

NSL12AWT1G

High Current Surface Mount PNP Silicon Low $V_{CE(sat)}$ Transistor for Battery Operated Applications

Features

- High Current Capability (3 A)
- High Power Handling (Up to 650 mW)
- Low $V_{CE(s)}$ (170 mV Typical @ 1 A)
- Small Size
- These Devices are Pb-Free, Halogen Free/BFR Free and are RoHS Compliant

Benefits

- High Specific Current and Power Capability Reduces Required PCB Area
- Reduced Parasitic Losses Increases Battery Life

MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$)

Rating	Symbol	Max	Unit
Collector-Emitter Voltage	V_{CEO}	-12	Vdc
Collector-Base Voltage	V_{CBO}	-12	Vdc
Emitter-Base Voltage	V_{EBO}	-5.0	Vdc
Collector Current – Continuous – Peak	I_C I_{CM}	-2.0 -3.0	Adc
Electrostatic Discharge	ESD	HBM Class 3 MM Class 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.

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Total Device Dissipation $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D (Note 1)	450 3.6	mW mW/ $^\circ\text{C}$
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$ (Note 1)	275	$^\circ\text{C}/\text{W}$
Total Device Dissipation $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D (Note 2)	650 5.2	mW mW/ $^\circ\text{C}$
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$ (Note 2)	192	$^\circ\text{C}/\text{W}$
Thermal Resistance, Junction-to-Lead 6	$R_{\theta JL}$	105	$^\circ\text{C}/\text{W}$
Total Device Dissipation (Single Pulse < 10 sec.)	P_D Single	1.4	W
Junction and Storage Temperature Range	T_J, T_{stg}	-55 to +150	$^\circ\text{C}$

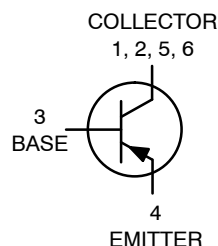
1. FR-4, Minimum Pad, 1 oz Coverage
2. FR-4, 1" Pad, 1 oz Coverage



ON Semiconductor®

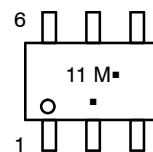
<http://onsemi.com>

**12 VOLTS
3.0 AMPS
PNP TRANSISTOR**



**SC-88/SOT-363
CASE 419B
STYLE 20**

MARKING DIAGRAM



M = Date Code
■ = Pb-Free Package

(Note: Microdot may be in either location)

ORDERING INFORMATION

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

NSL12AWT1G

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

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Collector–Emitter Breakdown Voltage, ($I_C = -10\text{ mAdc}$, $I_B = 0$)	$V_{(BR)CEO}$	-12	-15	-	Vdc
Collector–Base Breakdown Voltage, ($I_C = -0.1\text{ mAdc}$, $I_E = 0$)	$V_{(BR)CBO}$	-12	-25	-	Vdc
Emitter–Base Breakdown Voltage, ($I_E = -0.1\text{ mAdc}$, $I_C = 0$)	$V_{(BR)EBO}$	-5.0	-7.0	-	Vdc
Collector Cutoff Current, ($V_{CB} = -12\text{ Vdc}$, $I_E = 0$)	I_{CBO}	-	-0.02	-0.1	μAdc
Collector–Emitter Cutoff Current, ($V_{CES} = -12\text{ Vdc}$, $I_E = 0$)	I_{CES}	-	-0.03	-0.1	μAdc
Emitter Cutoff Current, ($V_{CES} = -5.0\text{ Vdc}$, $I_E = 0$)	I_{EBO}	-	-0.03	-0.1	μAdc

