MUN5235DW1, NSBC123JDXV6, NSBC123JDP6

Dual NPN Bias Resistor Transistors R1 = 2.2 kΩ, R2 = 47 kΩ

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°C, common for Q_1 and Q_2, unless otherwise noted)

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	$V_{IN(fwd)}$	12	Vdc
Input Reverse Voltage	$V_{IN(rev)}$	5	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.

ORDERING INFORMATION

Device	Package	Shipping†
MUN5235DW1T1G, SMUN5235DW1T1G	SOT−363	3,000 / Tape & Reel
SMUN5235DW1T3G	SOT−363	10,000 / Tape & Reel
NSBC123JDXV6T1G	SOT−563	4,000 / Tape & Reel
NSBC123JDXV6T5G	SOT−563	8,000 / Tape & Reel
NSBC123JDP6T5G	SOT−963	8,000 / 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.

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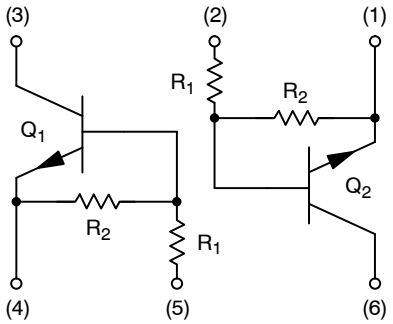
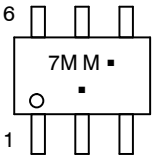
PIN CONNECTIONS

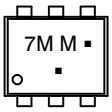


MARKING DIAGRAMS

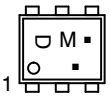
SOT−363
CASE 419B



SOT−563
CASE 463A



SOT−963
CASE 527AD



7M/D = 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.

THERMAL CHARACTERISTICS

Characteristic		Symbol	Max	Unit
MUN5235DW1 (SOT−363) ONE JUNCTION HEATED				
Total Device Dissipation		P_D		
T_A = 25°C	(Note 1)		187	mW
	(Note 2)		256	
Derate above 25°C	(Note 1)		1.5	mW/°C
	(Note 2)		2.0	
Thermal Resistance, Junction to Ambient	(Note 1)	$R_{\theta JA}$	670	°C/W
	(Note 2)		490	
MUN5235DW1 (SOT−363) BOTH JUNCTION HEATED (Note 3)				
Total Device Dissipation		P_D		
T_A = 25°C	(Note 1)		250	mW
	(Note 2)		385	
Derate above 25°C	(Note 1)		2.0	mW/°C
	(Note 2)		3.0	
Thermal Resistance, Junction to Ambient		$R_{\theta JA}$		°C/W
	(Note 1)		493	
	(Note 2)		325	
Thermal Resistance, Junction to Lead		$R_{\theta JL}$		°C/W
	(Note 1)		188	
	(Note 2)		208	
Junction and Storage Temperature Range		T_J, T_{stg}	−55 to +150	°C
NSBC123JDXV6 (SOT−563) ONE JUNCTION HEATED				
Total Device Dissipation		P_D		
T_A = 25°C	(Note 1)		357	mW
Derate above 25°C	(Note 1)		2.9	mW/°C
Thermal Resistance, Junction to Ambient		$R_{\theta JA}$		°C/W
	(Note 1)		350	
NSBC123JDXV6 (SOT−563) BOTH JUNCTION HEATED (Note 3)				
Total Device Dissipation		P_D		
T_A = 25°C	(Note 1)		500	mW
Derate above 25°C	(Note 1)		4.0	mW/°C
Thermal Resistance, Junction to Ambient		$R_{\theta JA}$		°C/W
	(Note 1)		250	
Junction and Storage Temperature Range		T_J, T_{stg}	−55 to +150	°C
NSBC123JDP6 (SOT−963) ONE JUNCTION HEATED				
Total Device Dissipation		P_D		
T_A = 25°C	(Note 4)		231	MW
	(Note 5)		269	
Derate above 25°C	(Note 4)		1.9	mW/°C
	(Note 5)		2.2	
Thermal Resistance, Junction to Ambient		$R_{\theta JA}$		°C/W
	(Note 4)		540	
	(Note 5)		464	
NSBC123JDP6 (SOT−963) BOTH JUNCTION HEATED (Note 3)				
Total Device Dissipation		P_D		
T_A = 25°C	(Note 4)		339	MW
	(Note 5)		408	
Derate above 25°C	(Note 4)		2.7	mW/°C
	(Note 5)		3.3	
Thermal Resistance, Junction to Ambient		$R_{\theta JA}$		°C/W
	(Note 4)		369	
	(Note 5)		306	
Junction and Storage Temperature Range		T_J, T_{stg}	−55 to +150	°C

