

CDCVF25081 3.3V 锁相环时钟驱动器

1 特性

- 基于锁相环的零延迟缓冲器
 - 1 个时钟输入，2 组 4 个输出
 - 无需外部 RC 网络
- 电源电压：3V 至 3.6V
- 工作频率：8 MHz 至 200 MHz
- 低附加抖动（逐周期）：在 66MHz 至 200MHz 频率下为 $\pm 100\text{ps}$
- 支持断电模式
 - 电流消耗： $< 20\mu\text{A}$
- 断电模式
- 25 Ω 片上串联阻尼电阻器
- 工业温度范围：-40°C 至 85°C
- 与扩频时钟兼容 (SSC)
- 封装采用
 - 9.9mm $\times$ 3.91mm 16 引脚 SOIC (D)
 - 5.0mm $\times$ 4.4mm 16 引脚 TSSOP (PW)

2 应用

- 国防无线电
- 量产开关和混频器
- 雷达
- 体外诊断
- CT 和 PET 扫描仪

3 说明

CDCVF25081 是一款高性能、低偏差、低抖动锁相环时钟驱动器。它使用 PLL 根据输入时钟信号对输出时钟的频率和相位进行精准校准。输出分为 2 组，共 8 个缓冲 CLKIN 输出。当不存在 CLKIN 信号时，器件会自动将输出置于低电平状态（关断模式）。

S1 和 S2 引脚允许选择 PLL 或旁路 PLL 输出。保持开路时，输出将禁用为逻辑低电平状态。

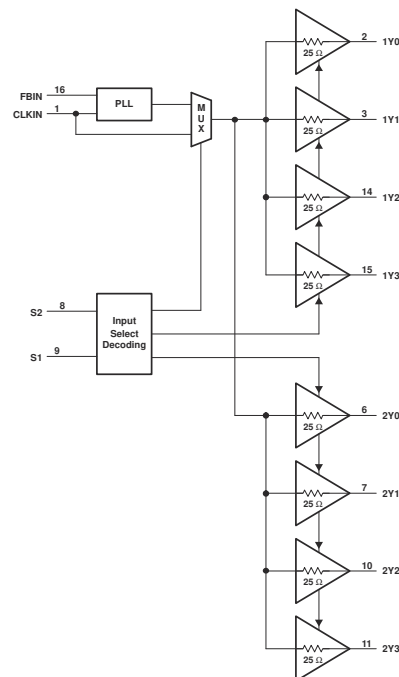
该器件支持失效防护功能。该器件还整合了输入迟滞，可防止在没有输入信号的情况下输出随机振荡。

该器件可在 3.3V 电源环境下工作，额定温度范围是 -40°C 至 85°C（环境温度）。

器件信息⁽¹⁾

器件型号	封装	封装尺寸（标称值）
CDCVF25081	SOIC (16)	9.90mm $\times$ 3.91mm
	TSSOP (16)	5.00mm $\times$ 4.40mm

(1) 如需了解所有可用封装，请参阅数据表末尾的可订购产品附录。



功能方框图



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4 Revision History

注：以前版本的页码可能与当前版本的页码不同

Changes from Revision A (February 2003) to Revision B (January 2022)	Page
• 更新了整个文档中的表格、图和交叉参考的编号格式.....	1
• 添加了 ESD 等级表、热性能信息表、特性说明部分、器件功能模式、应用和实施部分、电源相关建议部分、布局部分、器件和文档支持部分以及机械、封装和可订购信息部分.....	1

5 Pin Configuration and Functions

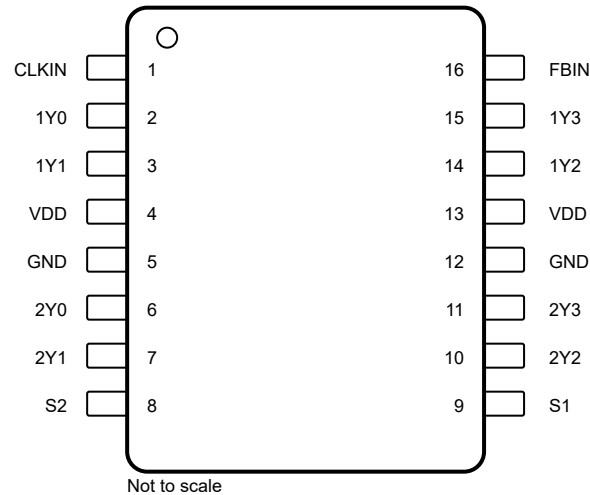


图 5-1. D or PW Package 16-Pin SOIC or TSSOP Top View

表 5-1. Pin Functions

PIN		I/O TYPE ⁽¹⁾	DESCRIPTION
NAME	NO.		
INPUT CLOCK			
CLKIN	1	I	Clock input. CLKIN must have a fixed frequency and phase in order for the PLL to acquire lock. Once the circuit is powered up and a valid signal is applied, a stabilization time is required for the PLL to phase lock the feedback signal to CLKIN.
INPUT SELECT			
S1, S2	9, 8	I	Input Selection. Selects input port. (See 表 8-2.)
FEEDBACK			
FBIN	16	I	Feedback input. FBIN provides the feedback signal to the internal PLL. FBIN must be wired to one of the outputs to complete the feedback loop of the internal PLL. The integrated PLL synchronizes the FBIN and output signal so there is nominally zero-delay from input clock to output clock.
OUTPUT CLOCKS			
1Y0	2	O	Bank 1 Y0 clock output with an integrated 25-Ω series-damping resistor.
1Y1	3	O	Bank 1 Y1 clock output with an integrated 25-Ω series-damping resistor.
1Y2	14	O	Bank 1 Y2 clock output with an integrated 25-Ω series-damping resistor.
1Y3	15	O	Bank 1 Y3 clock output with an integrated 25-Ω series-damping resistor.
2Y0	6	O	Bank 2 Y0 clock output with an integrated 25-Ω series-damping resistor.
2Y1	7	O	Bank 2 Y1 clock output with an integrated 25-Ω series-damping resistor.
2Y2	10	O	Bank 2 Y2 clock output with an integrated 25-Ω series-damping resistor.
2Y3	11	O	Bank 2 Y3 clock output with an integrated 25-Ω series-damping resistor.
SUPPLY VOLTAGE AND GROUND			
VDD	4, 13	P	3.3V power supply for output channels and core voltage.
GND	5, 12	G	Ground. Connect ground pad to system ground.

