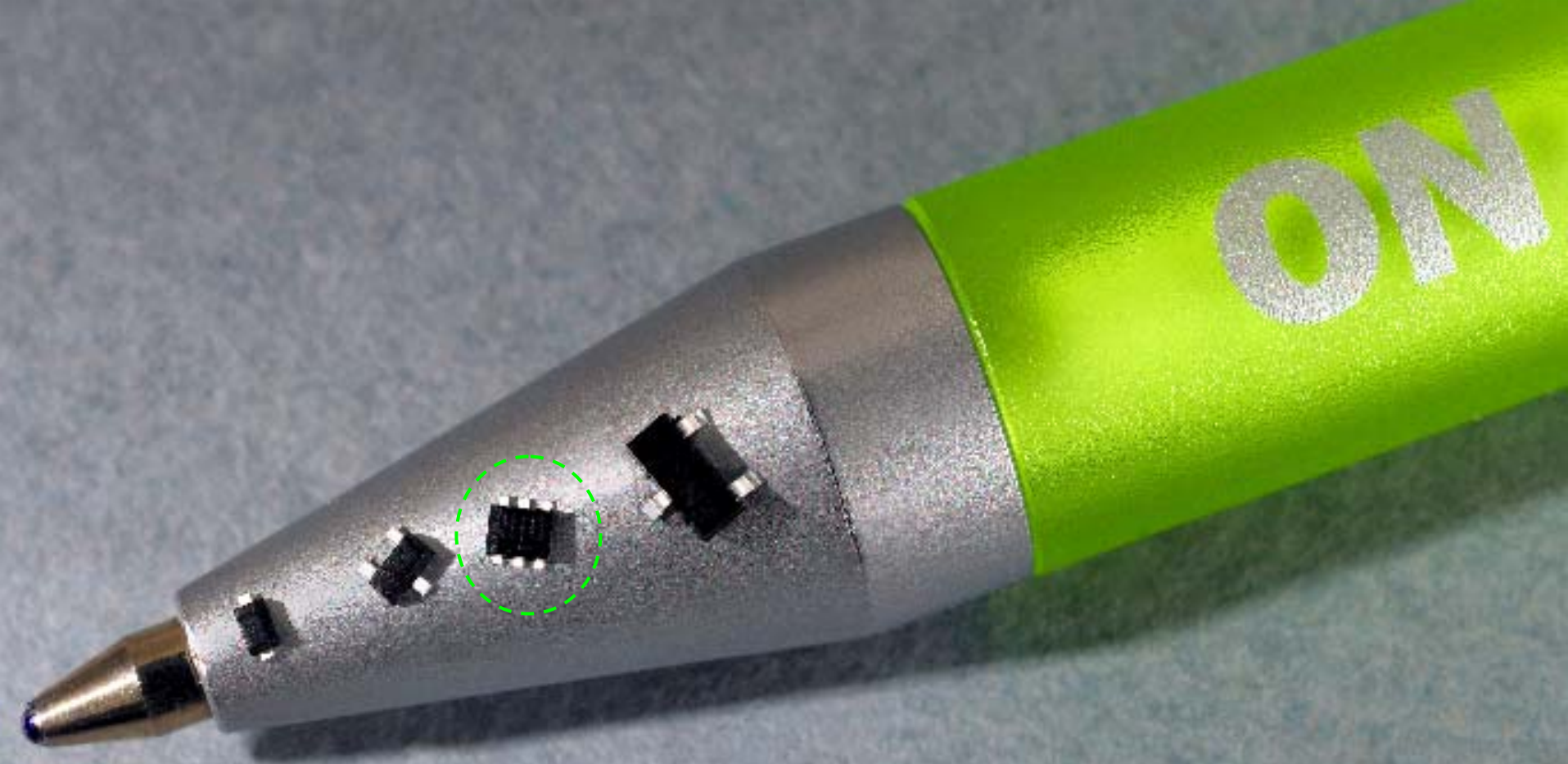




Left-to-right: SOD523, SC75, **SOT563**, SOT23

SOT553/563 Launch Packet

June 2003

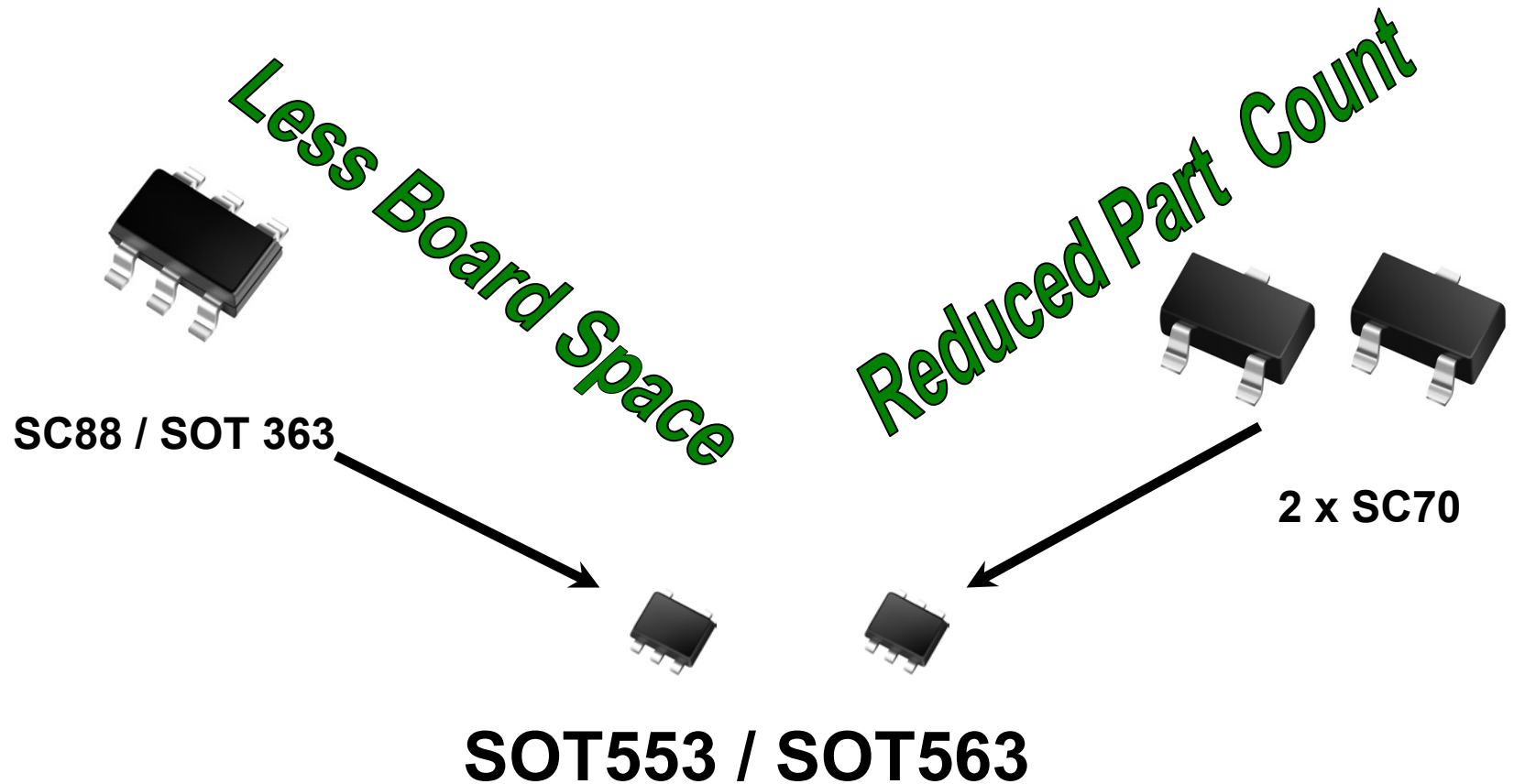
www.onsemi.com



ON Semiconductor®

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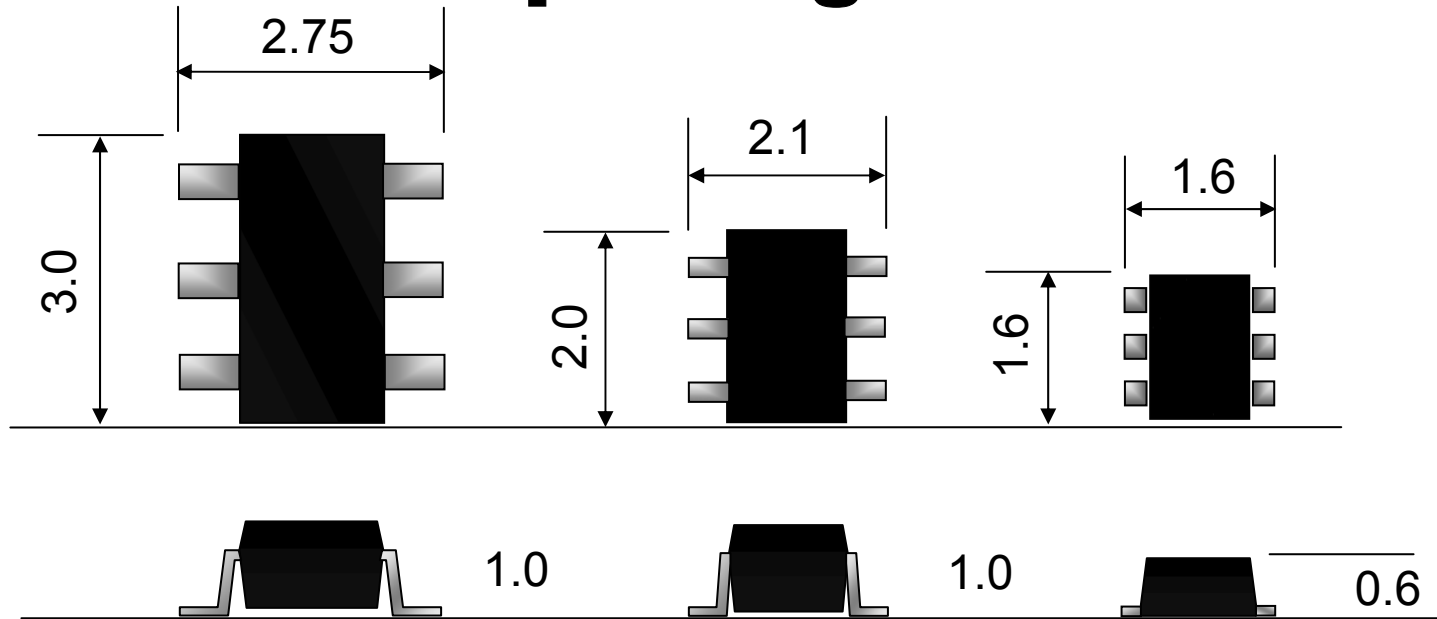
Offering the widest SOT553/556 portfolio



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Package Size Comparison – 6 pin packages



TSOP6
(SOT457)
(SM6)
(SMT6)
(Mini6)
(SOT23-6)
(SC-74)
(SC-59-6)

SC-88
(SOT363)
(US6)
(UMT6)
(S-Mini6)
(SC-70-6)

SOT563
(SOT666)
(ES6)
(EMT6)
(SS-Mini6)
(SC-75-6)



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Low Profile meets small footprint!

Product Portfolio

- **Logic MiniGates™**
- **Small Signal BRTs (Digital Transistors)**
