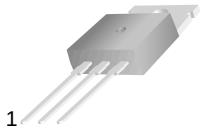
High-Voltage Fast-Switching NPN Power Transistor

FJP13009



1. Base
2. Collector
3. Emitter

TO-220-3LD
CASE 340AT

Description

The FJP13009 is a 700 V, 12 A NPN silicon epitaxial planar transistor. The FJP13009 is available with multiple h_{FE} bin classes for ease of design use. The FJP13009 is designed for high speed switching applications which utilizes the industry standard TO-220 package offering flexibility in design and excellent power dissipation.

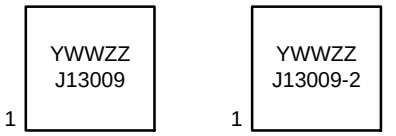
Features

- High-Voltage Capability
- High Switching Speed

Application

- Electronic Ballast
- Switching Regulator
- Motor Control
- Switched Mode Power Supply

MARKING DIAGRAM



FJP13009TU FJP13009H2TU

YWW = Date Code (Year & Week)
ZZ = Lot Run Traceability Code
J13009 = Specific Device Code
2 = h_{FE} Grade

ORDERING INFORMATION

Part Number (Note 1)	Package	Shipping
FJP13009TU	TO-220 3LD	1000 Units / Tube
FJP13009H2TU	TO-220 3LD	1000 Units / Tube

1. The affix “-H2” means the h_{FE} classification. The suffix “-TU” means the tube packing method.

ABSOLUTE MAXIMUM RATINGS (Note 2)

(T_C = 25 °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	9	V
I_C	Collector Current (DC)	12	A
I_{CP}	Collector Current (Pulse)	24	A
I_B	Base Current	6	A
P_D	Total Device Dissipation (T_C = 25 °C)	100	W
T_J	Junction Temperature	150	°C
T_{STG}	Storage Temperature Range	−65 to +150	°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.

2. These ratings are based on a maximum junction temperature of 150 °C. These are steady-state limits. **onsemi** should be consulted on application involving pulsed or low-duty-cycle operations.

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

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V_{CEO}(sus)	Collector-Emitter Sustaining Voltage	I_C = 10 mA, I_B = 0	400			V
I_{EBO}	Emitter Cut-Off Current	V_{EB} = 9 V, I_C = 0			1	mA
h_{FE1}	DC Current Gain (Note 3)	V_{CE} = 5 V, I_C = 5 A	8		40	
h_{FE2}		V_{CE} = 5 V, I_C = 8 A	6		30	
V_{CE}(sat)	Collector-Emitter Saturation Voltage (Note 3)	I_C = 5 A, I_B = 1 A			1.0	V
		I_C = 8 A, I_B = 1.6 A			1.5	
		I_C = 12 A, I_B = 3 A			3.0	
V_{BE}(sat)	Base-Emitter Saturation Voltage (Note 3)	I_C = 5 A, I_B = 1 A			1.2	V
		I_C = 8 A, I_B = 1.6 A			1.6	
C_{ob}	Output Capacitance	V_{CB} = 10 V, f = 0.1 MHz		180		pF
f_T	Current Gain Bandwidth Product	V_{CE} = 10 V, I_C = 0.5 A	4			MHz
t_{ON}	Turn-On Time	V_{CC} = 125 V, I_C = 8 A, I_{B1} = $-I_{B2}$ = 1.6 A, R_L = 15.6 Ω			1.1	μs
t_{STG}	Storage Time				3.0	
t_F	Fall Time				0.7	

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.

3. Pulse test: pulse width ≤ 300 μs, duty cycle ≤ 2%.

h_{FE} CLASSIFICATION

Classification	H1	H2
h_{FE1}	8~17	15~28

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TYPICAL PERFORMANCE CHARACTERISTICS

