Pb Free Plating Product

NJW1302G

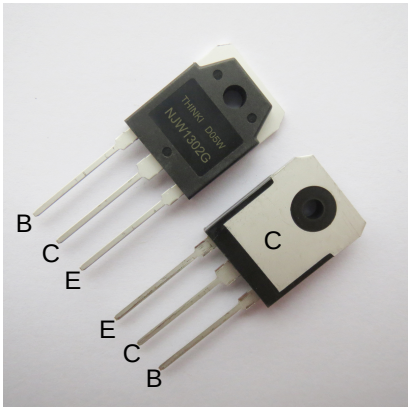
200Watt/-15A/-250V Silicon Planar PNP Type Power Transistor

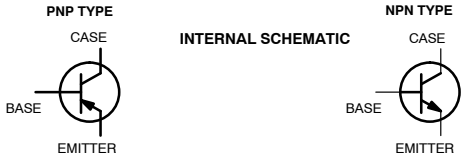
DESCRIPTION

- With THINKI TO-3PB-SQ pkg
- Complement to type NJW3281G

APPLICATION

- Home Amplifiers/Home Receivers
- Theater and Stadium Sound Systems
- Public Address Systems (PAs)





PINNING

PIN	DESCRIPTION
E	Emitter
C	Collector;connected to mounting base
B	Base

MAXIMUM RATINGS (T_J = 25°C unless otherwise noted)

Rating	Symbol	Value	Unit
Collector–Emitter Voltage	V_{CEO}	-250	Vdc
Collector–Base Voltage	V_{CBO}	-250	Vdc
Emitter–Base Voltage	V_{EBO}	-5.0	Vdc
Collector–Emitter Voltage – 1.5 V	V_{CEX}	-250	Vdc
Collector Current – Continuous	I_C	-15	Adc
Collector Current – Peak (Note 1)	I_{CM}	-30	Adc
Base Current – Continuous	I_B	-1.6	Adc
Total Power Dissipation @ T_C = 25°C Derate Above 25°C	P_D	200 1.43	W W/°C
Operating and Storage Junction Temperature Range	T_J, T_{stg}	– 65 to +150	°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction–to–Case	$R_{\theta JC}$	0.625	°C/W
Thermal Resistance, Junction–to–Ambient	$R_{\theta JA}$	40	°C/W

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

1. Pulse Test: Pulse Width = 5 ms, Duty Cycle < 10%.

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

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Collector–Emitter Sustaining Voltage (I_C = 100 mAdc, I_B = 0)	$V_{CEO(sus)}$	-250	–	–	Vdc
Collector Cutoff Current (V_{CB} = 250 Vdc, I_E = 0)	I_{CBO}	–	–	-50	μAdc
Emitter Cutoff Current (V_{EB} = 5 Vdc, I_C = 0)	I_{EBO}	–	–	-5	μAdc
SECOND BREAKDOWN					
Second Breakdown Collector with Base Forward Biased (V_{CE} = 50 Vdc, t = 1 s (non–repetitive)	$I_{S/b}$	-4	–	–	Adc
ON CHARACTERISTICS					
DC Current Gain	h_{FE}				–
(I_C = 100 mAdc, V_{CE} = 5 Vdc)		75	–	150	
(I_C = 1 Adc, V_{CE} = 5 Vdc)		75	–	150	
(I_C = 3 Adc, V_{CE} = 5 Vdc)		75	–	150	
(I_C = 5 Adc, V_{CE} = 5 Vdc)		60	–	–	
(I_C = 8 Adc, V_{CE} = 5 Vdc)		45	–	–	
Collector–Emitter Saturation Voltage (I_C = 8 Adc, I_B = 0.8 Adc)	$V_{CE(sat)}$	–	-0.4	-0.6	Vdc
Base–Emitter On Voltage (I_C = 8 Adc, V_{CE} = 5 Vdc)	$V_{BE(on)}$	–	–	-1.5	Vdc
DYNAMIC CHARACTERISTICS					
Current–Gain – Bandwidth Product (I_C = 1 Adc, V_{CE} = 5 Vdc, f_{test} = 1 MHz)	f_T	–	30	–	MHz
Output Capacitance (V_{CB} = 10 Vdc, I_E = 0, f_{test} = 1 MHz)	C_{ob}	–	–	600	pF