- **Small Signal Bipolar Transistors**
- **Quad-Zener Protection Arrays**
- **Small Signal Switching and Schottky Diodes**



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ON Semiconductor®

NL17SZxxx Series

Low Voltage CMOS Single-Gate Functions



Description

- High performance one-gate, functions
(tpd= 2.0 ns @ 5V Vcc)
- CMOS/LVTTL Compatible
- Operates from a 1.65 to 5.5V Supply
- Over-voltage tolerant I/O up to +7.0v
- Near static supply current
- Ultra Small SOT553 (5-lead)

Applications

- Cellular phones, Cordless phones, PDAs
- Digital cameras, Video Cameras
- MP3 players
- Computers, Printers

Benefits

- Low profile for height constrained portable products
- 36% less board space than SC88
- Environmentally friendly
- Proven reliability

Key Features

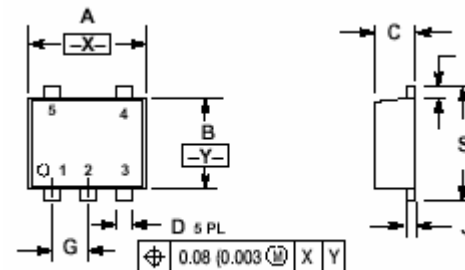
- 0.60mm max package height
- 1.70 x 1.70mm max footprint
- 100% Lead Free
- MSL1@260deg C Reflow Temperature.

Ordering Information

NL17SZxxxXV5T2

Example: NL17SZU04XV5T2 (4mm pitch 4k/reel)

- Gates (00,02,08,32)
 - Inverters (04, 06*, U04) Buffers (07*,16)
 - Schmitt Inverter (14) Buffer (17)
- * open drain



DIM	MILLIMETERS	
	MIN	MAX
A	1.50	1.70
B	1.10	1.30
C	0.50	0.60
D	0.17	0.27
G	0.50 BSC	
J	0.08	0.18
K	0.10	0.30
S	1.50	1.70



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For details contact your sales representative, local distributor, or visit

ON Semiconductor's MiniGate™ SOT-553s

Now Released

- World's smallest Logic package with leads.
- 4 devices - 1st to market !!!
- 6 devices – second source to Toshiba

