

## Low Jitter Precision HCSL Oscillator

### Features

- Low RMS Phase Jitter: <1 ps (typ.)
- High Stability:  $\pm 10$  ppm,  $\pm 20$  ppm,  $\pm 25$  ppm,  $\pm 50$  ppm
- Wide Temperature Range
  - Industrial:  $-40^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$
  - Ext. Commercial:  $-20^{\circ}\text{C}$  to  $+70^{\circ}\text{C}$
  - Ext. Industrial:  $-40^{\circ}\text{C}$  to  $+105^{\circ}\text{C}$
- High Supply Noise Rejection:  $-50$  dBc
- Wide Frequency Range: 2.3 MHz to 460 MHz
- Small Industry Standard Footprints:
  - 2.5 mm x 2.0 mm, 3.2 mm x 2.5 mm, 5.0 mm x 3.2 mm, and 7.0 mm x 5.0 mm
- Excellent Shock and Vibration Immunity
  - Qualified to MIL-STD-883
- High Reliability
  - 20x Better MTF than Quartz Oscillators
- Low Current Consumption
- Supply Range of 2.25V to 3.6V
- Standby and Output Enable Function
- Lead Free and RoHS Compliant

### Applications

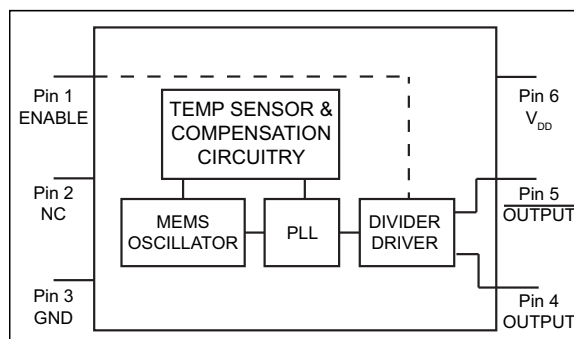
- Storage Area Networks
  - SATA, SAS, Fibre Channel
- Passive Optical Networks
  - EPON, 10G-EPON, GPON, 10G-PON
- Ethernet
  - 1G, 10GBASE-T/KR/LR/SR, and FCoE
- HD/SD/SDI Video and Surveillance
- PCI Express: Gen 1 to Gen 4
- Display Port

### General Description

The DSC1104 and DSC1124 series of high performance oscillators utilizes a proven silicon MEMS technology to provide excellent jitter and stability over a wide range of supply voltages and temperatures. By eliminating the need for quartz or SAW technology, MEMS oscillators significantly enhance reliability and accelerate product development, while meeting stringent clock performance criteria for a variety of communications, storage, and networking applications.

DSC1104 has a standby feature allowing it to completely power down when EN pin is pulled low; whereas for DSC1124, only the outputs are disabled when EN is low. Both oscillators are available in industry standard packages, including the small 2.5 mm x 2.0 mm, and are drop-in replacements for standard 6-pin HCSL quartz crystal oscillators.

### Block Diagram



**TABLE 1: OUTPUT ENABLE MODES**

| EN Pin | DSC1104        | DSC1124          |
|--------|----------------|------------------|
| High   | Outputs Active | Outputs Active   |
| NC     | Outputs Active | Outputs Active   |
| Low    | Standby        | Outputs Disabled |

# DSC1104/24

## 1.0 ELECTRICAL CHARACTERISTICS

### Absolute Maximum Ratings †

|                            |                          |
|----------------------------|--------------------------|
| Supply Voltage .....       | –0.3V to +4.0V           |
| Input Voltage .....        | –0.3V to $V_{DD} + 0.3V$ |
| ESD Protection (HBM) ..... | 4 kV                     |
| ESD Protection (MM) .....  | 400V                     |
| ESD Protection (CDM) ..... | 1.5 kV                   |

† **Notice:** Stresses above those listed under “Absolute Maximum Ratings” may cause permanent damage to the device. This is a stress rating only and functional operation of the device at those or any other conditions above those indicated in the operational sections of this specification is not intended. Exposure to maximum rating conditions for extended periods may affect device reliability.

### ELECTRICAL CHARACTERISTICS

Specifications:  $V_{DD} = 3.3V$ ;  $T_A = +25^{\circ}C$  unless otherwise specified.

| Parameters                       | Sym.            | Min.                 | Typ. | Max.                 | Units      | Conditions                                                                             |
|----------------------------------|-----------------|----------------------|------|----------------------|------------|----------------------------------------------------------------------------------------|
| <b>Supply Voltage (Note 1)</b>   | $V_{DD}$        | 2.25                 | —    | 3.6                  | V          | —                                                                                      |
| Supply Current                   | $I_{DD}$        | —                    | —    | 0.095                | mA         | DSC1104, EN pin low, Output is disabled                                                |
|                                  |                 | —                    | 20   | 22                   |            | DSC1124, EN pin low, Output is disabled                                                |
| Frequency Stability              | $\Delta f$      | —                    | —    | $\pm 10$             | ppm        | Includes frequency variation due to initial tolerance, temp., and power supply voltage |
|                                  |                 | —                    | —    | $\pm 20$             |            |                                                                                        |
|                                  |                 | —                    | —    | $\pm 25$             |            |                                                                                        |
|                                  |                 | —                    | —    | $\pm 50$             |            |                                                                                        |
| Aging                            | $\Delta f_{Y1}$ | —                    | —    | $\pm 5$              | ppm        | One year at $+25^{\circ}C$                                                             |
| Start-up Time (Note 2)           | $t_{SU}$        | —                    | —    | 5                    | ms         | $T = +25^{\circ}C$                                                                     |
| Input Logic Levels               | $V_{IH}$        | $0.75 \times V_{DD}$ | —    | —                    | V          | Input logic high                                                                       |
|                                  | $V_{IL}$        | —                    | —    | $0.25 \times V_{DD}$ |            | Input logic low                                                                        |
| Output Disable Time (Note 3)     | $t_{DA}$        | —                    | —    | 5                    | ns         | —                                                                                      |
| Output Enable Time               | $t_{EN}$        | —                    | —    | 5                    | ms         | DSC1104                                                                                |
|                                  |                 | —                    | —    | 20                   | ns         | DSC1124                                                                                |
| Enable Pull-Up Resistor (Note 4) | $R_{PU}$        | —                    | 40   | —                    | k $\Omega$ | Pull-up resistor exists                                                                |
| <b>HCSL Outputs</b>              |                 |                      |      |                      |            |                                                                                        |
| Supply Current                   | $I_{DD}$        | —                    | 40   | 42                   | mA         | Output Enabled, $R_L = 50\Omega$                                                       |
| Output Logic Levels              | $V_{OH}$        | 0.725                | —    | —                    | V          | Output logic high, $R_L = 50\Omega$                                                    |
|                                  | $V_{OL}$        | —                    | —    | 0.1                  |            | Output logic low                                                                       |
| Peak-to-Peak Output Swing        | —               | —                    | 750  | —                    | mV         | Single-Ended                                                                           |
| Output Transition Time (Note 3)  | $t_r$           | 200                  | —    | 400                  | ps         | Rise time, 20% to 80%, $R_L = 50\Omega$ , $C_L = 2$ pF                                 |
|                                  | $t_f$           | 200                  | —    | —                    |            | Fall time, 20% to 80%, $R_L = 50\Omega$ , $C_L = 2$ pF                                 |
| Frequency                        | $f_0$           | 2.3                  | —    | 460                  | MHz        | —                                                                                      |
| Output Duty Cycle                | SYM             | 48                   | —    | 52                   | %          | Differential                                                                           |