(1) The definitions below define the I/O type for each pin.

- I = Input
- O = Output
- P = Power Supply

- G = Ground

6 Specifications

6.1 Absolute Maximum Ratings

over operating free-air temperature range (unless otherwise noted)⁽¹⁾

		MIN	MAX	UNIT
V_{DD}	Power supply voltage	-0.5	4.6	V
V_I	Input voltage range ^{(2) (3)}	-0.5	4.6	V
V_O	Output voltage range ^{(2) (3)}	-0.5	$V_{DD} + 0.5$	V
I_{IK}	Input clamp current ($V_I < 0$)	-50		mA
I_{OK}	Output clamp current ($V_O < 0$)	-50		mA
I_O	Continuous total output current ($V_O = 0$ to V_{DD})	-50		mA
θ_{JA}	Package thermal impedance ⁽⁴⁾	PW package		147 °C/W
		D package		112 °C/W
T_{stg}	Storage temperature	-65	150	°C

- (1) Operation outside the *Absolute Maximum Ratings* may cause permanent device damage. *Absolute Maximum Ratings* do not imply functional operation of the device at these or any other conditions beyond those listed under *Recommended Operating Conditions*. If used outside the *Recommended Operating Conditions* but within the *Absolute Maximum Ratings*, the device may not be fully functional, and this may affect device reliability, functionality, performance, and shorten the device lifetime.
- (2) The input and output negative voltage ratings may be exceeded if the input and output clamp-current ratings are observed.
- (3) This value is limited to 4.6 V maximum.
- (4) The package thermal impedance is calculated in accordance with JESD 51.

6.2 ESD Ratings

		VALUE	UNIT
$V_{(ESD)}$	Electrostatic discharge	Human body model (HBM), per ANSI/ESDA/JEDEC JS-001, all pins ⁽¹⁾	±2000
		Charged device model (CDM), per JEDEC specification JESD22-C101, all pins ⁽²⁾	±1000

- (1) JEDEC document JEP155 states that 500-V HBM allows safe manufacturing with a standard ESD control process.
- (2) JEDEC document JEP157 states that 250-V CDM allows safe manufacturing with a standard ESD control process.

6.3 Recommended Operating Conditions

	MIN	NOM	MAX	UNIT
Supply voltage, V_{DD}	3	3.3	3.6	V
Low level input voltage, V_{IL}			0.8	V
High level input voltage, V_{IH}	2			V
Input voltage, V_I	0		3.6	V
High-level output current, I_{OH}			-12	mA
Low-level output current, I_{OL}			12	mA
Operating free-air temperature, T_A	-40		85	°C

6.4 Thermal Information

THERMAL METRIC ⁽¹⁾		CDCVF25081		UNIT
		SOIC (D)	TSSOP (PW)	
		16 PINS	16 PINS	
$R_{\theta JA}$	Junction-to-ambient thermal resistance	87.5	109.9	°C/W
$R_{\theta JC(top)}$	Junction-to-case (top) thermal resistance	46.0	40.4	°C/W
$R_{\theta JB}$	Junction-to-board thermal resistance	46.2	56.1	°C/W
Ψ_{JT}	Junction-to-top characterization parameter	11.7	3.6	°C/W
Ψ_{JB}	Junction-to-board characterization parameter	45.8	55.6	°C/W

(1) For more information about traditional and new thermal metrics, see the [Semiconductor and IC Package Thermal Metrics](#) application report (SPRA953).

6.5 Electrical Characteristics

over recommended operating free-air temperature range (unless otherwise noted)

PARAMETER		TEST CONDITIONS	MIN	TYP ⁽¹⁾	MAX	UNIT
V _{IK}	Input voltage	V _{DD} = 3 V, I _I = - 18 mA			- 1.2	V
I _I	Input current	V _I = 0 V or V _{DD}			±5	μA
I _{PD} ⁽²⁾	Power down current	f _{CLKIN} = 0 MHz, V _{DD} = 3.3 V			20	μA
I _{OZ}	Output 3-state	V _o = 0 V or V _{DD} , V _{DD} = 3.6 V			±5	μA
C _I	Input capacitance at FBIN, CLKIN	V _I = 0 V or V _{DD}		4		pF
C _I	Input capacitance at S1, S2	V _I = 0 V or V _{DD}		2.2		pF
C _O	Output capacitance	V _I = 0 V or V _{DD}		3		pF
V _{OH}	High-level output voltage	V _{DD} = min to max, I _{OH} = - 100 μA	V _{DD} - 0.2			V
		V _{DD} = 3 V, I _{OH} = - 12 mA	2.1			
		V _{DD} = 3 V, I _{OH} = - 6 mA	2.4			
V _{OL}	Low-level output voltage	V _{DD} = min to max, I _{OL} = 100 μA			0.2	V
		V _{DD} = 3 V, I _{OL} = 12 mA			0.8	
		V _{DD} = 3 V, I _{OL} = 6 mA			0.55	
I _{OH}	High-level output current	V _{DD} = 3 V, V _O = 1 V	- 24			mA
		V _{DD} = 3.3 V, V _O = 1.65 V		- 30		
		V _{DD} = 3.6 V, V _O = 3.135 V		- 15		
I _{OL}	Low-level output current	V _{DD} = 3 V, V _O = 1.95 V	26			mA
		V _{DD} = 3.3 V, V _O = 1.65 V		33		
		V _{DD} = 3.6 V, V _O = 0.4 V		14		

(1) All typical values are at respective nominal V_{DD} .

(2) For I_{DD} over frequency see [Figure 9-2](#).

