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SEMICONDUCTOR®

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FJN3303

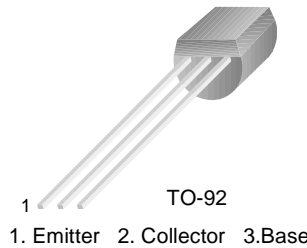## NPN Silicon Transistor Planar Silicon Transistor

High Voltage Switch Mode Application

- High Speed Switching
- Suitable for Electronic Ballast and Charger

TO-92

1. Emitter   2. Collector   3.Base

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	9	V
I_C	Collector Current (DC)	1.5	A
I_{CP}	Collector Current (Pulse) *	3	A
I_B	Base Current (DC)	0.75	A
I_{BP}	Base Current (Pulse) *	1.5	A
P_C	Collector Power Dissipation (T_C = 25°C)	1.1	W
T_J	Junction Temperature	150	°C
T_{STG}	Storage Temperature	-65 ~ 150	°C

* Pulse Test: Pulse Width = 5ms, Duty Cycle ≤ 10%

Electrical Characteristics T_C = 25°C unless otherwise noted

Symbol	Parameter	Conditions	Min.	Typ.	Max	Units
BV_{CBO}	Collector-Base Breakdown Voltage	I_C = 500μA, 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 = 500μA, I_C = 0	9			V
I_{CBO}	Collector Cut-off Current	V_{CB} = 700V, I_E = 0			10	μA
I_{EBO}	Emitter Cut-off Current	V_{EB} = 9V, I_C = 0			10	μA
h_{FE1} h_{FE2}	DC Current Gain	V_{CE} = 2V, I_C = 0.5A V_{CE} = 2V, I_C = 1.0A	14 5		23	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	I_C = 0.5A, I_B = 0.1A I_C = 1.0A, I_B = 0.25A I_C = 1.5A, I_B = 0.5A			0.5 1.0 3.0	V V V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	I_C = 0.5A, I_B = 0.1A I_C = 1.0A, I_B = 0.25A			1.0 1.2	V V
f_T	Current Gain Bandwidth Product	V_{CE} = 10V, I_C = 0.1A	4			MHz

Electrical Characteristics T_C = 25°C unless otherwise noted (Continued)

Symbol	Parameter	Conditions	Min.	Max.	Units
t_{ON}	Turn On Time	V_{CC} = 125V, I_C = 1A, I_{B1} = 0.2A I_{B2} = -0.2A, R_L = 125$_W$		1.1	µs
t_{STG}	Storage Time			4.0	µs
t_F	Fall Time			0.7	µs

Thermal Characteristics T_C = 25°C unless otherwise noted

Symbol	Parameter	Rating	Units
$R_{\theta JC}$	Thermal Resistance Junction-Case	48	°C/W
$R_{\theta JA}$	Thermal Resistance Junction-Ambient	125	°C/W