ON CHARACTERISTICS

DC Current Gain (Note 3) ($I_C = -0.5\text{ A}$, $V_{CE} = -1.5\text{ V}$) ($I_C = -0.8\text{ A}$, $V_{CE} = -1.5\text{ V}$) ($I_C = -1.0\text{ A}$, $V_{CE} = -1.5\text{ V}$)	h_{FE}	100 100 100	180 165 160	- 300 -	
Collector–Emitter Saturation Voltage (Note 3) ($I_C = -0.5\text{ A}$, $I_B = -10\text{ mA}$) ($I_C = -0.8\text{ A}$, $I_B = -16\text{ mA}$) ($I_C = -1.0\text{ A}$, $I_B = -20\text{ mA}$)	$V_{CE(sat)}$	- - -	-0.10 -0.14 -0.17	-0.160 -0.235 -0.290	V
Base–Emitter Saturation Voltage (Note 3) ($I_C = -1.0\text{ A}$, $I_B = -20\text{ mA}$)	$V_{BE(sat)}$	-	-0.84	-0.95	V
Base–Emitter Turn-on Voltage (Note 3) ($I_C = -1.0\text{ A}$, $V_{CE} = -1.5\text{ V}$)	$V_{BE(on)}$	-	-0.81	-0.95	V
Cutoff Frequency ($I_C = -100\text{ mA}$, $V_{CE} = -5.0\text{ V}$, $f = 100\text{ MHz}$)	f_T	-	100	-	MHz
Output Capacitance ($V_{CB} = -1.5\text{ V}$, $f = 1.0\text{ MHz}$)	C_{obo}	-	50	65	pF

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

ORDERING INFORMATION

Device	Package	Shipping†
NSL12AWT1G	SOT-363 (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.

