

# NJD1718, NJVNJD1718

## Power Transistors

### PNP Silicon DPAK For Surface Mount Applications

Designed for high-gain audio amplifier and power switching applications.

#### Features

- Low Collector-Emitter Saturation Voltage
- High Switching Speed
- Epoxy Meets UL 94 V-0 @ 0.125 in
- NJV Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable
- These Devices are Pb-Free, Halogen Free/BFR Free and are RoHS Compliant

#### MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Base Voltage	$V_{CB}$	-50	Vdc
Collector-Emitter Voltage	$V_{CEO}$	-50	Vdc
Emitter-Base Voltage	$V_{EB}$	-5	Vdc
Collector Current - Continuous	$I_C$	-2	Adc
Collector Current - Peak	$I_{CM}$	-3	Adc
Base Current	$I_B$	-0.4	Adc
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	15 0.1	W W/ $^\circ\text{C}$
Total Device Dissipation @ $T_A = 25^\circ\text{C}$ (Note 1) Derate above $25^\circ\text{C}$	$P_D$	1.68 0.011	W W/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	$T_J, T_{stg}$	-65 to +150	$^\circ\text{C}$
ESD - Human Body Model	HBM	3B	V
ESD - Machine Model	MM	C	V

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. These ratings are applicable when surface mounted on the minimum pad sizes recommended.

#### THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance Junction-to-Case Junction-to-Ambient (Note 2)	$R_{\theta JC}$ $R_{\theta JA}$	10 89.3	$^\circ\text{C}/\text{W}$

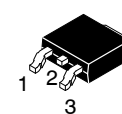
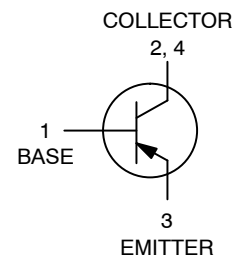
2. These ratings are applicable when surface mounted on the minimum pad sizes recommended.



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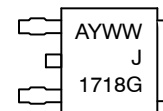
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**SILICON  
POWER TRANSISTORS  
2 AMPERES  
50 VOLTS  
15 WATTS**



**DPAK  
CASE 369C  
STYLE 1**

#### MARKING DIAGRAM



A = Assembly Location  
Y = Year  
WW = Work Week  
G = Pb-Free Device

#### ORDERING INFORMATION

Device	Package	Shipping <sup>†</sup>
NJD1718T4G	DPAK (Pb-Free)	2500 / Tape & Reel
NJVNJD1718T4G	DPAK (Pb-Free)	2500 / Tape & Reel

<sup>†</sup>For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

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## ELECTRICAL CHARACTERISTICS (T<sub>C</sub> = 25°C unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
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### OFF CHARACTERISTICS

Collector–Emitter Breakdown Voltage (Note 3) (I <sub>C</sub> = -10 mAdc, I <sub>B</sub> = 0)	BV <sub>CEO</sub>	-50		-	Vdc
Collector Cutoff Current (V <sub>CB</sub> = -50 Vdc, I <sub>E</sub> = 0)	I <sub>CBO</sub>	-		-100	nAdc
Emitter Cutoff Current (V <sub>BE</sub> = -5 Vdc, I <sub>C</sub> = 0)	I <sub>EBO</sub>	-		-100	nAdc

### ON CHARACTERISTICS

DC Current Gain (Note 3) (I <sub>C</sub> = -0.5 A, V <sub>CE</sub> = 2 V) (I <sub>C</sub> = -1.5 Adc, V <sub>CE</sub> = 2 Vdc)	h <sub>FE</sub>	70 40		240 -	-
Collector–Emitter Saturation Voltage (Note 3) (I <sub>C</sub> = -1 A, I <sub>B</sub> = -0.05 A)	V <sub>CE(sat)</sub>	-	-0.2	-0.5	Vdc
Base–Emitter Saturation Voltage (Note 3) (I <sub>C</sub> = -1 A, I <sub>B</sub> = -0.05 Adc)	V <sub>BE(sat)</sub>	-	-	-1.2	Vdc
Base–Emitter On Voltage (Note 3) (I <sub>C</sub> = -1 Adc, V <sub>CE</sub> = -2 Vdc)	V <sub>BE(on)</sub>	-	-	-1.2	Vdc