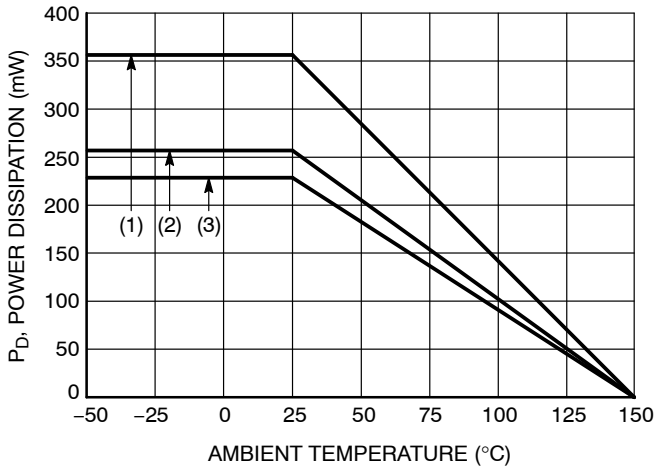
1. FR−4 @ Minimum Pad.
2. FR−4 @ 1.0 × 1.0 Inch Pad.
3. Both junction heated values assume total power is sum of two equally powered channels.
4. FR−4 @ 100 mm^2, 1 oz. copper traces, still air.
5. FR−4 @ 500 mm^2, 1 oz. copper traces, still air.

ELECTRICAL CHARACTERISTICS (T_A = 25°C, common for Q_1 and Q_2, unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Collector-Base Cutoff Current (V_{CB} = 50 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 V, I_C = 0)	I_{EBO}	–	–	0.2	mAdc
Collector-Base Breakdown Voltage (I_C = 10 μA, I_E = 0)	$V_{(BR)CBO}$	50	–	–	Vdc
Collector-Emitter Breakdown Voltage (Note 6) (I_C = 2.0 mA, I_B = 0)	$V_{(BR)CEO}$	50	–	–	Vdc
ON CHARACTERISTICS					
DC Current Gain (Note 6) (I_C = 5.0 mA, V_{CE} = 10 V)	h_{FE}	80	140	–	
Collector-Emitter Saturation Voltage (Note 6) (I_C = 10 mA, I_B = 1.0 mA)	$V_{CE(sat)}$	–	–	0.25	V
Input Voltage (Off) (V_{CE} = 5.0 V, I_C = 100 μA)	$V_{i(off)}$	–	0.6	–	Vdc
Input Voltage (On) (V_{CE} = 0.2 V, I_C = 5.0 mA)	$V_{i(on)}$	–	0.8	–	Vdc
Output Voltage (On) (V_{CC} = 5.0 V, V_B = 2.5 V, R_L = 1.0 kΩ)	V_{OL}	–	–	0.2	Vdc
Output Voltage (Off) (V_{CC} = 5.0 V, V_B = 0.5 V, R_L = 1.0 kΩ)	V_{OH}	4.9	–	–	Vdc
Input Resistor	R1	1.5	2.2	2.9	kΩ
Resistor Ratio	R_1/R_2	0.038	0.047	0.056	

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.

