Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

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Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China

NST489AMT1, NSVT489AMT1G

High Current Surface Mount NPN Silicon Low $V_{CE(sat)}$ Switching Transistor for Load Management in Portable Applications

Features

- AEC−Q101 Qualified and PPAP Capable
- NSV Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements
- Pb−Free Packages are Available*

MAXIMUM RATINGS (T_A = 25°C)

Rating	Symbol	Max	Unit
Collector-Emitter Voltage	V_{CEO}	30	V
Collector-Base Voltage	V_{CBO}	50	V
Emitter-Base Voltage	V_{EBO}	5.0	V
Collector Current − Continuous	I_C	2.0	A
Collector Current − Peak	I_{CM}	3.0	A

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Total Device Dissipation T_A = 25°C Derate above 25°C	P_D (Note 1)	 535 4.3	 mW mW/°C
Thermal Resistance, Junction−to−Ambient	$R_{\theta JA}$ (Note 1)	 234	°C/W
Total Device Dissipation T_A = 25°C Derate above 25°C	P_D (Note 2)	 1.180 9.4	 W mW/°C
Thermal Resistance, Junction−to−Ambient	$R_{\theta JA}$ (Note 2)	 106	°C/W
Thermal Resistance, Junction−to−Lead #1	$R_{\theta JL}$ (Note 1) $R_{\theta JL}$ (Note 2)	110 50	°C/W °C/W
Total Device Dissipation (Single Pulse < 10 s)	$P_{Dsingle}$ (Notes 2 and 3)	 1.75	W
Junction and Storage Temperature Range	T_J, T_{stg}	−55 to +150	°C

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. FR−4 with 1 oz and 3.9 mm^2 of copper area.
2. FR−4 with 1 oz and 645 mm^2 of copper area.
3. Refer to Figure 8.

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

ON Semiconductor®

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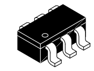
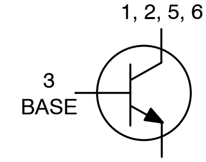
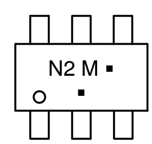
30 VOLTS, 3.0 AMPS
NPN TRANSISTOR



TSOP−6
CASE 318G
STYLE 6



DEVICE MARKING



N2 = Specific Device Code
M = Date Code*
▪ = Pb−Free Package

(Note: Microdot may be in either location)

*Date Code orientation may vary depending upon manufacturing location.

ORDERING INFORMATION

Device	Package	Shipping†
NST489AMT1	TSSOP−6	3,000 / Tape & Reel
NST489AMT1G	TSSOP−6 (Pb−Free)	3,000 / Tape & Reel
NSVT489AMT1G	TSSOP−6 (Pb−Free)	3,000 / 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.

November, 2011 − Rev. 8

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

Characteristic		Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Collector–Emitter Breakdown Voltage (I_C = 10 mA, I_B = 0)		$V_{(BR)CEO}$	30	–	–	V
Collector–Base Breakdown Voltage (I_C = 0.1 mA, I_E = 0)		$V_{(BR)CBO}$	50	–	–	V
Emitter–Base Breakdown Voltage (I_E = 0.1 mA, I_C = 0)		$V_{(BR)EBO}$	5.0	–	–	V
Collector Cutoff Current (V_{CB} = 30 V, I_E = 0)		I_{CBO}	–	–	0.1	μA
Collector–Emitter Cutoff Current (V_{CES} = 30 V)		I_{CES}	–	–	0.1	μA
Emitter Cutoff Current (V_{EB} = 4.0 V)		I_{EBO}	–	–	0.1	μA
ON CHARACTERISTICS						
DC Current Gain (Note 4)	(I_C = 1.0 mA, V_{CE} = 5.0 V) (I_C = 0.5 A, V_{CE} = 5.0 V) (I_C = 1.0 A, V_{CE} = 5.0 V)	h_{FE}	300 300 200	– 500 –	– 900 –	
Collector–Emitter Saturation Voltage (Note 4)	(I_C = 1.0 A, I_B = 100 mA) (I_C = 0.5 A, I_B = 50 mA) (I_C = 0.1 A, I_B = 1.0 mA)	$V_{CE(sat)}$	– – –	0.10 0.06 0.05	0.200 0.125 0.075	V
Base–Emitter Saturation Voltage (Note 4) (I_C = 1.0 A, I_B = 0.1 A)		$V_{BE(sat)}$	–	–	1.1	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	200	300	–	MHz
Output Capacitance (f = 1.0 MHz)		C_{obo}	–	–	15	pF