TYPICAL CHARACTERISTICS

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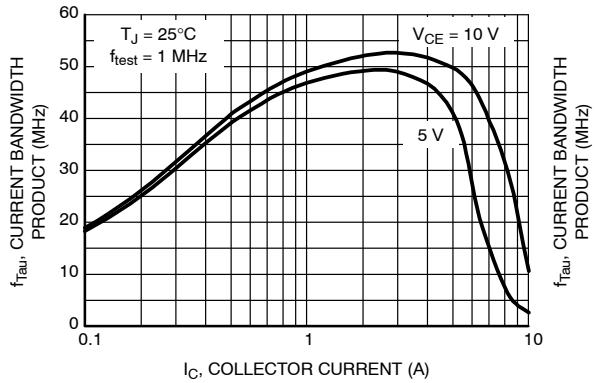

Figure 1. Typical Current Gain Bandwidth Product

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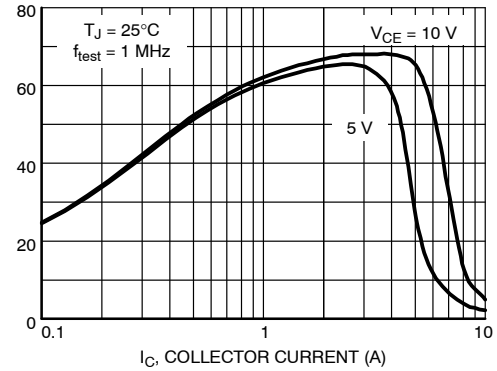