6.6 Timing Requirements

over recommended ranges of supply voltage, load, and operating free-air temperature

		MIN	NOM	MAX	UNIT
Clock frequency, f_{clk}	$C_L = 25\text{ pF}$	8		100	MHz
	$C_L = 15\text{ pF}$	66		200	

6.7 Switching Characteristics

over recommended operating free-air temperature range (unless otherwise noted)

PARAMETER		TEST CONDITIONS	MIN	TYP ⁽¹⁾	MAX	UNIT
t_{lock}	PLL lock time	$f = 100 \text{ MHz}$		10		μs
$t_{phoffset}$	Phase offset (CLKIN to FBIN)	$f = 8 \text{ MHz to } 66 \text{ MHz},$ $V_{th} = V_{DD}/2$ ⁽³⁾	- 200		200	ps
		$f = 66 \text{ MHz to } 200 \text{ MHz},$ $V_{th} = V_{DD}/2$ ⁽³⁾	- 150		150	
t_{PLH}	Low-to-high level output propagation delay	$S2 = \text{High}, S1 = \text{Low (PLL bypass)},$ $f = 1 \text{ MHz}, C_L = 25 \text{ pF}$	2.5		6	ns
t_{PHL}	High-to-low level output propagation delay		2.5		6	
$t_{sk(o)}$	Output skew (Y_n to Y_n) ⁽²⁾				150	ps
$t_{sk(pp)}$	Part-to-part skew	$S2 = \text{high}, S1 = \text{high (PLL mode)}$			600	ps
		$S2 = \text{high}, S1 = \text{low (PLL bypass)}$			700	
$t_{jit(cc)}$	Jitter (cycle-to-cycle)	$f = 66 \text{ MHz to } 200 \text{ MHz}, C_L = 15 \text{ pF}$			± 100	ps
		$f = 66 \text{ MHz to } 100 \text{ MHz}, C_L = 25 \text{ pF},$ $f = 8 \text{ MHz to } 66 \text{ MHz (see Figure 6-2)}$			± 150	
odc	Output duty cycle	$f = 8 \text{ MHz to } 200 \text{ MHz}$	43%		57%	
$t_{sk(p)}$	Pulse skew	$S2 = \text{High}, S1 = \text{low (PLL bypass)},$ $f = 1 \text{ MHz}, C_L = 25 \text{ pF}$			0.7	ns
t_{RISE}	Rise time rate	$C_L = 15 \text{ pF}, \text{ See Figure 7-4}$	0.8		3.3	V/ns
		$C_L = 25 \text{ pF}, \text{ See Figure 7-4}$	0.5		2	
t_{FALL}	Fall time rate	$C_L = 15 \text{ pF}, \text{ See Figure 7-4}$	0.8		3.3	V/ns
		$C_L = 25 \text{ pF}, \text{ See Figure 7-4}$	0.5		2	

(1) All typical values are at respective nominal V_{DD} .

(2) The $t_{sk(o)}$ specification is only valid for equal loading of all outputs.

(3) Similar waveform at CLKIN and FBIN are required. For phase displacement between CLKIN and Y-outputs see Figure 6-1.

6.8 Typical Characteristics

图 6-1 captures the variation of the CDCVF25081 current consumption with capacitive load and phase displacement. 图 6-2 shows the variation of the cycle-to-cycle jitter across frequency.

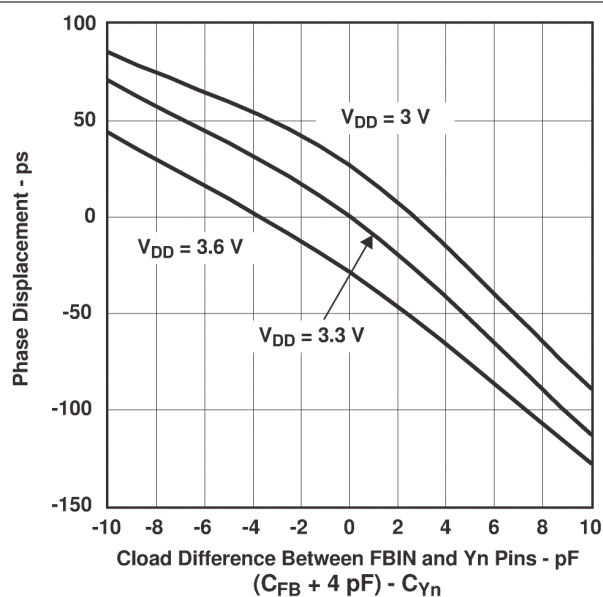


图 6-1. Phase Displacement vs. Load

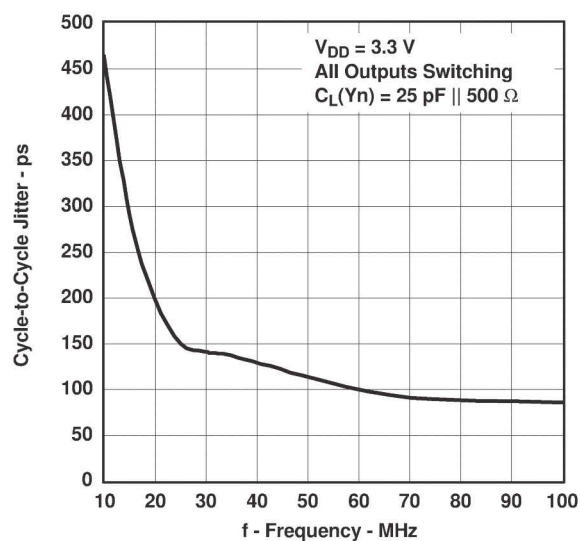
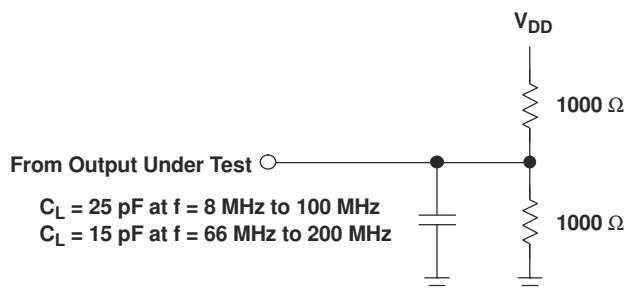


图 6-2. Cycle-to-Cycle Jitter vs. Frequency

7 Parameter Measurement Information



- NOTES: A. C_L includes probe and jig capacitance.
 B. All input pulses are supplied by generators having the following characteristics: $Z_O = 50 \Omega$, $t_r < 1.2 \text{ ns}$, $t_f < 1.2 \text{ ns}$.
 C. The outputs are measured one at a time with one transition per measurement.

