NSVS1002SL

Product Preview

Bipolar Transistor

100 V, 3 A, Low VCE(sat) NPN Single DPAK

This device is bipolar junction transistor featuring high current, low saturation voltage, and high speed switching.

Suitable for automotive applications. AEC−Q101 qualified and PPAP capable.

Features

- Complement to NSVS1001SL
- Large Current Capacitance
- Low Collector to Emitter Saturation Voltage
- High−Speed Switching
- High Allowable Power Dissipation
- AEC−Q101 Qualified and PPAP Capable
- These Devices are Pb−Free, Halogen Free/BFR Free and are RoHS Compliant

Typical Applications

- Load Switch
- Gate Driver Buffer
- DC−DC Converters

Specifications

ABSOLUTE MAXIMUM RATING at Ta = 25°C

Parameter	Symbol	Value	Unit
Collector to Base Voltage	V_{CBO}	120	V
Collector to Emitter Voltage	V_{CEO}	100	V
Emitter to Base Voltage	V_{EBO}	7	V
Collector Current	I_C	3	A
Collector Current (Pulse)	I_{CP}	5	A
Collector Dissipation (Note 1)	P_C	1	W
	PC (Tc = 25°C)	15	
Junction Temperature	Tj	175	°C
Storage Temperature	Tstg	−55 to +175	°C

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. Surface mounted on FR board.

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

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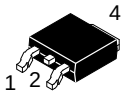
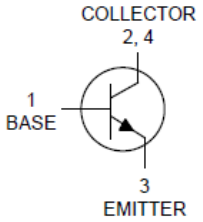
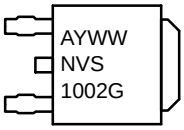


DPAK
CASE 369C

ELECTRICAL CONNECTION



MARKING DIAGRAM



A = Assembly Location
Y = Year
WW = Work Week
G = Pb−Free Package

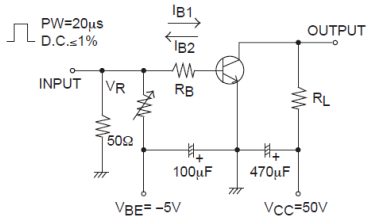
ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 2 of this data sheet.

ELECTRICAL CHARACTERISTICS at Ta = 25°C

Parameter	Symbol	Conditions	Value			Unit
			Min	Typ	Max	
Collector Cutoff Current	ICBO	VCB = 120 V IE = 0 A			0.1	μA
Emitter Cutoff Current	IEBO	VEB = 7 V IC = 0 A			0.1	μA
DC Current Gain	hFE1	VCE = 5 V IC = 100 mA	300		600	
	hFE2	VCE = 5 V IC = 1.5A	200			
Gain−Bandwidth Product	fT	VCE = 10 V IC = 500 mA		TBD		MHz
Output Capacitance	Cob	VCB = 10 V f = 1 MHz		15		pF
Collector to Emitter Saturation Voltage	VCE(sat)1	IC = 100 mA IB = 10 mA		0.018	0.036	V
	VCE(sat)2	IC = 1 A IB = 100 mA		0.07	0.14	V
	VCE(sat)3	IC = 3 A IB = 300 mA		0.18	0.36	V
Base to Emitter Saturation Voltage	VBE(sat)	IC = 1 A IB = 100 mA		0.8	1.2	V
Collector to Base Breakdown Voltage	V(BR)CBO	IC = 10 μA, IE = 0 A	120			V
Collector to Emitter Breakdown Voltage	V(BR)CEO	IC = 1 mA, RBE = ∞	100			V
Emitter to Base Breakdown Voltage	V(BR)EBO	IE = 10 μA, IC = 0 A	7			V
Turn−On Time	t_{on}	See Figure 1		TBD		ns
Storage Time	t_{stg}			TBD		ns
Fall Time	t_f			TBD		ns

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.



