NSS20300MR6T1G

Product Preview

20 V, 5 A, Low $V_{CE(sat)}$ PNP Transistor

ON Semiconductor's e^2PowerEdge 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^2PowerEdge devices to be driven directly from PMU's control outputs, and the Linear Gain (Beta) makes them ideal components in analog amplifiers.

MAXIMUM RATINGS (T_A = 25°C)

Rating	Symbol	Max	Unit
Collector-Emitter Voltage	V_{CEO}	−20	Vdc
Collector-Base Voltage	V_{CBO}	−30	Vdc
Emitter-Base Voltage	V_{EBO}	−6.0	Vdc
Collector Current − Continuous	I_C	−3.0	Adc
Collector Current − Peak	I_{CM}	−5.0	A
Electrostatic Discharge	ESD	HBM Class 3B MM Class C	

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Total Device Dissipation, T_A = 25°C Derate above 25°C	P_D (Note 1)	TBD	mW mW/°C
Thermal Resistance, Junction−to−Ambient	$R_{\theta JA}$ (Note 1)	TBD	°C/W
Total Device Dissipation T_A = 25°C Derate above 25°C	P_D (Note 2)	TBD	W mW/°C
Thermal Resistance, Junction−to−Ambient	$R_{\theta JA}$ (Note 2)	TBD	°C/W
Thermal Resistance, Junction−to−Lead #1	$R_{\theta JL}$	TBD	°C/W
Total Device Dissipation (Single Pulse < 10 sec.)	$P_{Dsingle}$ (Note 2)	TBD	W
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.

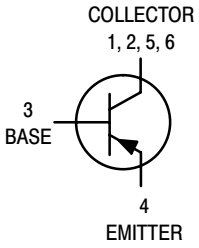
1. FR−4 @ Minimum Pad
2. FR−4 @ 1.0 X 1.0 inch Pad

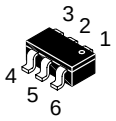
This document contains information on a product under development. ON Semiconductor reserves the right to change or discontinue this product without notice.

ON Semiconductor

http://onsemi.com

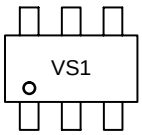
20 VOLTS
5.0 AMPS
PNP LOW $V_{CE(sat)}$ TRANSISTOR
EQUIVALENT $R_{DS(on)}$ 78 mΩ





CASE 318G
TSOP
STYLE 6

DEVICE MARKING



VS1= Specific Device Code
d = Date Code

ORDERING INFORMATION

Device	Package	Shipping†
NSS20300MR6T1G	TSOP−6 (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 Specifications Brochure, BRD8011/D.

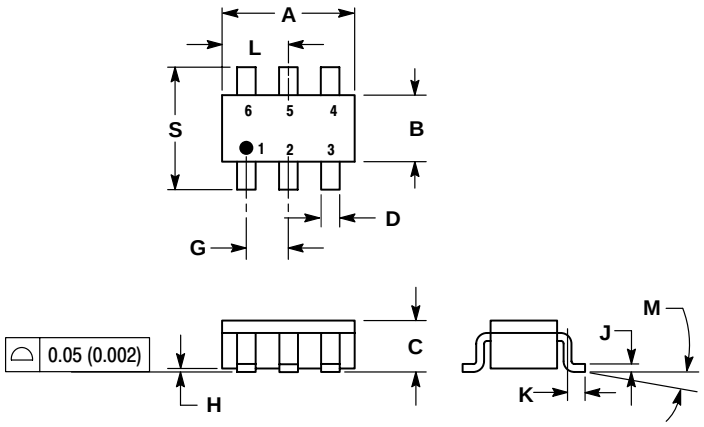
ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted)