Typical Performance Characteristics

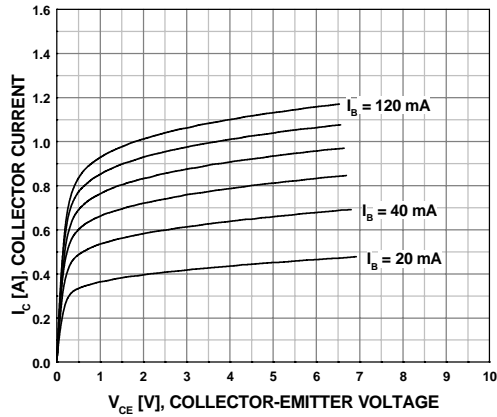### Figure 1. Static Characteristic

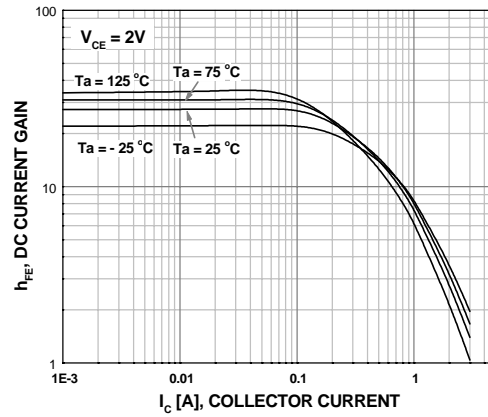

Figure 2. DC Current Gain

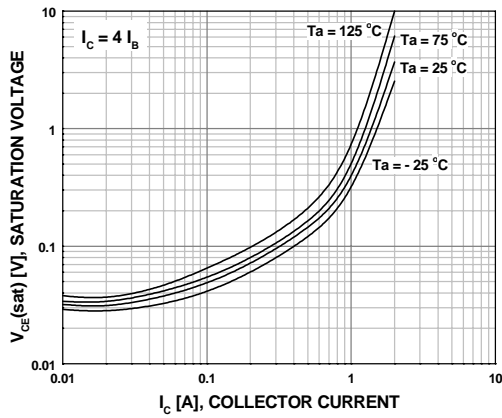### Figure 3. Collector-Emitter Saturation Voltage

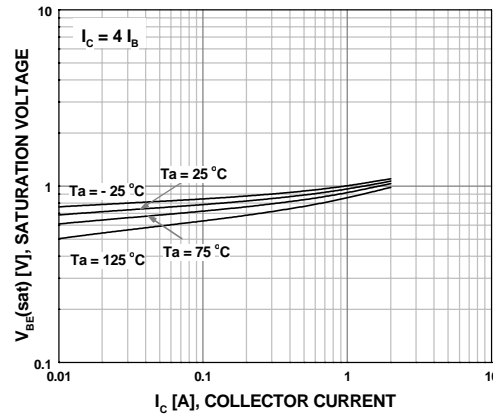### Figure 4. Base-Emitter Saturation Voltage
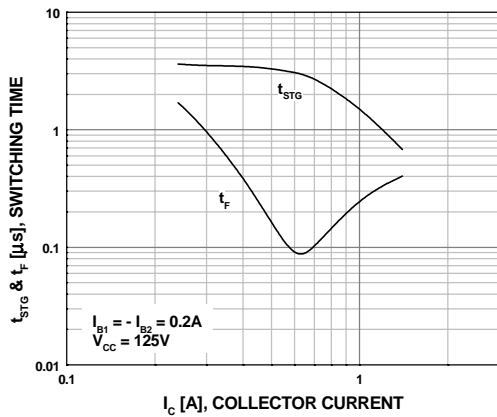

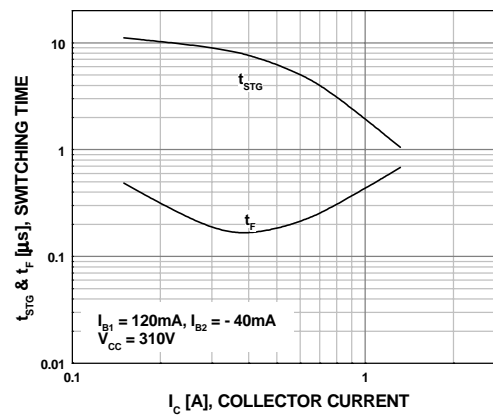### Figure 5. Resistive Load Switching Time

Figure 6. Resistive Load Switching Time

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Typical Performance Characteristics (Continued)
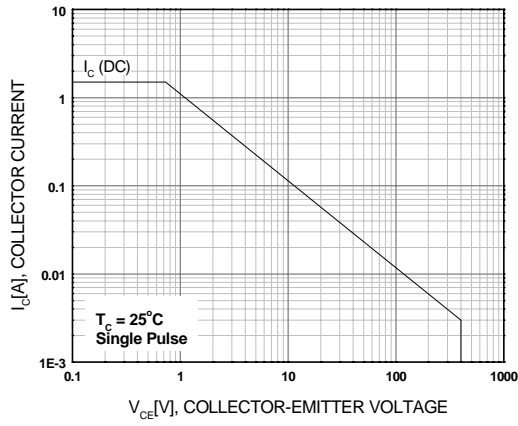
Figure 7. Forward Biased Safe Operating Area

I_C (DC)