### DYNAMIC CHARACTERISTICS

Current–Gain – Bandwidth Product (Note 4) (I <sub>C</sub> = -500 mAdc, V <sub>CE</sub> = -2 Vdc, f <sub>test</sub> = 10 MHz)	f <sub>T</sub>	-	80	-	MHz
Output Capacitance (V <sub>CB</sub> = 10 Vdc, I <sub>E</sub> = 0, f = 0.1 MHz)	C <sub>ob</sub>	-	33	-	pF
Switching Timers V <sub>CC</sub> = -30 V, I <sub>C</sub> = -1 A	t <sub>ON</sub>	-	55	-	ns
	t <sub>STG</sub>	-	320	-	
	t <sub>f</sub>	-	40	-	

3. Pulse Test: Pulse Width = 300 μs, Duty Cycle ≈ 2%.

4. f<sub>T</sub> = |h<sub>fe</sub>| • f<sub>test</sub>.

TYPICAL CHARACTERISTICS

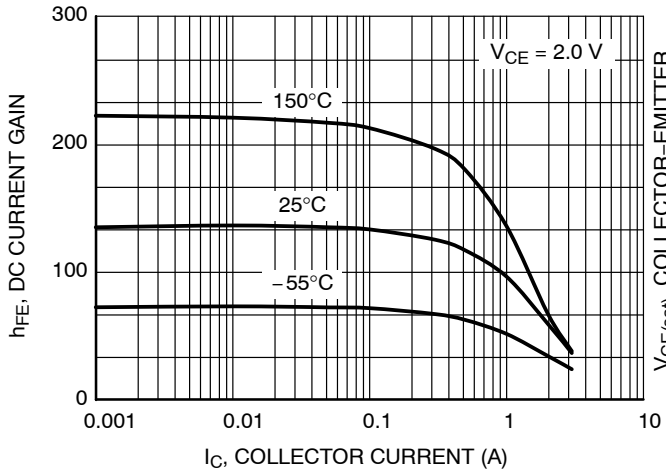


Figure 1. DC Current Gain

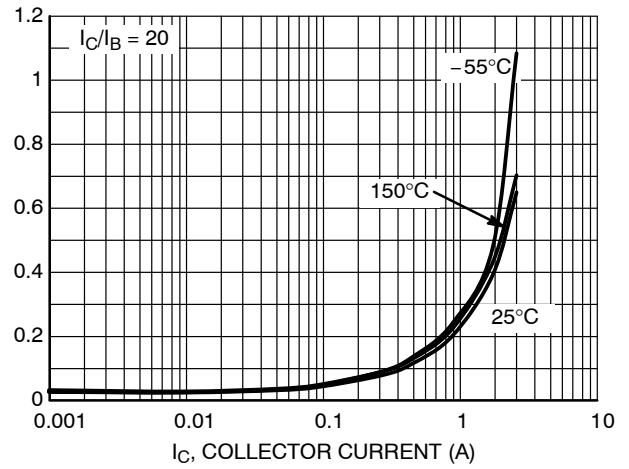


Figure 2. Collector-Emitter Saturation Voltage

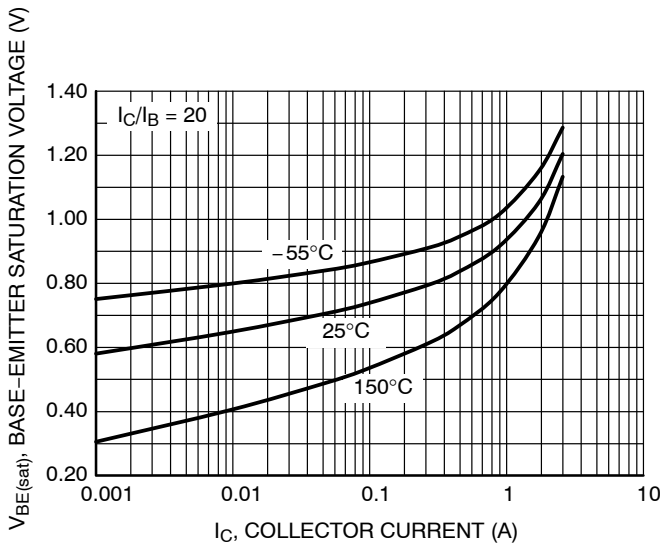


Figure 3. Base-Emitter Saturation Voltage

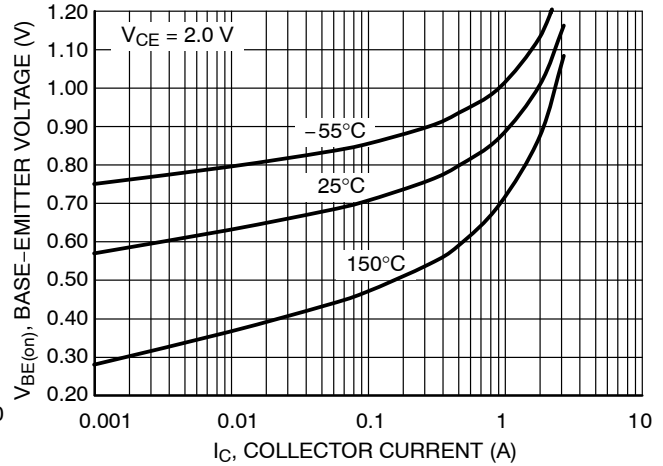


Figure 4. Base-Emitter Voltage

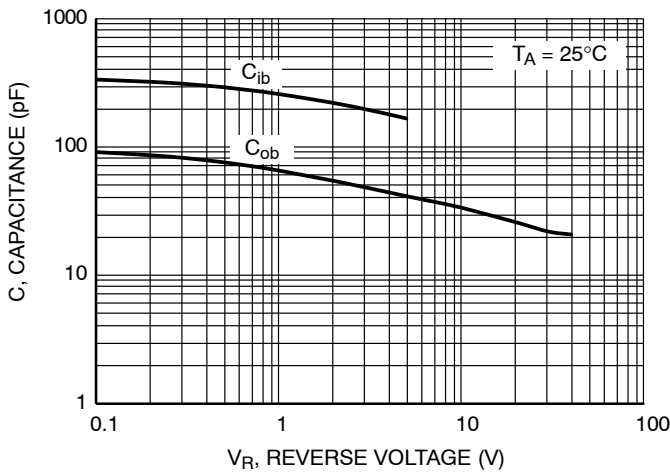


