

Single 5V Bias, Low Harmonic Distortion, 64-Channel, High-Voltage Analog Switch

Features

- 64-Channel 0V to $\pm 100\text{V}$ Analog Switch
- Only +5V Bias Supply Required
- 3.3V and 5V CMOS Input Logic Level
- 11 x 11 mm Package Size
- 3A Switch Output Peak Current per Channel
- 6 Ω Switch On-Resistance
- -70 dB Typical Off Isolation at 5.0 MHz
- 66 MHz Data Shift Clock Frequency
- Dual SPI for Fast ON/OFF Control
- Low On/Off Capacitance of 15 pF (Typical)
- DC to 50 MHz Analog Small-Signal Frequency
- 200 kHz to 50 MHz Large-Signal Frequency
- Cascadable Serial Data Register with Latches
- Integrated Bleed Resistors (SWS and SWT Pins in HV2925, SWT Pin in HV2926)

Application

- Medical Ultrasound Imaging
- Nondestructive Testing (NDT) Metal Flaw Detection
- Piezoelectric Transducer Drivers
- Inkjet Printer Head
- Optical MEMS Module

General Description

The HV2825/HV2925/HV2926 are low harmonic distortion, low charge injection, 64-channel, high-voltage switches for multiplexers/demultiplexers, without high-voltage bias supplies. They are intended for use in applications requiring high-voltage switching controlled by low-voltage control signals, such as medical ultrasound imaging, driving piezoelectric transducers and printers.

The devices require no high voltage bias supplies but only a +5V low voltage source (V_{DD}). All of the analog switches in the devices can pass $\pm 100\text{V}$ high voltage pulses from SWS to SWT with a typical 6 Ω R_{ON} and 50 MHz bandwidth for small signals. Since the devices have low-voltage biased switches, they cannot pass high-voltage DC signals.

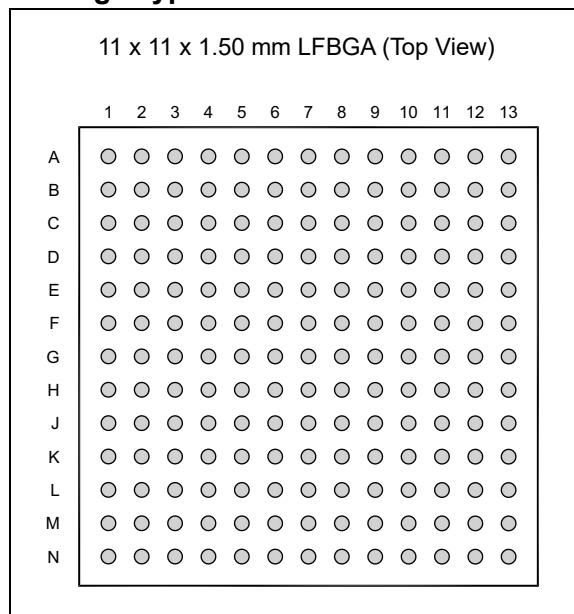
In the HV2825/HV2925/HV2926, the piezoelectric transducers are connected to SWT pins and the pulsed signals are applied to SWS pins.

The HV2925 has bleed resistors in both SWS and SWT pins. HV2926 has bleed resistors only in SWT pins. HV2825 does not have bleed resistors. The bleed resistor removes potential charge built up in capacitive load of the analog switches as well as capacitive load in piezoelectric transducers.

The HV2825/HV2925/HV2926 have dual SPI (Serial to Parallel Interface) logic inputs to control two sets of 32 switches independently for a higher speed on switch ON/OFF control. The ON/OFF states of each 32 switches are programmed individually through the corresponding SPI. Users can also program HV2825/HV2925/HV2926 as 64-channel switches by connecting two SPI in daisy-chain configuration to reduce the control logic signals from FPGA.