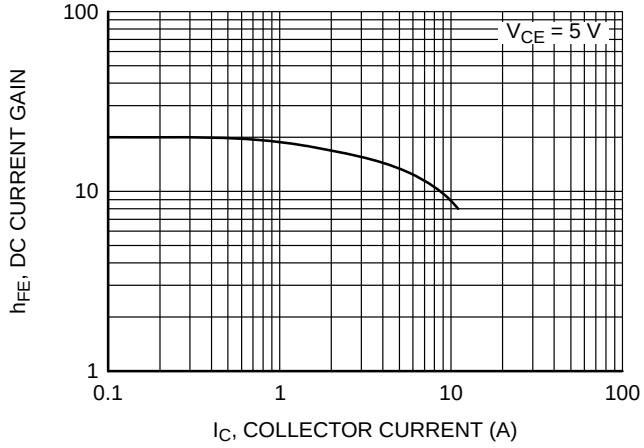


Figure 1. DC Current Gain

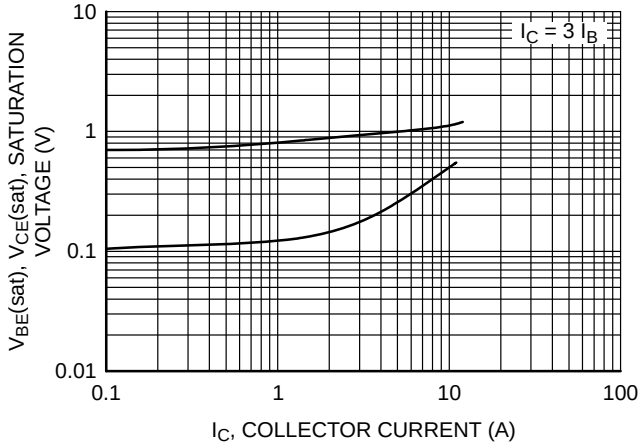


Figure 2. Base-Emitter Saturation Voltage and Collector-Emitter Saturation Voltage

