

NPN Silicon Epitaxial Transistor

This family of NPN Silicon Epitaxial transistors is designed for use as a general purpose amplifier and in switching applications. The device is housed in the SOT-223 package which is designed for medium power surface mount applications.

Features

- High Voltage
- The SOT-223 Package Can Be Soldered Using Wave or Reflow
- SOT-223 Package Ensures Level Mounting, Resulting in Improved Thermal Conduction, and Allows Visual Inspection of Soldered Joints
- The Formed Leads Absorb Thermal Stress During Soldering, Eliminating the Possibility of Damage to the Die
- PNP Complement is BSP16T1G
- Moisture Sensitivity Level (MSL): 1
- NSV 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 ($T_C = 25^\circ\text{C}$ unless otherwise noted)

Rating	Symbol	Value	Unit
Collector-Emitter Voltage (Open Base)	V_{CEO}	350	Vdc
Collector-Base Voltage (Open Emitter)	V_{CBO}	400	Vdc
Emitter-Base Voltage (Open Collector)	V_{EBO}	5.0	Vdc
Collector Current (DC)	I_C	100	mAdc

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Total Power Dissipation @ $T_A = 25^\circ\text{C}$ (Note 1)	P_D	0.8	W
Derate above 25°C		6.4	mW/ $^\circ\text{C}$
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	156	$^\circ\text{C}/\text{W}$
Junction and Storage Temperature Range	T_{stg}	-65 to +150	$^\circ\text{C}$
ESD - Human Body Model	HBM	3B	V
ESD - Machine Model	MM	C	V

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.

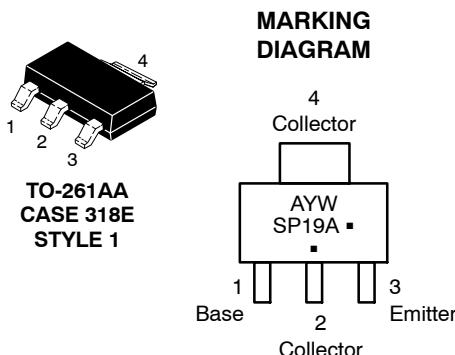
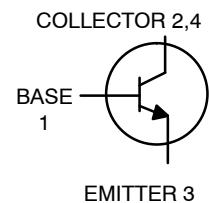
1. Device mounted on a FR-4 glass epoxy printed circuit board using minimum recommended footprint.



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SOT-223 PACKAGE NPN SILICON HIGH VOLTAGE TRANSISTOR SURFACE MOUNT



**MARKING
DIAGRAM**

A = Assembly Location
Y = Year
W = Work Week
SP19A = Specific Device Code
▪ = Pb-Free Package
(Note: Microdot may be in either location)

ORDERING INFORMATION

Device	Package	Shipping [†]
BSP19AT1G	SOT-223 (Pb-Free)	1000 / Tape & Reel
NSVBSP19AT1G	SOT-223 (Pb-Free)	1000 / Tape & Reel

[†]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.

BSP19A

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Characteristics	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector-Emitter Breakdown Voltage ($I_C = 1.0 \text{ mA}_\text{dc}$, $I_B = 0$)	$V_{(\text{BR})\text{CEO}}$	350	—	V_dc
Collector-Base Cutoff Current ($V_{CB} = 400 \text{ V}_\text{dc}$, $I_E = 0$)	I_{CBO}	—	20	nA_dc
Emitter-Base Cutoff Current ($V_{EB} = 5.0 \text{ V}_\text{dc}$, $I_C = 0$)	I_{EBO}	—	10	μA_dc
ON CHARACTERISTICS (Note 2)				
DC Current Gain ($I_C = 20 \text{ mA}_\text{dc}$, $V_{CE} = 10 \text{ V}_\text{dc}$)	h_{FE}	40	—	—
Current-Gain — Bandwidth Product ($I_C = 10 \text{ mA}_\text{dc}$, $V_{CE} = 10 \text{ V}_\text{dc}$, $f = 5.0 \text{ MHz}$)	f_T	70	—	MHz
Collector-Emitter Saturation Voltage ($I_C = 50 \text{ mA}_\text{dc}$, $I_B = 4.0 \text{ mA}_\text{dc}$)	$V_{CE(\text{sat})}$	—	0.5	V_dc
Base-Emitter Saturation Voltage ($I_C = 50 \text{ mA}_\text{dc}$, $I_B = 4.0 \text{ mA}_\text{dc}$)	$V_{BE(\text{sat})}$	—	1.3	V_dc

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.