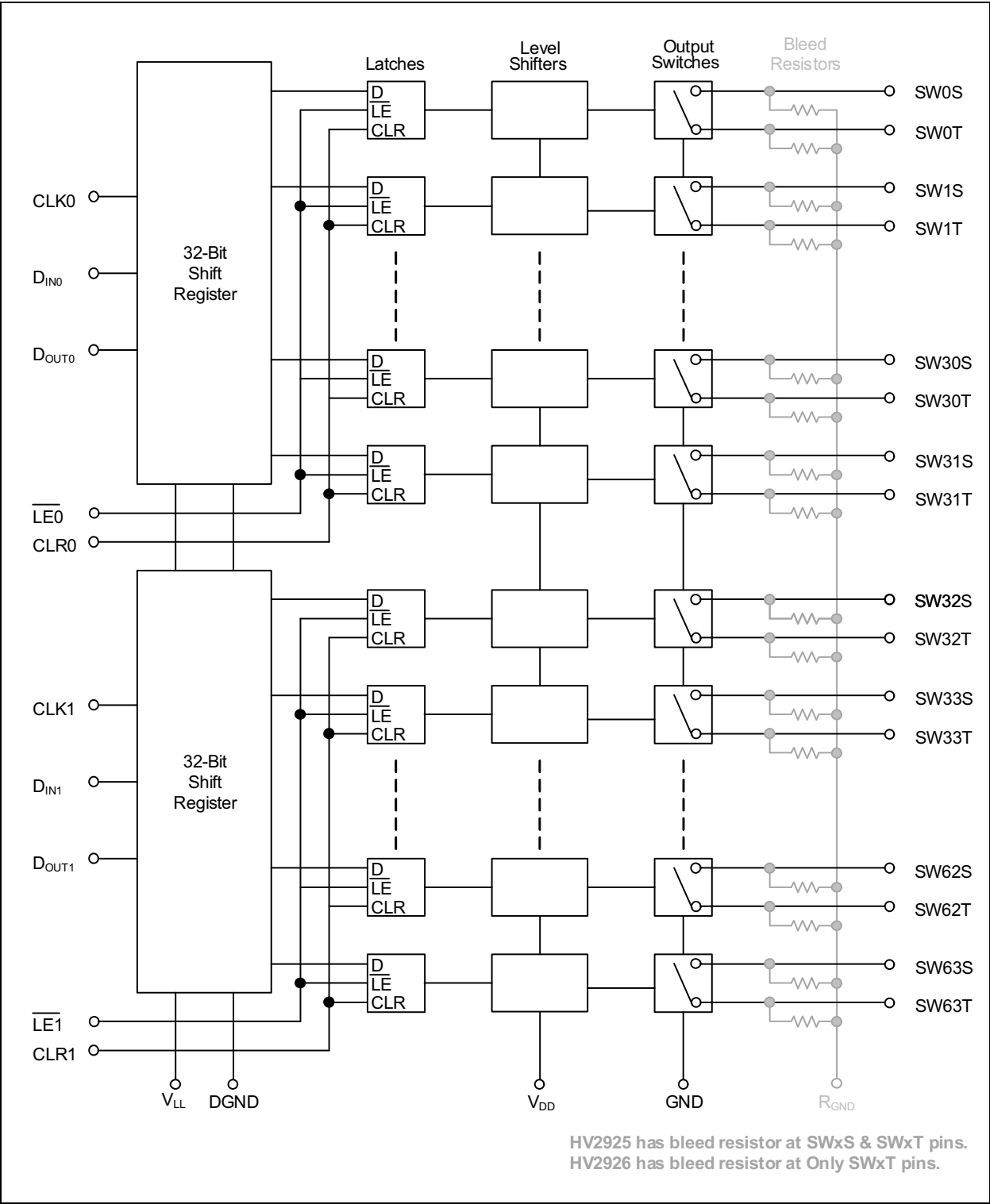
The HV2825/HV2925/HV2926 are available in 169-ball 11 x 11 x 1.50 mm LFBGA package.