图 7-1. Test Load Circuit

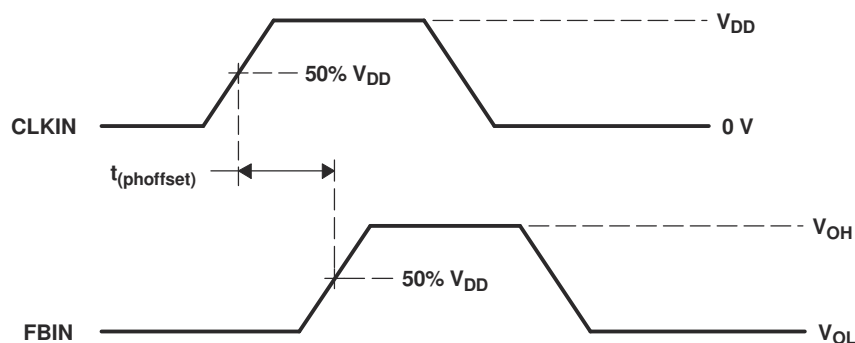
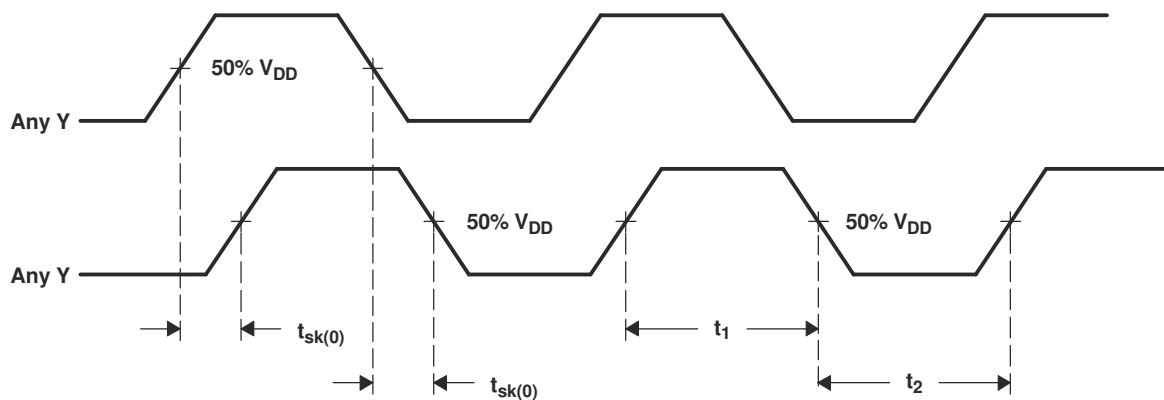
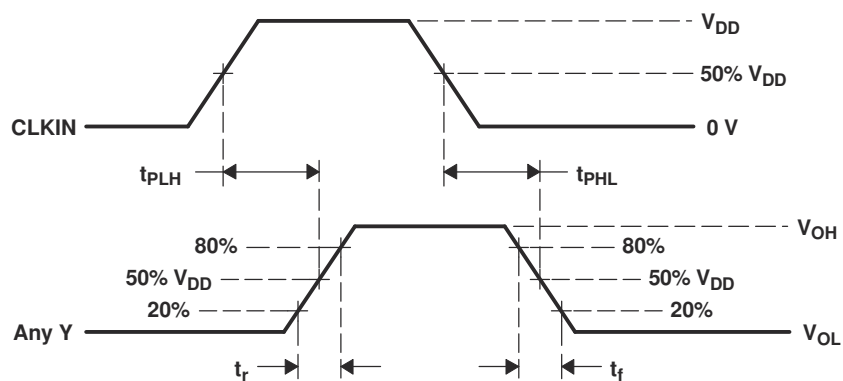


图 7-2. Voltage Thresholds for Measurements, Phase Offset (PLL Mode)



NOTE: $\text{odc} = t_1 / (t_1 + t_2) \times 100\%$

图 7-3. Output Skew and Output Duty Cycle (PLL Mode)



NOTE: $t_{sk(p)} = |t_{PLH} - t_{PHL}|$

图 7-4. Propagation Delay and Pulse Skew (Non-PLL Mode)

8 Detailed Description

8.1 Overview

The CDCVF25081 is a low jitter, low skew, phase-locked loop clock buffer solution. Unlike many products containing PLLs, the CDCVF25081 does not require an external RC network. The loop filter for the PLL is included on-chip, minimizing component count, space, and cost. Two banks of four outputs each provide buffered copies of the CLKIN.

8.2 Functional Block Diagram

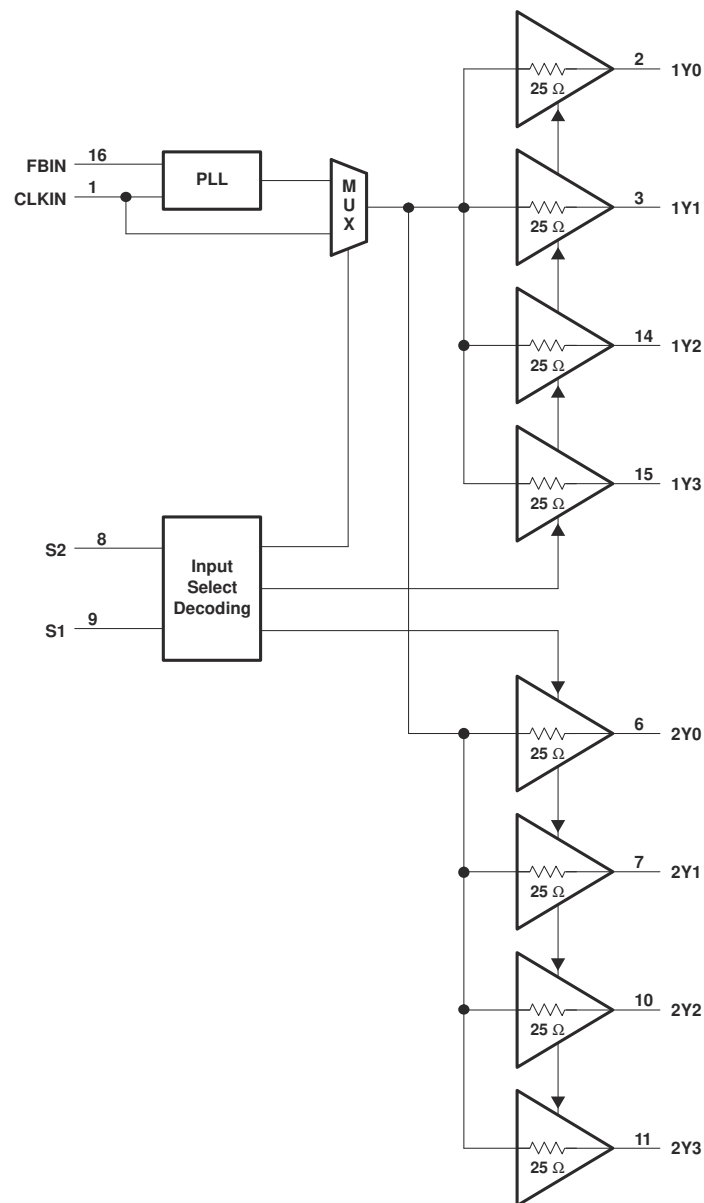


图 8-1. Functional Block Diagram

8.3 Feature Description

The CDCVF25081 has an integrated PLL with a dedicated feedback pin (FBIN) for synchronization and zero-delay. FBIN must be directly routed to a clock output to complete the feedback loop. When no input is applied to the CLKIN pin, the device powers down the outputs by setting them to a low logic level.