Figure 2. Typical Current Gain Bandwidth Product

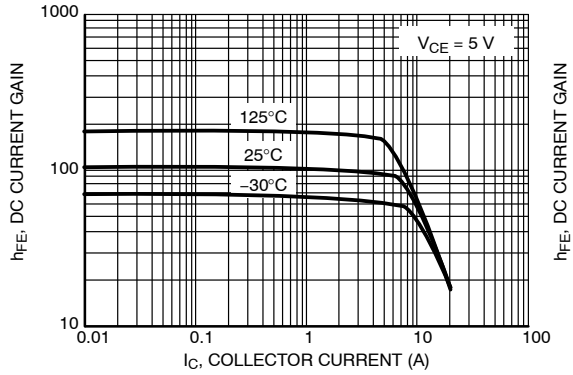

Figure 3. DC Current Gain

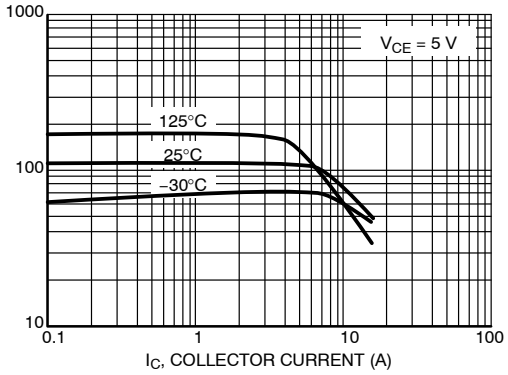

Figure 4. DC Current Gain

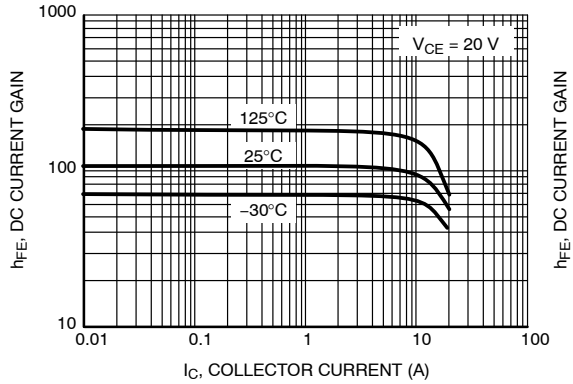

Figure 5. DC Current Gain

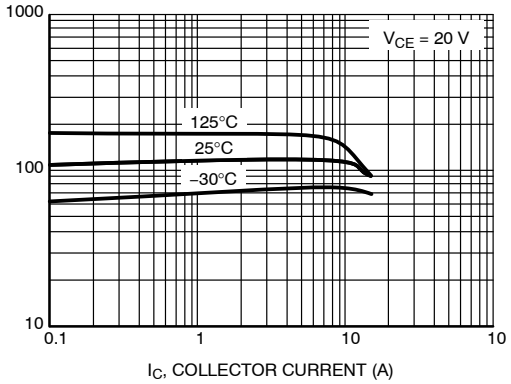

Figure 6. DC Current Gain

TYPICAL CHARACTERISTICS

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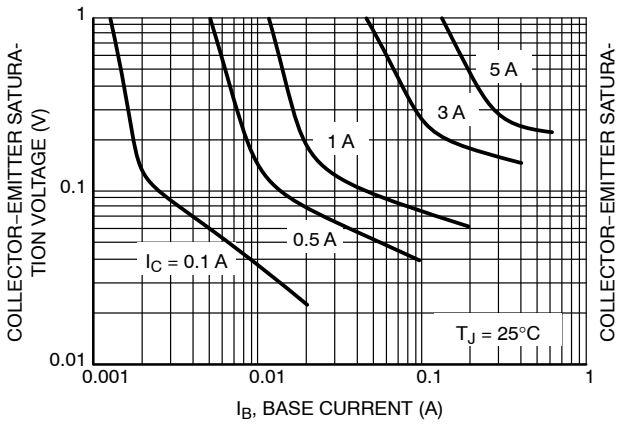

Figure 7. Saturation Region

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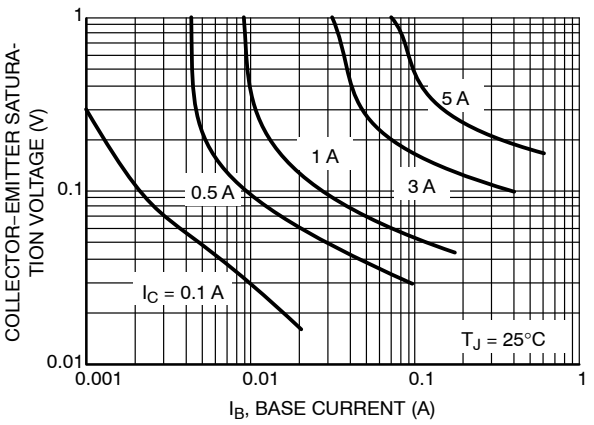