2. Pulse Test: Pulse Width $\leq 300 \mu\text{s}$, Duty Cycle = 2.0%

TYPICAL CHARACTERISTICS

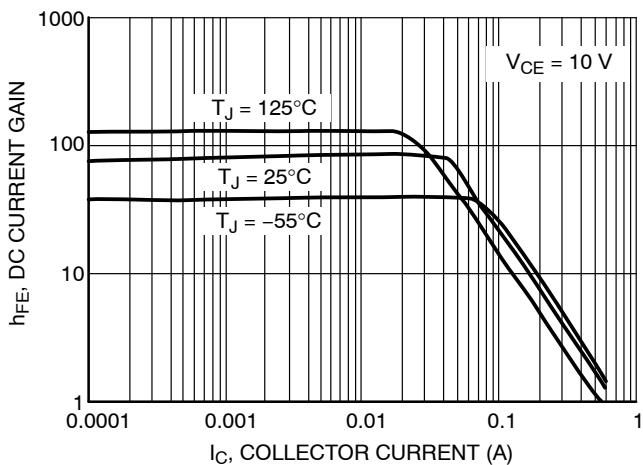


Figure 1. DC Current Gain

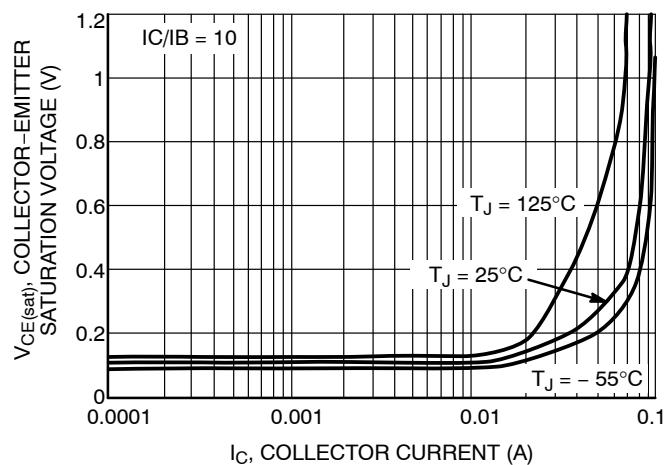


Figure 2. Collector Saturation Voltage

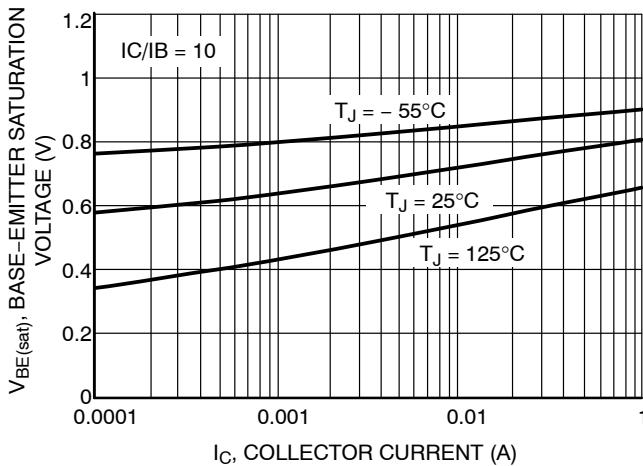


Figure 3. Base Saturation Voltage

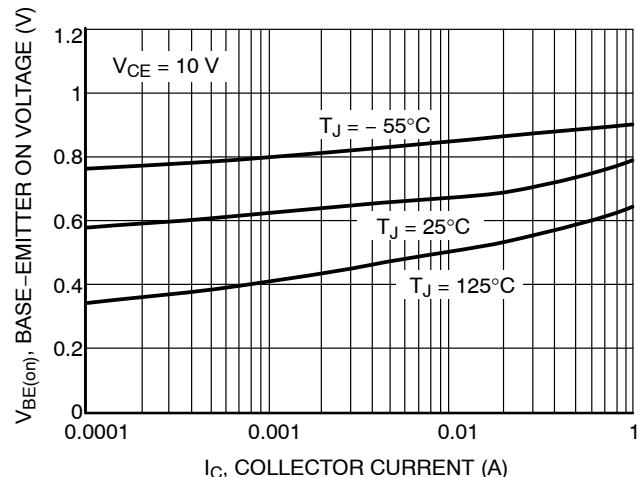


Figure 4. Base ON Voltage

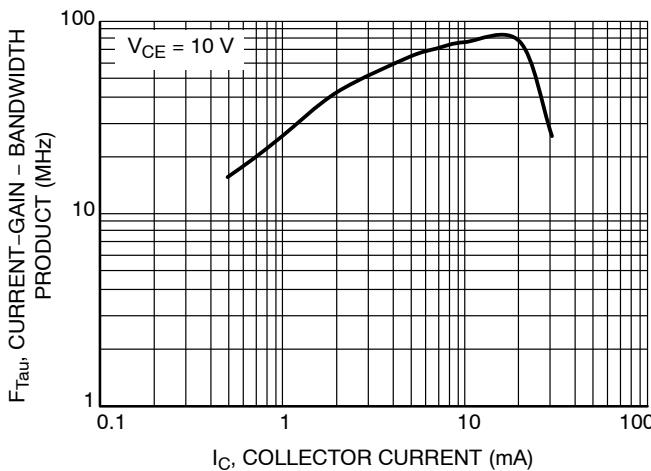


Figure 5. Current Gain – Bandwidth Product

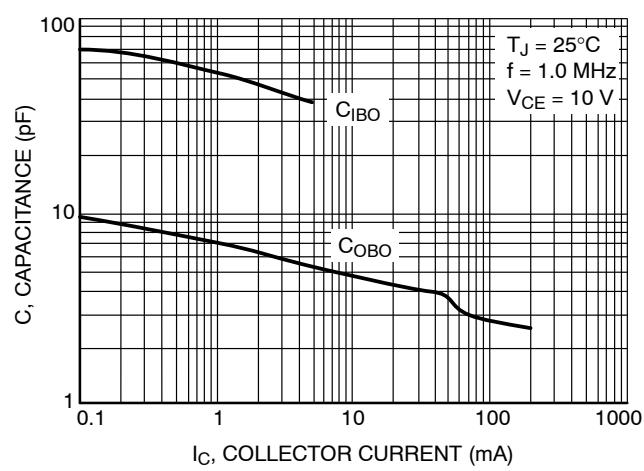


Figure 6. Capacitance

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