Because it is based on a PLL circuitry, the CDCVF25081 requires a stabilization time to achieve phase lock of the feedback signal to the reference signal. This time is required following power up and application of a fixed-frequency signal at CLKIN and any changes to the PLL reference.

Output duty cycles are adjusted to 50%, independent of duty cycle at CLKIN. Each output has an internal series damping resistor of 25 ohms useful in driving point-to-point loads. Unused outputs can be left floating to reduce overall system cost.

表 8-1 lists the output bank mapping of the CDCVF25081.

表 8-1. Output Bank Mapping

BANK	CLOCK OUTPUTS
0	1Y0, 1Y1, 1Y2, 1Y3
1	2Y0, 2Y1, 2Y2, 2Y3

8.4 Device Functional Modes

The CDCVF25081 operates from a 3.3-V supply. 表 8-2 shows the output logic states of the device based on the selection pins. Based on the input selection pins (S1 and S2), the two output banks can be set as PLL outputs, bypassed PLL outputs, or high impedance.

表 8-2. Output Logic Table

S2	S1	Bank 1	Bank 2	OUTPUT SOURCE	PLL SHUTDOWN
0	0	Hi-Z	Hi-Z	N/A	Yes
0	1	Active	Hi-Z	PLL ⁽¹⁾	No
1	0	Active	Active	Input clock (PLL bypass)	Yes
1	1	Active	Active	PLL ⁽¹⁾	No

(1) If CLKIN < 2 MHz, then the outputs are switched to a LOW level.

9 Application and Implementation

备注

Information in the following applications sections is not part of the TI component specification, and TI does not warrant its accuracy or completeness. TI's customers are responsible for determining suitability of components for their purposes, as well as validating and testing their design implementation to confirm system functionality.

9.1 Application Information

The CDCVF25081 is a low additive jitter, phase-locked loop driver that can operate up to 200 MHz with a 3.3-V supply. The PLL circuitry is internal to device requiring no additional configuration by the user.

9.2 Typical Application

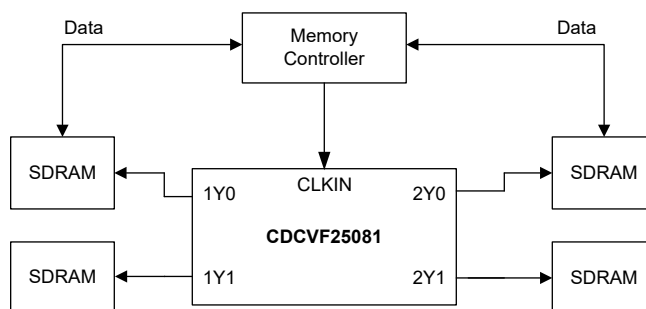


图 9-1. System Configuration Example

9.2.1 Design Requirements

Any output pin can be used to synchronize the FBIN to the outputs. TI recommends to not have a load on the output routed to the FBIN pin for optimum results.

9.2.2 Detailed Design Procedure

Unused outputs can be left floating. See the [Power Supply Recommendations](#) section for recommended filtering techniques.

9.2.3 Application Curves

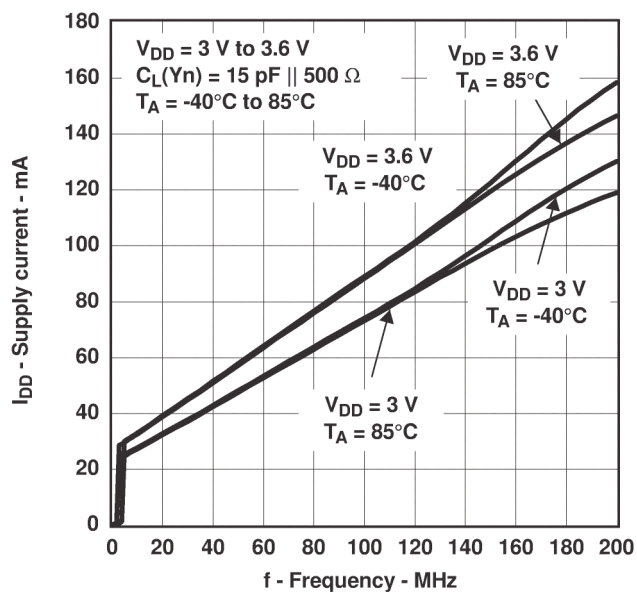


图 9-2. Supply Current vs. Frequency

10 Power Supply Recommendations

High-performance clock buffers can be sensitive to noise on the power supply, which may dramatically increase the additive jitter of the buffer. Thus, it is essential to manage any excessive noise from the system power supply, especially for applications where the jitter and phase noise performance is critical.

Filter capacitors are used to eliminate the low-frequency noise from the power supply, where the bypass capacitors provide the very low impedance path for high-frequency noise and guard the power supply system against induced fluctuations. These bypass capacitors also provide instantaneous current surges as required by the device and should have low equivalent series resistance (ESR). To properly bypass the supply, the decoupling capacitors must be placed very close to the power-supply terminals, be connected directly to the ground plane, and laid out with short loops to minimize inductance. TI recommends adding as many high-frequency (for example, 0.1 μF) bypass capacitors, as there are supply terminals in the package. TI recommends, but does not require, inserting a ferrite bead between the board power supply and the chip power supply that isolates the high-frequency switching noises generated by the clock buffer. These beads prevent the switching noise from leaking into the board supply. It is imperative to choose an appropriate ferrite bead with very low DC resistance to provide adequate isolation between the board supply and the chip supply, as well as to maintain a voltage at the supply terminals that is greater than the minimum voltage required for proper operation.