Figure 8. Saturation Region

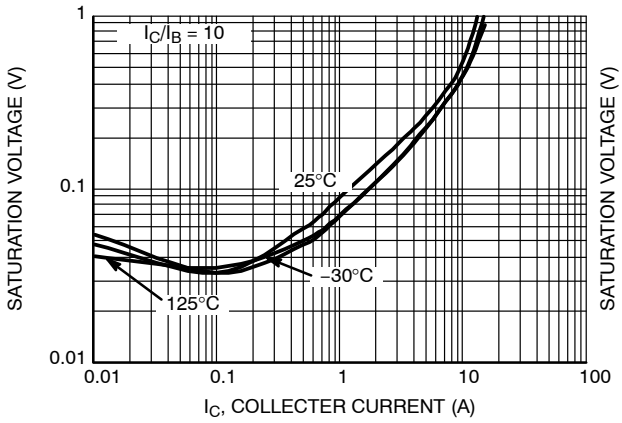

Figure 9. $V_{CE(sat)}$, Collector–Emitter Saturation Voltage

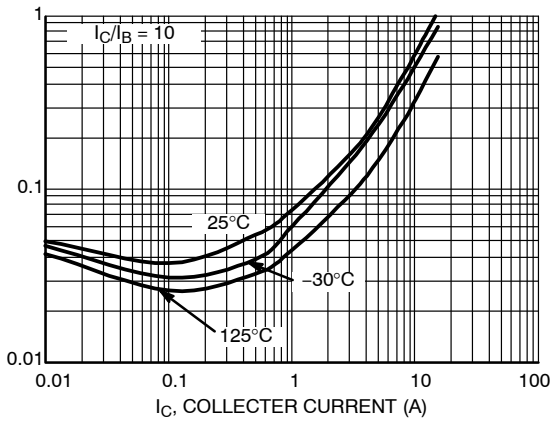

Figure 10. $V_{CE(sat)}$, Collector–Emitter Saturation Voltage

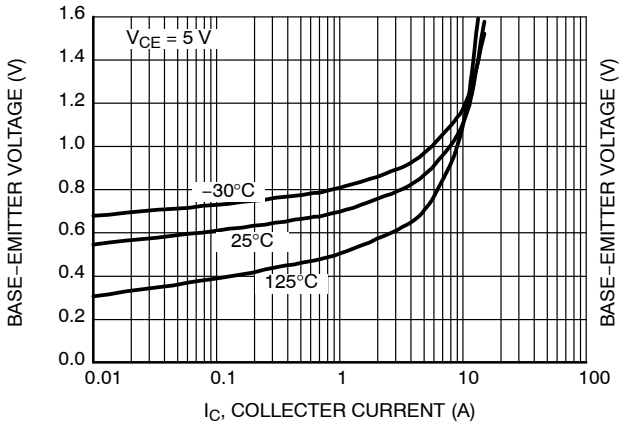

Figure 11. $V_{BE(on)}$, Base–Emitter Voltage

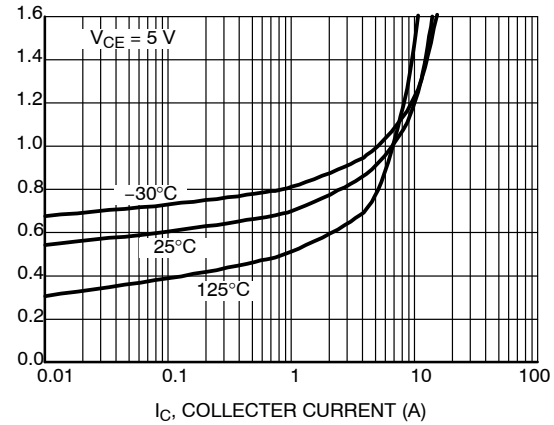

Figure 12. $V_{BE(on)}$, Base–Emitter Voltage

TYPICAL CHARACTERISTICS

PNP NJW1302G

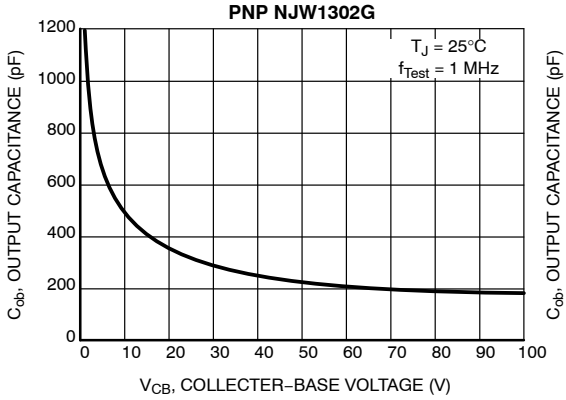

Figure 13. Output Capacitance

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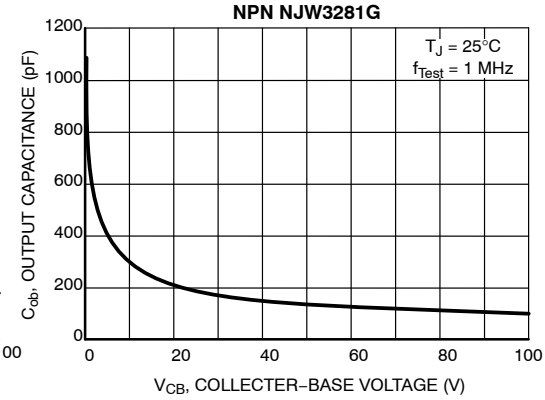