6. Pulsed Condition: Pulse Width = 300 ms, Duty Cycle ≤ 2%.



(1) SOT−363; 1.0 × 1.0 Inch Pad
(2) SOT−563; Minimum Pad
(3) SOT−963; 100 mm^2, 1 oz. Copper Trace

Figure 1. Derating Curve

TYPICAL CHARACTERISTICS
MUN5235DW1, NSBC123JDXV6

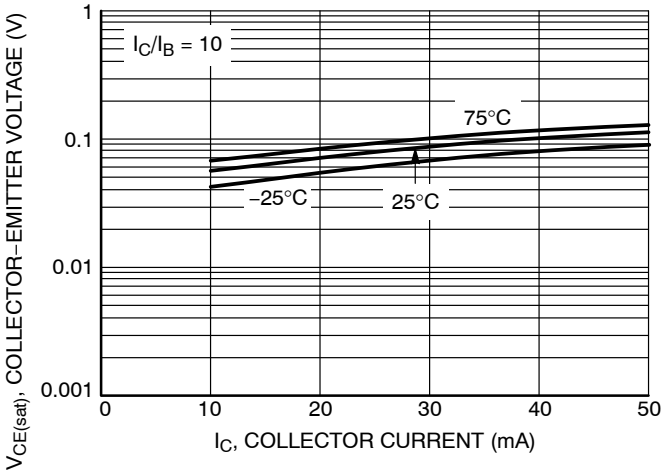


Figure 2. $V_{CE(sat)}$ vs. I_C

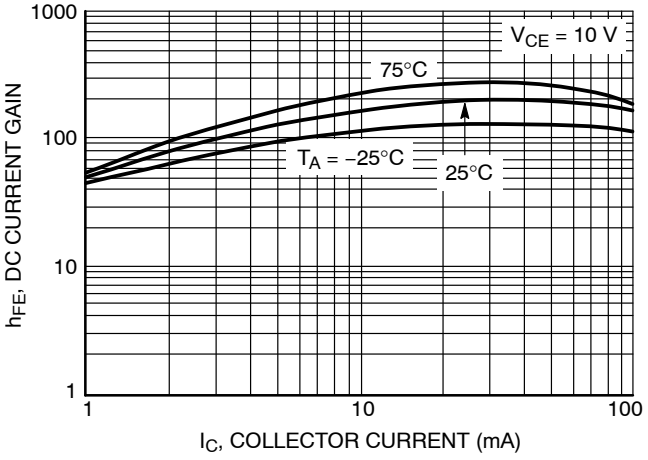