图 10-1 shows the recommended power supply decoupling method.

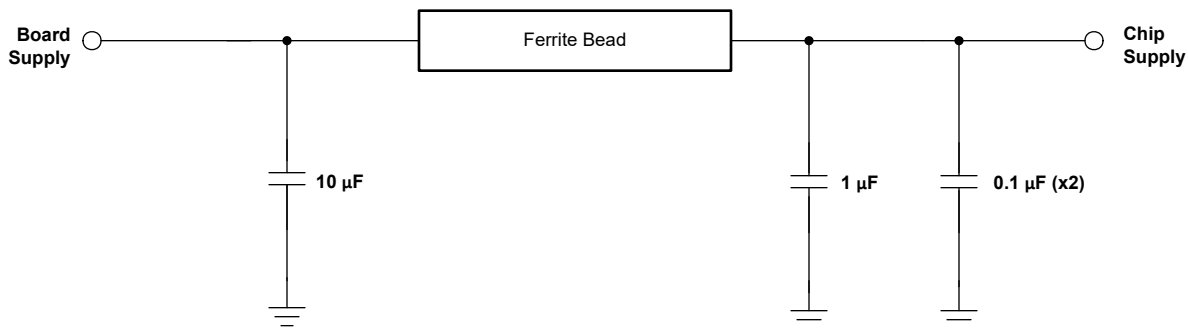


图 10-1. Power Supply Decoupling

11 Layout

11.1 Layout Guidelines

图 11-1 shows a conceptual layout detailing recommended placement of power-supply bypass capacitors. For component side mounting, use 0402 body size capacitors to facilitate signal routing. Keep the connections between the bypass capacitors and the power supply on the device as short as possible. Ground the other side of the capacitor using a low-impedance connection to the ground plane.

11.2 Layout Example

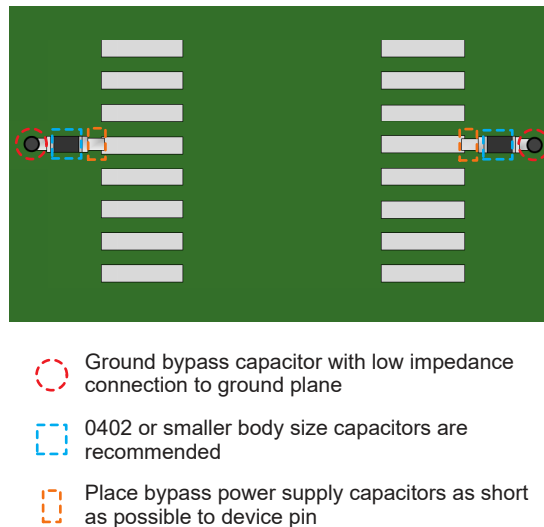


图 11-1. PCB Conceptual Layout

12 Device and Documentation Support

TI offers an extensive line of development tools. Tools and software to evaluate the performance of the device, generate code, and develop solutions are listed below.

12.1 Documentation Support

12.1.1 Related Documentation

12.2 接收文档更新通知

要接收文档更新通知，请导航至 ti.com 上的器件产品文件夹。点击 [订阅更新](#) 进行注册，即可每周接收产品信息更改摘要。有关更改的详细信息，请查看任何已修订文档中包含的修订历史记录。

12.3 支持资源

[TI E2E™ 支持论坛](#) 是工程师的重要参考资料，可直接从专家获得快速、经过验证的解答和设计帮助。搜索现有解答或提出自己的问题可获得所需的快速设计帮助。

链接的内容由各个贡献者“按原样”提供。这些内容并不构成 TI 技术规范，并且不一定反映 TI 的观点；请参阅 TI 的《[使用条款](#)》。

12.4 Trademarks

TI E2E™ is a trademark of Texas Instruments.

所有商标均为其各自所有者的财产。

12.5 Electrostatic Discharge Caution



This integrated circuit can be damaged by ESD. Texas Instruments recommends that all integrated circuits be handled with appropriate precautions. Failure to observe proper handling and installation procedures can cause damage.

ESD damage can range from subtle performance degradation to complete device failure. Precision integrated circuits may be more susceptible to damage because very small parametric changes could cause the device not to meet its published specifications.

12.6 术语表

[TI 术语表](#) 本术语表列出并解释了术语、首字母缩略词和定义。

13 Mechanical, Packaging, and Orderable Information

The following pages include mechanical, packaging, and orderable information. This information is the most current data available for the designated devices. This data is subject to change without notice and revision of this document. For browser-based versions of this data sheet, refer to the left-hand navigation.

PACKAGING INFORMATION

Orderable part number	Status (1)	Material type (2)	Package Pins	Package qty Carrier	RoHS (3)	Lead finish/ Ball material (4)	MSL rating/ Peak reflow (5)	Op temp (°C)	Part marking (6)
CDCVF25081D	Active	Production	SOIC (D) 16	40 TUBE	Yes	NIPDAU	Level-1-260C-UNLIM	-40 to 85	CKV25081
CDCVF25081DR	Active	Production	SOIC (D) 16	2500 LARGE T&R	Yes	NIPDAU	Level-1-260C-UNLIM	-40 to 85	CKV25081
CDCVF25081PW	Active	Production	TSSOP (PW) 16	90 TUBE	Yes	NIPDAU	Level-1-260C-UNLIM	-40 to 85	CK081
CDCVF25081PW.A	Active	Production	TSSOP (PW) 16	90 TUBE	Yes	NIPDAU	Level-1-260C-UNLIM	-40 to 85	CK081
CDCVF25081PWG4	Active	Production	TSSOP (PW) 16	90 TUBE	Yes	NIPDAU	Level-1-260C-UNLIM	-40 to 85	CK081
CDCVF25081PWR	Active	Production	TSSOP (PW) 16	2000 LARGE T&R	Yes	NIPDAU	Level-1-260C-UNLIM	-40 to 85	CK081
CDCVF25081PWR.A	Active	Production	TSSOP (PW) 16	2000 LARGE T&R	Yes	NIPDAU	Level-1-260C-UNLIM	-40 to 85	CK081
CDCVF25081PWRG4	Active	Production	TSSOP (PW) 16	2000 LARGE T&R	Yes	NIPDAU	Level-1-260C-UNLIM	-40 to 85	CK081

⁽¹⁾ **Status:** For more details on status, see our [product life cycle](#).