Package Type

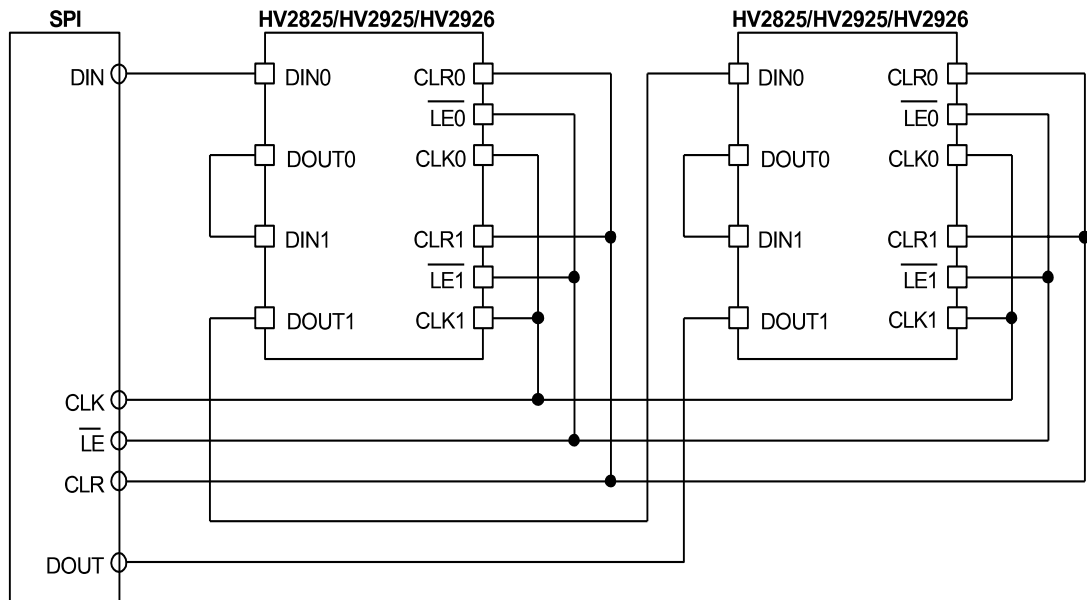


HV2825/HV2925/HV2926

Block Diagram



Daisy Chain in Single SPI



Daisy Chain in Dual SPI

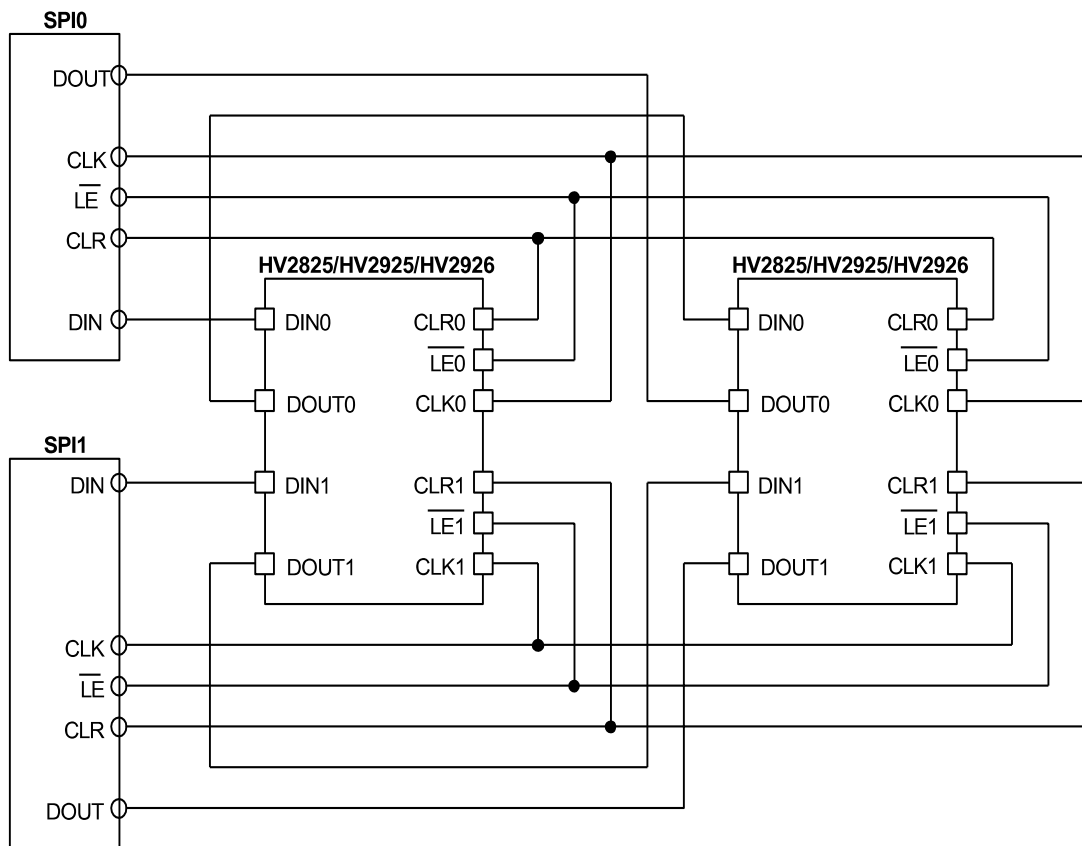


FIGURE 1: Daisy Chain Connection in Single and Dual Configurations.

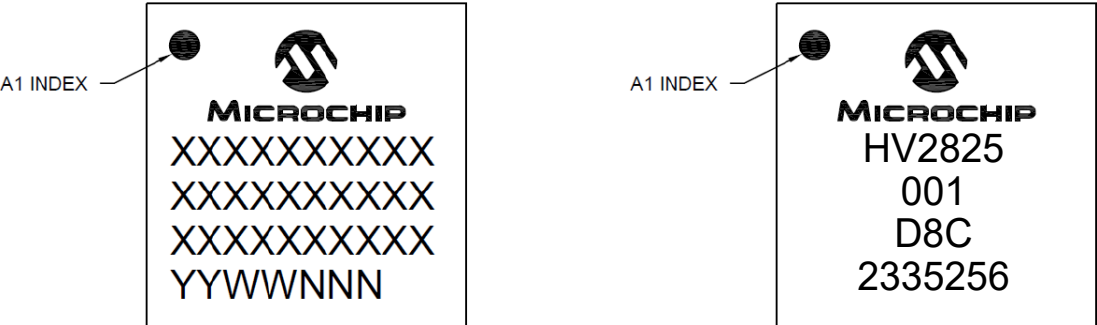
HV2825/HV2925/HV2926

1.0 PACKAGING INFORMATION

1.1 Package Marking Information

169-Lead LFBGA (11 x 11 x 1.50 mm)

Example



Legend:

XX...X	Product code or customer-specific information
Y	Year code (last digit of calendar year)
YY	Year code (last 2 digits of calendar year)
WW	Week code (week of January 1 is week '01')
NNN	Alphanumeric traceability code
(e3)	Pb-free JEDEC® designator for Matte Tin (Sn)
*	This package is Pb-free. The Pb-free JEDEC designator (e3) can be found on the outer packaging for this package.

●, ▲, ▼ Pin one index is identified by a dot, delta up, or delta down (triangle mark).