ON PART No.	Function	Toshiba Part No.
NL17SZ00XV5T2	2 Input NAND	TC7SZ00AFE
NL17SZ02XV5T2	2 Input NOR	TC7SZ02AFE
NL17SZ04XV5T2	Single INV	TC7SZ04AFE
NL17SZU04XV5T2	Unbuffered INV	TC7SZU04AFE
NL17SZ06XV5T2	Open Drain INV	N/A
NL17SZ07XV5T2	Open Drain BUF	N/A
NL17SZ08XV5T2	2 Input AND	TC7SZ08AFE
NL17SZ16XV5T2	Single BUF	N/A
NL17SZ17XV5T2	Schmitt BUF	N/A
NL17SZ32XV5T2	2 Input OR	TC7SZ32AFE

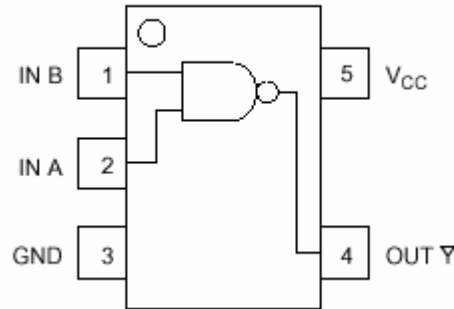
Pb free
1.6 X 1.6 X .6 mm



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MiniGate Logic™



SOT-553 One Gates					
Device	Family	Type	Voltage	Drive mA	Tpd
NL17SV00XV5T2	VCX	2 Input NAND	1 - 3.6	24	1.5 ns
NL17SV02XV5T2	VCX	2 Input NOR	1 - 3.6	24	1.5 ns
NL17SV04XV5T2	VCX	Inverter	1 - 3.6	24	1.5 ns
NL17SV08XV5T2	VCX	2 Input AND	1 - 3.6	24	1.5 ns
NL17SV14XV5T2	VCX	Schmitt Inverter	1 - 3.6	24	1.5 ns
NL17SV17XV5T2	VCX	Schmitt Buffer	1 - 3.6	24	1.5 ns



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NSBxxxxxDXV5/6 series

Dual BRTs in SOT-553 and SOT-563

Description

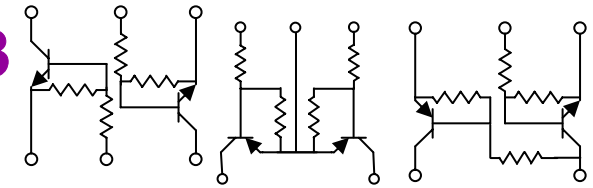
- 50V 100mA NPN and PNP BRTs (Digital Transistors)
- Ultra Small SOT553 (5-lead) and SOT-563 (6-lead) package
- Dual NPN, Dual PNP, and Dual Complimentary devices
- Broad range of Resistor combinations:
 - R1=R2: 1k/1k, 2.2k/2.2k, 4.7k/4.7k, 10k/10k, 22k/22k, 47k/47k, 100k/100k
 - R1<R2: 2.2k / 47k, 4.7k / 47k, 10k / 47k, 22k / 47k
 - R1>R2: 47k / 22k
 - R1 only: 4.7k, 10k

Benefits

- Low profile for height constrained portable products
- 36% less board space than SC88
- Reduces part count and placement cost
- Environmentally friendly
- Proven reliability

Ordering Information

- Dual BRTs in SOT-563: NSBxxxxxDXV6T5
 - Example: NSBA114TDXV6T5 (2mm pitch 8k/reel)
 - Example: NSBA114TDXV6T1 (4mm pitch 4k/reel)
- Common Emitter BRTs in SOT-553:
 - Example: EMA6DXV5T5 (2mm pitch 8k/reel)
- Base-Collector Connected BRTs in SOT-553:
 - Example: EMC5DXV5T1 (4mm pitch 4k/reel)

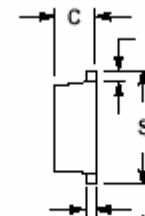
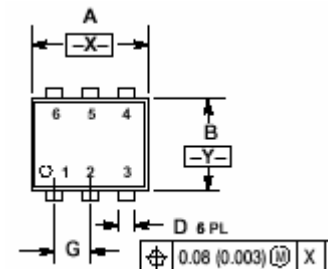


Applications

- Cellular phones, Cordless phones, PDAs
- Digital cameras, Video Cameras
- MP3 players
- Computers, Printers

Key Features

- 0.60mm max package height
- 1.70 x 1.70mm max footprint
- Dual configuration
- 100% Lead Free
- MSL1@260deg C Reflow Temperature.
-



DIM	MILLIMETERS	
	MIN	MAX
A	1.50	1.70
B	1.10	1.30
C	0.50	0.60
D	0.17	0.27
G	0.50 BSC	
J	0.08	0.18
K	0.10	0.30
S	1.50	1.70



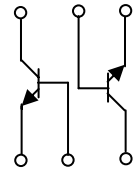
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For details contact your sales representative, local distributor, or visit

