V
		I _C = 1.0 A, I _B = 0.2 A	–	–	1.2	V
		I _C = 2.5 A, I _B = 0.5 A	–	–	1.3	V
t _{STG}	Storage Time	V _{CLAMP} = 200 V, I _C = 2.0 A, I _{B1} = 0.4 A, V _{BE(off)} = –5 V, L = 200 μH	–	0.6	–	μs
t _F	Fall Time		–	0.1	–	μs
t _{STG}	Storage Time	V _{CC} = 250 V, I _C = 2.0 A, I _{B1} = 0.4 A, I _{B2} = –0.4 A, T _P = 30 μs	–	–	2.9	μs
t _F	Fall Time		–	0.2	–	μs
V _F	Avalanche Energy	I _F = 2 A	–	–	2.5	V

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

TYPICAL PERFORMANCE CHARACTERISTICS

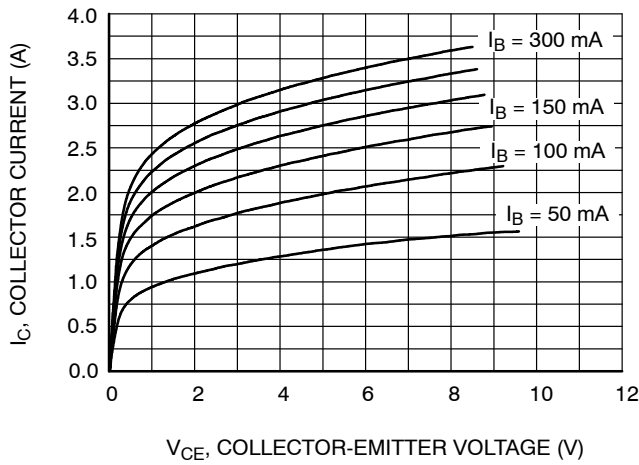