Figure 3. DC Current Gain

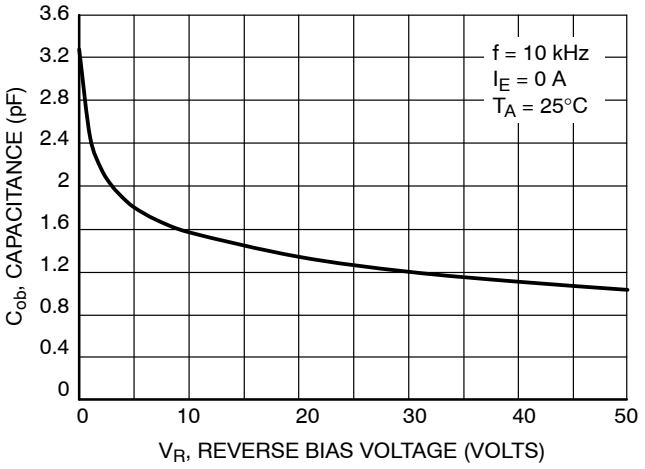


Figure 4. Output Capacitance

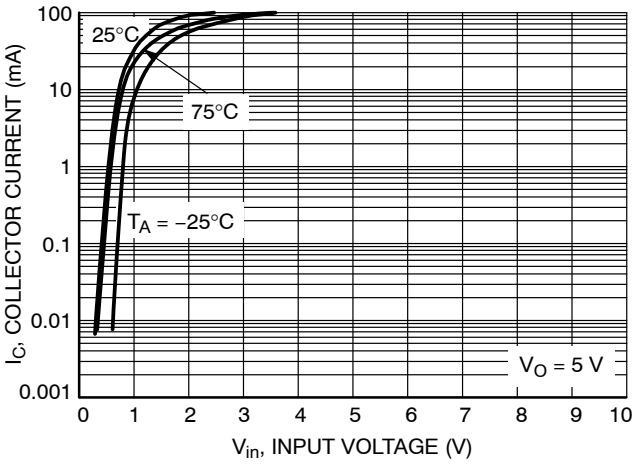


Figure 5. Output Current vs. Input Voltage

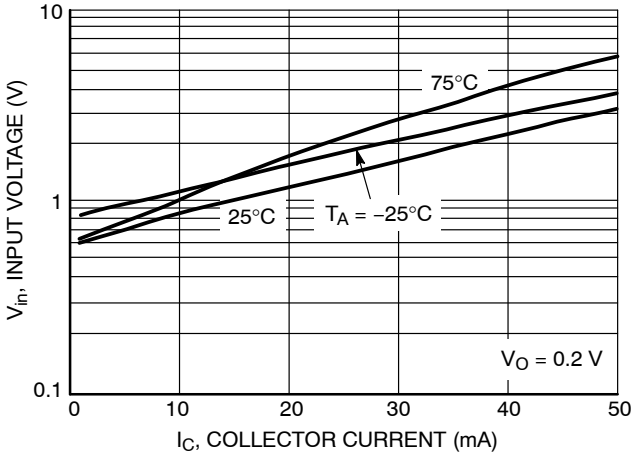


Figure 6. Input Voltage vs. Output Current

TYPICAL CHARACTERISTICS
NSBC123JDP6

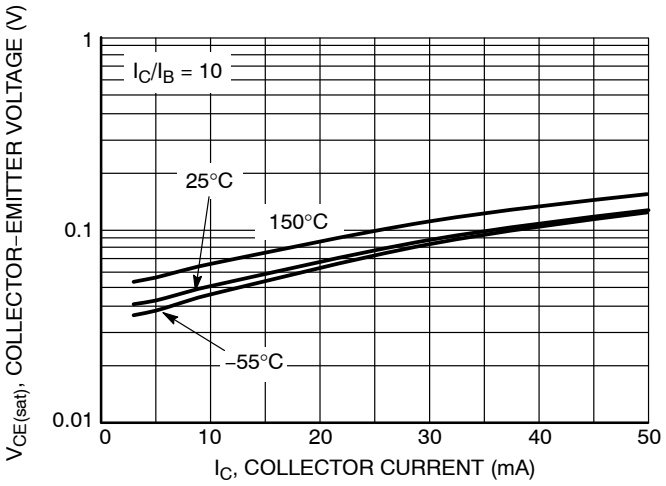