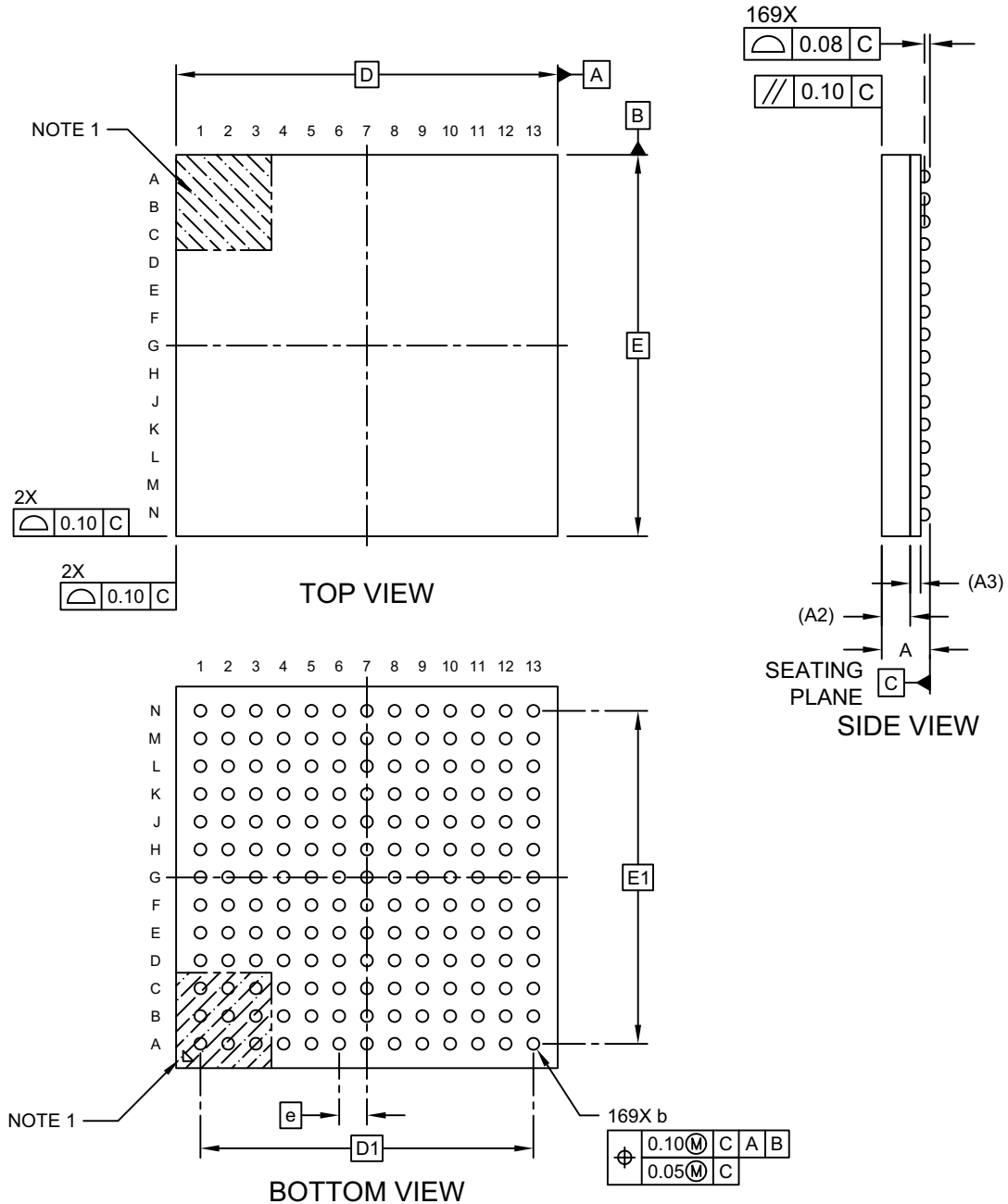
Note: In the event the full Microchip part number cannot be marked on one line, it will be carried over to the next line, thus limiting the number of available characters for customer-specific information. Package may or may not include the corporate logo.

Underbar (_) and/or Overbar (¯) symbol may not be to scale.

HV2825/HV2925/HV2926

169-Ball Low Profile Fine-Pitch Ball Grid Array (D8C) - 11×11×1.50 mm Body [LFBGA]

Note: For the most current package drawings, please see the Microchip Packaging Specification located at <http://www.microchip.com/packaging>