Figure 1. Static Characteristic

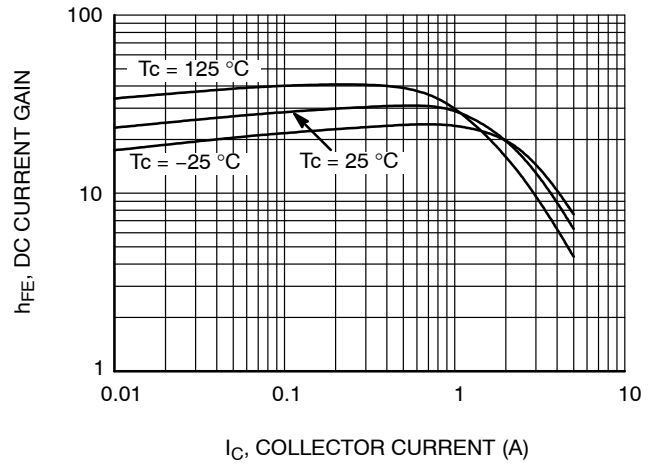


Figure 2. DC Current Gain

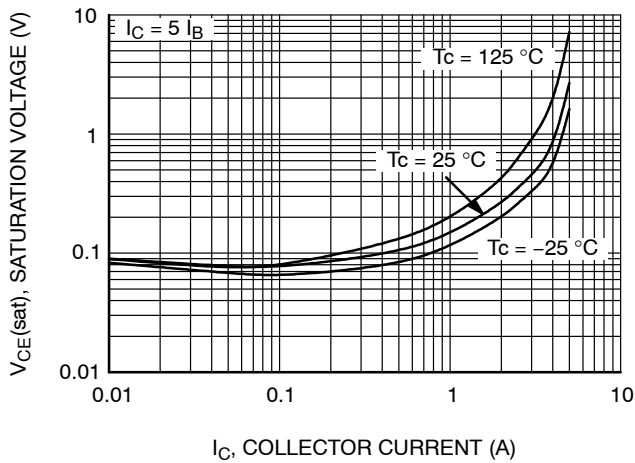


Figure 3. Collector-Emitter Saturation Voltage

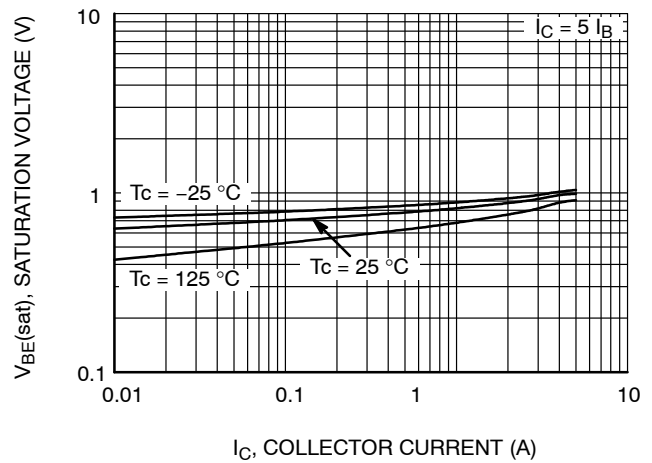


Figure 4. Base-Emitter Saturation Voltage

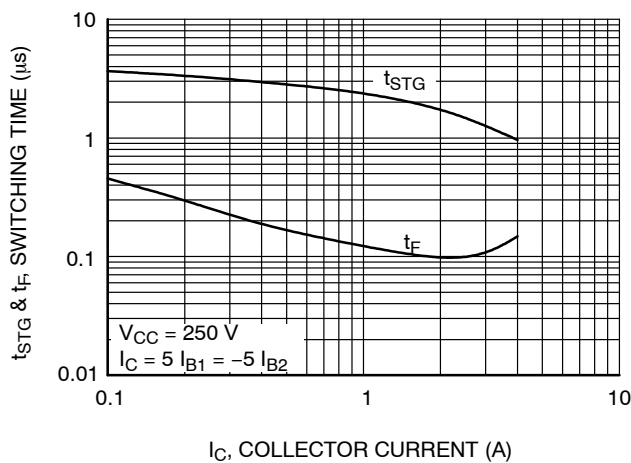


Figure 5. Resistive Load Switching Time

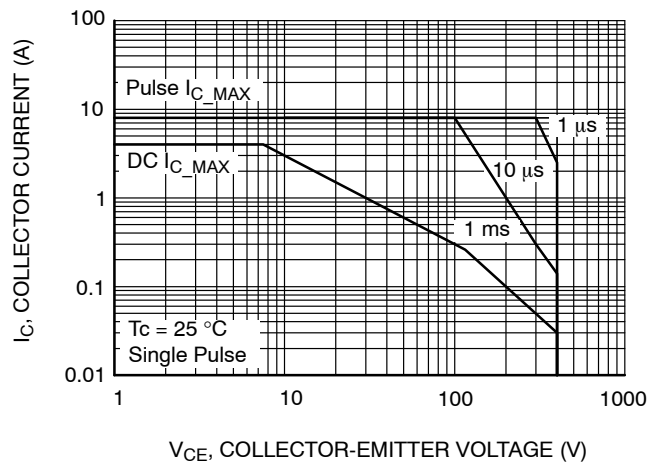


Figure 6. Forward Biased Safe Operating Area

TYPICAL PERFORMANCE CHARACTERISTICS (continued)

