Digital Transistors (BRT) $R1 = 10 \text{ k}\Omega$, $R2 = 47 \text{ k}\Omega$

NPN Transistors with Monolithic Bias Resistor Network

This series of digital transistors is designed to replace a single device and its external resistor bias network. The Bias Resistor Transistor (BRT) contains a single transistor with a monolithic bias network consisting of two resistors; a series base resistor and a base-emitter resistor. The BRT eliminates these individual components by integrating them into a single device. The use of a BRT can reduce both system cost and board space.

Features

- Simplifies Circuit Design
- Reduces Board Space
- Reduces Component Count
- S and NSV Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable
- These Devices are Pb-Free, Halogen Free/BFR Free and are RoHS Compliant

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

Rating	Symbol	Max	Unit
Collector-Base Voltage	V _{CBO}	50	Vdc
Collector-Emitter Voltage	V_{CEO}	50	Vdc
Collector Current – Continuous	I _C	100	mAdc
Input Forward Voltage	V _{IN(fwd)}	40	Vdc
Input Reverse Voltage	V _{IN(rev)}	6	Vdc

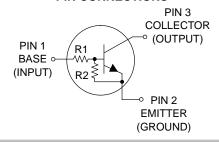
Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.



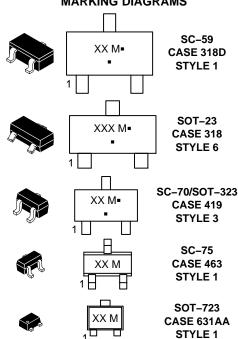
ON Semiconductor®

www.onsemi.com

PIN CONNECTIONS



MARKING DIAGRAMS



= Specific Device Code XXX

= Date Code* M

X ML₁

= Pb-Free Package

(Note: Microdot may be in either location)

*Date Code orientation may vary depending upon manufacturing location.

ORDERING INFORMATION

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

SOT-1123

CASE 524AA STYLE 1

Table 1. ORDERING INFORMATION

Device	Part Marking	Package	Shipping [†]
MUN2214T1G, SMUN2214T1G*	8D	SC-59 (Pb-Free)	3000 / Tape & Reel
MUN2214T3G, SMUN2214T3G*	8D	SC-59 (Pb-Free)	10000 / Tape & Reel
MMUN2214LT1G, SMMUN2214LT1G*	A8D	SOT-23 (Pb-Free)	3000 / Tape & Reel
MUN5214T1G, SMUN5214T1G*	8D	SC-70/SOT-323 (Pb-Free)	3000 / Tape & Reel
DTC114YET1G, SDTC114YET1G	8D	SC-75 (Pb-Free)	3000 / Tape & Reel
DTC114YM3T5G, NSVDTC114YM3T5G*	8D	SOT-723 (Pb-Free)	8000 / Tape & Reel
NSBC114YF3T5G	J	SOT-1123 (Pb-Free)	8000 / 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.

^{*}S and NSV Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable.

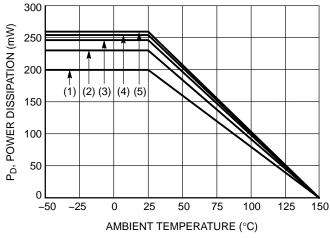


Figure 1. Derating Curve

- (1) SC-75 and SC-70/SOT-323; Minimum Pad
- (2) SC-59; Minimum Pad
- (3) SOT-23; Minimum Pad
- (4) SOT-1123; 100 mm², 1 oz. copper trace
- (5) SOT-723; Minimum Pad