⁽²⁾ **Material type:** When designated, preproduction parts are prototypes/experimental devices, and are not yet approved or released for full production. Testing and final process, including without limitation quality assurance, reliability performance testing, and/or process qualification, may not yet be complete, and this item is subject to further changes or possible discontinuation. If available for ordering, purchases will be subject to an additional waiver at checkout, and are intended for early internal evaluation purposes only. These items are sold without warranties of any kind.

⁽³⁾ **RoHS values:** Yes, No, RoHS Exempt. See the [TI RoHS Statement](#) for additional information and value definition.

⁽⁴⁾ **Lead finish/Ball material:** Parts may have multiple material finish options. Finish options are separated by a vertical ruled line. Lead finish/Ball material values may wrap to two lines if the finish value exceeds the maximum column width.

⁽⁵⁾ **MSL rating/Peak reflow:** The moisture sensitivity level ratings and peak solder (reflow) temperatures. In the event that a part has multiple moisture sensitivity ratings, only the lowest level per JEDEC standards is shown. Refer to the shipping label for the actual reflow temperature that will be used to mount the part to the printed circuit board.

⁽⁶⁾ **Part marking:** There may be an additional marking, which relates to the logo, the lot trace code information, or the environmental category of the part.

Multiple part markings will be inside parentheses. Only one part marking contained in parentheses and separated by a "-" will appear on a part. If a line is indented then it is a continuation of the previous line and the two combined represent the entire part marking for that device.

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TAPE AND REEL INFORMATION



*All dimensions are nominal

Device	Package Type	Package Drawing	Pins	SPQ	Reel Diameter (mm)	Reel Width W1 (mm)	A0 (mm)	B0 (mm)	K0 (mm)	P1 (mm)	W (mm)	Pin1 Quadrant
CDCVF25081DR	SOIC	D	16	2500	330.0	16.4	6.5	10.3	2.1	8.0	16.0	Q1
CDCVF25081PWR	TSSOP	PW	16	2000	330.0	12.4	6.9	5.6	1.6	8.0	12.0	Q1

TAPE AND REEL BOX DIMENSIONS



*All dimensions are nominal

Device	Package Type	Package Drawing	Pins	SPQ	Length (mm)	Width (mm)	Height (mm)
CDCVF25081DR	SOIC	D	16	2500	350.0	350.0	43.0
CDCVF25081PWR	TSSOP	PW	16	2000	353.0	353.0	32.0

