

SN74CB3T3125 クワッドFETバス・スイッチ

2.5V、3.3V低電圧バス・スイッチ、5V耐圧レベル・シフト付き

1 特長

- 出力電圧変換が V_{CC} に追従
- すべてのデータI/Oポートで混在モード信号動作をサポート
 - 3.3Vの V_{CC} の場合、5V入力を3.3V出力にレベル・シフト
 - 2.5Vの V_{CC} の場合、5V/3.3V入力を2.5V出力にレベル・シフト
- デバイスの電源オン時とオフ時の両方で5V許容のI/O
- 伝播遅延がゼロに近い双方向データ・フロー
- 低いオン抵抗(r_{on})特性 ($r_{on} = 5\Omega$: 標準値)
- 低い入力/出力容量により負荷が最小化
($C_{io(OFF)} = 4.5pF$: 標準値)
- データおよび制御入りにアンダーシュート・クランプ・ダイオードを搭載
- 低い消費電力 ($I_{CC} = 20\mu A$: 最大値)
- 2.3V~3.6Vの範囲の V_{CC} で動作
- データI/Oは0~5Vの信号レベルに対応(0.8V、1.2V、1.5V、1.8V、2.5V、3.3V、5V)
- 制御入力をTTLまたは5V/3.3V CMOS出力で駆動可能
- I_{off} により部分的パワーダウン・モード動作をサポート
- JESD 17準拠で250mA超のラッチアップ性能
- JESD 22準拠でESD性能をテスト済み
 - 人体モデルで2000V (A114-B、クラスII)
 - 荷電デバイス・モデルで1000V (C101)

2 アプリケーション

- デジタル・アプリケーションをサポート: レベル変換、USBインターフェイス、バス分離
- 低消費電力の携帯用機器に理想的

3 概要

SN74CB3T3125は、オン抵抗(r_{on})が低い伝播遅延を最小限に低減できる高速TTL互換FETバス・スイッチです。このデバイスは、 V_{CC} に追従した電圧変換を行うことで、すべてのデータI/Oポートにおいて混在モード信号動作を完全にサポートします。SN74CB3T3125は、5V TTL、3.3V LVTTTL、2.5V CMOSスイッチング規格に加えて、ユーザー定義のスイッチング・レベルを使用するシステムに対応します(「標準的なDC電圧変換特性」を参照)。

SN74CB3T3125は4つの1ビット・バス・スイッチとして構成され、個別の出カインネーブル($1\overline{OE}$ 、 $2\overline{OE}$ 、 $3\overline{OE}$ 、 $4\overline{OE}$)入力を持っています。このデバイスは、4つの1ビット・バス・スイッチ、または1つの4ビット・バス・スイッチとして使用できます。 \overline{OE} がLOWのとき、関連付けられている1ビット・バス・スイッチはオンで、AポートはBポートに接続され、ポート間で双方向のデータ・フローが可能になります。 \overline{OE} をHIGHにすると、関連する1ビット・バス・スイッチはオフになり、AとBのポート間には高インピーダンス状態になります。

このデバイスは、 I_{off} を使用する部分的パワーダウン・アプリケーション用に完全に動作が規定されています。 I_{off} 機能により、パワーダウン時に損傷を引き起こすような電流がデバイスに逆流しないことが保証されます。デバイスは、電源オフ時は絶縁されています。

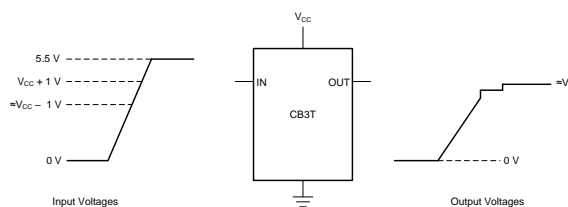
電源オンまたは電源オフ時に高インピーダンス状態を確保するため、 \overline{OE} はプルアップ抵抗経路で V_{CC} に接続します。この抵抗の最小値は、ドライバの電流シンク能力によって決定されます。

製品情報⁽¹⁾

型番	パッケージ	本体サイズ(公称)
SN74CB3T3125	VQFN – RGY (14)	3.50mm×3.50mm
	TSSOP – PW (14)	5.00mm×4.40mm
	TVSOP – DGV (14)	3.60mm×4.40mm

(1) 利用可能なすべてのパッケージについては、このデータシートの末尾にある注文情報を参照してください。

標準的なDC電圧変換特性



If the input high voltage (V_{ih}) level is greater than or equal to $V_{CC} + 1V$, and less than or equal to 5.5 V, the output high voltage (V_{oh}) level will be equal to approximately the V_{CC} voltage level.