Table 2. THERMAL CHARACTERISTICS

		Symbol	Max	Unit
THERMAL CHARACTERISTICS (SC-59) (MUN2214)				
Total Device Dissipation		P _D		
$T_A = 25$ °C	(Note 1)	2	230	mW
	(Note 2)		338	
Derate above 25°C	(Note 1)		1.8	mW/°C
	(Note 2)		2.7	
Thermal Resistance,	(Note 1)	$R_{ hetaJA}$	540	°C/W
Junction to Ambient	(Note 2)		370	
Thermal Resistance,	(Note 1)	$R_{ heta JL}$	264	°C/W
Junction to Lead	(Note 2)	032	287	
Junction and Storage Temperature Range		T _J , T _{stg}	-55 to +150	°C
THERMAL CHARACTERISTICS (SOT-23) (MMUN2214L)	<u> </u>			
Total Device Dissipation		P _D		
$T_A = 25$ °C	(Note 1)	D	246	mW
	(Note 2)		400	
Derate above 25°C	(Note 1)		2.0	mW/°C
	(Note 2)		3.2	
Thermal Resistance,	(Note 1)	$R_{\theta JA}$	508	°C/W
Junction to Ambient	(Note 2)	· · · ·	311	
Thermal Resistance,	(Note 1)	$R_{ heta JL}$	174	°C/W
Junction to Lead	(Note 2)	UJL	208	
Junction and Storage Temperature Range		T _J , T _{stg}	-55 to +150	°C
THERMAL CHARACTERISTICS (SC-70/SOT-323) (MUN5214)			•	
Total Device Dissipation		P _D		
T _A = 25°C	(Note 1)	. 0	202	mW
n	(Note 2)		310	
Derate above 25°C	(Note 1)		1.6	mW/°C
	(Note 2)		2.5	
Thermal Resistance,	(Note 1)	$R_{\theta JA}$	618	°C/W
Junction to Ambient	(Note 2)	0071	403	
	(11010 2)			
	` ,	Rou	280	°C/W
Thermal Resistance, Junction to Lead	(Note 1) (Note 2)	$R_{ heta JL}$	280 332	°C/W
Thermal Resistance,	(Note 1)			°C/W
Thermal Resistance, Junction to Lead Junction and Storage Temperature Range	(Note 1)	R _{θJL}	332	
Thermal Resistance, Junction to Lead Junction and Storage Temperature Range	(Note 1)	T _J , T _{stg}	332	
Thermal Resistance, Junction to Lead Junction and Storage Temperature Range THERMAL CHARACTERISTICS (SC-75) (DTC114YE)	(Note 1)		332	
Thermal Resistance, Junction to Lead Junction and Storage Temperature Range THERMAL CHARACTERISTICS (SC-75) (DTC114YE) Total Device Dissipation	(Note 1) (Note 2)	T _J , T _{stg}	332 -55 to +150	°C
Thermal Resistance, Junction to Lead Junction and Storage Temperature Range THERMAL CHARACTERISTICS (SC-75) (DTC114YE) Total Device Dissipation	(Note 1) (Note 2) (Note 1) (Note 2) (Note 1)	T _J , T _{stg}	332 -55 to +150 200	°C mW
Thermal Resistance, Junction to Lead Junction and Storage Temperature Range THERMAL CHARACTERISTICS (SC-75) (DTC114YE) Total Device Dissipation T _A = 25°C	(Note 1) (Note 2) (Note 1) (Note 2)	T _J , T _{stg}	332 -55 to +150 200 300	°C mW
Thermal Resistance, Junction to Lead Junction and Storage Temperature Range THERMAL CHARACTERISTICS (SC-75) (DTC114YE) Total Device Dissipation $T_A = 25^{\circ}C$	(Note 1) (Note 2) (Note 1) (Note 2) (Note 1)	T _J , T _{stg}	332 -55 to +150 200 300 1.6	°C mW
Thermal Resistance, Junction to Lead Junction and Storage Temperature Range THERMAL CHARACTERISTICS (SC-75) (DTC114YE) Total Device Dissipation T _A = 25°C Derate above 25°C	(Note 1) (Note 2) (Note 1) (Note 2) (Note 1) (Note 2)	T _J , T _{stg}	332 -55 to +150 200 300 1.6 2.4	°C mW mW/°C
Thermal Resistance, Junction to Lead Junction and Storage Temperature Range THERMAL CHARACTERISTICS (SC-75) (DTC114YE) Total Device Dissipation T _A = 25°C Derate above 25°C Thermal Resistance,	(Note 1) (Note 2) (Note 1) (Note 2) (Note 1) (Note 2) (Note 1)	T _J , T _{stg}	332 -55 to +150 200 300 1.6 2.4 600	°C mW mW/°C
Thermal Resistance, Junction to Lead Junction and Storage Temperature Range THERMAL CHARACTERISTICS (SC-75) (DTC114YE) Total Device Dissipation T _A = 25°C Derate above 25°C Thermal Resistance, Junction to Ambient Junction and Storage Temperature Range	(Note 1) (Note 2) (Note 1) (Note 2) (Note 1) (Note 2) (Note 1)	T _J , T _{stg} P _D	332 -55 to +150 200 300 1.6 2.4 600 400	°C mW mW/°C °C/W