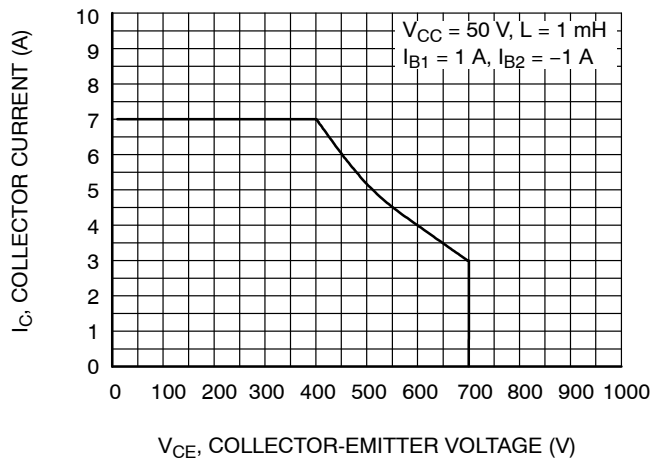


Figure 7. Reverse Biased Safe Operating Area

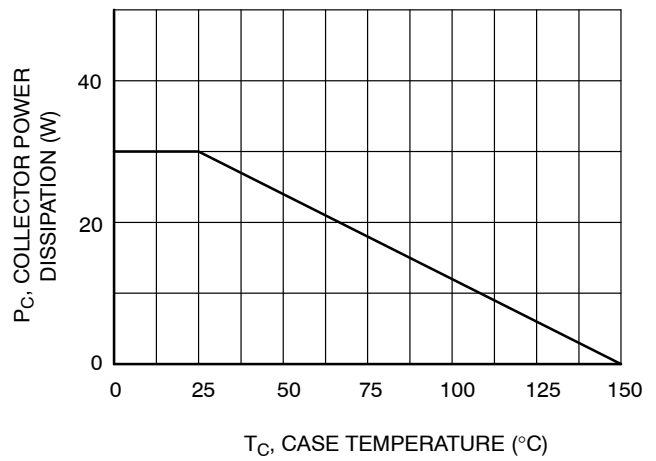
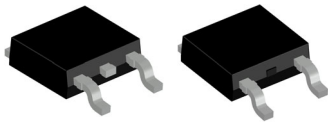
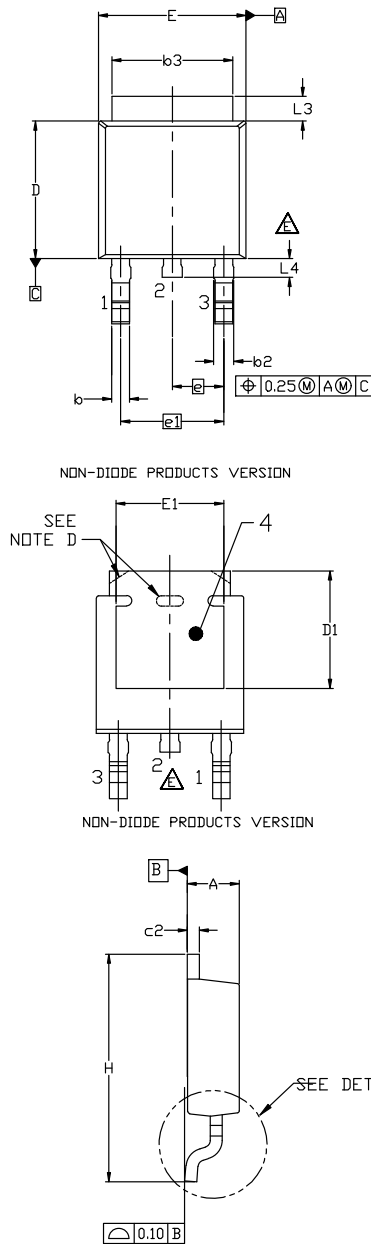


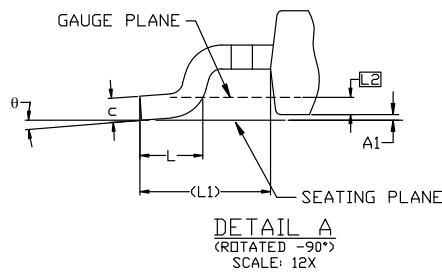
Figure 8. Power Derating Curve


DPAK3 6.10x6.54x2.29, 4.57P
CASE 369AS
ISSUE B

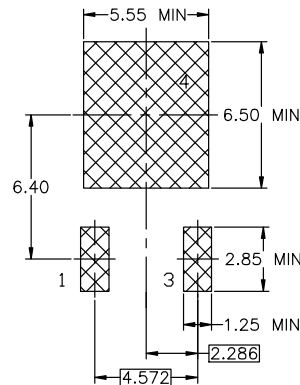
DATE 20 DEC 2023



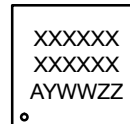
- NOTES: UNLESS OTHERWISE SPECIFIED
- A) THIS PACKAGE CONFORMS TO JEDEC, TO-252, ISSUE F, VARIATION AA.
 - B) ALL DIMENSIONS ARE IN MILLIMETERS.
 - C) DIMENSIONING AND TOLERANCING PER ASME Y14.5M-2018.
 - D) SUPPLIER DEPENDENT MOLD LOCKING HOLES OR CHAMFERED CORNERS OR EDGE PROTRUSION.
 - E) FOR DIODE PRODUCTS, L4 IS 0.25 MM MAX PLASTIC BODY STUB WITHOUT CENTER LEAD.
 - F) DIMENSIONS ARE EXCLUSIVE OF BURRS, MOLD FLASH AND TIE BAR EXTRUSIONS.
 - G) LAND PATTERN RECOMMENDATION IS BASED ON IPC7351A STD TD228P991X239-3N.