目次

1	特長	1	8.3	Feature Description	9
2	アプリケーション	1	8.4	Device Functional Modes	9
3	概要	1	9	Application and Implementation	10
4	改訂履歴	2	9.1	Application Information	10
5	Pin Configuration and Functions	3	9.2	Typical Application	10
6	Specifications	4	10	Power Supply Recommendations	11
6.1	Absolute Maximum Ratings	4	11	Layout	12
6.2	ESD Ratings	4	11.1	Layout Guidelines	12
6.3	Recommended Operating Conditions	4	11.2	Layout Example	12
6.4	Thermal Information	4	12	デバイスおよびドキュメントのサポート	13
6.5	Electrical Characteristics	5	12.1	デバイス・サポート	13
6.6	Switching Characteristics	5	12.2	ドキュメントの更新通知を受け取る方法	13
6.7	Typical Characteristics	6	12.3	コミュニティ・リソース	13
7	Parameter Measurement Information	7	12.4	商標	13
8	Detailed Description	8	12.5	静電気放電に関する注意事項	13
8.1	Overview	8	12.6	Glossary	13
8.2	Functional Block Diagram	8	13	メカニカル、パッケージ、および注文情報	13

4 改訂履歴

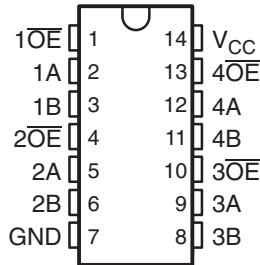
資料番号末尾の英字は改訂を表しています。その改訂履歴は英語版に準じています。

Revision B (August 2012) から Revision C に変更	Page
• 「アプリケーション」一覧、「製品情報」表、「ESD定格」表、「機能説明」セクション、「デバイスの機能モード」セクション、「アプリケーションと実装」セクション、「電源に関する推奨事項」セクション、「レイアウト」セクション、「デバイスおよびドキュメントのサポート」セクション、「メカニカル、パッケージ、および注文情報」セクションを追加	1
• 「注文情報」表を削除	1
• Changed t_{en} $V_{CC} = 3.3$ V MAX value From: 4.4 ns To: 8 ns in the <i>Switching Characteristic</i>	5

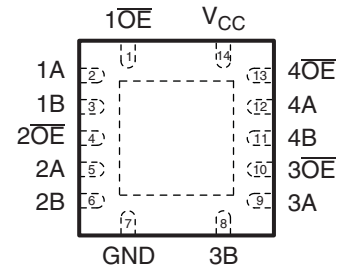
Revision A (April 2009) から Revision B に変更	Page
• 「標準的なDC電圧変換特性」を更新	1

5 Pin Configuration and Functions

**DGV OR PW PACKAGE
(TOP VIEW)**



**RGY PACKAGE
(TOP VIEW)**



Pin Functions

PIN		I/O	DESCRIPTION
NAME	NO.		
1OE	1	I	Active-low enable for switch 1
1A	2	I/O	Switch 1 A terminal
1B	3	I/O	Switch 1 B terminal
2OE	4	I	Active-low enable for switch 2
2A	5	I/O	Switch 2 A terminal
2B	6	I/O	Switch 2 B terminal
GND	7	-	Ground
3A	8	I/O	Switch 3 A terminal
3B	9	I/O	Switch 3 B terminal
3OE	10	I	Active-low enable for switch 3
4A	11	I/O	Switch 4 A terminal
4B	12	I/O	Switch 4 B terminal
4OE	13	I	Active-low enable for switch 4
V _{CC}	14	-	Supply voltage pin

6 Specifications

6.1 Absolute Maximum Ratings⁽¹⁾

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

		MIN	MAX	UNIT
V _{CC}	Supply voltage range ⁽²⁾	-0.5	7	V
V _{IN}	Control input voltage range ^{(2) (3)}	-0.5	7	V
V _{I/O}	Switch I/O voltage range ^{(2) (3) (4)}	-0.5	7	V
I _{IK}	Control input clamp current	V _{IN} < 0	-50	mA
I _{I/O}	I/O port clamp current	V _{I/O} < 0	-50	mA
I _{I/O}	ON-state switch current ⁽⁵⁾		±128	mA
	Continuous current through V _{CC} or GND		±100	mA
T _{stg}	Storage temperature range	-65	150	°C