Thermal Resistance, Junction to Lead Junction and Storage Temperature Range THERMAL CHARACTERISTICS (SC-75) (DTC114YE) Total Device Dissipation T _A = 25°C Derate above 25°C Thermal Resistance, Junction to Ambient Junction and Storage Temperature Range THERMAL CHARACTERISTICS (SOT-723) (DTC114YM3) Total Device Dissipation	(Note 1) (Note 2) (Note 1) (Note 2) (Note 1) (Note 2) (Note 1) (Note 2)	T _J , T _{stg} P _D	332 -55 to +150 200 300 1.6 2.4 600 400 -55 to +150	°C mW mW/°C °C/W
Thermal Resistance, Junction to Lead Junction and Storage Temperature Range THERMAL CHARACTERISTICS (SC-75) (DTC114YE) Total Device Dissipation T _A = 25°C Derate above 25°C Thermal Resistance, Junction to Ambient Junction and Storage Temperature Range THERMAL CHARACTERISTICS (SOT-723) (DTC114YM3)	(Note 1) (Note 2) (Note 1) (Note 2) (Note 1) (Note 2) (Note 1) (Note 2)	T _J , T _{stg} P _D R _{θJA} T _J , T _{stg}	332 -55 to +150 200 300 1.6 2.4 600 400 -55 to +150	°C mW mW/°C °C/W
Thermal Resistance, Junction to Lead Junction and Storage Temperature Range THERMAL CHARACTERISTICS (SC-75) (DTC114YE) Total Device Dissipation $T_A = 25^{\circ}C$ Derate above $25^{\circ}C$ Thermal Resistance, Junction to Ambient Junction and Storage Temperature Range THERMAL CHARACTERISTICS (SOT-723) (DTC114YM3) Total Device Dissipation $T_A = 25^{\circ}C$	(Note 1) (Note 2) (Note 1) (Note 2) (Note 1) (Note 2) (Note 1) (Note 2)	T _J , T _{stg} P _D R _{θJA} T _J , T _{stg}	332 -55 to +150 200 300 1.6 2.4 600 400 -55 to +150 260 600	°C mW mW/°C °C/W °C
Thermal Resistance, Junction to Lead Junction and Storage Temperature Range THERMAL CHARACTERISTICS (SC-75) (DTC114YE) Total Device Dissipation T _A = 25°C Derate above 25°C Thermal Resistance, Junction to Ambient Junction and Storage Temperature Range THERMAL CHARACTERISTICS (SOT-723) (DTC114YM3) Total Device Dissipation	(Note 1) (Note 2) (Note 2) (Note 1) (Note 2) (Note 1) (Note 2) (Note 1) (Note 2) (Note 1) (Note 2) (Note 1)	T _J , T _{stg} P _D R _{θJA} T _J , T _{stg}	332 -55 to +150 200 300 1.6 2.4 600 400 -55 to +150 260 600 2.0	°C mW mW/°C °C/W °C
Thermal Resistance, Junction to Lead Junction and Storage Temperature Range THERMAL CHARACTERISTICS (SC-75) (DTC114YE) Total Device Dissipation $T_A = 25^{\circ}C$ Derate above $25^{\circ}C$ Thermal Resistance, Junction to Ambient Junction and Storage Temperature Range THERMAL CHARACTERISTICS (SOT-723) (DTC114YM3) Total Device Dissipation $T_A = 25^{\circ}C$	(Note 1) (Note 2) (Note 1) (Note 2) (Note 1) (Note 2) (Note 1) (Note 2)	T _J , T _{stg} P _D R _{θJA} T _J , T _{stg}	332 -55 to +150 200 300 1.6 2.4 600 400 -55 to +150 260 600	°C mW mW/°C °C/W °C
Thermal Resistance, Junction to Lead Junction and Storage Temperature Range THERMAL CHARACTERISTICS (SC-75) (DTC114YE) Total Device Dissipation $T_A = 25^{\circ}C$ Derate above $25^{\circ}C$ Thermal Resistance, Junction to Ambient Junction and Storage Temperature Range THERMAL CHARACTERISTICS (SOT-723) (DTC114YM3) Total Device Dissipation $T_A = 25^{\circ}C$	(Note 1) (Note 2) (Note 2) (Note 1) (Note 2) (Note 1) (Note 2) (Note 1) (Note 2) (Note 1) (Note 2) (Note 1)	T _J , T _{stg} P _D R _{θJA} T _J , T _{stg}	332 -55 to +150 200 300 1.6 2.4 600 400 -55 to +150 260 600 2.0	°C mW mW/°C °C/W °C
Thermal Resistance, Junction to Lead Junction and Storage Temperature Range THERMAL CHARACTERISTICS (SC-75) (DTC114YE) Total Device Dissipation $T_A = 25^{\circ}C$ Derate above 25°C Thermal Resistance, Junction to Ambient Junction and Storage Temperature Range THERMAL CHARACTERISTICS (SOT-723) (DTC114YM3) Total Device Dissipation $T_A = 25^{\circ}C$ Derate above 25°C	(Note 1) (Note 2) (Note 1) (Note 2) (Note 1) (Note 2) (Note 1) (Note 2) (Note 1) (Note 2) (Note 1) (Note 2)	T _J , T _{stg} P _D R _{θJA} T _J , T _{stg}	332 -55 to +150 200 300 1.6 2.4 600 400 -55 to +150 260 600 2.0 4.8	°C mW mW/°C °C/W °C mW mW/°C