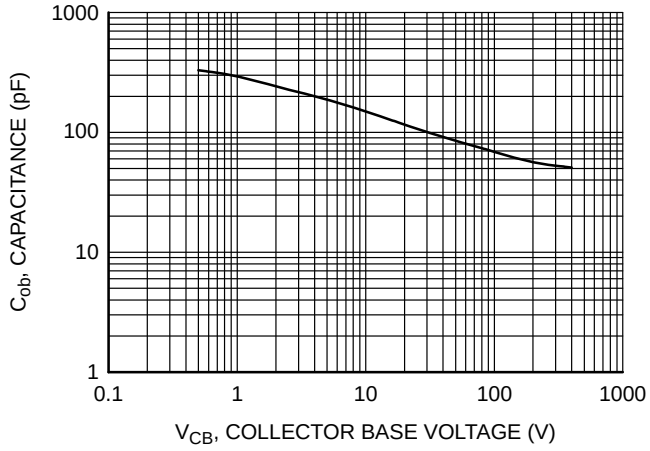


Figure 3. Collector Output Capacitance

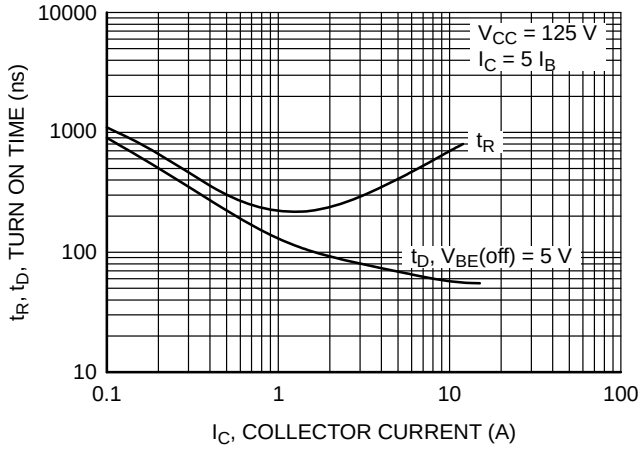


Figure 4. Turn-On Time

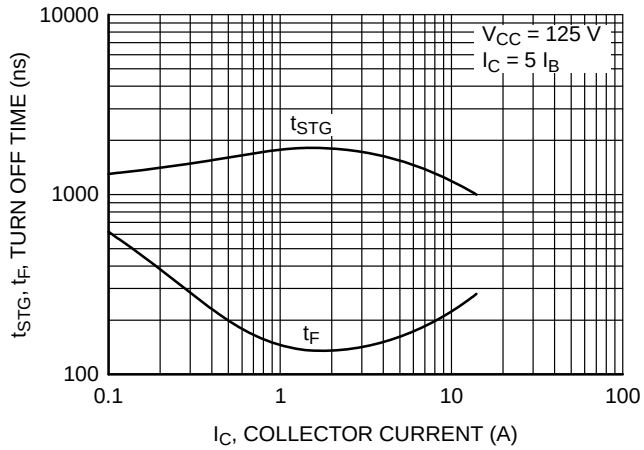


Figure 5. Turn-Off Time

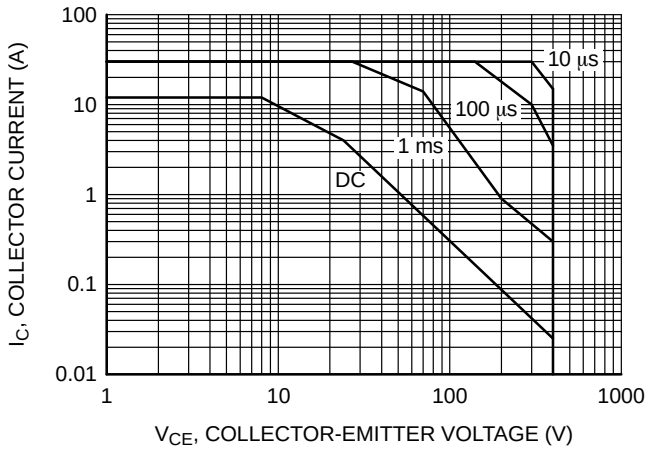


Figure 6. Forward Bias Safe Operating Area

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TYPICAL CHARACTERISTICS (CONTINUED)

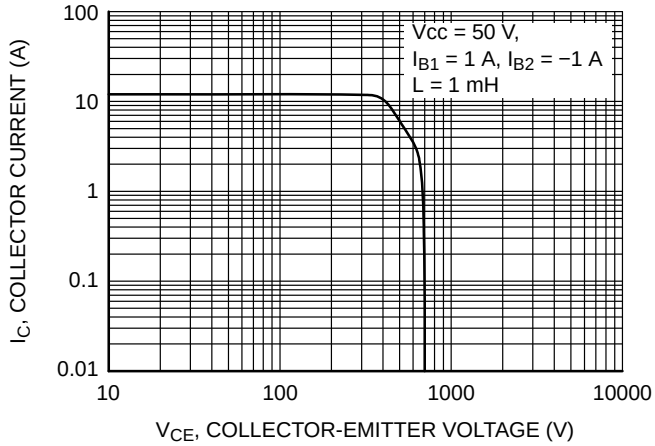


Figure 7. Reverse Bias Safe Operating Area

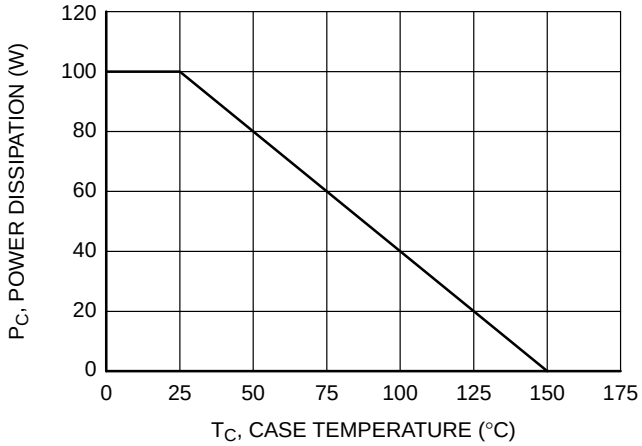


Figure 8. Power Derating

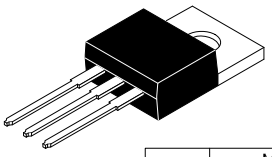
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REVISION HISTORY

Revision	Description of Changes	Date
2	Converted the document to **onsemi** format.	5/20/2026

This document has undergone updates prior to the inclusion of this revision history table. The changes tracked here only reflect updates made on the noted approval dates.

