NSS30100LT1G

30 V, 2 A, Low $V_{CE(sat)}$ PNP Transistor

ON Semiconductor's e[2]PowerEdge family of low $V_{CE(sat)}$ transistors are miniature surface mount devices featuring ultra low saturation voltage ($V_{CE(sat)}$) and high current gain capability. These are designed for use in low voltage, high speed switching applications where affordable efficient energy control is important.

Typical application are DC−DC converters and power management in portable and battery powered products such as cellular and cordless phones, PDAs, computers, printers, digital cameras and MP3 players. Other applications are low voltage motor controls in mass storage products such as disc drives and tape drives. In the automotive industry they can be used in air bag deployment and in the instrument cluster. The high current gain allows e[2]PowerEdge devices to be driven directly from PMU's control outputs, and the Linear Gain (Beta) makes them ideal components in analog amplifiers.

- This is a Pb−Free Device

MAXIMUM RATINGS (T_A = 25°C)

Rating	Symbol	Max	Unit
Collector-Emitter Voltage	V_{CEO}	−30	Vdc
Collector-Base Voltage	V_{CBO}	−50	Vdc
Emitter-Base Voltage	V_{EBO}	−5.0	Vdc
Collector Current − Continuous	I_C	−1.0	A
Collector Current − Peak	I_{CM}	−2.0	A

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Total Device Dissipation T_A = 25°C Derate above 25°C	P_D (Note 1)	310 2.5	mW mW/°C
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$ (Note 1)	403	°C/W
Total Device Dissipation T_A = 25°C Derate above 25°C	P_D (Note 2)	710 5.7	mW mW/°C
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$ (Note 2)	176	°C/W
Total Device Dissipation (Single Pulse < 10 sec.)	$P_{Dsingle}$ (Note 3)	575	mW
Junction and Storage Temperature Range	T_J, T_{stg}	−55 to +150	°C

Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.

1. FR−4 @ Minimum Pad.
2. FR−4 @ 1.0 X 1.0 inch Pad.
3. Refer to Figure 8.

ON Semiconductor®

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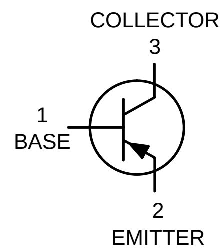
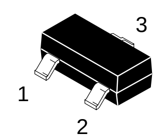
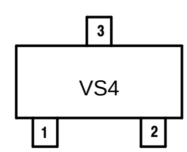
30 VOLTS
2.0 AMPS
PNP LOW $V_{CE(sat)}$ TRANSISTOR
EQUIVALENT $R_{DS(on)}$ 200 mΩ





SOT−23 (TO−236)
CASE 318
STYLE 6

DEVICE MARKING



VS4 = Specific Device Code

ORDERING INFORMATION

Device	Package	Shipping†
NSS30100LT1G	SOT−23 (Pb−Free)	3000/Tape & Reel

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

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

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector−Emitter Breakdown Voltage (I_C = −10 mAdc, I_B = 0)	$V_{(BR)CEO}$	−30	−	Vdc
Collector−Base Breakdown Voltage (I_C = −0.1 mAdc, I_E = 0)	$V_{(BR)CBO}$	−50	−	Vdc
Emitter−Base Breakdown Voltage (I_E = −0.1 mAdc, I_C = 0)	$V_{(BR)EBO}$	−5.0	−	Vdc
Collector Cutoff Current (V_{CB} = −30 Vdc, I_E = 0)	I_{CBO}	−	−0.1	μAdc
Collector−Emitter Cutoff Current (V_{CES} = −30 Vdc)	I_{CES}	−	−0.1	μAdc
Emitter Cutoff Current (V_{EB} = −4.0 Vdc)	I_{EBO}	−	−0.1	μAdc
ON CHARACTERISTICS				
DC Current Gain (Note 4) (Figure 1)	h_{FE}			
(I_C = −1.0 mA, V_{CE} = −2.0 V)		100	−	
(I_C = −500 mA, V_{CE} = −2.0 V)		100	300	
(I_C = −1.0 A, V_{CE} = −2.0 V)		80	−	
(I_C = 2.0 A, V_{CE} = −2.0 V)		40	−	
Collector−Emitter Saturation Voltage (Note 4) (Figure 3)	$V_{CE(sat)}$			V
(I_C = −0.5 A, I_B = −0.05 A)		−	−0.25	
(I_C = −1.0 A, I_B = 0.1 A)		−	−0.30	
(I_C = −2.0 A, I_B = −0.2 A)		−	−0.65	
Base−Emitter Saturation Voltage (Note 4) (Figure 2) (I_C = −1.0 A, I_B = −0.1 A)	$V_{BE(sat)}$	−	−1.2	V
Base−Emitter Turn−on Voltage (Note 4) (I_C = −1.0 A, V_{CE} = −2.0 V)	$V_{BE(on)}$	−	−1.1	V
Cutoff Frequency (I_C = −100 mA, V_{CE} = −5.0 V, f = 100 MHz)	f_T	100	−	MHz
Output Capacitance (f = 1.0 MHz)	Cobo	−	15	pF