## ELECTRICAL CHARACTERISTICS (CONTINUED)

Specifications:  $V_{DD} = 3.3V$ ;  $T_A = +25^\circ C$  unless otherwise specified.

| Parameters             | Sym.      | Min. | Typ. | Max. | Units      | Conditions                     |
|------------------------|-----------|------|------|------|------------|--------------------------------|
| Period Jitter          | $J_{PER}$ | —    | 2.5  | —    | $ps_{RMS}$ | —                              |
| Integrated Phase Noise | $J_{PH}$  | —    | 0.25 | —    | $ps_{RMS}$ | 200 kHz to 20 MHz @ 156.25 MHz |
|                        |           | —    | 0.38 | —    |            | 100 kHz to 20 MHz @ 156.25 MHz |
|                        |           | —    | 1.7  | 2    |            | 12 kHz to 20 MHz @ 156.25 MHz  |

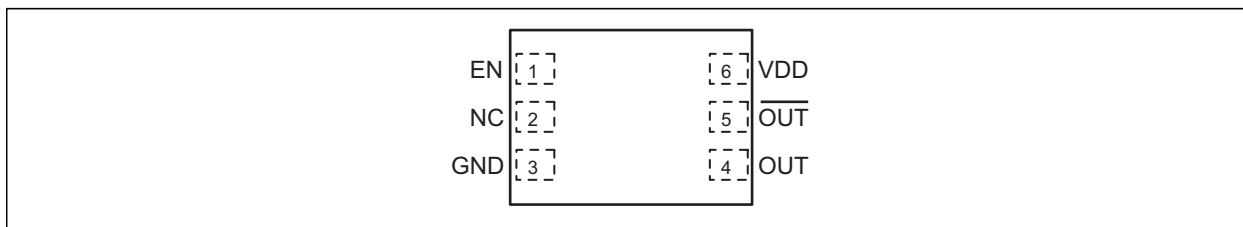
- Note 1:** Pin 6  $V_{DD}$  should be filtered with a 0.1  $\mu F$  capacitor.
- 2:**  $t_{SU}$  is time to 100 ppm stable output frequency after  $V_{DD}$  is applied and outputs are enabled.
- 3:** [Output Waveform](#) and [Test Circuit](#) figures below define the parameters.
- 4:** Output is enabled if pad is floated or not connected.

## TEMPERATURE SPECIFICATIONS (Note 1)

| Parameters                  | Sym.  | Min. | Typ. | Max. | Units | Conditions        |
|-----------------------------|-------|------|------|------|-------|-------------------|
| Operating Temperature Range | $T_A$ | -20  | —    | +70  | °C    | Ordering Option E |
|                             |       | -40  | —    | +85  | °C    | Ordering Option I |
|                             |       | -40  | —    | +105 | °C    | Ordering Option L |
| Junction Temperature        | $T_J$ | —    | —    | +150 | °C    | —                 |
| Storage Temperature Range   | $T_S$ | -55  | —    | +150 | °C    | —                 |
| Soldering Temperature       | —     | —    | —    | +260 | °C    | 40 sec. max.      |

**Note 1:** The maximum allowable power dissipation is a function of ambient temperature, the maximum allowable junction temperature, and the thermal resistance from junction to air (i.e.,  $T_A$ ,  $T_J$ ,  $\theta_{JA}$ ). Exceeding the maximum allowable power dissipation will cause the device operating junction temperature to exceed the maximum +150°C rating. Sustained junction temperatures above +150°C can impact the device reliability.

## 2.0 PIN DESCRIPTIONS



**FIGURE 2-1:** Pin Configuration, 6-Lead QFN.

The descriptions of the pins are listed in [Table 2-1](#).

**TABLE 2-1: PIN FUNCTION TABLE**

| Pin Number | Pin Name                | Description           |
|------------|-------------------------|-----------------------|
| 1          | EN                      | Enable.               |
| 2          | NC                      | Leave unconnected.    |
| 3          | GND                     | Ground.               |
| 4          | OUT                     | Output.               |
| 5          | $\overline{\text{OUT}}$ | Complementary output. |
| 6          | VDD                     | Input.                |

3.0 NOMINAL PERFORMANCE PARAMETERS

Unless specified otherwise, T = +25°C, V<sub>DD</sub> = 3.3V.

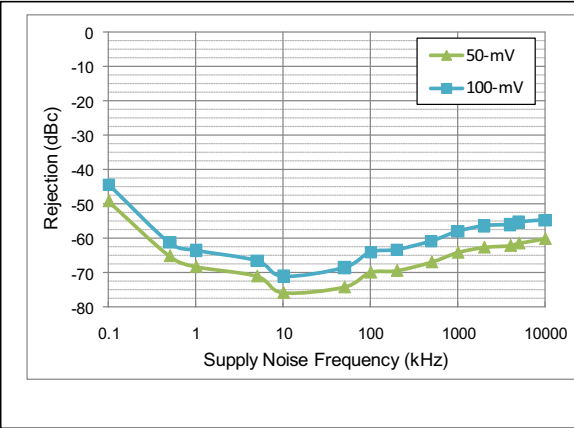


FIGURE 3-1: Power Supply Rejection Ratio.