Figure 7. $V_{CE(sat)}$ vs. I_C

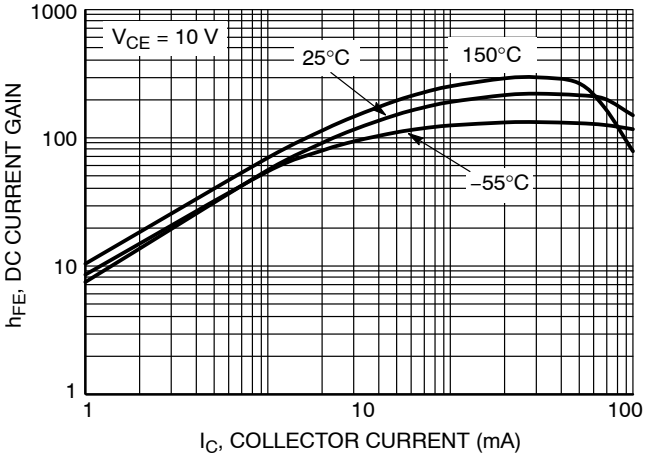


Figure 8. DC Current Gain

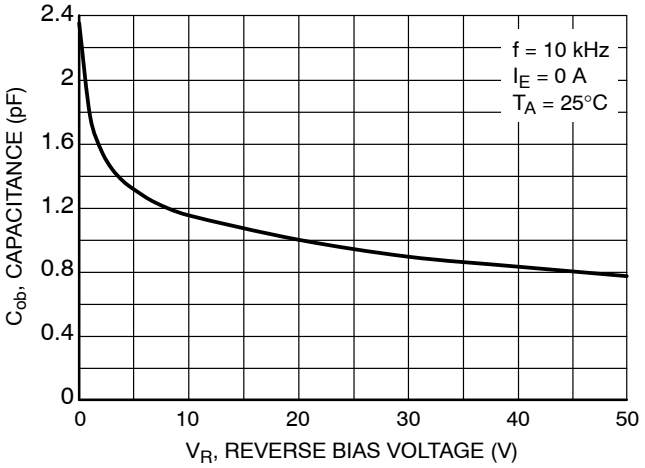


Figure 9. Output Capacitance

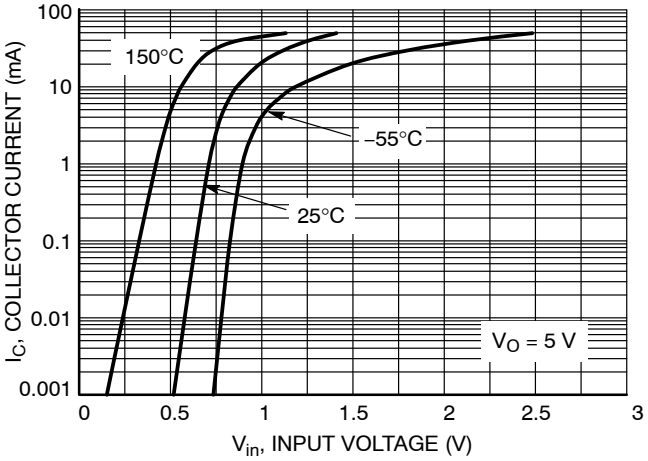


Figure 10. Output Current vs. Input Voltage

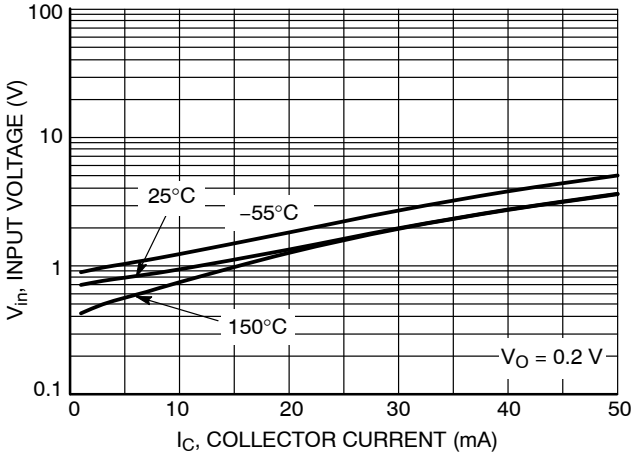
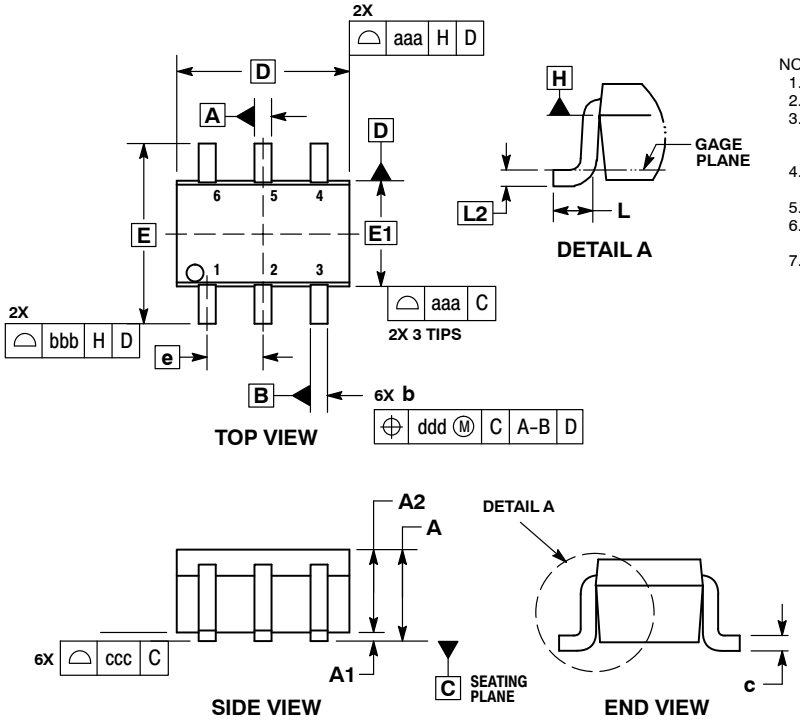