4. Pulsed Condition: Pulse Width = 300 msec, Duty Cycle ≤ 2%.

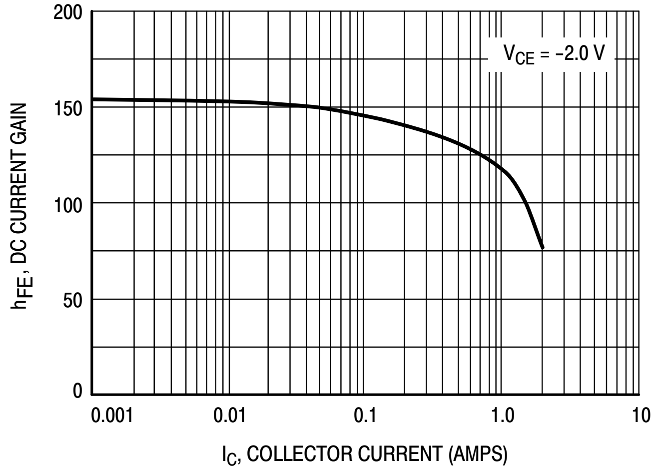


Figure 1. DC Current Gain versus Collector Current

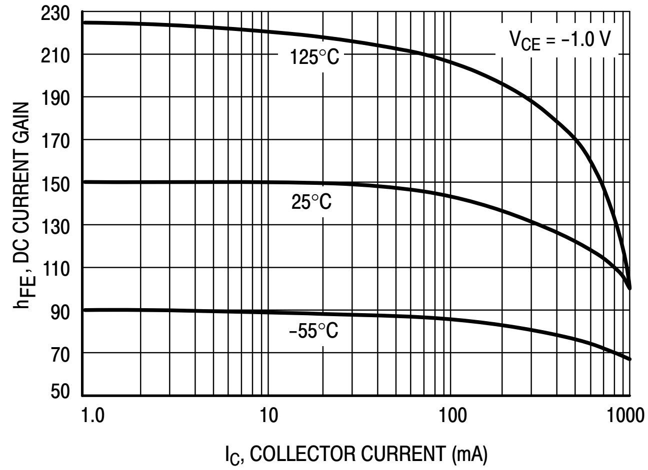


Figure 2. DC Current Gain versus Collector Current

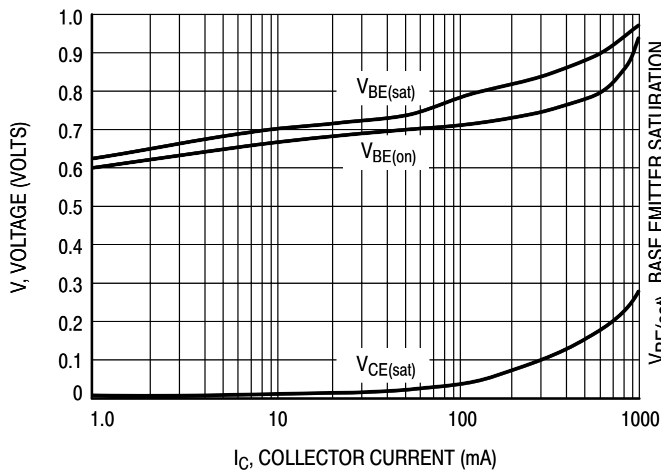


Figure 3. "On" Voltages

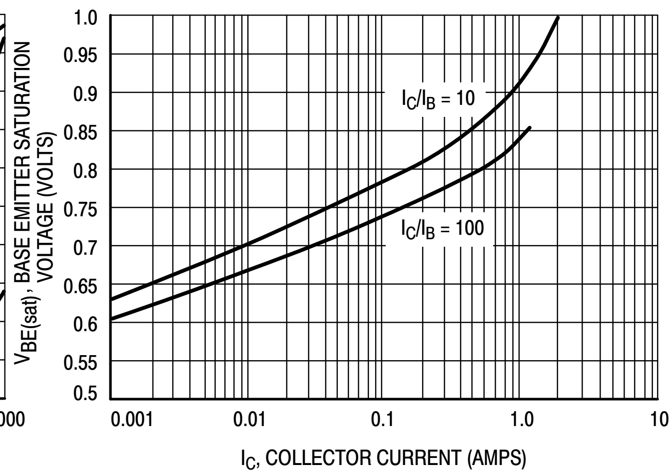


Figure 4. Base Emitter Saturation Voltage versus Collector Current

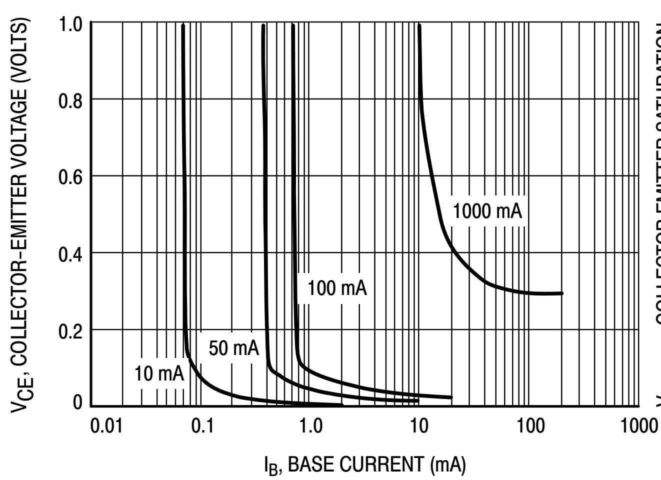


Figure 5. Collector Emitter Saturation Voltage versus Collector Current

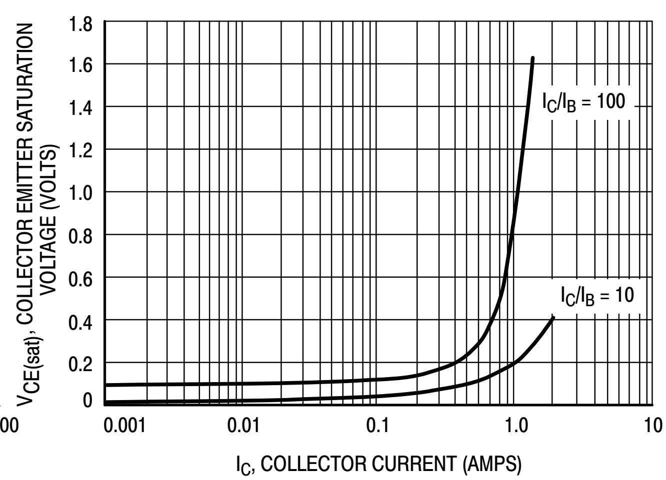


Figure 6. Collector Emitter Saturation Voltage versus Collector Current

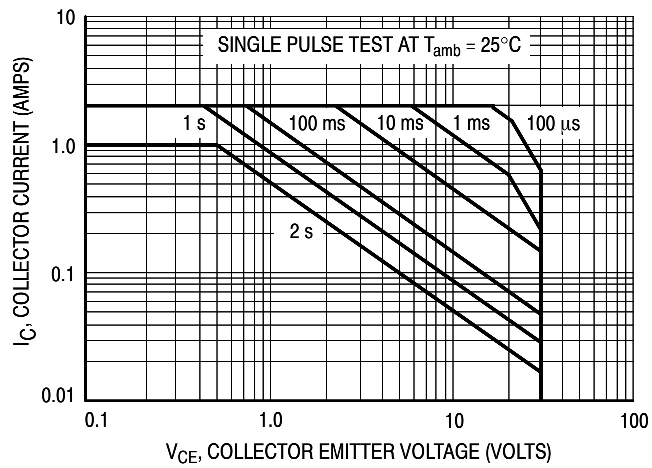