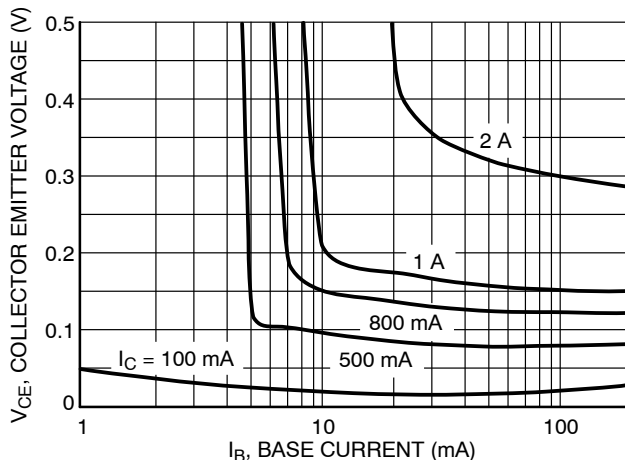


Figure 1. Collector Emitter Voltage vs Base Current

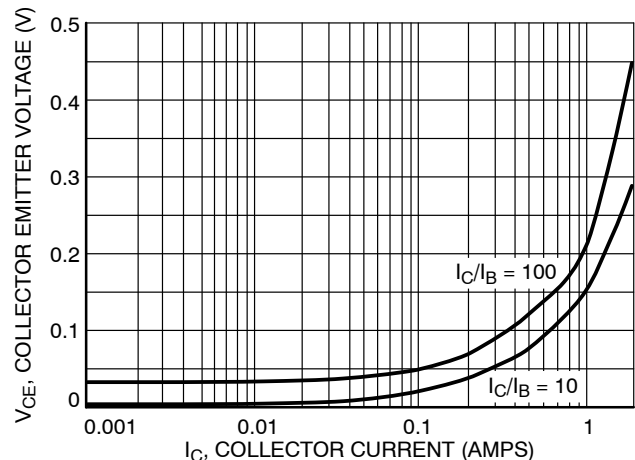


Figure 2. Collector Emitter Voltage vs Collector Current

NSL12AWT1G

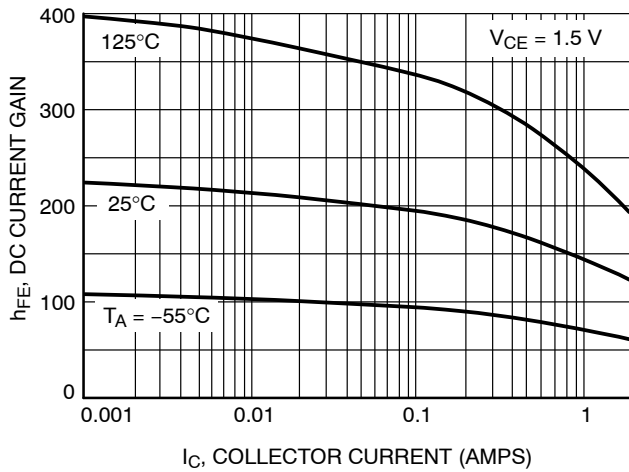


Figure 3. DC Current Gain versus Collector Current

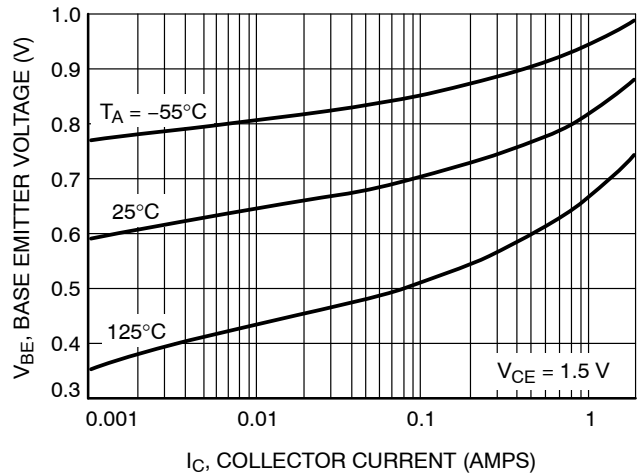


Figure 4. Base Emitter Voltage versus Collector Current

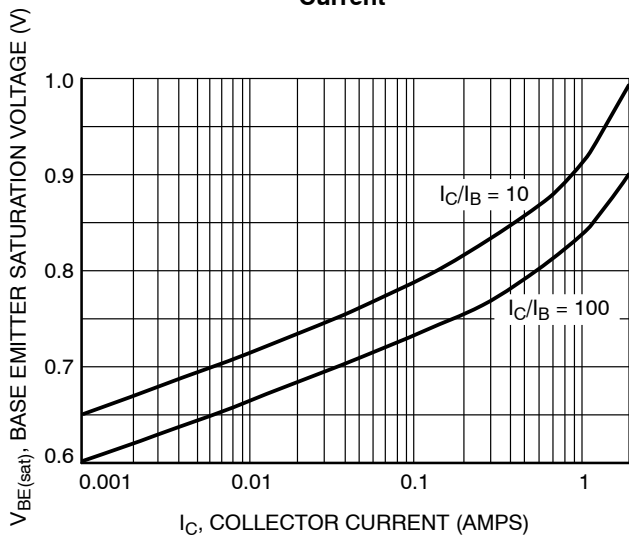


Figure 5. Base Emitter Saturation Voltage versus Base Current