- FR-4 @ Minimum Pad.
 FR-4 @ 1.0 x 1.0 Inch Pad.
 FR-4 @ 100 mm², 1 oz. copper traces, still air.
 FR-4 @ 500 mm², 1 oz. copper traces, still air.

Table 2. THERMAL CHARACTERISTICS

Characteristic		Symbol	Max	Unit
THERMAL CHARACTERISTICS (SOT-1123) (NSBC114YF3)			•	
Total Device Dissipation $T_A = 25^{\circ}C$ Derate above 25°C	(Note 3) (Note 4) (Note 3) (Note 4)	P _D	254 297 2.0 2.4	mW mW/°C
Thermal Resistance, Junction to Ambient	(Note 3) (Note 4)	$R_{ heta JA}$	493 421	°C/W
Thermal Resistance, Junction to Lead	(Note 3)	$R_{ heta JL}$	193	°C/W
Junction and Storage Temperature Range		T _J , T _{stg}	-55 to +150	°C

- 1. FR-4 @ Minimum Pad.
- 2. FR-4 @ 1.0 x 1.0 Inch Pad.
- FR-4 @ 100 mm², 1 oz. copper traces, still air.
 FR-4 @ 500 mm², 1 oz. copper traces, still air.

Table 3. ELECTRICAL CHARACTERISTICS ($T_A = 25$ °C, unless otherwise noted)

Characteristic	Symbol	Min	Тур	Max	Unit
OFF CHARACTERISTICS					
Collector–Base Cutoff Current $(V_{CB} = 50 \text{ V}, I_E = 0)$	I _{CBO}	_	_	100	nAdc
Collector–Emitter Cutoff Current (V _{CE} = 50 V, I _B = 0)	I _{CEO}	-	-	500	nAdc
Emitter–Base Cutoff Current $(V_{EB} = 6.0 \text{ V}, I_C = 0)$	I _{EBO}	_	-	0.2	mAdc
Collector–Base Breakdown Voltage ($I_C = 10 \mu A, I_E = 0$)	V _(BR) CBO	50	-	-	Vdc
Collector–Emitter Breakdown Voltage (Note 5) (I _C = 2.0 mA, I _B = 0)	V _(BR) CEO	50	-	_	Vdc
ON CHARACTERISTICS					
DC Current Gain (Note 5) (I _C = 5.0 mA, V _{CE} = 10 V)	h _{FE}	80	140	-	
Collector – Emitter Saturation Voltage (Note 5) (I _C = 10 mA, I _B = 0.3 mA)	V _{CE(sat)}	_	-	0.25	Vdc
Input Voltage (off) (V _{CE} = 5.0 V, I _C = 100 μ A)	V _{i(off)}	_	0.7	0.5	Vdc
Input Voltage (on) $(V_{CE} = 0.3 \text{ V}, I_C = 1.0 \text{ mA})$	V _{i(on)}	1.4	0.8	-	Vdc
Output Voltage (on) (V _{CC} = 5.0 V, V _B = 2.5 V, R _L = 1.0 k Ω)	V _{OL}	_	-	0.2	Vdc
Output Voltage (off) $ (V_{CC} = 5.0 \text{ V}, V_B = 0.5 \text{ V}, R_L = 1.0 \text{ k}\Omega) $	V _{OH}	4.9	_	_	Vdc
Input Resistor	R1	7.0	10	13	kΩ
Resistor Ratio	R ₁ /R ₂	0.17	0.21	0.25	

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.

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

TYPICAL CHARACTERISTICS MUN2214, MMUN2214L, MUN5214, DTC114YE, DTC114YM3

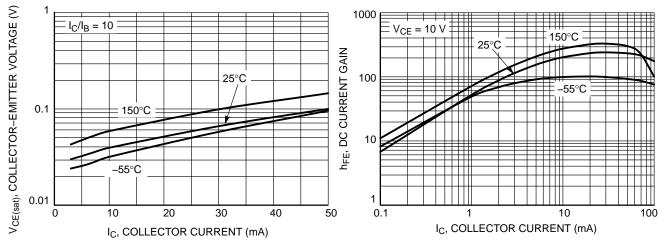


Figure 2. V_{CE(sat)} vs. I_C

Figure 3. DC Current Gain

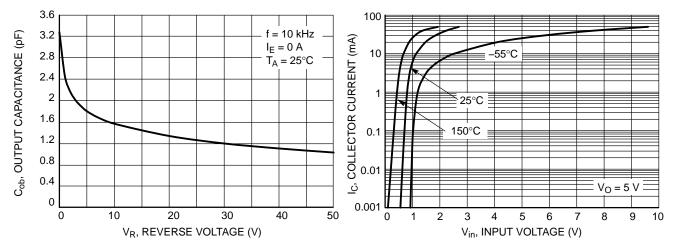


Figure 4. Output Capacitance

Figure 5. Output Current vs. Input Voltage

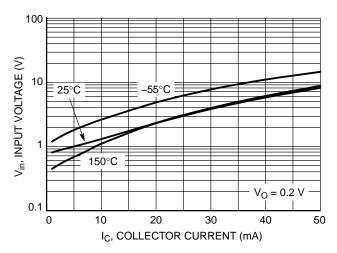


Figure 6. Input Voltage vs. Output Current

TYPICAL CHARACTERISTICS NSBC114YF3

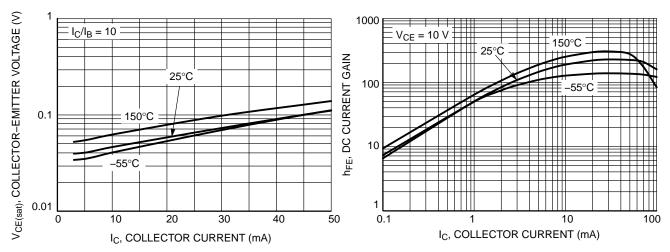


Figure 7. V_{CE(sat)} vs. I_C

Figure 8. DC Current Gain

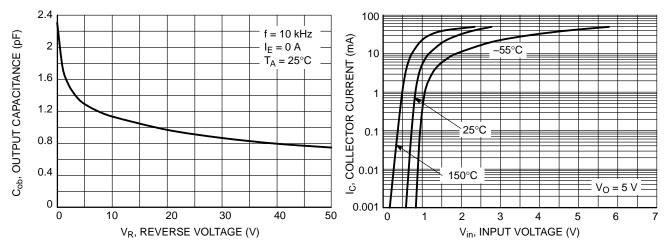


Figure 9. Output Capacitance

Figure 10. Output Current vs. Input Voltage

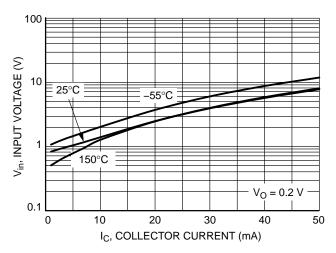


Figure 11. Input Voltage vs. Output Current

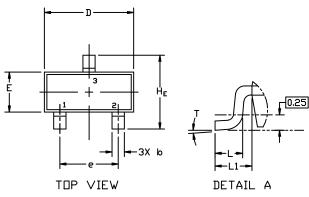




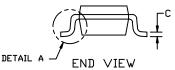
SOT-23 (TO-236) **CASE 318 ISSUE AT**

DATE 01 MAR 2023









NOTES:

- 1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M,1994.
- CONTROLLING DIMENSION: MILLIMETERS
- MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF THE BASE MATERIAL.
- DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH, PROTRUSIONS, OR GATE BURRS.

	MILLIMETERS			MILLIMETERS INCHES		
DIM	MIN.	N□M.	MAX.	MIN.	N□M.	MAX.
A	0.89	1.00	1.11	0.035	0.039	0.044
A1	0.01	0.06	0.10	0.000	0.002	0.004
b	0.37	0.44	0.50	0.015	0.017	0.020
U	0.08	0.14	0.20	0.003	0.006	0.008
D	2.80	2.90	3.04	0.110	0.114	0.120
E	1.20	1.30	1.40	0.047	0.051	0.055
e	1.78	1.90	2.04	0.070	0.075	0.080
L	0.30	0.43	0.55	0.012	0.017	0.022
L1	0.35	0.54	0.69	0.014	0.021	0.027
HE	2.10	2.40	2.64	0.083	0.094	0.104
T	0*		10*	0*		10°



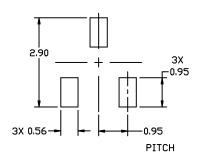


XXX = Specific Device Code

= Date Code

= Pb-Free Package

*This information is generic. Please refer to device data sheet for actual part marking. Pb-Free indicator, "G" or microdot "=", may or may not be present. Some products may not follow the Generic Marking.



RECOMMENDED MOUNTING FOOTPRINT

For additional information on our Pb-Free strategy and soldering details, please download the DN Semiconductor Soldering and Mounting Techniques Reference Manual, SDLDERRM/D.

STYLES ON PAGE 2

DOCUMENT NUMBER:	98ASB42226B	Electronic versions are uncontrolled except when accessed directly from the Document F Printed versions are uncontrolled except when stamped "CONTROLLED COPY" in red.	
DESCRIPTION:	SOT-23 (TO-236)		PAGE 1 OF 2

onsemi and ONSEMI are trademarks of Semiconductor Components Industries, LLC dba onsemi or its subsidiaries in the United States and/or other countries. onsemi reserves the right to make changes without further notice to any products herein. onsemi makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does onsemi 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. onsemi does not convey any license under its patent rights nor the rights of others.

MECHANICAL CASE OUTLINE PACKAGE DIMENSIONS



SOT-23 (TO-236) CASE 318 ISSUE AT

DATE 01 MAR 2023

STYLE 1 THRU 5: CANCELLED	STYLE 6: PIN 1. BASE 2. EMITTER 3. COLLECTOR	STYLE 7: PIN 1. EMITTER 2. BASE 3. COLLECTOR	STYLE 8: PIN 1. ANODE 2. NO CONNECTION 3. CATHODE	ı	
STYLE 9:	STYLE 10:	STYLE 11:	STYLE 12: PIN 1. CATHODE 2. CATHODE 3. ANODE	STYLE 13:	STYLE 14:
PIN 1. ANODE	PIN 1. DRAIN	PIN 1. ANODE		PIN 1. SOURCE	PIN 1. CATHODE
2. ANODE	2. SOURCE	2. CATHODE		2. DRAIN	2. GATE
3. CATHODE	3. GATE	3. CATHODE-ANODE		3. GATE	3. ANODE
STYLE 15:	STYLE 16:	STYLE 17:	STYLE 18:	STYLE 19:	STYLE 20:
PIN 1. GATE	PIN 1. ANODE	PIN 1. NO CONNECTION	PIN 1. NO CONNECTION	I PIN 1. CATHODE	PIN 1. CATHODE
2. CATHODE	2. CATHODE	2. ANODE	2. CATHODE	2. ANODE	2. ANODE
3. ANODE	3. CATHODE	3. CATHODE	3. ANODE	3. CATHODE-ANODE	3. GATE
STYLE 21:	STYLE 22:	STYLE 23:	STYLE 24:	STYLE 25:	STYLE 26:
PIN 1. GATE	PIN 1. RETURN	PIN 1. ANODE	PIN 1. GATE	PIN 1. ANODE	PIN 1. CATHODE
2. SOURCE	2. OUTPUT	2. ANODE	2. DRAIN	2. CATHODE	2. ANODE
3. DRAIN	3. INPUT	3. CATHODE	3. SOURCE	3. GATE	3. NO CONNECTION
STYLE 27: PIN 1. CATHODE 2. CATHODE 3. CATHODE	STYLE 28: PIN 1. ANODE 2. ANODE 3. ANODE				

DOCUMENT NUMBER:	98ASB42226B	Electronic versions are uncontrolled except when accessed directly from the Document Reposit Printed versions are uncontrolled except when stamped "CONTROLLED COPY" in red.		
DESCRIPTION:	SOT-23 (TO-236)		PAGE 2 OF 2	

onsemi and ONSEMi are trademarks of Semiconductor Components Industries, LLC dba onsemi or its subsidiaries in the United States and/or other countries. onsemi reserves the right to make changes without further notice to any products herein. onsemi makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does onsemi 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. onsemi does not convey any license under its patent rights nor the rights of others.