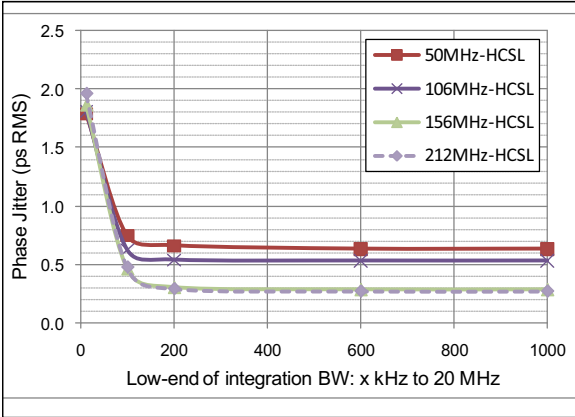
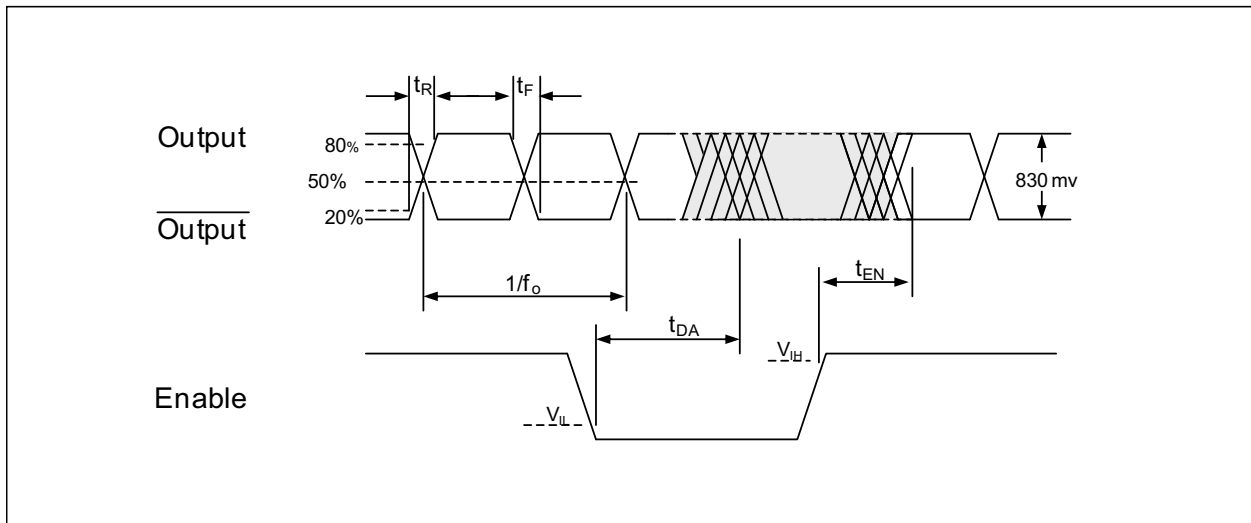


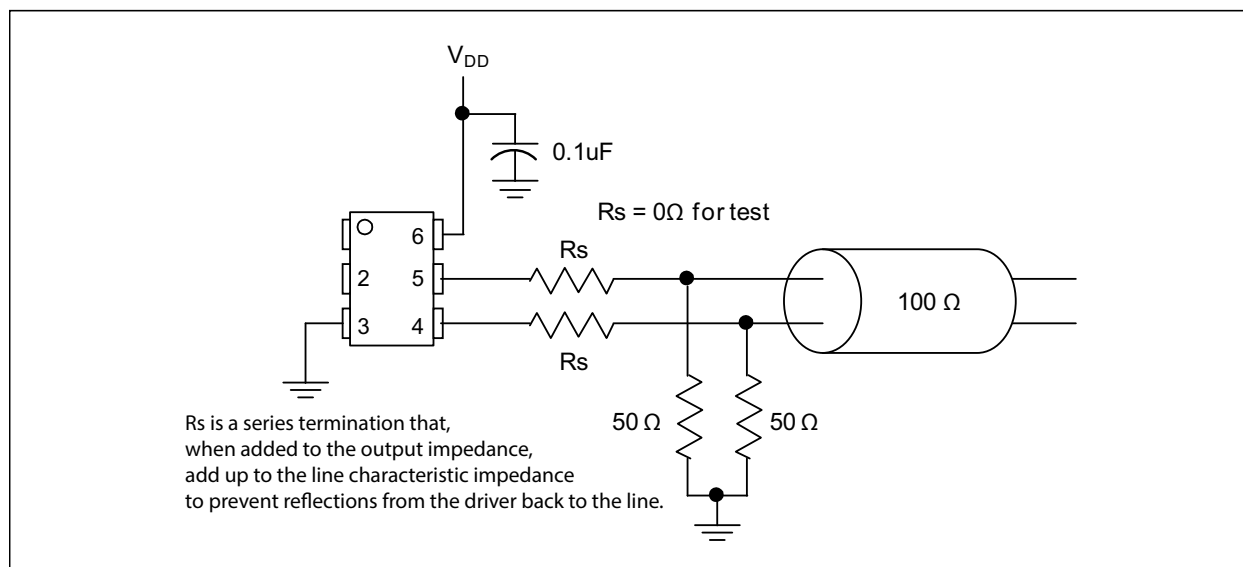
FIGURE 3-2: Phase Jitter (Integrated Phase Noise).

## 4.0 OUTPUT WAVEFORM



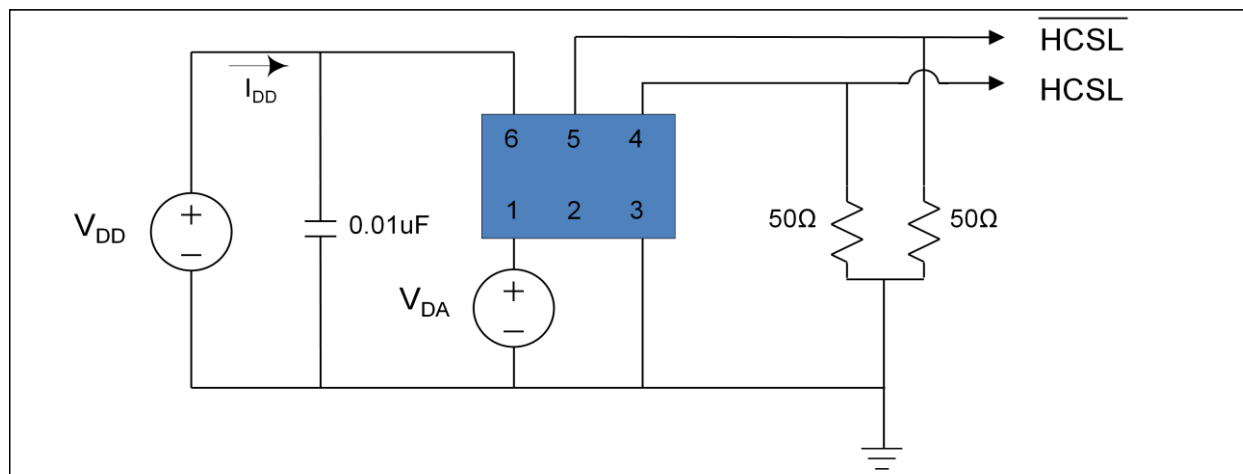
**FIGURE 4-1:** Output Waveform.