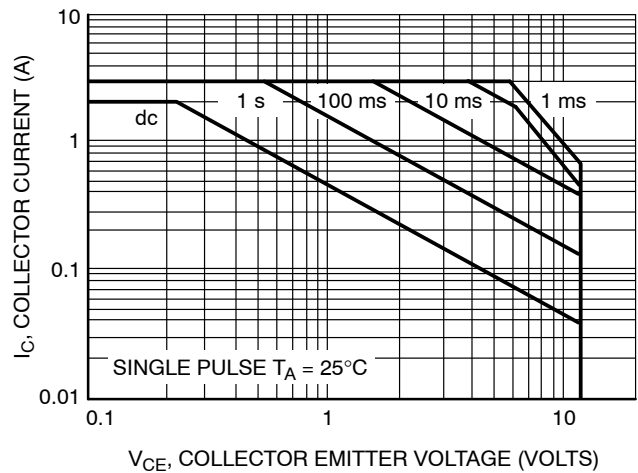


Figure 6. Safe Operating Area

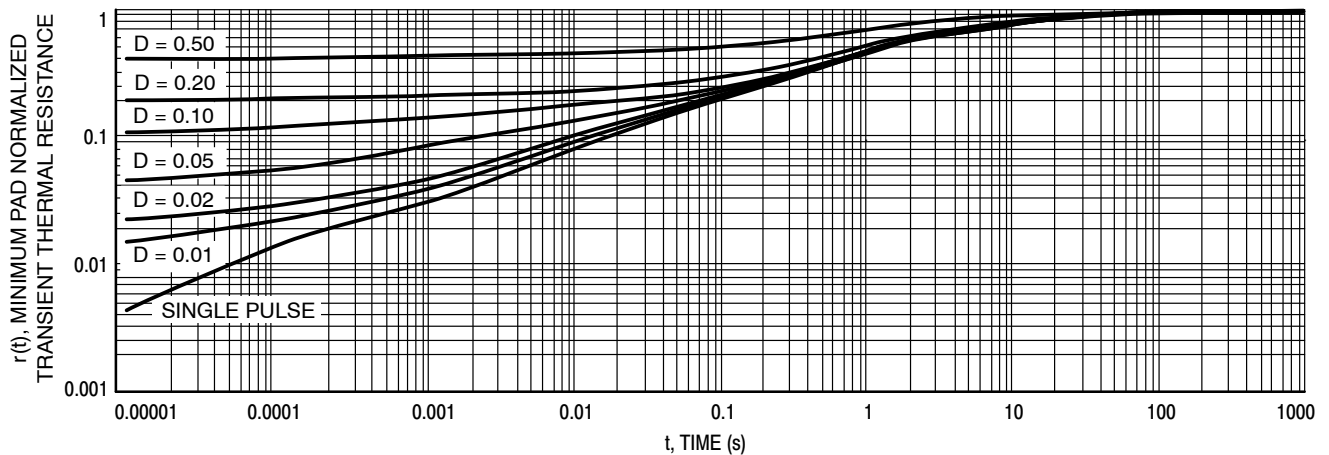
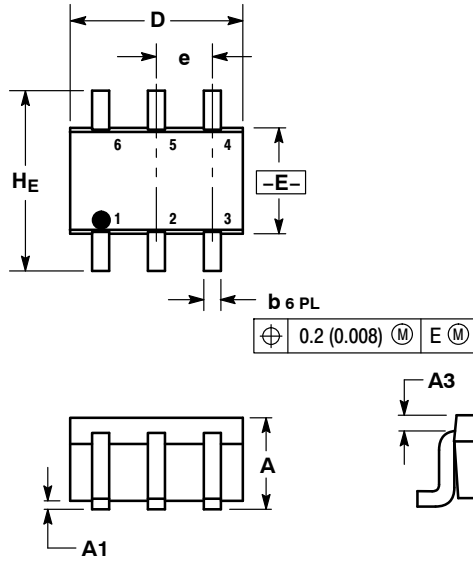


Figure 7. Normalized Thermal Response

NSL12AWT1G

PACKAGE DIMENSIONS

SC-88/SC70-6/SOT-363
CASE 419B-02
ISSUE W

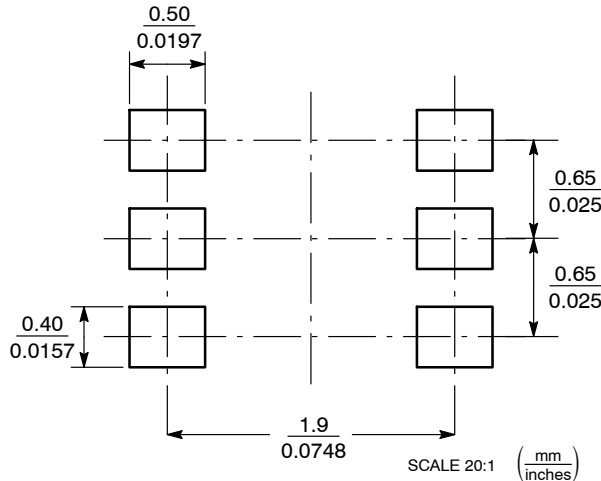


- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
 2. CONTROLLING DIMENSION: INCH.
 3. 419B-01 OBSOLETE, NEW STANDARD 419B-02.