SCALE 2:1

SC-59 CASE 318D-04 ISSUE H

DATE 28 JUN 2012

NOTES:

- 1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
 2. CONTROLLING DIMENSION: MILLIMETER.

	MILLIMETERS				INCHES	
DIM	MIN	NOM	MAX	MIN	MOM	MAX
Α	1.00	1.15	1.30	0.039	0.045	0.051
A1	0.01	0.06	0.10	0.001	0.002	0.004
b	0.35	0.43	0.50	0.014	0.017	0.020
С	0.09	0.14	0.18	0.003	0.005	0.007
D	2.70	2.90	3.10	0.106	0.114	0.122
E	1.30	1.50	1.70	0.051	0.059	0.067
е	1.70	1.90	2.10	0.067	0.075	0.083
L	0.20	0.40	0.60	0.008	0.016	0.024
HE	2.50	2.80	3.00	0.099	0.110	0.118

GENERIC MARKING DIAGRAM



XXX = Specific Device Code

Μ = Date Code

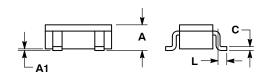
= Pb-Free Package* (*Note: Microdot may be in either location)

*This information is generic. Please refer to device data sheet for actual part marking. Pb-Free indicator, "G" or microdot " ■", may or may not be present.

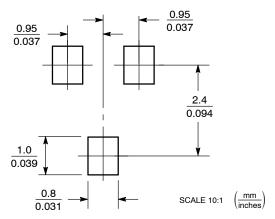
STYLE 1:		STYLE 2:		STYLE 3:	
PIN 1.	BASE	PIN 1.	ANODE	PIN 1.	ANODE
2.	EMITTER	2.	N.C.	2.	ANODE
3.	COLLECTOR	3.	CATHODE	3.	CATHODE

STYLE 4:	STYLE 5:	STYLE 6:	
PIN 1. CATHODE	PIN 1. CATHODE	PIN 1. ANODE	
2. N.C.	2. CATHODE	2. CATHODE	
3. ANODE	3. ANODE	ANODE/CATHOD	Ε

ΗE



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.

DOCUMENT NUMBER:	98ASB42664B	Electronic versions are uncontrolled except when accessed directly from the Document Repository Printed versions are uncontrolled except when stamped "CONTROLLED COPY" in red.	
DESCRIPTION:	SC-59	•	PAGE 1 OF 1

ON Semiconductor and (III) are trademarks of Semiconductor Components Industries, LLC dba ON Semiconductor or its subsidiaries in the United States and/or other countries. ON Semiconductor reserves the right to make changes without further notice to any products herein. ON Semiconductor makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does ON Semiconductor 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. ON Semiconductor does not convey any license under its patent rights nor the rights of others.





SC-70 (SOT-323) **CASE 419** ISSUE R

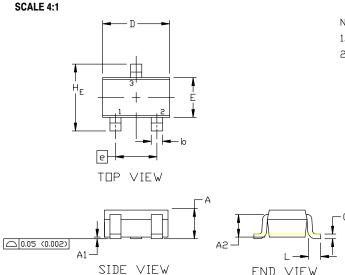
END VIEW

DATE 11 OCT 2022

NOTES:

- 1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1982.
- 2. CONTROLLING DIMENSION: INCH

	MILLIMETERS				INCHES	
DIM	MIN.	N□M.	MAX.	MIN.	N□M.	MAX.
Α	0.80	0.90	1.00	0.032	0.035	0.040
A1	0.00	0.05	0.10	0.000	0.002	0.004
A2		0.70 REF			0.028 BS	C
b	0.30	0.35	0.40	0.012	0.014	0.016
С	0.10	0.18	0.25	0.004	0.007	0.010
D	1.80	2.00	2.20	0.071	0.080	0.087
E	1.15	1.24	1.35	0.045	0.049	0.053
е	1.20	1.30	1.40	0.047	0.051	0.055
e1	0.65 BSC			0.026 BS	C	
L	0.20	0.38	0.56	0.008	0.015	0.022
HE	2.00	2.10	2.40	0.079	0.083	0.095



GENERIC MARKING DIAGRAM

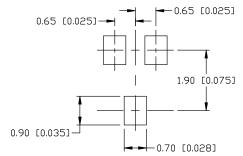


= Specific Device Code XX

М = Date Code

= Pb-Free Package

*This information is generic. Please refer to device data sheet for actual part marking. Pb-Free indicator, "G" or microdot "■", may or may not be present. Some products may not follow the Generic Marking.



For additional information on our Pb-Free strategy and soldering details, please download the ID Semiconductor Soldering and Mounting Techniques Reference Manual, SDLDERRM/D.