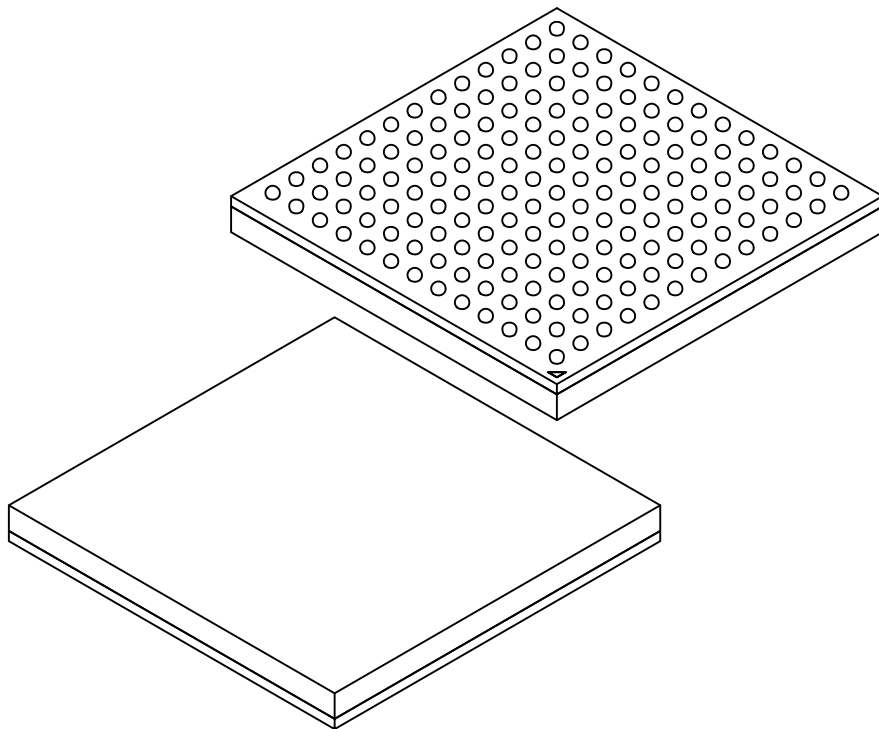


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HV2825/HV2925/HV2926

169-Ball Low Profile Fine-Pitch Ball Grid Array (D8C) - 11×11×1.50 mm Body [LFBGA]

Note: For the most current package drawings, please see the Microchip Packaging Specification located at <http://www.microchip.com/packaging>



Units		MILLIMETERS		
Dimension Limits		MIN	NOM	MAX
Number of Terminals	N	169		
Pitch	e	0.80 BSC		
Overall Height	A	1.31	1.39	1.50
Mold Thickness	A2	0.86 REF		
Substrate Thickness	A3	0.26 REF		
Overall Length	D	11.00 BSC		
Ball Array Length	D1	9.60 BSC		
Overall Width	E	11.00 BSC		
Ball Array Width	E1	9.60 BSC		
Ball Diameter	b	0.32	–	0.42

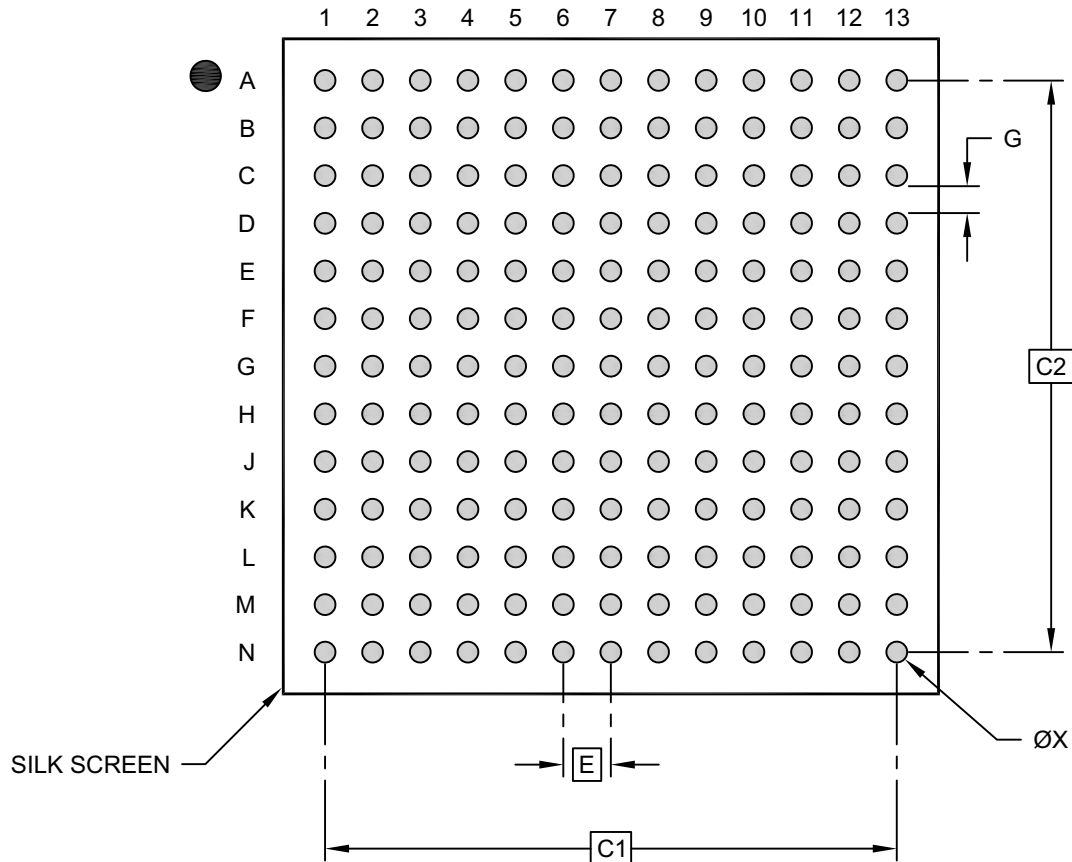
Notes:

- Pin 1 visual index feature may vary, but must be located within the hatched area.
- Dimensioning and tolerancing per ASME Y14.5M
BSC: Basic Dimension. Theoretically exact value shown without tolerances.
REF: Reference Dimension, usually without tolerance, for information purposes only.

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169-Ball Low Profile Fine-Pitch Ball Grid Array (D8C) - 11×11×1.50 mm Body [LFBGA]

Note: For the most current package drawings, please see the Microchip Packaging Specification located at <http://www.microchip.com/packaging>



RECOMMENDED LAND PATTERN

Units		MILLIMETERS		
Dimension Limits		MIN	NOM	MAX
Contact Pitch	E	0.80 BSC		
Contact Pad Spacing	C1	9.60 BSC		
Contact Pad Spacing	C2	9.60 BSC		
Contact Pad Width (X169)	X			0.35
Contact Pad to Contact Pad	G	0.45		

Notes:

- Dimensioning and tolerancing per ASME Y14.5M
BSC: Basic Dimension. Theoretically exact value shown without tolerances.

Microchip Technology Drawing C04-27535 Rev C

APPENDIX A: REVISION HISTORY

Revision A (October 2025)

- Initial release of this document.

PRODUCT IDENTIFICATION SYSTEM

To order or obtain information, e.g., on pricing or delivery, refer to the factory or the listed sales office.

<u>PART NO.</u>	<u>/XXX</u>
Device	Package
Device:	
HV2825:	Single 5V Bias, Low Harmonic Distortion, 64-Channel High-Voltage Analog Switch
HV2925:	Single 5V Bias, Low Harmonic Distortion, 64-Channel High-Voltage Analog Switch with Bleed Resistor
HV2926:	Single 5V Bias, Low Harmonic Distortion, 64-Channel High-Voltage Analog Switch with Bleed Resistor at One Side of Switch
Package:	
D8C =	Low Profile Fine Pitch Ball Grid Array – 11x11x1.50 mm (LFBGA), 169-Ball

Examples:
a) HV2825/D8C: Single 5V Bias, Low Harmonic Distortion, 64-Channel High-Voltage Analog Switch, low Profile Fine Pitch Ball Grid Array (LFBGA), 169-Ball package
b) HV2925/D8C: Single 5V Bias, Low Harmonic Distortion, 64-Channel High-Voltage Analog Switch with Bleed Resistor, Low Profile Fine Pitch Ball Grid Array (LFBGA), 169-Ball package
c) HV2926/D8C: Single 5V Bias, Low Harmonic Distortion, 64-Channel High-Voltage Analog Switch with Bleed Resistor at One Side of Switch, Low Profile Fine Pitch Ball Grid Array (LFBGA), 169-Ball package

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