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

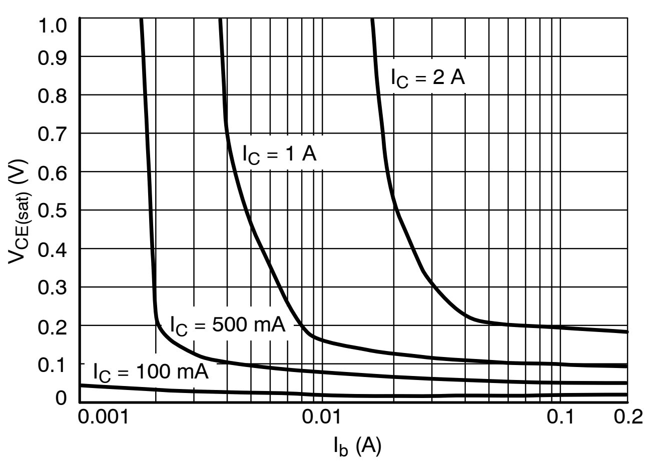


Figure 1. $V_{CE\ (sat)}$ versus I_b

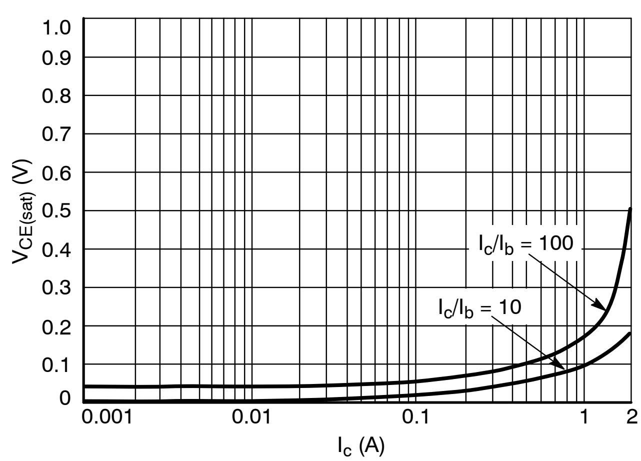


Figure 2. $V_{CE\ (sat)}$ versus I_c

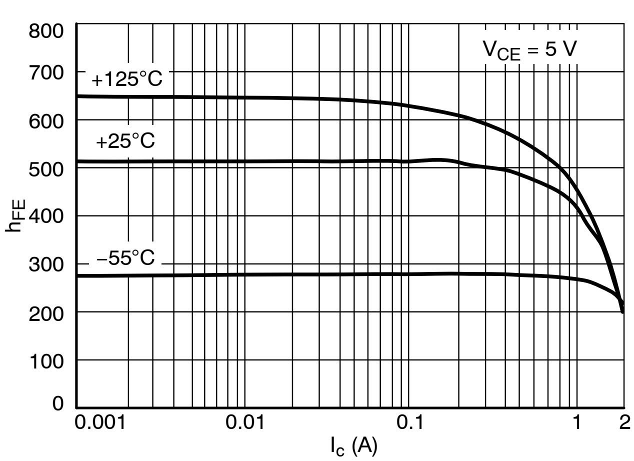


Figure 3. h_{FE} versus I_c

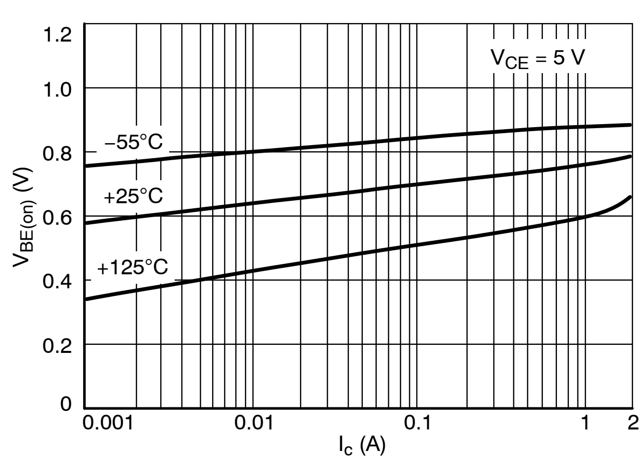


Figure 4. $V_{BE(on)}$ versus I_c

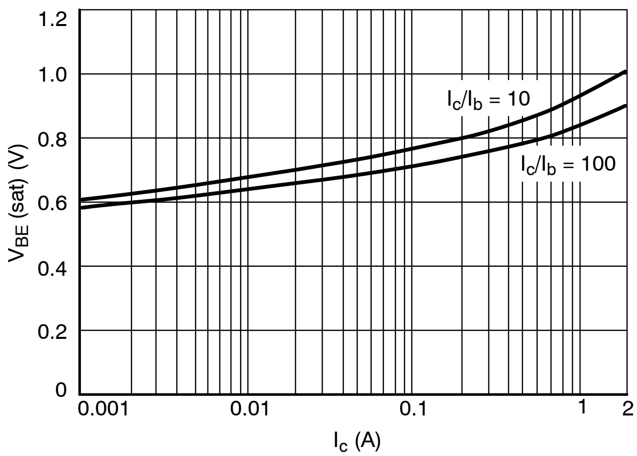


Figure 5. $V_{BE(sat)}$ versus I_c

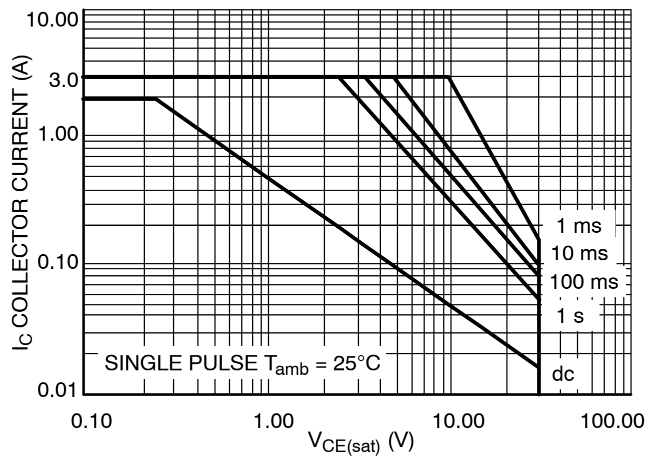


Figure 6. Safe Operating Area