Characteristic	Symbol	Min	Typical	Max	Unit
OFF CHARACTERISTICS					
Collector−Emitter Breakdown Voltage (I_C = −10 mAdc, I_B = 0)	$V_{(BR)CEO}$	−20		−	Vdc
Collector−Base Breakdown Voltage (I_C = −0.1 mAdc, I_E = 0)	$V_{(BR)CBO}$	−30		−	Vdc
Emitter−Base Breakdown Voltage (I_E = −0.1 mAdc, I_C = 0)	$V_{(BR)EBO}$	−6.0		−	Vdc
Collector Cutoff Current (V_{CB} = −20 Vdc, I_E = 0)	I_{CBO}	−		−0.1	μAdc
Collector−Emitter Cutoff Current (V_{CES} = −20 Vdc)	I_{CES}	−		−0.1	μAdc
Emitter Cutoff Current (V_{EB} = −6.0 Vdc)	I_{EBO}	−		−0.1	μAdc
ON CHARACTERISTICS					
DC Current Gain (1) (I_C = −1.0 A, V_{CE} = −1.5 V) (I_C = −1.5 A, V_{CE} = −2.0 V) (I_C = −2.0 A, V_{CE} = −2.0 V)	h_{FE}	 100 100 100		 − 400 −	
Collector−Emitter Saturation Voltage (Note 3) (I_C = −0.10 A, I_B = −0.010 A) (I_C = −1.0 A, I_B = −0.010 A) (I_C = −2.0 A, I_B = −0.02 A)	$V_{CE(sat)}$	 − − −	 − − −	 −0.015 −0.145 −0.320	V
Base−Emitter Saturation Voltage (Note 3) (I_C = −1A, I_B = −0.010 A)	$V_{BE(sat)}$	−	−	−0.85	V
Base−Emitter Turn−on Voltage (Note 3) (I_C = −2.0 A, V_{CE} = −3.0 V)	$V_{BE(on)}$	−	−	−0.875	V
Cutoff Frequency (I_C = −100 mA, V_{CE} = −5.0 V, f = 100 MHz)	f_T	100	−	−	MHz
Input Capacitance (V_{EB} = −0.5 V, f = 1.0 MHz)	Cibo	−		650	pF
Output Capacitance (V_{CB} = −3.0 V, f = 1.0 MHz)	Cobo	−		100	pF

3. Pulsed Condition: Pulse Width ≤ 300 μsec, Duty Cycle ≤ 2%

PACKAGE DIMENSIONS

TSOP−6
CASE 318G−02
ISSUE N

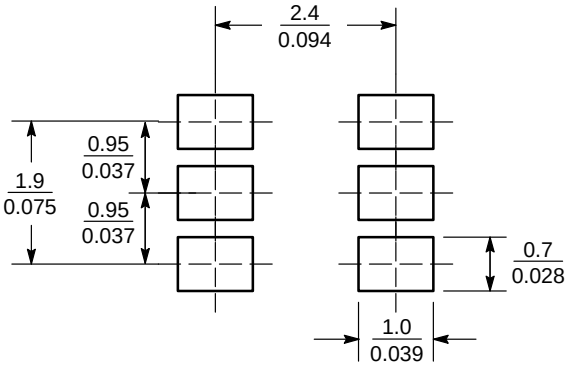


NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETER.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH THICKNESS. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.
4. DIMENSIONS A AND B DO NOT INCLUDE MOLD FLASH, PROTRUSIONS, OR GATE BURRS.

	MILLIMETERS		INCHES	
DIM	MIN	MAX	MIN	MAX
A	2.90	3.10	0.1142	0.1220
B	1.30	1.70	0.0512	0.0669
C	0.90	1.10	0.0354	0.0433
D	0.25	0.50	0.0098	0.0197
G	0.85	1.05	0.0335	0.0413
H	0.013	0.100	0.0005	0.0040
J	0.10	0.26	0.0040	0.0102
K	0.20	0.60	0.0079	0.0236
L	1.25	1.55	0.0493	0.0610
M	0	10	0	10
S	2.50	3.00	0.0985	0.1181

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

SOLDERING FOOTPRINT*



SCALE 10:1 $\left(\frac{\text{mm}}{\text{inches}}\right)$

*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
Fax: 480−829−7709 or 800−344−3867 Toll Free USA/Canada
Email: orderlit@onsemi.com

N. American Technical Support: 800−282−9855 Toll Free USA/Canada

Japan: ON Semiconductor, Japan Customer Focus Center
2−9−1 Kamimeguro, Meguro−ku, Tokyo, Japan 153−0051
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.