ON Semiconductor®

NSTxxxxDXV6 series

Dual Bipolar Signal Transistors in SOT-563



Description

- 30 – 60V 100 - 200mA NPN and PNP BJTransistors
- Ultra Small SOT563 package (1.6x1.6mm)
- Dual NPN, Dual PNP, and Dual Complimentary devices
- Broad range of industry standard transistors:
 - NPNs: 3904s, BC846s, BC847s, BC848s
 - PNPs: 3906s, BC856s, BC857s, BC858s
 - Complimentary versions

Applications

- Cellular phones, Cordless phones, PDAs
- Digital cameras, Video Cameras
- MP3 players
- Computers, Printers

Benefits

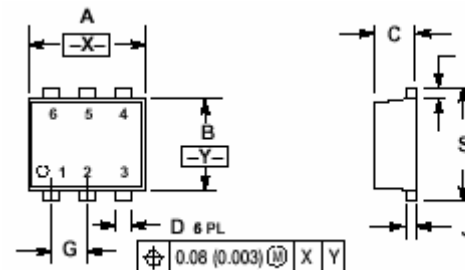
- Low profile for height constrained portable products
- 36% less board space than SC88
- Reduces part count and placement cost
- Environmentally friendly
- Proven reliability

Key Features

- 0.60mm max package height
- 1.70 x 1.70mm max footprint
- Dual configuration
- 100% Lead Free
- MSL1@260deg C Reflow Temperature.

Ordering Information

- Dual Transistors: NSTxxxxDXV6T5
 - Example: NST3904DXV6T5 (2mm pitch 8k/reel)
 - Example: BC846BDXV6T1 (4mm pitch 4k/reel)
- Complimentary Duals: NSTxxxxPDXV6T5
 - Example: NST3946PDXV6T1 (4mm pitch 4k/reel)
 - Example: BC846BPDXV6T1 (2mm pitch 8k/reel)



DIM	MILLIMETERS	
	MIN	MAX
A	1.50	1.70
B	1.10	1.30
C	0.50	0.60
D	0.17	0.27
G	0.50 BSC	
J	0.08	0.18
K	0.10	0.30
S	1.50	1.70



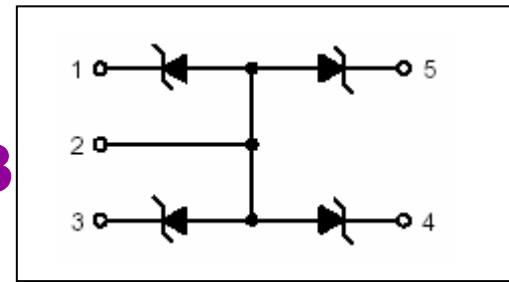
www.onsemi.com

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NZQA series

Quad Array in SOT-553



Description

- Breakdown Voltage: 5.6V, 6.2V & 6.8 V @ 1 mA
- Low Leakage < 1uA
- Peak Power Dissipation: 100 W @ 8*20 us
- Steady State Power Dissipation 300 mW

Benefits

- Protect equipments/components from surge current/voltage damages
- Protect users from surge current/voltage damage
- Saves board space
- Saves component cost

Ordering Information

- NZQA5V6XV5T1
- NZQA6V2XV5T1
- NZQA6V8XV5T1

Additional Information

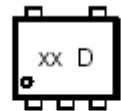
- See <http://www.onsemi.com/site/products/summary/0,4450,NZQA,00.html>

Applications

- Cellular phones, cordless phones, computers, printers, Digital cameras, MP3 players, business machines, communication systems & medical equipment

Key Features

ESD Protection Meeting 61000-4-2 Level 4 and 16 kV Human Body Model
SOT-553 Package for high Density Application
100% Lead Free, MSL1@260deg C Reflow Temperature.



xx = Device Marking
D = One Digit Date Code



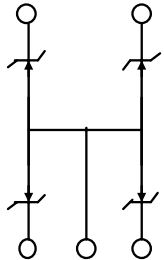
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For details contact your sales representative, local distributor, or visit

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Selector Guide:

Zener Diode Protection Arrays

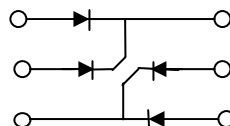
SOT-553 Quad Zener 				
Device	V	Capacitance @ 0V bias	Comment	Status
		pF		
NZQA5V6XV5	5.32	90	Uni-directional	Released
NZQA6V2XV5	5.89	80	Uni-directional	Released
NZQA6V8XV5	6.46	70	Uni-directional	Released
NZQA6V8AXV5	5.89	15pF(Low Cap)	Uni-directional	Released