Figure 11. Input Voltage vs. Output Current

PACKAGE DIMENSIONS

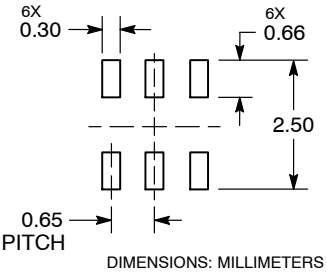
SC−88/SC70−6/SOT−363
CASE 419B−02
ISSUE Y



NOTES:
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. DIMENSIONS D AND E1 DO NOT INCLUDE MOLD FLASH, PROTRUSIONS, OR GATE BURRS. MOLD FLASH, PROTRUSIONS, OR GATE BURRS SHALL NOT EXCEED 0.20 PER END.
4. DIMENSIONS D AND E1 AT THE OUTERMOST EXTREMES OF THE PLASTIC BODY AND DATUM H.
5. DATUMS A AND B ARE DETERMINED AT DATUM H.
6. DIMENSIONS b AND c APPLY TO THE FLAT SECTION OF THE LEAD BETWEEN 0.08 AND 0.15 FROM THE TIP.
7. DIMENSION b DOES NOT INCLUDE DAMBAR PROTRUSION. ALLOWABLE DAMBAR PROTRUSION SHALL BE 0.08 TOTAL IN EXCESS OF DIMENSION b AT MAXIMUM MATERIAL CONDITION. THE DAMBAR CANNOT BE LOCATED ON THE LOWER RADIUS OF THE FOOT.

	MILLIMETERS			INCHES		
DIM	MIN	NOM	MAX	MIN	NOM	MAX
A	---	---	1.10	---	---	0.043
A1	0.00	---	0.10	0.000	---	0.004
A2	0.70	0.90	1.00	0.027	0.035	0.039
b	0.15	0.20	0.25	0.006	0.008	0.010
C	0.08	0.15	0.22	0.003	0.006	0.009
D	1.80	2.00	2.20	0.070	0.078	0.086
E	2.00	2.10	2.20	0.078	0.082	0.086
E1	1.15	1.25	1.35	0.045	0.049	0.053
e	0.65 BSC			0.026 BSC		
L	0.26	0.36	0.46	0.010	0.014	0.018
L2	0.15 BSC			0.006 BSC		
aaa	0.15			0.006		
bbb	0.30			0.012		
ccc	0.10			0.004		
ddd	0.10			0.004		