SOLDERING FOOTPRINT

STYLE 1: CANCELLED	STYLE 2: PIN 1. ANODE 2. N.C. 3. CATHODE	STYLE 3: PIN 1. BASE 2. EMITTER 3. COLLECTOR	STYLE 4: PIN 1. CATHODE 2. CATHODE 3. ANODE	STYLE 5: PIN 1. ANODE 2. ANODE 3. CATHODE	
STYLE 6: PIN 1. EMITTER	STYLE 7: PIN 1. BASE	STYLE 8: PIN 1. GATE	STYLE 9: PIN 1. ANODE	STYLE 10: PIN 1. CATHODE	STYLE 11: PIN 1. CATHODE
2. BASE	2. EMITTER	2. SOURCE	2. CATHODE	2. ANODE	2. CATHODE
COLLECTOR	COLLECTOR	3. DRAIN	CATHODE-ANODE	3. ANODE-CATHODE	CATHODE

DOCUMENT NUMBER:	98ASB42819B	Electronic versions are uncontrolled except when accessed directly from the Document Reposito Printed versions are uncontrolled except when stamped "CONTROLLED COPY" in red.	
DESCRIPTION:	SC-70 (SOT-323)		PAGE 1 OF 1

onsemi and ONSEMI are trademarks of Semiconductor Components Industries, LLC dba onsemi or its subsidiaries in the United States and/or other countries. onsemi reserves the right to make changes without further notice to any products herein. onsemi makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does **onsemi** 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. **onsemi** does not convey any license under its patent rights nor the rights of others.

MECHANICAL CASE OUTLINE

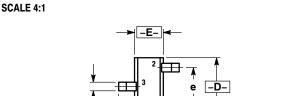
b 3 PL ⊕ 0.20 (0.008) M D

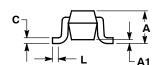




SC-75/SOT-416 CASE 463-01 **ISSUE G**

DATE 07 AUG 2015





STYLE 1: PIN 1. BASE 2. EMITTER

3. COLLECTOR

STYLE 4: PIN 1. CATHODE 2. CATHODE 3. ANODE STYLE 5: PIN 1. GATE 2. SOURCE 3. DRAIN

STYLE 2: PIN 1. ANODE 2. N/C 3. CATHODE

STYLE 3: PIN 1. ANODE 2. ANODE 3. CATHODE

0.20 (0.008) E

NOTES:

- 1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982. 2. CONTROLLING DIMENSION: MILLIMETER.

-		MILLIMETERS				INCHES	;
L	DIM	MIN	NOM	MAX	MIN	NOM	MAX
	Α	0.70	0.80	0.90	0.027	0.031	0.035
L	A1	0.00	0.05	0.10	0.000	0.002	0.004
	b	0.15	0.20	0.30	0.006	0.008	0.012
	С	0.10	0.15	0.25	0.004	0.006	0.010
	D	1.55	1.60	1.65	0.061	0.063	0.065
	Е	0.70	0.80	0.90	0.027	0.031	0.035
	е	1	.00 BSC)		0.04 BSC)
	L	0.10	0.15	0.20	0.004	0.006	0.008
	HE	1.50	1.60	1.70	0.060	0.063	0.067

GENERIC MARKING DIAGRAM*



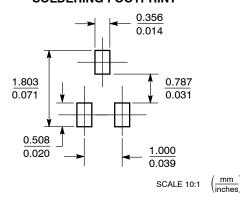
XX= Specific Device Code

Μ = Date Code

= Pb-Free Package

*This information is generic. Please refer to device data sheet for actual part marking. Pb-Free indicator, "G" or microdot " ■", may or may not be present.

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.

DOCUMENT NUMBER:	98ASB15184C	Electronic versions are uncontrolled except when accessed directly from the Document Reposi Printed versions are uncontrolled except when stamped "CONTROLLED COPY" in red.	
DESCRIPTION:	SC-75/SOT-416		PAGE 1 OF 1

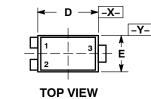
ON Semiconductor and (III) are trademarks of Semiconductor Components Industries, LLC dba ON Semiconductor or its subsidiaries in the United States and/or other countries. ON Semiconductor reserves the right to make changes without further notice to any products herein. ON Semiconductor makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does ON Semiconductor 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. ON Semiconductor does not convey any license under its patent rights nor the rights of others.

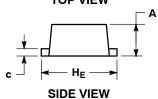


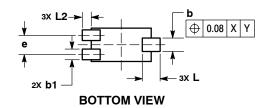
SOT-1123 CASE 524AA ISSUE C

DATE 29 NOV 2011

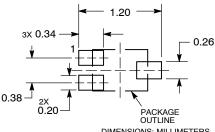
SCALE 8:1







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.

NOTES:

- 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.
 DIMENSIONS D AND E DO NOT INCLUDE MOLD
 FLASH, PROTRUSIONS, OR GATE BURRS.