DIM	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.80	0.95	1.10	0.031	0.037	0.043
A1	0.00	0.05	0.10	0.000	0.002	0.004
A3	0.20 REF			0.008 REF		
b	0.10	0.21	0.30	0.004	0.008	0.012
C	0.10	0.14	0.25	0.004	0.005	0.010
D	1.80	2.00	2.20	0.070	0.078	0.086
E	1.15	1.25	1.35	0.045	0.049	0.053
e	0.65 BSC			0.026 BSC		
L	0.10	0.20	0.30	0.004	0.008	0.012
H _E	2.00	2.10	2.20	0.078	0.082	0.086

STYLE 20:
PIN 1. COLLECTOR
2. COLLECTOR
3. BASE
4. EMITTER
5. COLLECTOR
6. COLLECTOR

SOLDERING FOOTPRINT*



*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 and are registered trademarks of Semiconductor Components Industries, LLC (SCILLC). SCILLC reserves the right to make changes without further notice to any products herein. SCILLC makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does SCILLC assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. "Typical" parameters which may be provided in SCILLC data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. SCILLC does not convey any license under its patent rights nor the rights of others. SCILLC products are not designed, intended, or authorized for use as components in systems intended for surgical implant into the body, or other applications intended to support or sustain life, or for any other application in which the failure of the SCILLC product could create a situation where personal injury or death may occur. Should Buyer purchase or use SCILLC products for any such unintended or unauthorized application, Buyer shall indemnify and hold SCILLC and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that SCILLC was negligent regarding the design or manufacture of the part. SCILLC is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

PUBLICATION ORDERING INFORMATION

LITERATURE FULFILLMENT:
Literature Distribution Center for ON Semiconductor
P.O. Box 5163, Denver, Colorado 80217 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
Email: orderlit@onsemi.com

N. American Technical Support: 800-282-9855 Toll Free
USA/Canada
Europe, Middle East and Africa Technical Support:
Phone: 421 33 790 2910
Japan Customer Focus Center
Phone: 81-3-5773-3850

ON Semiconductor Website: www.onsemi.com
Order Literature: <http://www.onsemi.com/orderlit>
For additional information, please contact your local Sales Representative

Данный компонент на территории Российской Федерации

Вы можете приобрести в компании MosChip.

Для оперативного оформления запроса Вам необходимо перейти по данной ссылке:

<http://moschip.ru/get-element>

Вы можете разместить у нас заказ для любого Вашего проекта, будь то серийное производство или разработка единичного прибора.

В нашем ассортименте представлены ведущие мировые производители активных и пассивных электронных компонентов.

Нашей специализацией является поставка электронной компонентной базы двойного назначения, продукции таких производителей как XILINX, Intel (ex.ALTERA), Vicor, Microchip, Texas Instruments, Analog Devices, Mini-Circuits, Amphenol, Glenair.

Сотрудничество с глобальными дистрибьюторами электронных компонентов, предоставляет возможность заказывать и получать с международных складов практически любой перечень компонентов в оптимальные для Вас сроки.

На всех этапах разработки и производства наши партнеры могут получить квалифицированную поддержку опытных инженеров.

Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

Офис по работе с юридическими лицами:

105318, г.Москва, ул.Щербаковская д.3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: info@moschip.ru

Skype отдела продаж:

moschip.ru

moschip.ru_4

moschip.ru_6

moschip.ru_9