IC=10IB1=−10IB2=1A

Figure 1. Switching Time Test Circuit

ESD RATING

Parameter	Symbol	Value	Unit	Class
Electrostatic Discharge −Human Body Model	HBM	4000	V	H3
Electrostatic Discharge −Machine Model	MM	400	V	M4

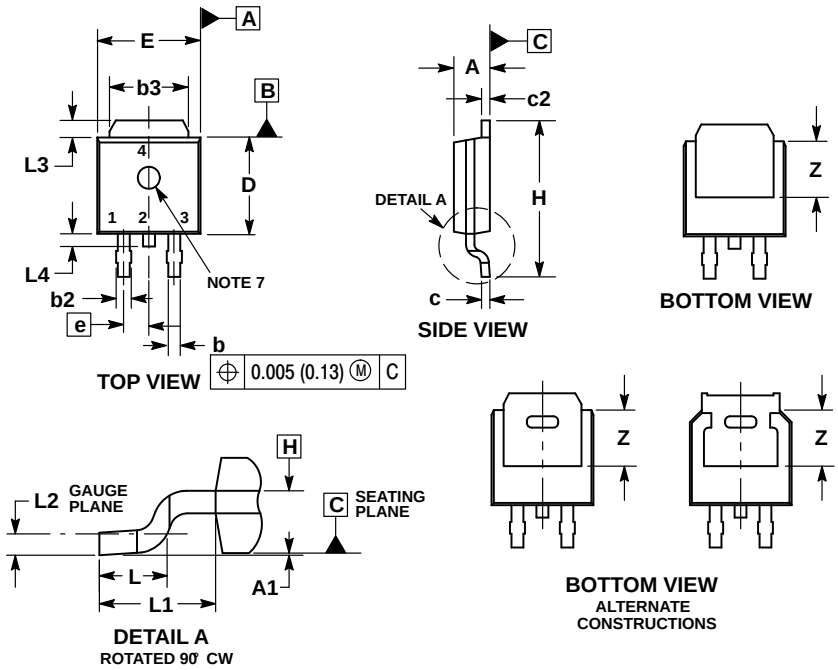
ORDERING INFORMATION

Device	Marking	Package	Shipping (Qty / Packing)†
NSVS1002SLT4G	NVS1002	DPAK (Pb−Free / Halogen Free)	2,500 / 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

PACKAGE DIMENSIONS

DPAK (SINGLE GAUGE)
CASE 369C
ISSUE F

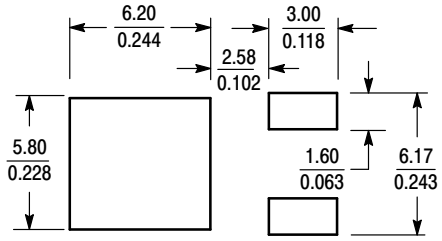


NOTES:
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: INCHES.
3. THERMAL PAD CONTOUR OPTIONAL WITHIN DIMENSIONS b3, L3 and Z.
4. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH, PROTRUSIONS, OR BURRS. MOLD FLASH, PROTRUSIONS, OR GATE BURRS SHALL NOT EXCEED 0.006 INCHES PER SIDE.
5. DIMENSIONS D AND E ARE DETERMINED AT THE OUTERMOST EXTREMES OF THE PLASTIC BODY.
6. DATUMS A AND B ARE DETERMINED AT DATUM PLANE H.
7. OPTIONAL MOLD FEATURE.

	INCHES		MILLIMETERS	
DIM	MIN	MAX	MIN	MAX
A	0.086	0.094	2.18	2.38
A1	0.000	0.005	0.00	0.13
b	0.025	0.035	0.63	0.89
b2	0.028	0.045	0.72	1.14
b3	0.180	0.215	4.57	5.46
c	0.018	0.024	0.46	0.61
c2	0.018	0.024	0.46	0.61
D	0.235	0.245	5.97	6.22
E	0.250	0.265	6.35	6.73
e	0.090 BSC		2.29 BSC	
H	0.370	0.410	9.40	10.41
L	0.055	0.070	1.40	1.78
L1	0.114 REF		2.90 REF	
L2	0.020 BSC		0.51 BSC	
L3	0.035	0.050	0.89	1.27
L4	−−−	0.040	−−−	1.01
Z	0.155	−−−	3.93	−−−

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

SOLDERING FOOTPRINT*



SCALE 3:1 $\left(\frac{\text{mm}}{\text{inches}}\right)$

*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
19521 E. 32nd Pkwy, Aurora, Colorado 80011 USA
Phone: 303−675−2175 or 800−344−3860 Toll Free USA/Canada
Fax: 303−675−2176 or 800−344−3867 Toll Free USA/Canada
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Order Literature: http://www.onsemi.com/orderlit

For additional information, please contact your local Sales Representative