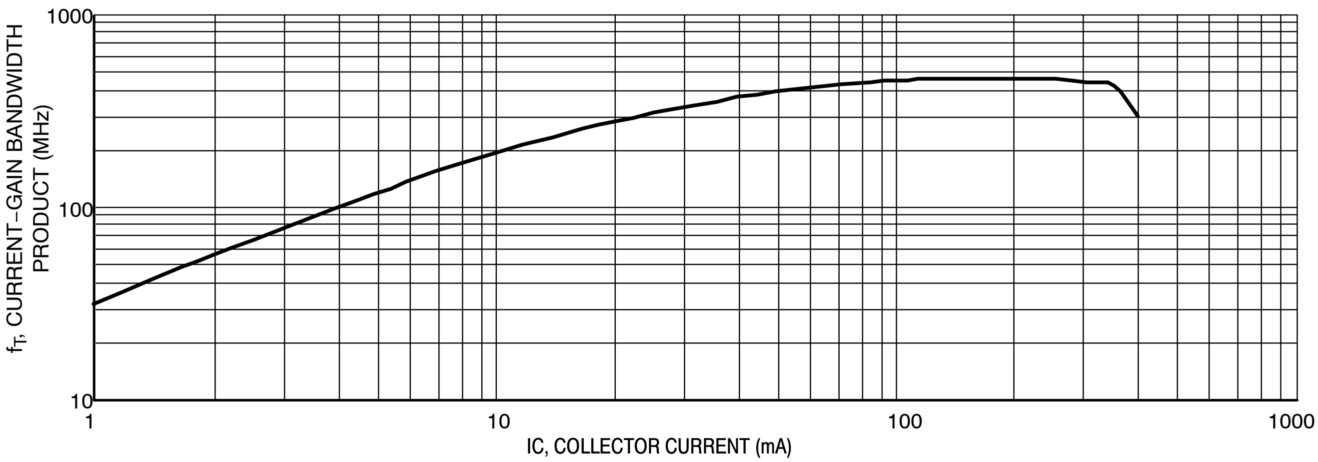


Figure 7. f_T (MHZ) versus I_C (mA) V_{CE} = 5.0 V

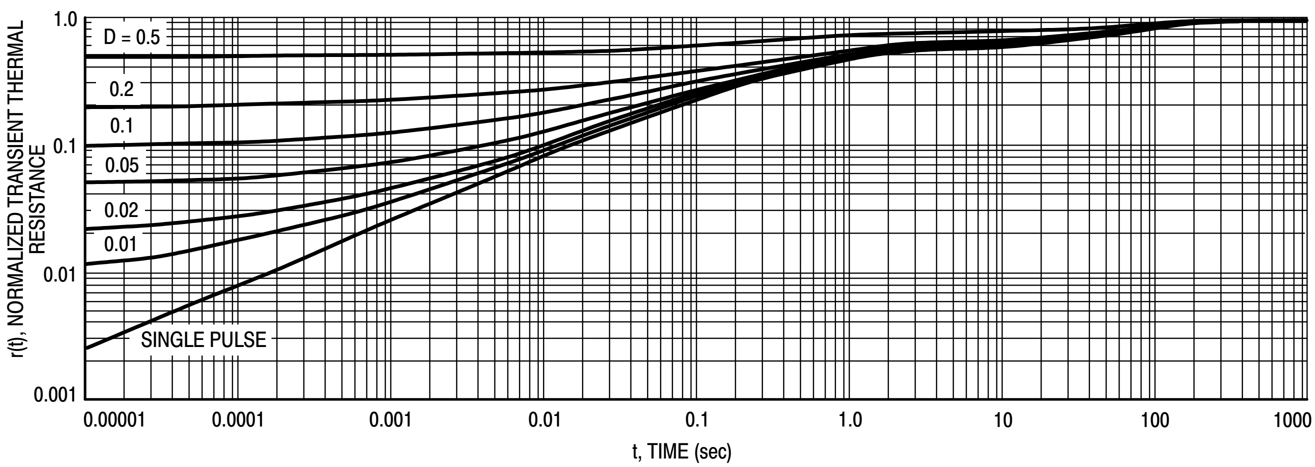
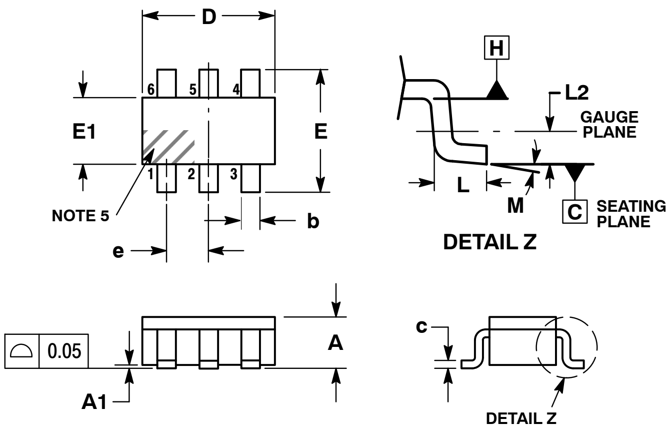


Figure 8. Normalized Thermal Response

PACKAGE DIMENSIONS

TSOP−6
CASE 318G−02
ISSUE U

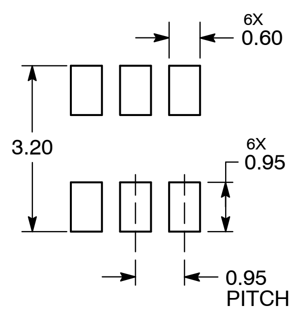


NOTES:
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.
4. DIMENSIONS D AND E1 DO NOT INCLUDE MOLD FLASH, PROTRUSIONS, OR GATE BURRS. MOLD FLASH, PROTRUSIONS, OR GATE BURRS SHALL NOT EXCEED 0.15 PER SIDE. DIMENSIONS D AND E1 ARE DETERMINED AT DATUM H.
5. PIN ONE INDICATOR MUST BE LOCATED IN THE INDICATED ZONE.

	MILLIMETERS		
DIM	**MIN**	**NOM**	**MAX**
A	0.90	1.00	1.10
A1	0.01	0.06	0.10
b	0.25	0.38	0.50
c	0.10	0.18	0.26
D	2.90	3.00	3.10
E	2.50	2.75	3.00
E1	1.30	1.50	1.70
e	0.85	0.95	1.05
L	0.20	0.40	0.60
L2	0.25 BSC		
M	0°	−	10°

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

RECOMMENDED SOLDERING FOOTPRINT*



DIMENSIONS: MILLIMETERS

*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

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