	MILLIMETERS				
DIM	MIN	MAX			
Α	0.34	0.40			
b	0.15	0.28			
b1	0.10	0.20			
С	0.07	0.17			
D	0.75	0.85			
E	0.55	0.65			
е	0.35	0.40			
HE	0.95	1.05			
L	0.185	REF			
L2	0.05	0.15			

GENERIC MARKING DIAGRAM*



= Specific Device Code

Μ = Date Code

*This information is generic. Please refer to device data sheet for actual part marking.

Pb-Free indicator, "G" or microdot " ■", may or may not be present.

STYLE 1:	STYLE 2:	STYLE 3:	STYLE 4:	STYLE 5:
PIN 1. BASE	PIN 1. ANODE	PIN 1. ANODE	PIN 1. CATHODE	PIN 1. GATE
2. EMITTER	2. N/C	2. ANODE	2. CATHODE	2. SOURCE
COLLECTOR	CATHODE	CATHODE	ANODE	3. DRAIN

DOCUMENT NUMBER:	98AON23134D	Electronic versions are uncontrolled except when accessed directly from the Document Reposit Printed versions are uncontrolled except when stamped "CONTROLLED COPY" in red.	
DESCRIPTION:	SOT-1123, 3-LEAD, 1.0X0	.6X0.37, 0.35P	PAGE 1 OF 1

ON Semiconductor and (III) are trademarks of Semiconductor Components Industries, LLC dba ON Semiconductor or its subsidiaries in the United States and/or other countries. ON Semiconductor reserves the right to make changes without further notice to any products herein. ON Semiconductor makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does ON Semiconductor 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. ON Semiconductor does not convey any license under its patent rights nor the rights of others.



SOT-723 CASE 631AA-01 ISSUE D

- C

SIDE VIEW

DATE 10 AUG 2009

NOTES:

- 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.
- DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS.

	MILLIMETERS				
DIM	MIN	NOM	MAX		
Α	0.45	0.50	0.55		
b	0.15	0.21	0.27		
b1	0.25	0.31	0.37		
С	0.07	0.12	0.17		
D	1.15	1.20	1.25		
E	0.75	0.80	0.85		
е		0.40 BS0			
ΗE	1.15	1.20	1.25		
L	0.29 REF				
12	0.15	0.20	0.25		

L2 0.15 0.20 0.25

GENERIC MARKING DIAGRAM*

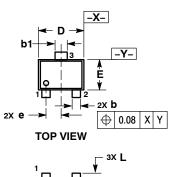


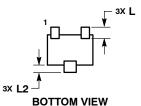
= Specific Device Code XX

Μ = Date Code



*This information is generic. Please refer to device data sheet for actual part marking. Pb-Free indicator, "G", may or not be present.

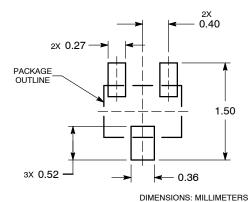




STYLE 1: PIN 1. BASE 2. EMITTER 3. COLLECTOR STYLE 2: PIN 1. ANODE 2. N/C 3. CATHODE STYLE 3: PIN 1. ANODE 2. ANODE 3. CATHODE

STYLE 4: PIN 1. CATHODE 2. CATHODE 3. ANODE STYLE 5: PIN 1. GATE 2. SOURCE 3. DRAIN

RECOMMENDED 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.

DOCUMENT NUMBER:	98AON12989D	Electronic versions are uncontrolled except when accessed directly from the Document Repository Printed versions are uncontrolled except when stamped "CONTROLLED COPY" in red.	
DESCRIPTION:	SOT-723		PAGE 1 OF 1

ON Semiconductor and un are trademarks of Semiconductor Components Industries, LLC dba ON Semiconductor or its subsidiaries in the United States and/or other countries. ON Semiconductor reserves the right to make changes without further notice to any products herein. ON Semiconductor makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does ON Semiconductor 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. ON Semiconductor does not convey any license under its patent rights nor the rights of others.

onsemi, Onsemi, and other names, marks, and brands are registered and/or common law trademarks of Semiconductor Components Industries, LLC dba "onsemi" or its affiliates and/or subsidiaries in the United States and/or other countries. onsemi owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of onsemi's product/patent coverage may be accessed at www.onsemi.com/site/pdf/Patent-Marking.pdf. Onsemi reserves the right to make changes at any time to any products or information herein, without notice. The information herein is provided "as-is" and onsemi makes no warranty, representation or guarantee regarding the accuracy of the information, product features, availability, functionality, or suitability of its products for any particular purpose, nor does onsemi 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. Buyer is responsible for its products and applications using onsemi products, including compliance with all laws, regulations and safety requirements or standards, regardless of any support or applications information provided by onsemi. "Typical" parameters which may be provided in onsemi 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. onsemi does not convey any license under any of its intellectual property rights nor the rights of others. onsemi products are not designed, intended, or authorized for use as a critical component in life support systems or any FDA class 3 medical devices with a same or similar classification in a foreign jurisdiction or any devices intended for implantation in the human body. Should Buyer purchase

ADDITIONAL INFORMATION

TECHNICAL PUBLICATIONS:

 $\textbf{Technical Library:} \ \underline{www.onsemi.com/design/resources/technical-documentation}$

onsemi Website: www.onsemi.com

ONLINE SUPPORT: www.onsemi.com/support

For additional information, please contact your local Sales Representative at www.onsemi.com/support/sales