- (1) Stresses beyond those listed under *Absolute Maximum Ratings* may cause permanent damage to the device. These are stress ratings only, which do not imply functional operation of the device at these or any other conditions beyond those indicated under *Recommended Operating Conditions*. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.
- (2) All voltages are with respect to ground unless otherwise specified.
- (3) The input and output voltage ratings may be exceeded if the input and output clamp-current ratings are observed.
- (4) V_I and V_O are used to denote specific conditions for V_{I/O}.
- (5) I_I and I_O are used to denote specific conditions for I_{I/O}.

6.2 ESD Ratings

		VALUE	UNIT
V _(ESD)	Electrostatic discharge	Human-body model (HBM), per ANSI/ESDA/JEDEC JS-001 ⁽¹⁾	±2000
		Charged-device model (CDM), per JEDEC specification JESD22-C101 ⁽²⁾	±1000
			V

- (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⁽¹⁾

		MIN	MAX	UNIT
V _{CC}	Supply voltage	2.3	3.6	V
V _{IH}	High-level control input voltage	V _{CC} = 2.3 V to 2.7 V	1.7	5.5
		V _{CC} = 2.7 V to 3.6 V	2	5.5
V _{IL}	Low-level control input voltage	V _{CC} = 2.3 V to 2.7 V	0	0.7
		V _{CC} = 2.7 V to 3.6 V	0	0.8
V _{I/O}	Data input/output voltage	0	5.5	V
T _A	Operating free-air temperature	-40	85	°C

- (1) All unused control inputs of the device must be held at V_{CC} or GND to ensure proper device operation. Refer to the TI application report, *Implications of Slow or Floating CMOS Inputs*, literature number [SCBA004](#).

6.4 Thermal Information

THERMAL METRIC ⁽¹⁾	SN74CB3T3125			UNIT	
	VQFN (RGY)	TSSOP (PW)	TVSOP (DGV)		
	14 PINS	14 PINS	14 PINS		
R _{θJA}	Junction-to-ambient thermal resistance	55.5	123.3	154.8	°C/W
R _{θJC(top)}	Junction-to-case (top) thermal resistance	56.9	53.0	64.4	°C/W
R _{θJB}	Junction-to-board thermal resistance	30.9	66.3	88.4	°C/W
ψ _{JT}	Junction-to-top characterization parameter	3.6	9.1	10.8	°C/W
ψ _{JB}	Junction-to-board characterization parameter	30.9	65.7	87.4	°C/W
R _{θJC(bot)}	Junction-to-case (bottom) thermal resistance	14.6	-	-	°C/W