TUBE

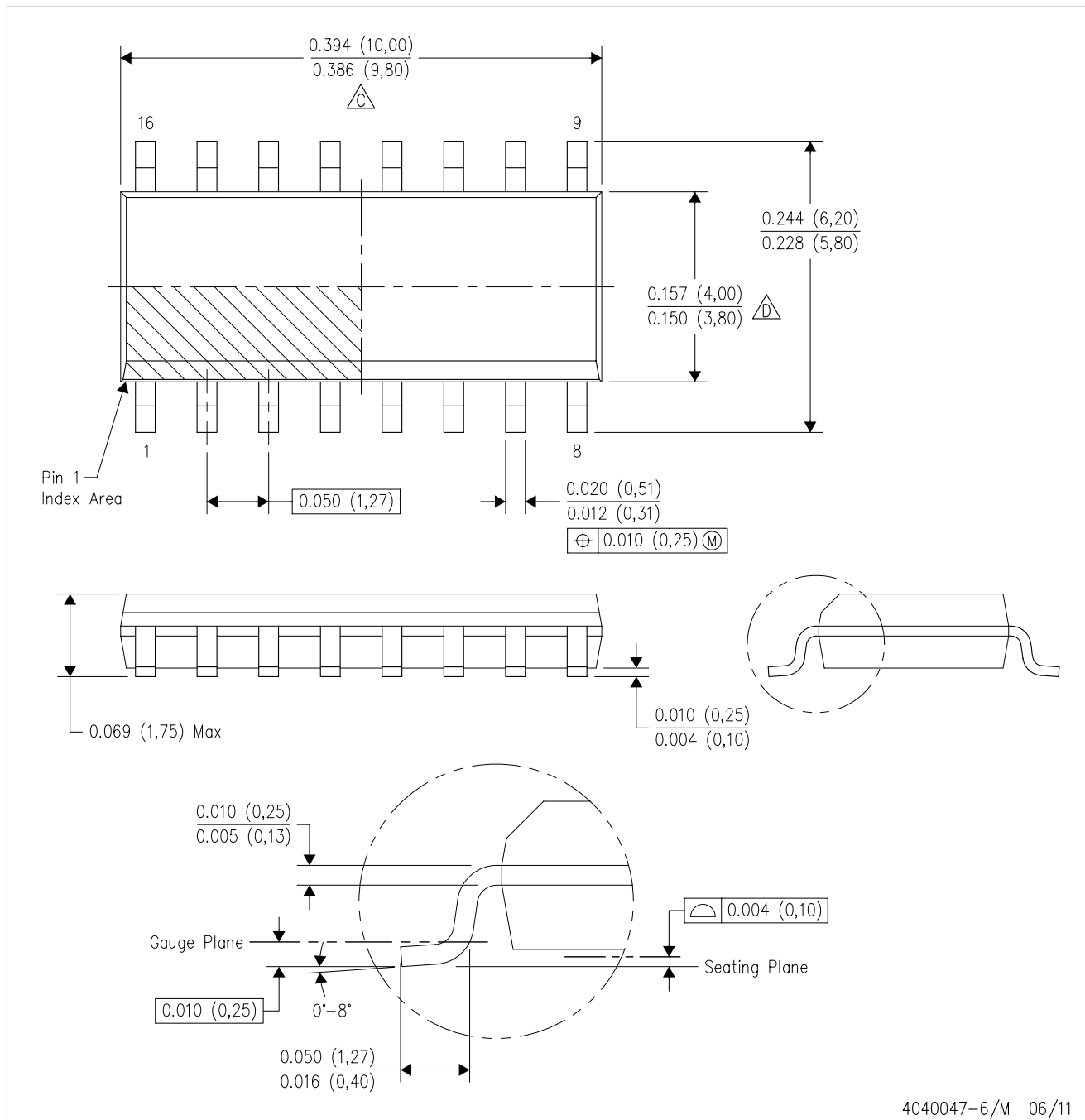


*All dimensions are nominal

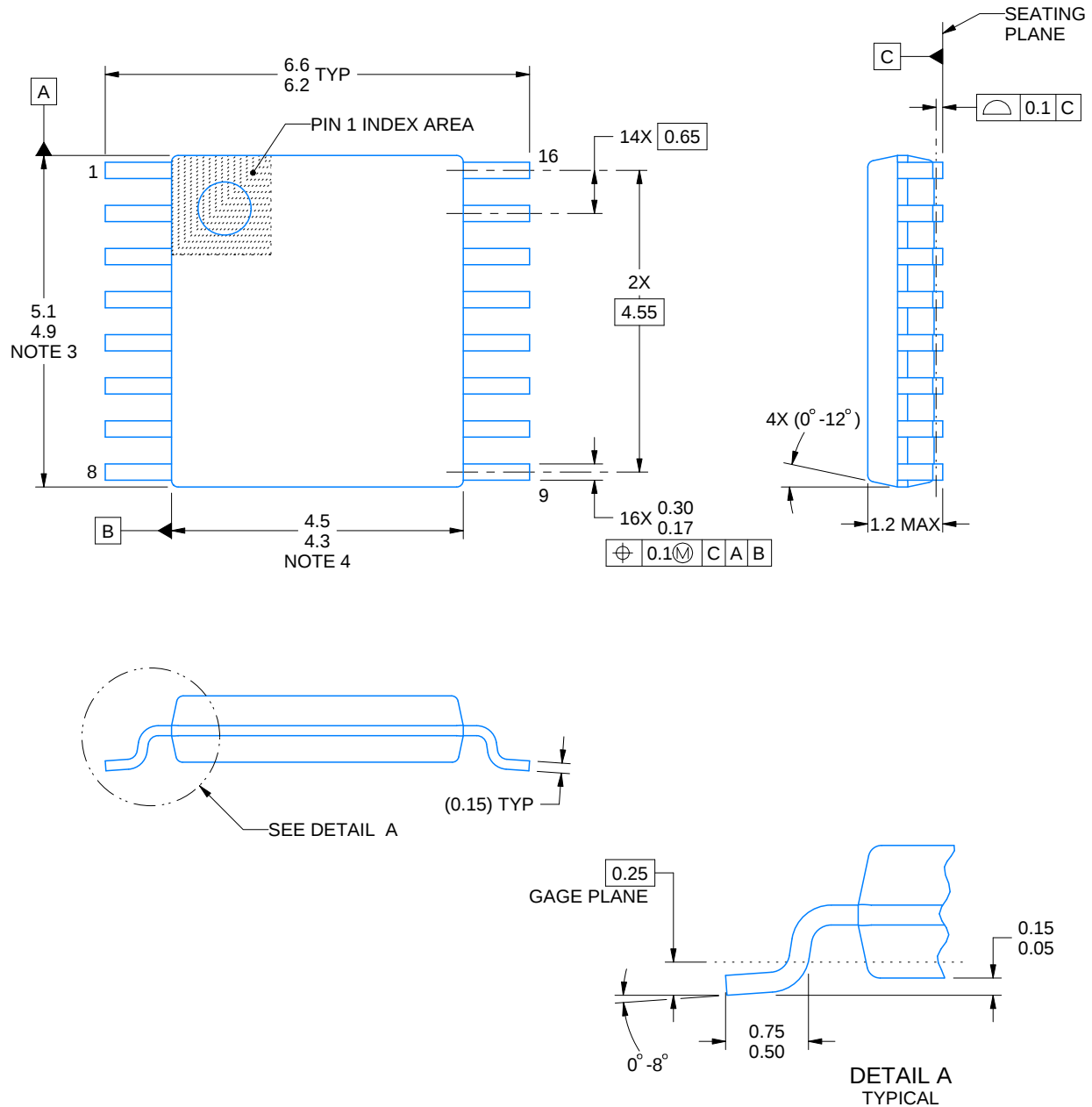
Device	Package Name	Package Type	Pins	SPQ	L (mm)	W (mm)	T (μm)	B (mm)
CDCVF25081D	D	SOIC	16	40	505.46	6.76	3810	4
CDCVF25081PW	PW	TSSOP	16	90	530	10.2	3600	3.5
CDCVF25081PW.A	PW	TSSOP	16	90	530	10.2	3600	3.5
CDCVF25081PWG4	PW	TSSOP	16	90	530	10.2	3600	3.5

D (R-PDSO-G16)

PLASTIC SMALL OUTLINE



- NOTES:
- A. All linear dimensions are in inches (millimeters).
 - B. This drawing is subject to change without notice.
 - $\triangle C$ Body length does not include mold flash, protrusions, or gate burrs. Mold flash, protrusions, or gate burrs shall not exceed 0.006 (0,15) each side.
 - $\triangle D$ Body width does not include interlead flash. Interlead flash shall not exceed 0.017 (0,43) each side.
 - E. Reference JEDEC MS-012 variation AC.



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NOTES:

1. All linear dimensions are in millimeters. Any dimensions in parenthesis are for reference only. Dimensioning and tolerancing per ASME Y14.5M.
2. This drawing is subject to change without notice.
3. This dimension does not include mold flash, protrusions, or gate burrs. Mold flash, protrusions, or gate burrs shall not exceed 0.15 mm per side.
4. This dimension does not include interlead flash. Interlead flash shall not exceed 0.25 mm per side.
5. Reference JEDEC registration MO-153.

EXAMPLE BOARD LAYOUT

PW0016A

TSSOP - 1.2 mm max height

SMALL OUTLINE PACKAGE



LAND PATTERN EXAMPLE
EXPOSED METAL SHOWN
SCALE: 10X



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NOTES: (continued)

6. Publication IPC-7351 may have alternate designs.

7. Solder mask tolerances between and around signal pads can vary based on board fabrication site.

EXAMPLE STENCIL DESIGN

PW0016A

TSSOP - 1.2 mm max height

SMALL OUTLINE PACKAGE



SOLDER PASTE EXAMPLE
BASED ON 0.125 mm THICK STENCIL
SCALE: 10X

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NOTES: (continued)

8. Laser cutting apertures with trapezoidal walls and rounded corners may offer better paste release. IPC-7525 may have alternate design recommendations.
9. Board assembly site may have different recommendations for stencil design.

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