I_C[A], COLLECTOR CURRENT

$T_C = 25^oC$
Single Pulse

V_{CE}[V], COLLECTOR-EMITTER VOLTAGE

Figure 8. Reverse Biased Safe Operating Area

I_C [A], COLLECTOR CURRENT

$I_{B1} = 1A, R_{B2} = 0$
$V_{CC} = 50V, L = 1 mH$

V_{CE} [V], COLLECTOR-EMITTER VOLTAGE

Figure 9. Power Derating

P_C [W], COLLECTOR POWER DISSIPATION
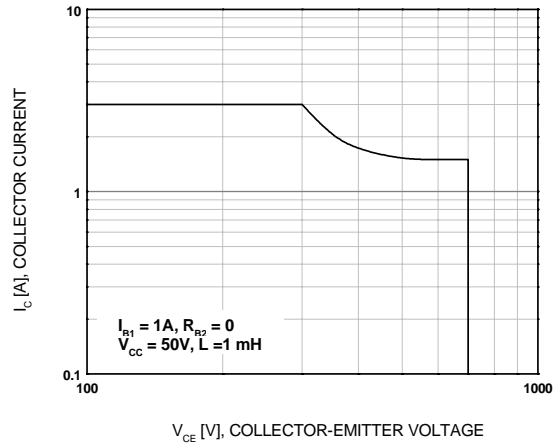
T_a [^oC], AMBIENT TEMPERATURE

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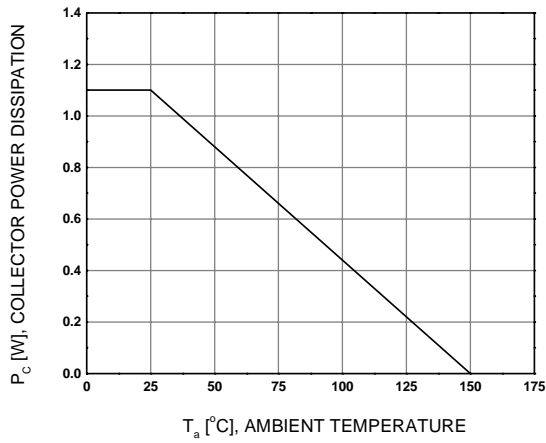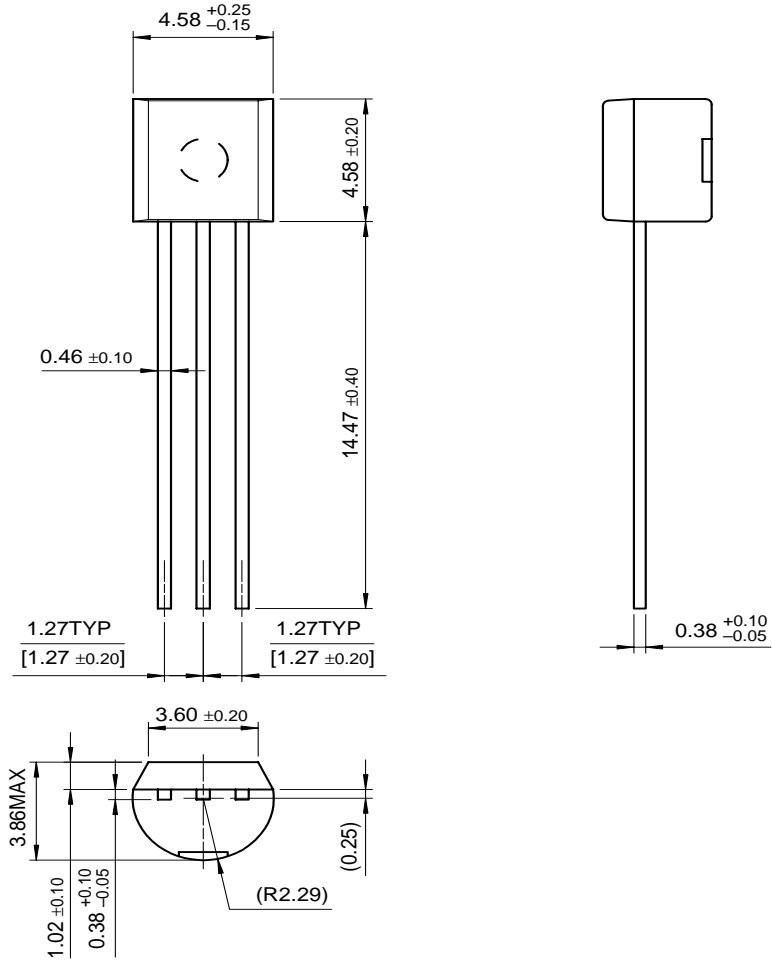
Mechanical Dimensions

TO-92

Dimensions in Millimeters

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