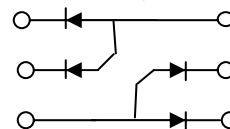
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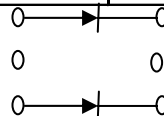
Selector Guide: Switching and Schottky Diode Arrays



Device	Technology	Vr	CT @ V		Vf Max		Ir @ V		Trr
			pF Max	Volts	Volts	If	nA Max	Volts	
BAV70DXV6T5	Switching	70	1.5	0	1.25	150mA	5000	70	6
NSDEMN11DXV6T5	Switching	80	3.5	6	1.2	100mA	100	70	4



Device	Technology	Vr	CT @ V		Vf Max		Ir @ V		Trr
			pF Max	Volts	Volts	If	nA Max	Volts	
BAW56DXV6T5	Switching	70	2.0	0	1.25	150mA	2.5	70	6
NSDEMP11DXV6T5	Switching	70	3.5	6	1.2	100mA	100	70	4



Device	Technology	Vr	CT @ V		Vf Max		Ir @ V		Trr
			pF Max	Volts	Volts	If	uA Max	Volts	
BAS16DXV6T5	Switching	75	2.0	0	1.25	150mA	1	75	6
NSR101DXV6T5	Schottky	7.0	1.0	0	0.6	10mA	0.25	3.0	
NSR15ADXV6T5	Schottky	15	1.0	0	0.68	10mA	0.05	1.0	
BAT54DXV6T5	Schottky	30	10	1.0	0.8	100mA	2	25	5
BAS40DXV6T5	Schottky	40	5.0	1.0	1.0	100mA	1	25	
BAS70DXV6T5	Schottky	70	2.0	0	1.0	15mA	10	70	



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Current Product Release Status

Switching and Schottky Diodes

Switching Diodes - SOT563

Part#	Status	Datasheet
BAS16DXV6T1	Released	Available
BAS16DXV6T5	Released	Available
BAV70DXV6T1	Released	Available
BAV70DXV6T5	Released	Available
NSDEMN11XV6T1	Released	Available
NSDEMN11XV6T5	Released	Available
NSDEMP11XV6T1	Released	Available
NSDEMP11XV6T5	Released	Available

SS Schottky - SOT563

Part#	Status	Datasheet
NSR15ADXV6T1	Intro Pending	Available
NSR15ADXV6T5	Intro Pending	Available



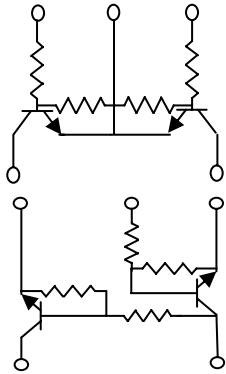
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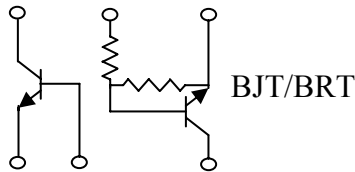
MicroIntegration

Build Your Own Device

If you can Imagine It, We can Build It!



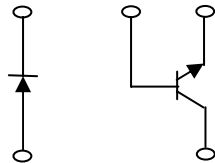
Inter-connectivity



BJT/BRT



BRT/Diode (Switching,Schottky,Zener)



BJT/Diode (Switching,Schottky,Zener)

Pick any 2 Devices from our list, define your Interconnections, and we can do it!



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Build Your Own Device

(Example)

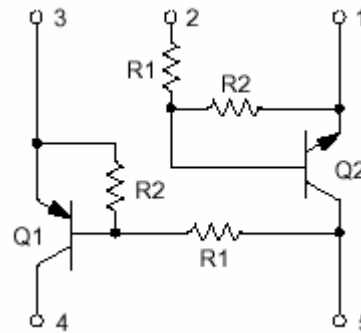
Your Requirements

Q1: NSBA143X Die: PNP R1=4.7K, R2=10K

Q2: NSBC144E Die: NPN R1=47K, R2=47K

Connections: Q1 Base to Q2 Collector

Your New Device



EMC5NXV5T1

(Equivalent to ON Semiconductor's UMC5NT1)