## 5.0 TYPICAL TERMINATION SCHEME



**FIGURE 5-1:** Typical Termination Scheme.

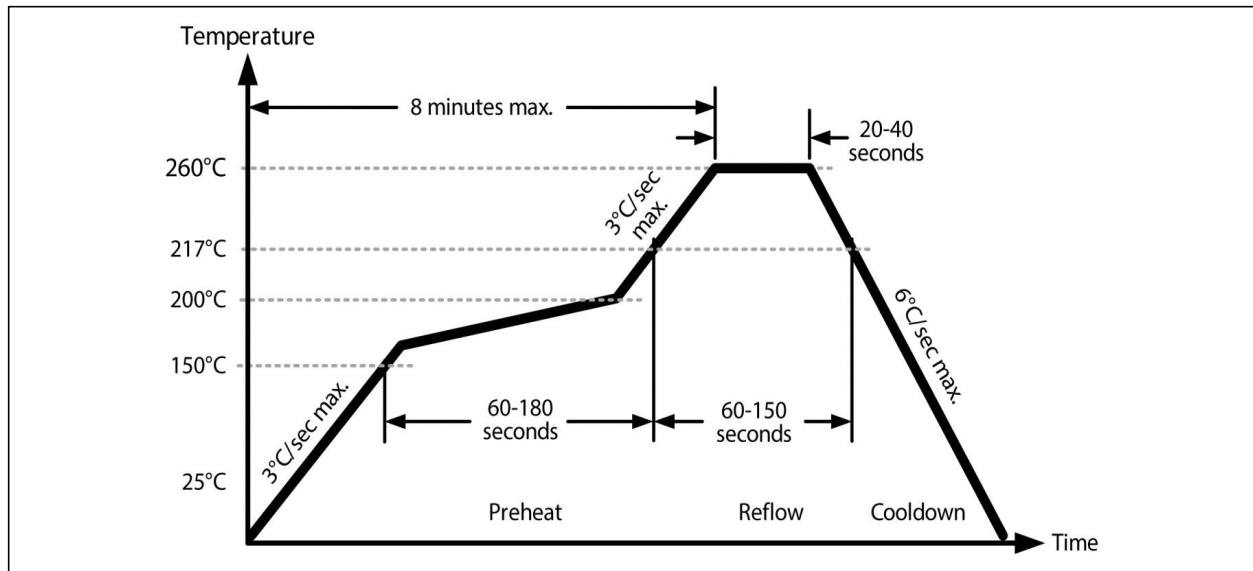
## 6.0 TEST CIRCUIT



**FIGURE 6-1:** Test Circuit.



## 7.0 SOLDER REFLOW PROFILE



### MSL 1 @ 260°C refer to JSTD-020C

|                                   |                |
|-----------------------------------|----------------|
| Ramp-Up Rate (200°C to Peak Temp) | 3°C/sec. max.  |
| Preheat Time 150°C to 200°C       | 60-180 sec.    |
| Time Maintained above 217°C       | 60-150 sec.    |
| Peak Temperature                  | 255°C to 260°C |
| Time within 5°C of Actual Peak    | 20-40 sec.     |
| Ramp-Down Rate                    | 6°C/sec. max.  |
| Time 25°C to Peak Temperature     | 8 minutes max. |

8.0 PACKAGE MARKING INFORMATION

8.1 Package Marking Information

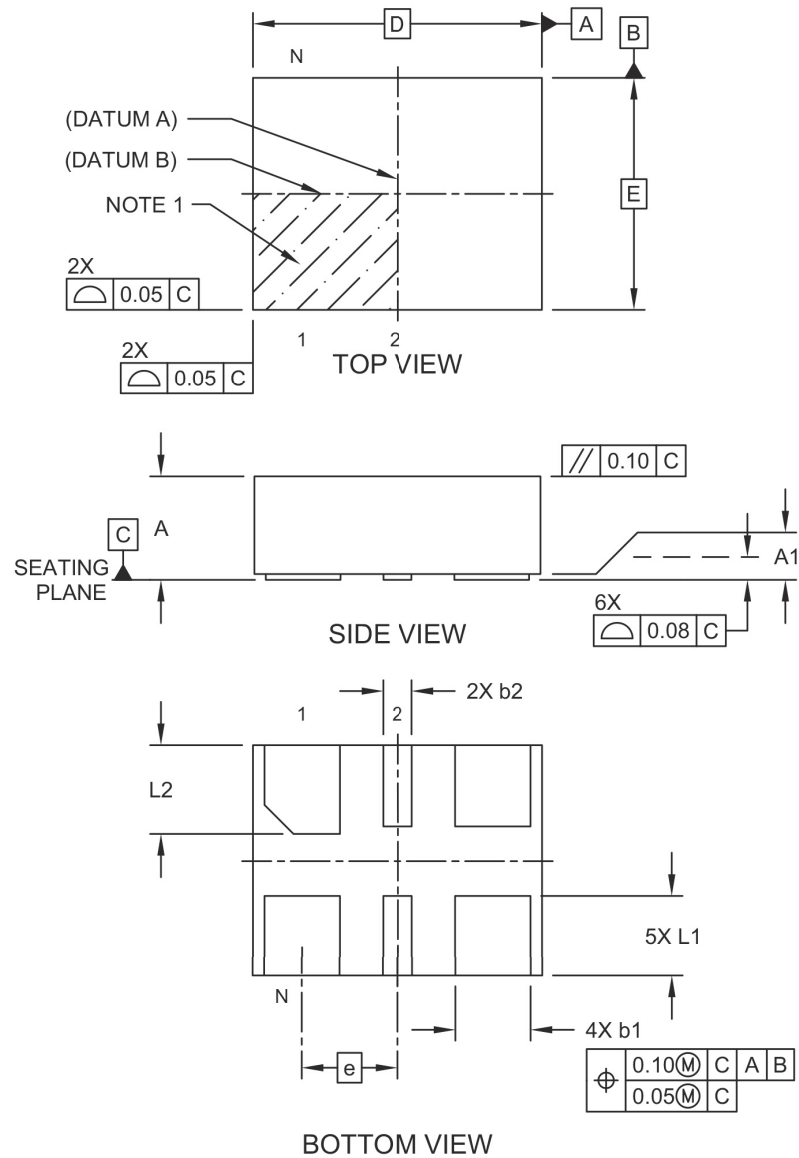
| 6-Pin CDFN/VDFN*                                                          | Example                                                                   |
|---------------------------------------------------------------------------|---------------------------------------------------------------------------|
| <div><div>XXXXXXX</div><div>DCPYYWW</div><div>0SSS</div><div></div></div> | <div><div>0750000</div><div>DCP1723</div><div>0421</div><div></div></div> |

|                |                                                                                                                                                                                                                                                            |                                                                                                                  |
|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|
| <b>Legend:</b> | XX...X                                                                                                                                                                                                                                                     | Product code, customer-specific information, or frequency in MHz without printed decimal point                   |
|                | 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')                                                                       |
|                | SSS                                                                                                                                                                                                                                                        | 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).                                   |
| <b>Note:</b>   | 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.                                                                                                                                                                                            |                                                                                                                  |