Figure 5. Capacitance

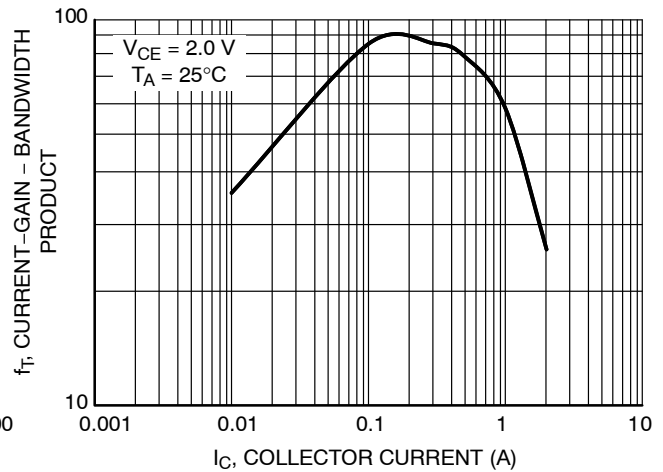


Figure 6. Current-Gain-Bandwidth Product

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## TYPICAL CHARACTERISTICS

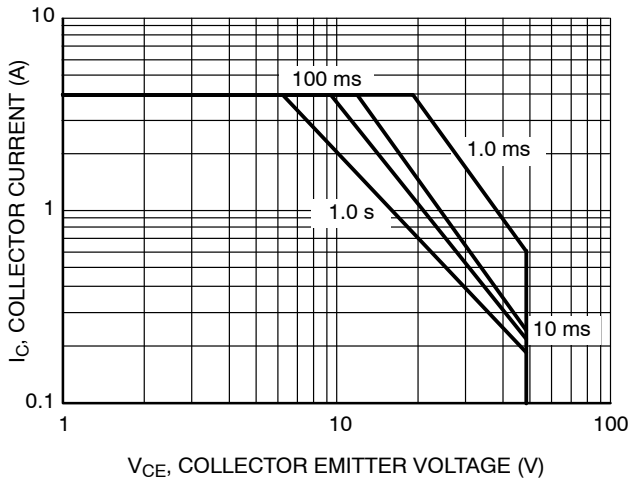


Figure 7. State Operating Area

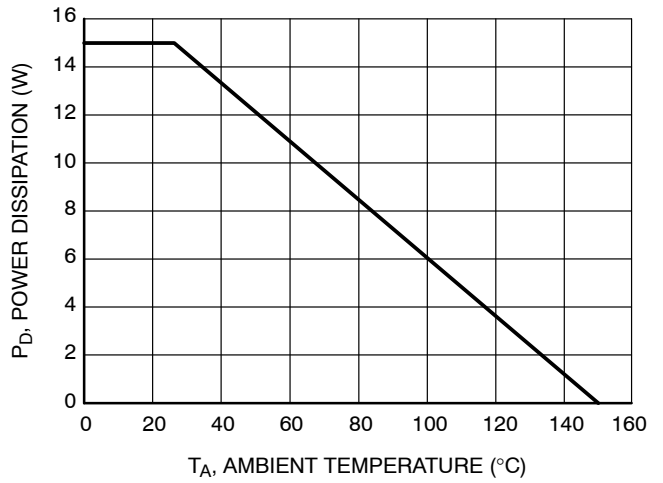


Figure 8. Power Derating

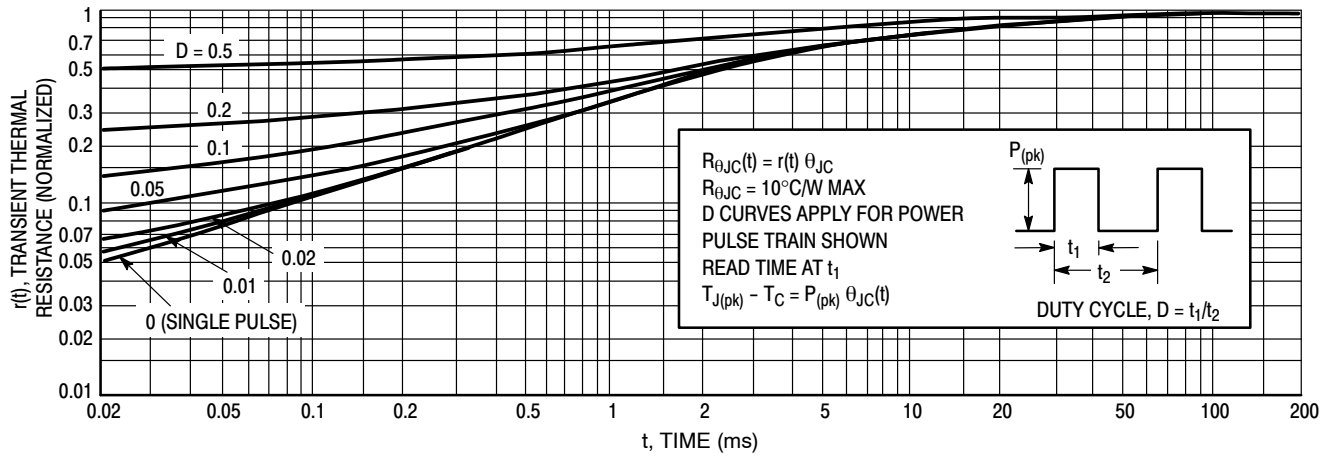


Figure 9. Thermal Response



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