Q1: PNP R1=4.7K, R2=10K

Q2: NPN R1=47K, R2=47K

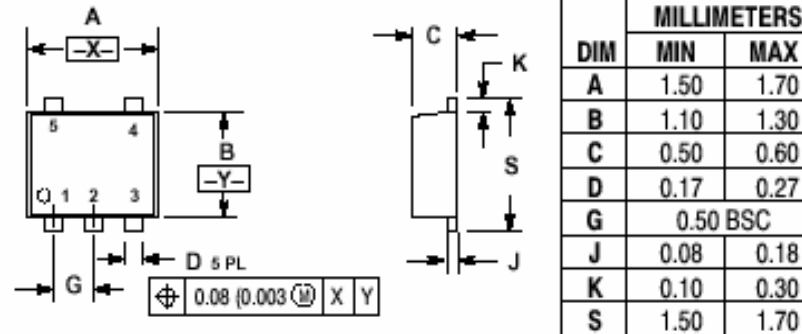


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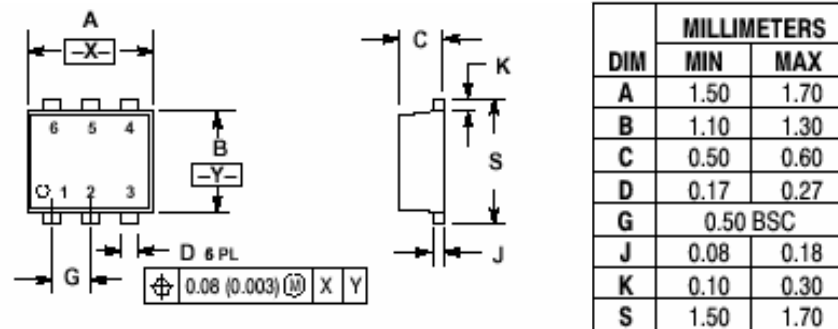
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Package Outlines

SOT-553



SOT-563

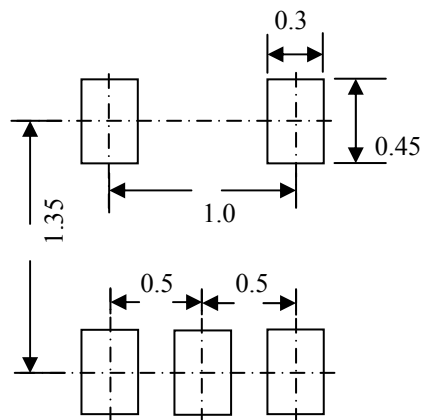


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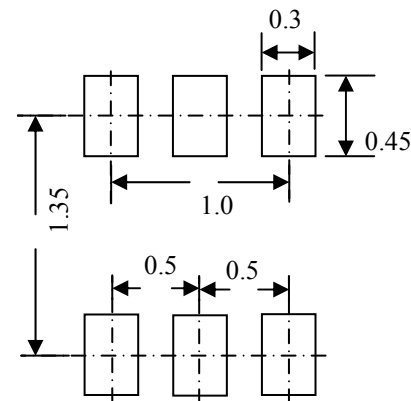
Recommended PCB Solder Foot Print

SOT-553



Dimensions in mm

SOT-563



Dimensions in mm



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Pb Free Plating

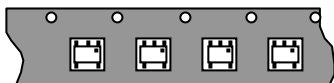
- **Standard plating is 100% Sn (Tin) used for backward compatibility with Pb based solder systems and Pb free solder systems.**
- **MSL1 – Moisture Sensitivity Level 1 (the highest) for 260 deg C reflow.**



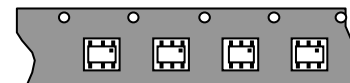
Tape and Reel Options (2mm and 4mm pitch)

Package	Tape Width (mm)	Pitch mm (inch)	Reel Size		Devices Per Reel and Min order Quantity	Tape and Reel Suffix	Orientation	NOTES
			(mm)	(in)				
SOT-553/563	8	4.0 +/- 0.1 (0.157 +/- 0.004)	178	7	4,000	T1	Toward	
SOT-553/563	8	4.0 +/- 0.1 (0.157 +/- 0.004)	178	7	4,000	T2	Away	LOGIC STANDARD (Preferred)
SOT-553/563	8	2.0 +/- 0.05 (0.079 +/- 0.002)	178	7	8,000	T5	Toward	SMALL SIGNAL STANDARD (Preferred)
SOT-553/563	8	2.0 +/- 0.05 (0.079 +/- 0.002)	178	7	8,000	T6	Away	

SOT553, T1 (4mm pitch)



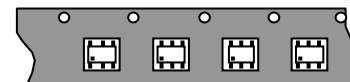
SOT563, T1 (4mm pitch)



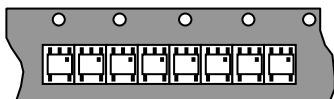
SOT553, T2 (4mm pitch) - like Toshiba Logic



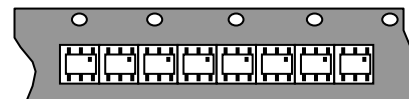
SOT563, T2 (4mm pitch)



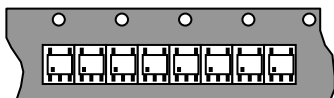
SOT553, T5 (2mm pitch) - like Rohm Discretes



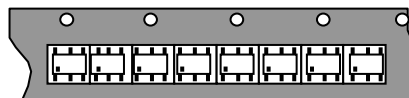
SOT563, T5 (2mm pitch)



SOT553, T6 (2mm pitch)



SOT563, T6 (2mm pitch)



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Availability

- **Stocking Plan: Most active parts have sample inventory**
- **Lead times**
 - SOT553/563 and SOD123FL
 - 6-8 weeks A.R.O. typical
 - Some available sooner
 - Check specific availability via local sales office.