DIM	MILLIMETERS		
	MIN.	NOM.	MAX.
A	2.18	2.29	2.39
A1	0.00	-	0.127
b	0.64	0.77	0.89
b2	0.76	0.95	1.14
b3	5.21	5.34	5.46
c	0.45	0.53	0.61
c2	0.45	0.52	0.58
D	5.97	6.10	6.22
D1	5.21	---	---
E	6.35	6.54	6.73
E1	4.32	---	---
e	2.286 BSC		
e1	4.572 BSC		
H	9.40	9.91	10.41
L	1.40	1.59	1.78
L1	2.90 REF		
L2	0.51 BSC		
L3	0.89	1.08	1.27
L4	---	---	1.02
θ	0°	---	10°


LAND PATTERN RECOMMENDATION

*FOR ADDITIONAL INFORMATION ON OUR Pb-FREE STRATEGY AND SOLDERING DETAILS, PLEASE DOWNLOAD THE ON SEMICONDUCTOR SOLDERING AND MOUNTING TECHNIQUES REFERENCE MANUAL, SOLDERM/D.

GENERIC MARKING DIAGRAM*


*This information is generic. Please refer to device data sheet for actual part marking. Pb-Free indicator, "G" or microdot "•", may or may not be present. Some products may not follow the Generic Marking.

XXXX = Specific Device Code
A = Assembly Location
Y = Year
WW = Work Week
ZZ = Assembly Lot Code

DOCUMENT NUMBER:	98AON13810G	Electronic versions are uncontrolled except when accessed directly from the Document Repository. Printed versions are uncontrolled except when stamped "CONTROLLED COPY" in red.
DESCRIPTION:	DPAK3 6.10x6.54x2.29, 4.57P	PAGE 1 OF 1

onsemi and Onsemi are trademarks of Semiconductor Components Industries, LLC dba onsemi or its subsidiaries in the United States and/or other countries. onsemi reserves the right to make changes without further notice to any products herein. onsemi makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does onsemi assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. onsemi does not convey any license under its patent rights nor the rights of others.

onsemi, **Onsemi**, and other names, marks, and brands are registered and/or common law trademarks of Semiconductor Components Industries, LLC dba "**onsemi**" or its affiliates and/or subsidiaries in the United States and/or other countries. **onsemi** owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of **onsemi**'s product/patent coverage may be accessed at www.onsemi.com/site/pdf/Patent-Marking.pdf. **onsemi** reserves the right to make changes at any time to any products or information herein, without notice. The information herein is provided "as-is" and **onsemi** makes no warranty, representation or guarantee regarding the accuracy of the information, product features, availability, functionality, or suitability of its products for any particular purpose, nor does **onsemi** assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. Buyer is responsible for its products and applications using **onsemi** products, including compliance with all laws, regulations and safety requirements or standards, regardless of any support or applications information provided by **onsemi**. "Typical" parameters which may be provided in **onsemi** data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. **onsemi** does not convey any license under any of its intellectual property rights nor the rights of others. **onsemi** products are not designed, intended, or authorized for use as a critical component in life support systems or any FDA Class 3 medical devices or medical devices with a same or similar classification in a foreign jurisdiction or any devices intended for implantation in the human body. Should Buyer purchase or use **onsemi** products for any such unintended or unauthorized application, Buyer shall indemnify and hold **onsemi** and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that **onsemi** was negligent regarding the design or manufacture of the part. **onsemi** is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

ADDITIONAL INFORMATION

TECHNICAL PUBLICATIONS:

Technical Library: www.onsemi.com/design/resources/technical-documentation
onsemi Website: www.onsemi.com

ONLINE SUPPORT: www.onsemi.com/support

For additional information, please contact your local Sales Representative at
www.onsemi.com/support/sales