## 6-Lead VDFN 2.5 mm x 2.0 mm Package Outline and Recommended Land Pattern

### 6-Lead Very Thin Dual Flatpack No-Leads (J7A) - 2.5x2.0 mm Body [VDFN]

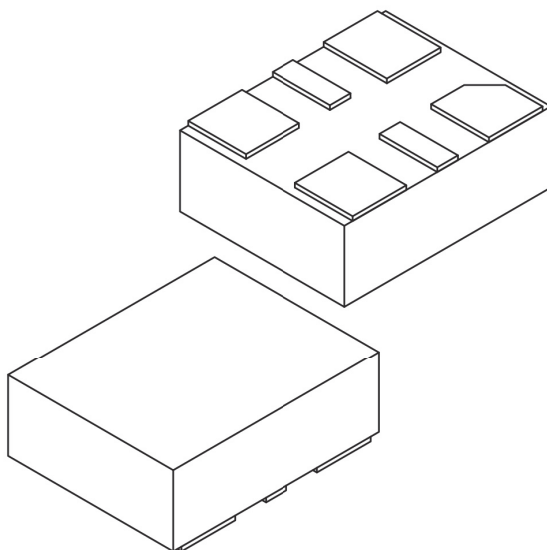
**Note:** For the most current package drawings, please see the Microchip Packaging Specification located at <http://www.microchip.com/packaging>



Microchip Technology Drawing C04-1005 Rev C Sheet 1 of 2

## 6-Lead Very Thin Dual Flatpack No-Leads (J7A) - 2.5x2.0 mm Body [VDFN]

**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  | 6           |       |       |
| Pitch               | e  | 0.825 BSC   |       |       |
| Overall Height      | A  | 0.80        | 0.85  | 0.90  |
| Standoff            | A1 | 0.00        | 0.02  | 0.05  |
| Overall Length      | D  | 2.50 BSC    |       |       |
| Overall Width       | E  | 2.00 BSC    |       |       |
| Terminal Width      | b1 | 0.60        | 0.65  | 0.70  |
| Terminal Width      | b2 | 0.20        | 0.25  | 0.30  |
| Terminal Length     | L1 | 0.60        | 0.70  | 0.80  |
| Terminal Length     | L2 | 0.665       | 0.765 | 0.865 |

**Notes:**

1. Pin 1 visual index feature may vary, but must be located within the hatched area.
2. Package is saw singulated
3. Dimensioning and tolerancing per ASME Y14.5M

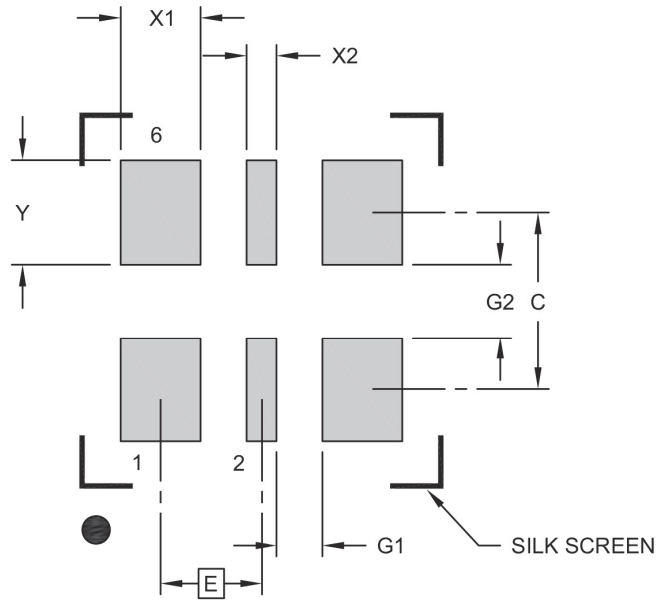
BSC: Basic Dimension. Theoretically exact value shown without tolerances.

REF: Reference Dimension, usually without tolerance, for information purposes only.

Microchip Technology Drawing C04-1005 Rev C Sheet 2 of 2

## 6-Lead Very Thin Dual Flatpack No-Leads (J7A) - 2.5x2.0 mm Body [VDFN]

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



RECOMMENDED LAND PATTERN

| Dimension Limits            | Units | MILLIMETERS |      |      |
|-----------------------------|-------|-------------|------|------|
|                             |       | MIN         | NOM  | MAX  |
| Contact Pitch               | E     | 0.825 BSC   |      |      |
| Contact Pad Width (X4)      | X1    |             |      | 0.65 |
| Contact Pad Width (X2)      | X2    |             |      | 0.25 |
| Contact Pad Length (X6)     | Y     |             |      | 0.85 |
| Contact Pad Spacing         | C     |             | 1.45 |      |
| Space Between Contacts (X4) | G1    | 0.38        |      |      |
| Space Between Contacts (X3) | G2    | 0.60        |      |      |

**Notes:**

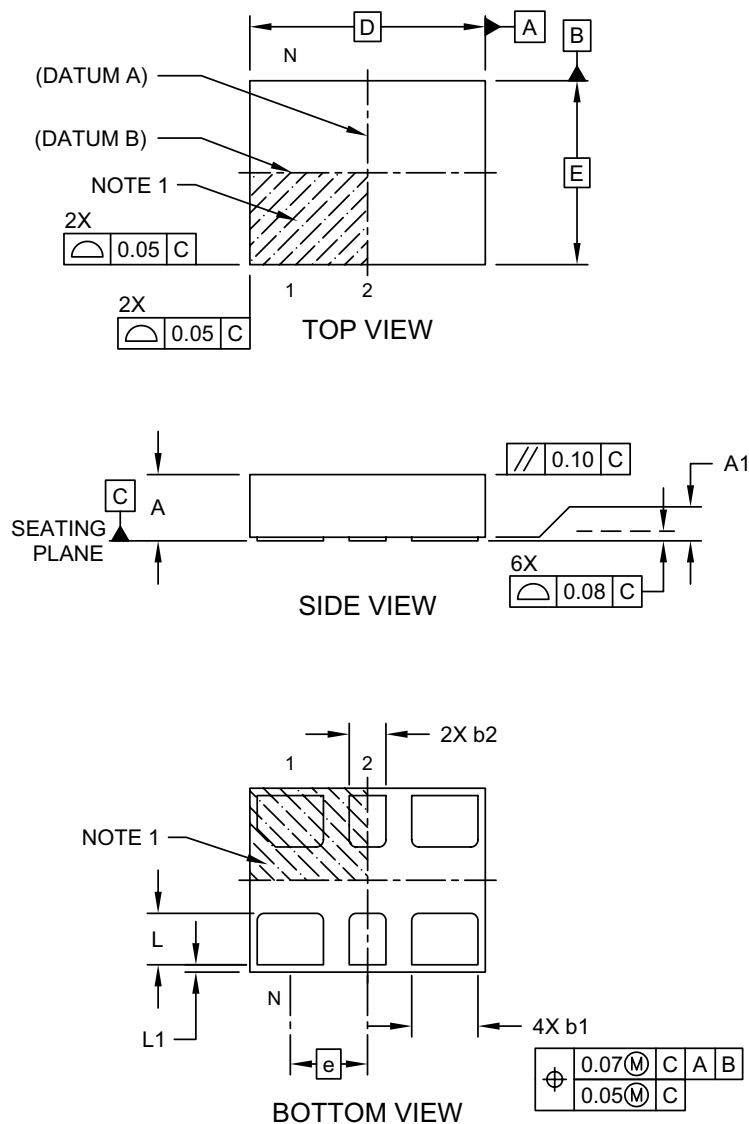
- Dimensioning and tolerancing per ASME Y14.5M  
BSC: Basic Dimension. Theoretically exact value shown without tolerances.
- For best soldering results, thermal vias, if used, should be filled or tented to avoid solder loss during reflow process