RECOMMENDED SOLDERING FOOTPRINT*

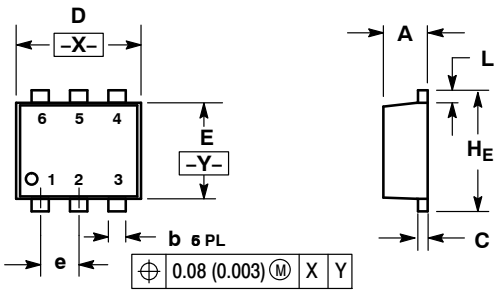


DIMENSIONS: MILLIMETERS

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

PACKAGE DIMENSIONS

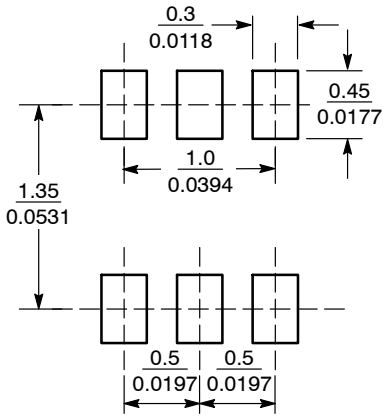
SOT−563, 6 LEAD
CASE 463A
ISSUE F



NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETERS
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH THICKNESS. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.

	MILLIMETERS			INCHES		
DIM	MIN	NOM	MAX	MIN	NOM	MAX
A	0.50	0.55	0.60	0.020	0.021	0.023
b	0.17	0.22	0.27	0.007	0.009	0.011
C	0.08	0.12	0.18	0.003	0.005	0.007
D	1.50	1.60	1.70	0.059	0.062	0.066
E	1.10	1.20	1.30	0.043	0.047	0.051
e	0.5 BSC			0.02 BSC		
L	0.10	0.20	0.30	0.004	0.008	0.012
H_E	1.50	1.60	1.70	0.059	0.062	0.066

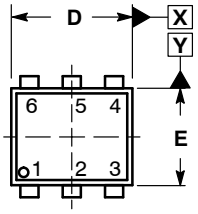
SOLDERING FOOTPRINT*



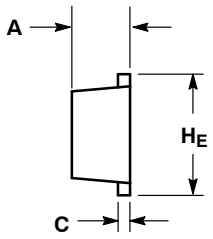
*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

PACKAGE DIMENSIONS

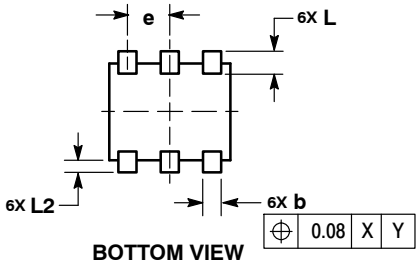
SOT−963
CASE 527AD
ISSUE E



TOP VIEW



SIDE VIEW

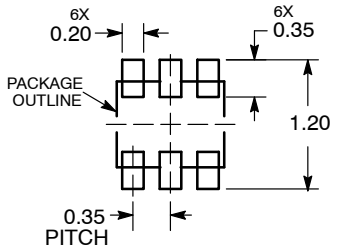


BOTTOM VIEW

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

	MILLIMETERS		
DIM	MIN	NOM	MAX
A	0.34	0.37	0.40
b	0.10	0.15	0.20
C	0.07	0.12	0.17
D	0.95	1.00	1.05
E	0.75	0.80	0.85
e	0.35 BSC		
H_E	0.95	1.00	1.05
L	0.19 REF		
L2	0.05	0.10	0.15

RECOMMENDED MOUNTING 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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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: 81−3−5817−1050

ON Semiconductor Website: **www.onsemi.com**

Order Literature: http://www.onsemi.com/orderlit

For additional information, please contact your local Sales Representative

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Адрес: 105318, г.Москва, ул.Щербаковская д.3, офис 1107

Данный компонент на территории Российской Федерации

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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:

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