Figure 7. Safe Operating Area

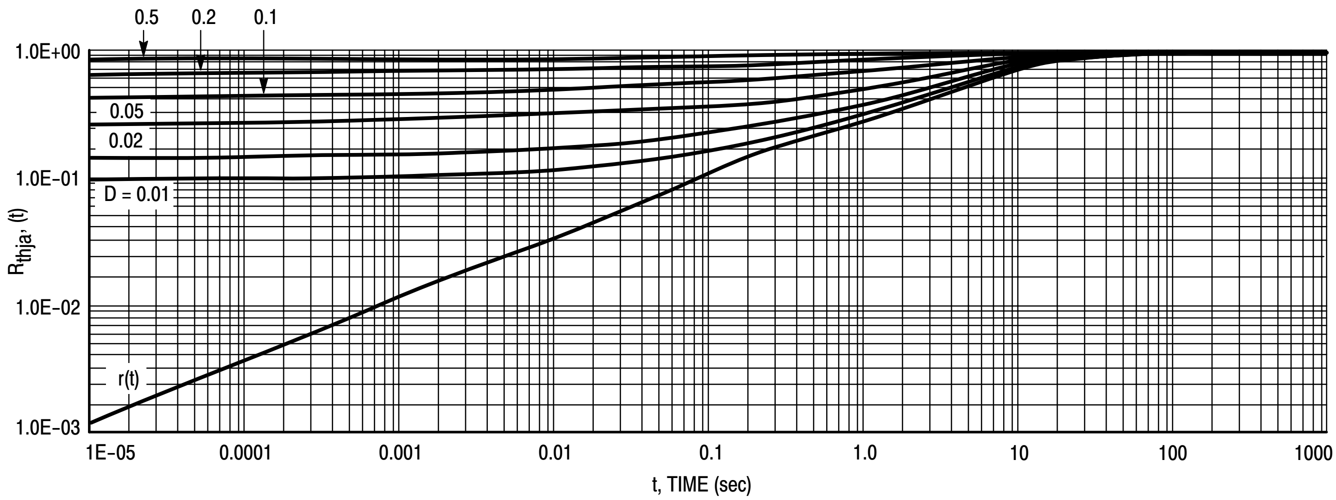
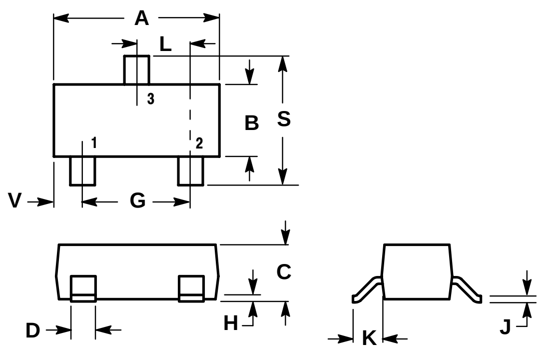


Figure 8. Normalized Thermal Response

PACKAGE DIMENSIONS

SOT−23 (TO−236)
CASE 318−08
ISSUE AH

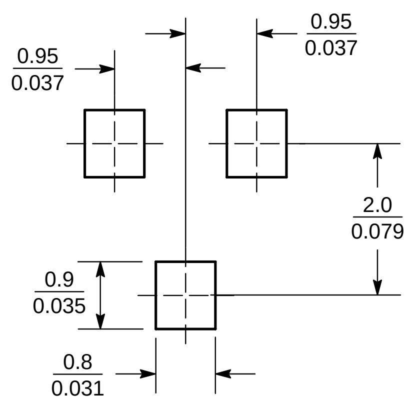


NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH THICKNESS. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.
4. 318−03 AND −07 OBSOLETE, NEW STANDARD 318−08.

	INCHES		MILLIMETERS	
DIM	MIN	MAX	MIN	MAX
A	0.1102	0.1197	2.80	3.04
B	0.0472	0.0551	1.20	1.40
C	0.0350	0.0440	0.89	1.11
D	0.0150	0.0200	0.37	0.50
G	0.0701	0.0807	1.78	2.04
H	0.0005	0.0040	0.013	0.100
J	0.0034	0.0070	0.085	0.177
K	0.0140	0.0285	0.35	0.69
L	0.0350	0.0401	0.89	1.02
S	0.0830	0.1039	2.10	2.64
V	0.0177	0.0236	0.45	0.60

STYLE 6:
PIN 1. BASE
2. EMITTER
3. COLLECTOR

SOLDERING FOOTPRINT*



SCALE 10:1 (mm / inches)

*For additional information on our Pb−Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

PUBLICATION ORDERING INFORMATION

LITERATURE FULFILLMENT:
Literature Distribution Center for ON Semiconductor
P.O. Box 61312, Phoenix, Arizona 85082−1312 USA
Phone: 480−829−7710 or 800−344−3860 Toll Free USA/Canada
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Phone: 81−3−5773−3850

ON Semiconductor Website: http://onsemi.com

Order Literature: http://www.onsemi.com/litorder

For additional information, please contact your local Sales Representative.