Microchip Technology Drawing C04-3005 Rev C

## 6-Lead VDFN 3.2 mm x 2.5 mm Package Outline and Recommended Land Pattern

### 6-Lead Very Thin Plastic Dual Flatpack No-Lead (H5A) - 3.2x2.5 mm Body [VDFN]

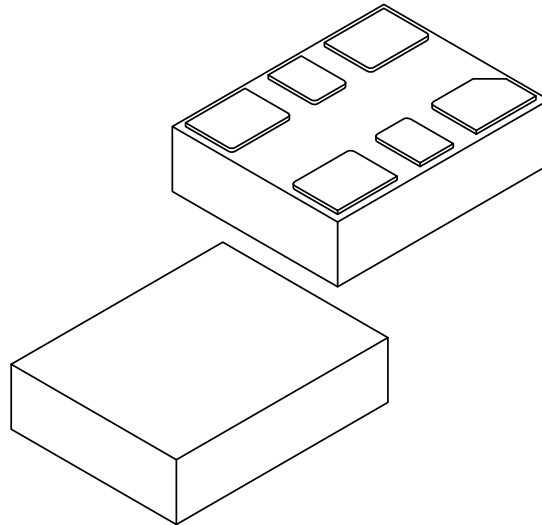
**Note:** For the most current package drawings, please see the Microchip Packaging Specification located at <http://www.microchip.com/packaging>



Microchip Technology Drawing C04-1007A Sheet 1 of 2

## 6-Lead Very Thin Plastic Dual Flatpack No-Lead (H5A) - 3.2x2.5 mm Body [VDFN]

**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  | 6           |      |      |
| Pitch               | e  | 1.05 BSC    |      |      |
| Overall Height      | A  | 0.80        | 0.85 | 0.90 |
| Standoff            | A1 | 0.00        | 0.02 | 0.05 |
| Overall Length      | D  | 3.20 BSC    |      |      |
| Overall Width       | E  | 2.50 BSC    |      |      |
| Terminal Width      | b1 | 0.85        | 0.90 | 0.95 |
| Terminal Width      | b2 | 0.45        | 0.50 | 0.55 |
| Terminal Length     | L  | 0.65        | 0.70 | 0.75 |
| Terminal Pullback   | L1 | 0.10 REF    |      |      |

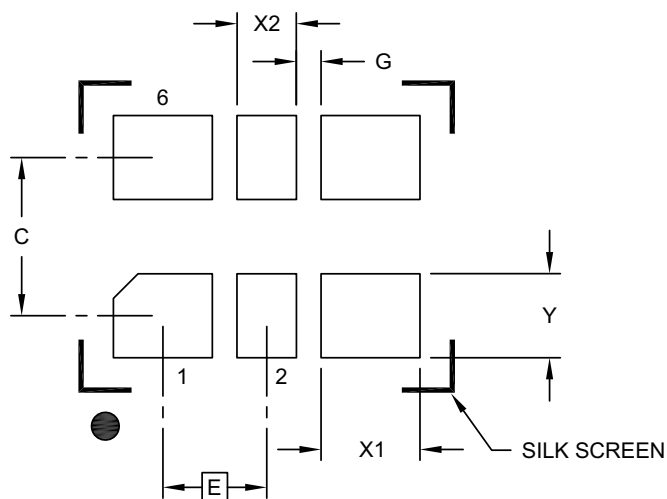
**Notes:**

- Pin 1 visual index feature may vary, but must be located within the hatched area.
- Package is saw singulated
- 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.

Microchip Technology Drawing C04-1007A Sheet 2 of 2

## 6-Lead Very Thin Plastic Dual Flatpack No-Lead (H5A) - 3.2x2.5 mm Body [VDFN]

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



RECOMMENDED LAND PATTERN

| Dimension Limits            | Units | MILLIMETERS |          |      |
|-----------------------------|-------|-------------|----------|------|
|                             |       | MIN         | NOM      | MAX  |
| Contact Pitch               | E     |             | 1.05 BSC |      |
| Contact Pad Spacing         | C     |             | 1.60     |      |
| Contact Pad Width (X4)      | X1    |             |          | 1.00 |
| Contact Pad Width (X2)      | X2    |             |          | 0.60 |
| Contact Pad Length (X6)     | Y     |             |          | 0.85 |
| Space Between Contacts (X4) | G1    | 0.25        |          |      |

**Notes:**

1. Dimensioning and tolerancing per ASME Y14.5M

BSC: Basic Dimension. Theoretically exact value shown without tolerances.