As of June 15, 2003



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Additional Information

More information regarding the SOT553/563 products are available via

<https://www.onsemi.com/site/content/0,,1277,00.html>



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Contact Information

Logic MiniGate™ contacts:

Please contact Frank Dover for any Logic product requests.

f.dover@onsemi.com

Tel: 602 244-3317

Small Signal contact:

Please contact John Lettieri for any new Small Signal part requests

John.Lettieri@onsemi.com

Tel: 602 244-4761

Zener Protection contact:

Please contact Hemen Cheng for all Zener Protection questions and requests.

hemen.cheng@onsemi.com

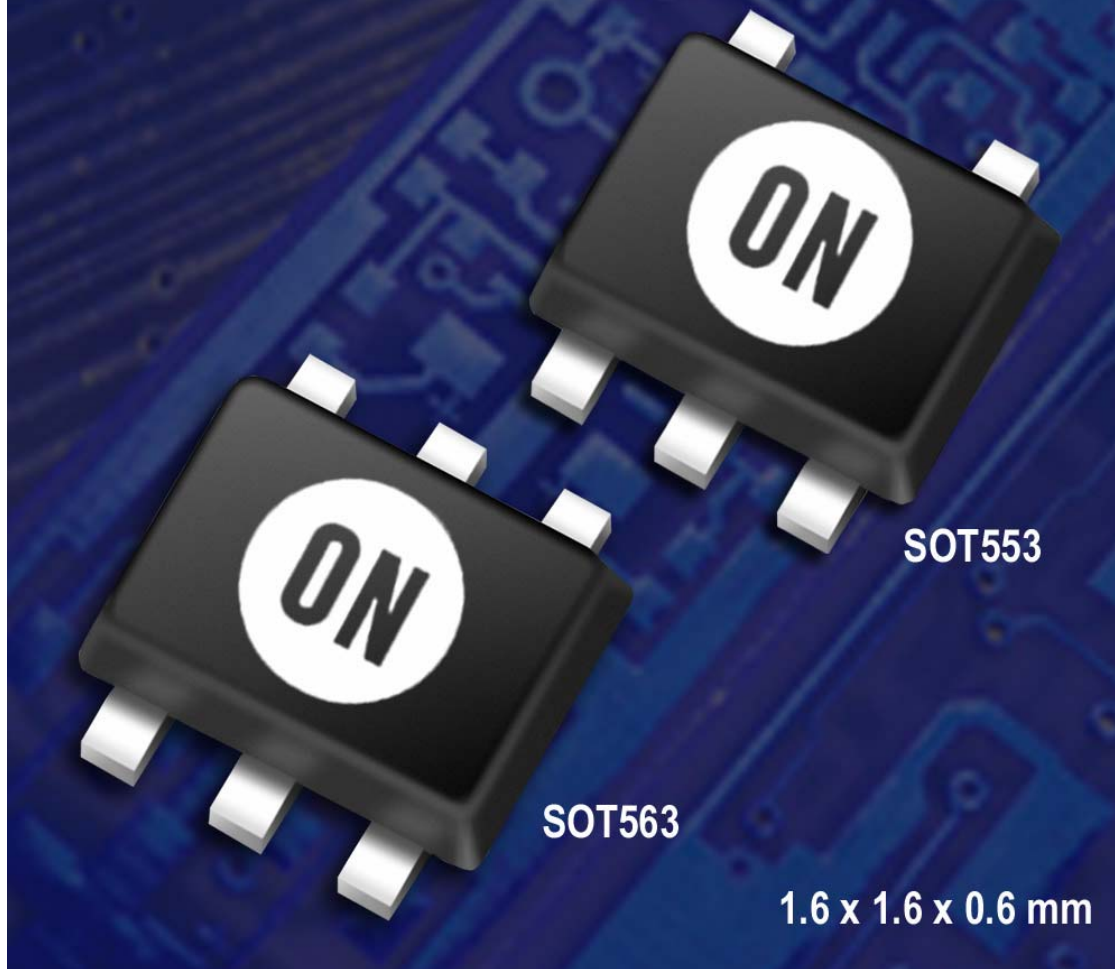
Tel: 602 244-7790



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Logic MiniGates™ / Analog Switches / Discretes



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