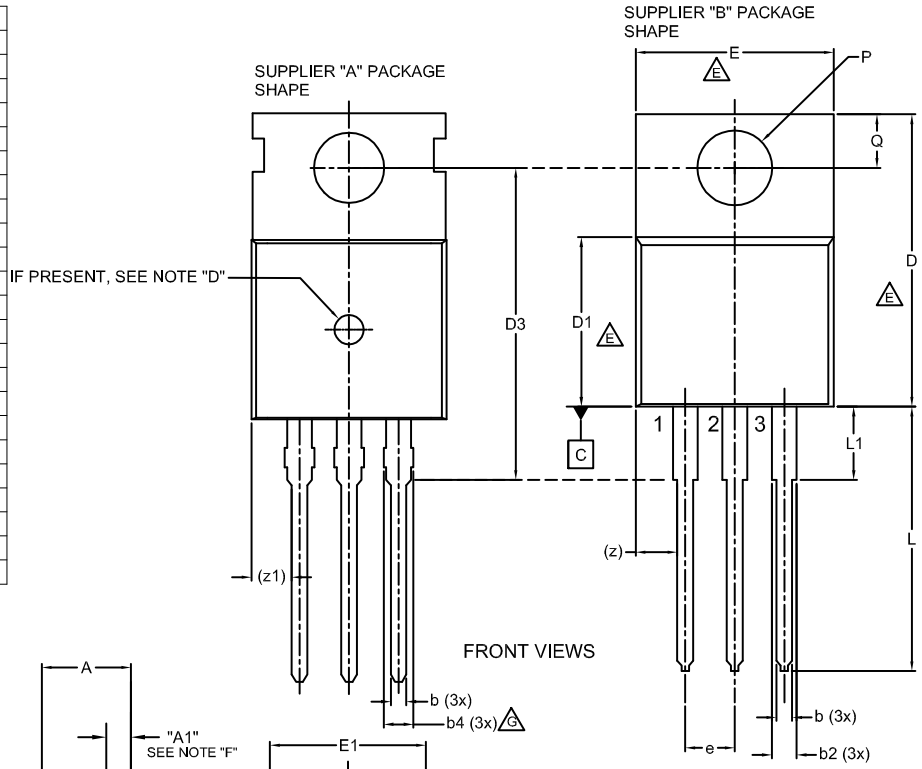
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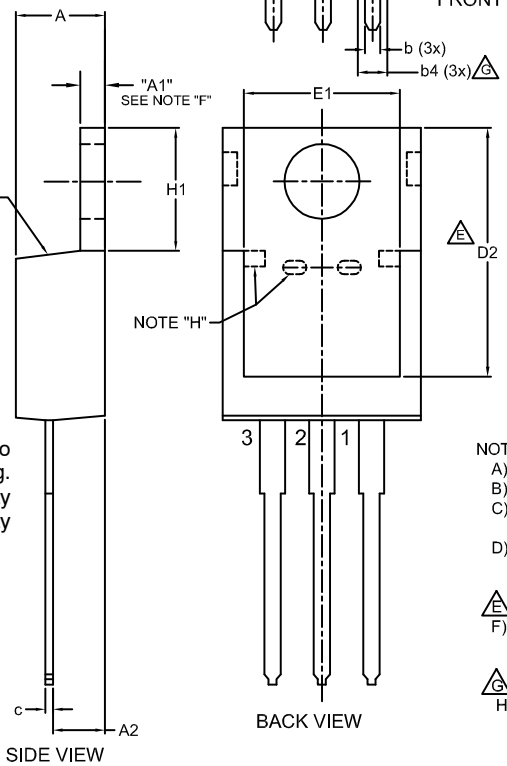


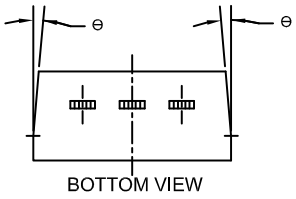
TO−220−3LD
CASE 340AT
ISSUE B

DATE 08 AUG 2022

DIM	MILLIMETERS		
	MIN.	NOM.	MAX.
A	4.00	--	4.70
A1	SEE NOTE "F"		
A2	2.10	--	2.85
b	0.55	--	1.00
b2	1.10	--	1.62
b4	1.42	--	1.62
c	0.36	--	0.60
D	13.90	--	16.30
D1	8.13	--	9.40
D2	11.50	--	14.30
D3	15.42	--	16.51
E	9.65	--	10.67
E1	7.59	--	8.65
e	2.40	--	2.67
H1	6.06	--	6.69
L	12.70	--	14.04
L1	2.70	--	4.10
P	3.50	--	4.00
Q	2.50	--	3.40
z	2.13 REF		
z1	2.06 REF		
Θ	3°	–	5°







GENERIC MARKING DIAGRAM*



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

*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.

NOTES:
A) REFERENCE JEDEC, TO-220, VARIATION AB
B) ALL DIMENSIONS ARE IN MILLIMETERS.
C) DIMENSIONS COMMON TO ALL PACKAGE SUPPLIERS EXCEPT WHERE NOTED [ ].
D) LOCATION OF MOLDED FEATURE MAY VARY (LOWER LEFT CORNER, LOWER CENTER AND CENTER OF THE PACKAGE)
E) DOES NOT COMPLY JEDEC STANDARD VALUE.
F) "A1" DIMENSIONS AS BELOW:
SINGLE GAUGE = 0.51 - 0.61
DUAL GAUGE = 1.10 - 1.45
G) PRESENCE IS SUPPLIER DEPENDENT
H) SUPPLIER DEPENDENT MOLD LOCKING HOLES IN HEATSINK.

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