Microchip Technology Drawing C04-3007A

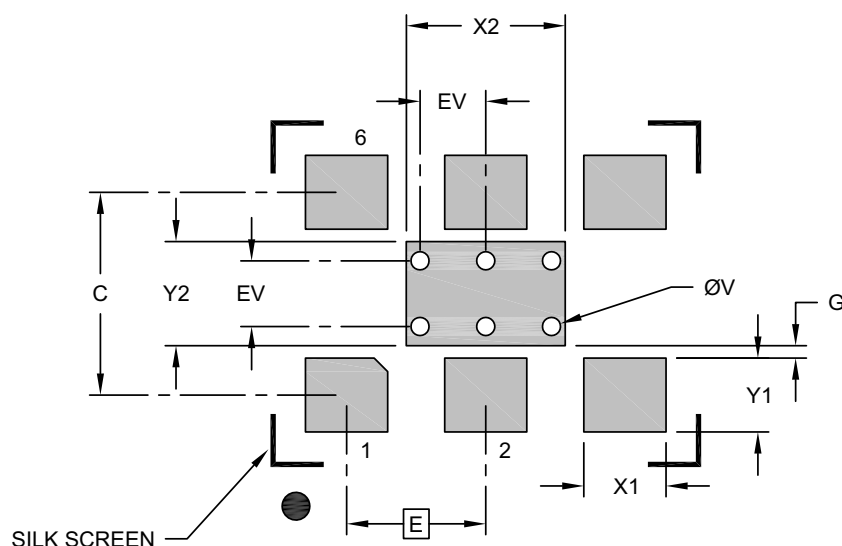




## 6-Lead VDFN 7.0 mm x 5.0 mm Package Outline and Recommended Land Pattern

### 6-Lead Very Thin Plastic Quad Flat, No Lead Package (H8A) - 7x5 mm Body [VDFN] With 2.8x1.8 mm Exposed Pad

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



### RECOMMENDED LAND PATTERN

| Dimension Limits               | Units | MILLIMETERS |      |      |
|--------------------------------|-------|-------------|------|------|
|                                |       | MIN         | NOM  | MAX  |
| Contact Pitch                  | E     | 2.54 BSC    |      |      |
| Optional Center Pad Width      | X2    |             |      | 2.90 |
| Optional Center Pad Length     | Y2    |             |      | 1.90 |
| Contact Pad Spacing            | C     |             | 3.70 |      |
| Contact Pad Width (X6)         | X1    |             |      | 1.50 |
| Contact Pad Length (X6)        | Y1    |             |      | 1.35 |
| Contact Pad to Center Pad (X2) | G     | 0.20        |      |      |
| Thermal Via Diameter (X6)      | V     |             | 0.33 |      |
| Thermal Via Pitch              | EV    |             | 1.20 |      |

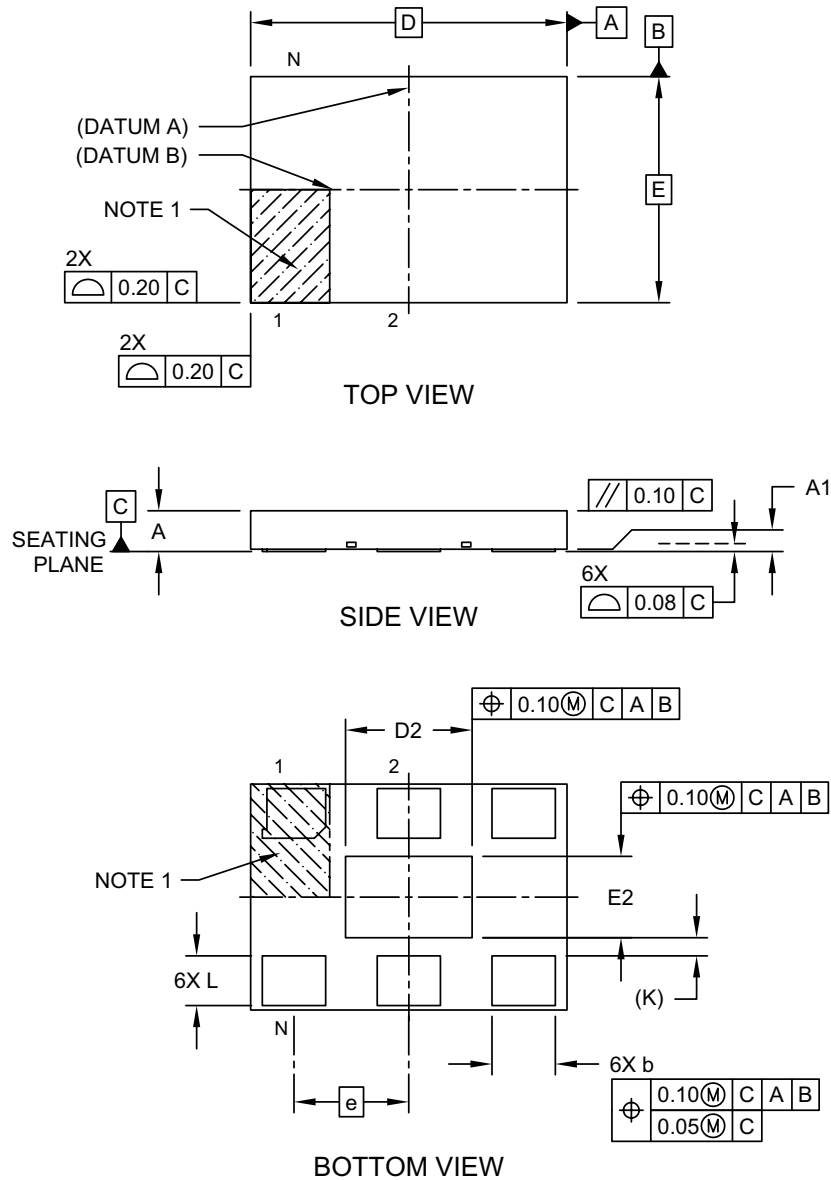
#### Notes:

- Dimensioning and tolerancing per ASME Y14.5M  
BSC: Basic Dimension. Theoretically exact value shown without tolerances.
- For best soldering results, thermal vias, if used, should be filled or tented to avoid solder loss during reflow process

Microchip Technology Drawing C04-3010A

## 6-Lead Very Thin Plastic Quad Flat, No Lead Package (H8A) - 7x5 mm Body [VDFN] With 2.8x1.8 mm Exposed Pad

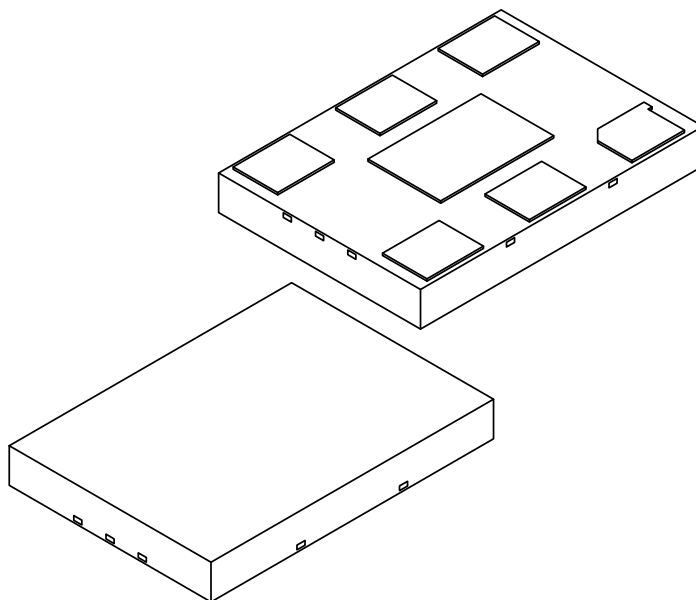
**Note:** For the most current package drawings, please see the Microchip Packaging Specification located at <http://www.microchip.com/packaging>



Microchip Technology Drawing C04-1010A Sheet 1 of 2

## 6-Lead Very Thin Plastic Quad Flat, No Lead Package (H8A) - 7x5 mm Body [VDFN] With 2.8x1.8 mm Exposed Pad

**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  | 6           |      |      |
| Pitch                   | e  | 2.54        |      |      |
| Overall Height          | A  | 0.80        | 0.85 | 0.90 |
| Standoff                | A1 | 0.00        | 0.02 | 0.05 |
| Overall Length          | D  | 7.00 BSC    |      |      |
| Exposed Pad Length      | D2 | 2.70        | 2.80 | 2.90 |
| Overall Width           | E  | 5.00 BSC    |      |      |
| Exposed Pad Width       | E2 | 1.70        | 1.80 | 1.90 |
| Terminal Width          | b  | 1.35        | 1.40 | 1.45 |
| Terminal Length         | L  | 1.00        | 1.10 | 1.20 |
| Terminal-to-Exposed-Pad | K  | 0.20 REF    |      |      |

**Notes:**

- Pin 1 visual index feature may vary, but must be located within the hatched area.
- Package is saw singulated
- 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.