Figure 14. Output Capacitance

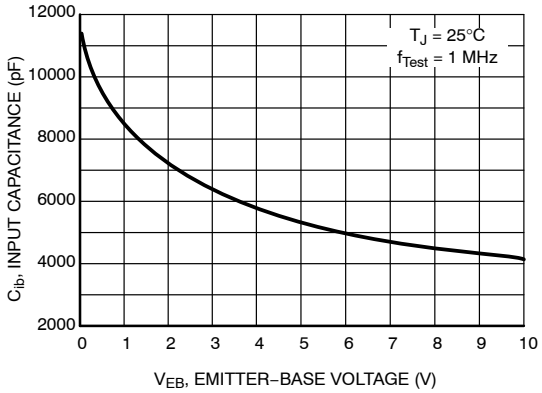

Figure 15. Input Capacitance

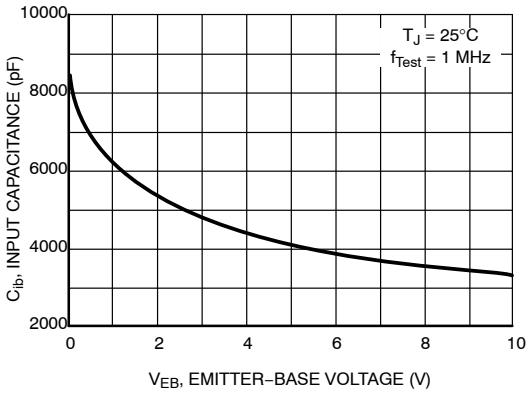

Figure 16. Input Capacitance

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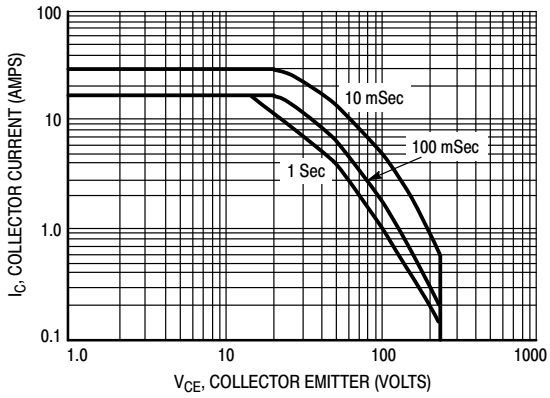

Figure 17. Active Region Safe Operating Area

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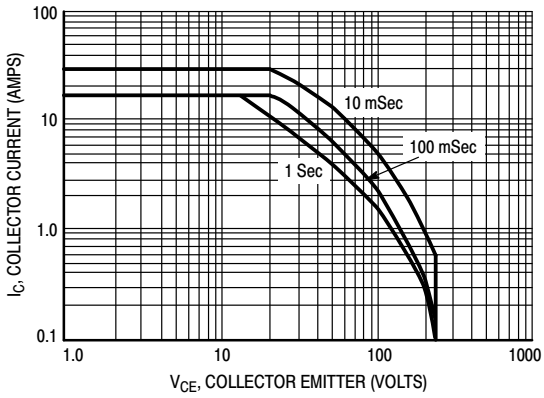
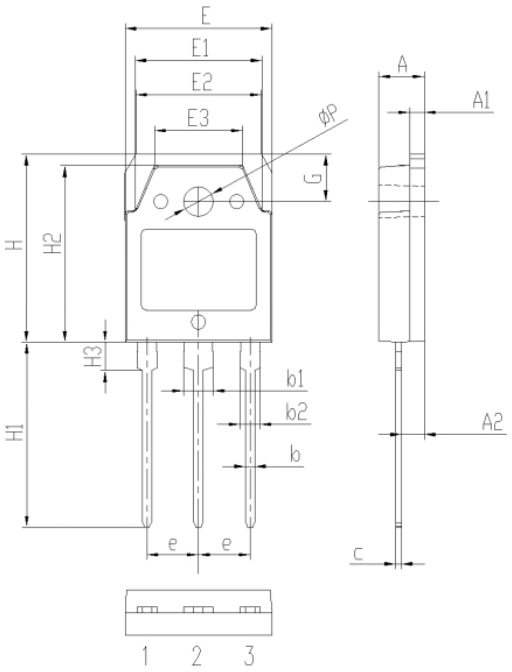


Figure 18. Active Region Safe Operating Area

There are two limitations on the power handling ability of a transistor; average junction temperature and secondary breakdown. Safe operating area curves indicate $I_C - V_{CE}$ limits of the transistor that must be observed for reliable operation; i.e., the transistor must not be subjected to greater dissipation than the curves indicate.

The data of Figures 17 and 18 is based on $T_{J(pk)}$ = 150°C; T_C is variable depending on conditions. At high case temperatures, thermal limitations will reduce the power than can be handled to values less than the limitations imposed by second breakdown.

THINKI TO-3PB-SQ Package Outline



Symbol	Dimensions(millimeters)	
	Min.	Max.
A	4.60	5.00
A1	1.30	1.70
A2	2.20	2.60
b	0.80	1.20
b1	2.90	3.30
b2	1.90	2.30
c	0.40	0.80
e	5.25	5.65
E	15.3	15.7
E1	13.2	13.6
E2	13.1	13.5
E3	9.10	9.50
H	19.7	20.1
H1	19.1	20.1
H2	18.3	18.7
H3	2.80	3.20
G	4.80	5.20
ΦP	3.00	3.40