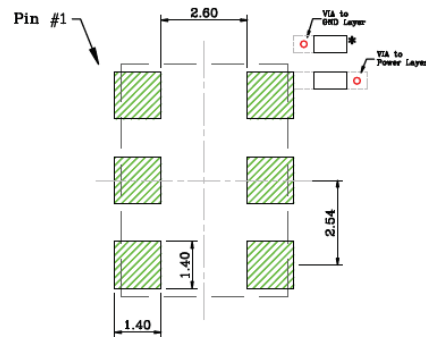
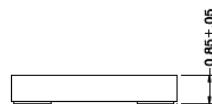
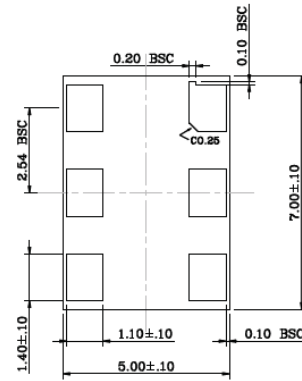
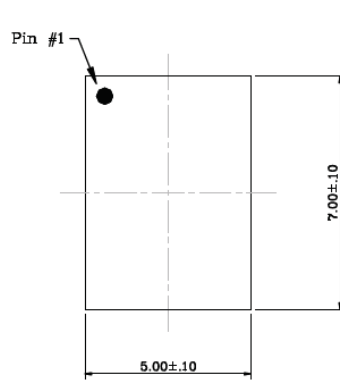
Microchip Technology Drawing C04-1010A Sheet 2 of 2

## 6-Lead CDFN 7.0 mm x 5.0 mm Package Outline and Recommended Land Pattern

### TITLE

6 LEAD CDFN 7.0x5.0mm COL PACKAGE OUTLINE & RECOMMENDED LAND PATTERN

| DRAWING # | CDFN75-6LD-PL-1 | UNIT | MM |
|-----------|-----------------|------|----|
|-----------|-----------------|------|----|



### NOTE:

- \* Power Supply Decoupling Capacitor is required in Recommended Land Pattern.
- Green shaded rectangles in Recommended Land Pattern are solder stencil opening.
- Red circles in Recommended Land Pattern are thermal VIA.

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

NOTES:

## APPENDIX A: REVISION HISTORY

### Revision A (December 2017)

- Initial conversion of Micrel document DSC1104/24 to Microchip data sheet template DS20005870A.
- Minor text changes throughout.

### Revision B (October 2019)

- Updated [6-Lead VDFN 2.5 mm x 2.0 mm Package Outline and Recommended Land Pattern](#) package drawing.
- Updated note in [Figure 5-1](#).

NOTES:



## PRODUCT IDENTIFICATION SYSTEM

To order or obtain information, e.g., on pricing or delivery, contact your local Microchip representative or sales office.

| <u>PART NO.</u>           |  | <u>X</u> | <u>X</u>                                          | <u>X</u>                                   | <u>-XXX.XXXX</u> | <u>X</u>         |
|---------------------------|--|----------|---------------------------------------------------|--------------------------------------------|------------------|------------------|
| Device                    |  | Package  | Temperature Range                                 | Stability                                  | Frequency        | Packaging Option |
| <b>Device:</b>            |  | DSC1104: | Low-Jitter Precision HCSL Oscillator with Standby |                                            |                  |                  |
|                           |  | DSC1124: | Low-Jitter Precision HCSL Oscillator              |                                            |                  |                  |
| <b>Package:</b>           |  | A        | =                                                 | 6-Lead 7.0 mm x 5.0 mm CDFN                |                  |                  |
|                           |  | B        | =                                                 | 6-Lead 5.0 mm x 3.2 mm CDFN                |                  |                  |
|                           |  | C        | =                                                 | 6-Lead 3.2 mm x 2.5 mm CDFN                |                  |                  |
|                           |  | D        | =                                                 | 6-Lead 2.5 mm x 2.0 mm CDFN                |                  |                  |
|                           |  | N        | =                                                 | 6-Lead 7.0 mm x 5.0 mm CDFN w/o center pad |                  |                  |
| <b>Temperature Range:</b> |  | E        | =                                                 | -20°C to +70°C (Extended Commercial)       |                  |                  |
|                           |  | I        | =                                                 | -40°C to +85°C (Industrial)                |                  |                  |
|                           |  | L        | =                                                 | -40°C to +105°C (Extended Industrial)      |                  |                  |
| <b>Stability:</b>         |  | 1        | =                                                 | ±50 ppm                                    |                  |                  |
|                           |  | 2        | =                                                 | ±25 ppm                                    |                  |                  |
|                           |  | 3        | =                                                 | ±20 ppm                                    |                  |                  |
|                           |  | 5        | =                                                 | ±10 ppm                                    |                  |                  |
| <b>Frequency:</b>         |  | xxx.xxxx | =                                                 | 2.3 MHz to 460 MHz (User Defined)          |                  |                  |
| <b>Packing Option:</b>    |  | <blank>  | =                                                 | Tube                                       |                  |                  |
|                           |  | T        | =                                                 | 1000/Reel                                  |                  |                  |

**Examples:**

a) DSC1104AE1-053.5000: Low Jitter Precision HCSL Oscillator with Standby, 6-Lead 7x5 CDFN, Ext. Commercial Temp. Range, ±50 ppm Stability, 53.5 MHz Frequency, Tube

b) DSC1124BI2-246.8100T: Low Jitter Precision HCSL Oscillator, 6-Lead 5x3.2 VDFN, Industrial Temp. Range, ±25 ppm Stability, 246.81 MHz Frequency, 1000/Reel

c) DSC1104CL5-156.2500: Low Jitter Precision HCSL Oscillator with Standby, 6-Lead 3.2x2.5 VDFN, Ext. Industrial Temp. Range, ±10 ppm Standby, 156.25 MHz Frequency, Tube

d) DSC1124DE3-094.5500T: Low Jitter Precision HCSL Oscillator, 6-Lead 2.5x2.0 CDFN, Ext. commercial Temp. Range, ±20 ppm Stability, 94.55 MHz Frequency, 1000/Reel

**Note 1:** Tape and Reel identifier only appears in the catalog part number description. This identifier is used for ordering purposes and is not printed on the device package. Check with your Microchip Sales Office for package availability with the Tape and Reel option.

NOTES:

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