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

6.5 Electrical Characteristics⁽¹⁾

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

PARAMETER		TEST CONDITIONS	MIN	TYP ⁽²⁾	MAX	UNIT	
V_{IK}		$V_{CC} = 3\text{ V}$, $I_I = -18\text{ mA}$			-1.2	V	
V_{OH}		See Figure 3 through Figure 5					
I_{IN}	Control inputs	$V_{CC} = 3.6\text{ V}$, $V_{IN} = 3.6\text{ V to } 5.5\text{ V or GND}$			±10	µA	
I_I		$V_{CC} = 3.6\text{ V}$, Switch ON, $V_{IN} = V_{CC}$ or GND	$V_I = V_{CC} - 0.7\text{ V to } 5.5\text{ V}$		±20	µA	
			$V_I = 0.7\text{ V to } V_{CC} - 0.7\text{ V}$		-40		
			$V_I = 0\text{ to } 0.7\text{ V}$		±5		
I_{OZ} ⁽³⁾		$V_{CC} = 3.6\text{ V}$, $V_O = 0\text{ to } 5.5\text{ V}$, $V_I = 0$, Switch OFF, $V_{IN} = V_{CC}$ or GND			±10	µA	
I_{off}		$V_{CC} = 0$, $V_O = 0\text{ to } 5.5\text{ V}$, $V_I = 0$			10	µA	
I_{CC}		$V_{CC} = 3.6\text{ V}$, $I_{I/O} = 0$, Switch ON or OFF, $V_{IN} = V_{CC}$ or GND	$V_I = V_{CC}$ or GND		20	µA	
			$V_I = 5.5\text{ V}$		20		
ΔI_{CC} ⁽⁴⁾	Control inputs	$V_{CC} = 3\text{ V to } 3.6\text{ V}$, One input at $V_{CC} - 0.6\text{ V}$, Other inputs at V_{CC} or GND			300	µA	
C_{in}	Control inputs	$V_{CC} = 3.3\text{ V}$, $V_{IN} = V_{CC}$ or GND		3		pF	
$C_{io(OFF)}$		$V_{CC} = 3.3\text{ V}$, $V_{I/O} = 5.5\text{ V}$, 3.3 V , or GND, Switch OFF, $V_{IN} = V_{CC}$ or GND		4.5		pF	
$C_{io(ON)}$		$V_{CC} = 3.3\text{ V}$, Switch ON, $V_{IN} = V_{CC}$ or GND	$V_{I/O} = 5.5\text{ V or } 3.3\text{ V}$		4	pF	
			$V_{I/O} = \text{GND}$		10		
r_{on} ⁽⁵⁾		$V_{CC} = 2.3\text{ V}$, TYP at $V_{CC} = 2.5\text{ V}$, $V_I = 0$	$I_O = 24\text{ mA}$		5	8	Ω
			$I_O = 16\text{ mA}$		5	8	
		$V_{CC} = 3\text{ V}$, $V_I = 0$	$I_O = 64\text{ mA}$		5	7	
			$I_O = 32\text{ mA}$		5	7	

(1) V_{IN} and I_{IN} refer to control inputs. V_I , V_O , I_I , and I_O refer to data pins.

(2) All typical values are at $V_{CC} = 3.3\text{ V}$ (unless otherwise noted), $T_A = 25^\circ\text{C}$.

(3) For I/O ports, the parameter I_{OZ} includes the input leakage current.

(4) This is the increase in supply current for each input that is at the specified TTL voltage level, rather than V_{CC} or GND.

(5) Measured by the voltage drop between A and B terminals at the indicated current through the switch. ON-state resistance is determined by the lower of the voltages of the two (A or B) terminals.

6.6 Switching Characteristics

over recommended operating free-air temperature range (unless otherwise noted) (see [Figure 6](#))

PARAMETER	FROM (INPUT)	TO (OUTPUT)	$V_{CC} = 2.5\text{ V} \pm 0.2\text{ V}$		$V_{CC} = 3.3\text{ V} \pm 0.3\text{ V}$		UNIT
			MIN	MAX	MIN	MAX	
t_{pd} ⁽¹⁾	A or B	B or A	0.15		0.25		ns
t_{en}	\overline{OE}	A or B	1	8.5	1	8	ns
t_{dis}	\overline{OE}	A or B	1	9	1	9	ns

(1) The propagation delay is the calculated RC time constant of the typical ON-state resistance of the switch and the specified load capacitance, when driven by an ideal voltage source (zero output impedance).

6.7 Typical Characteristics

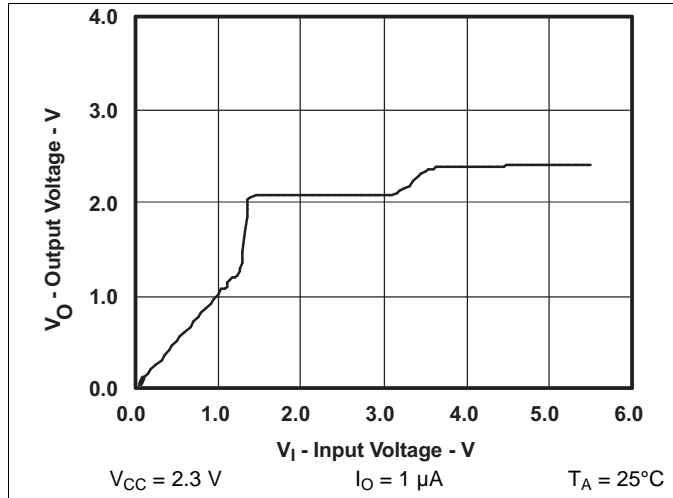


Figure 1. Data Output Voltage vs Data Input Voltage

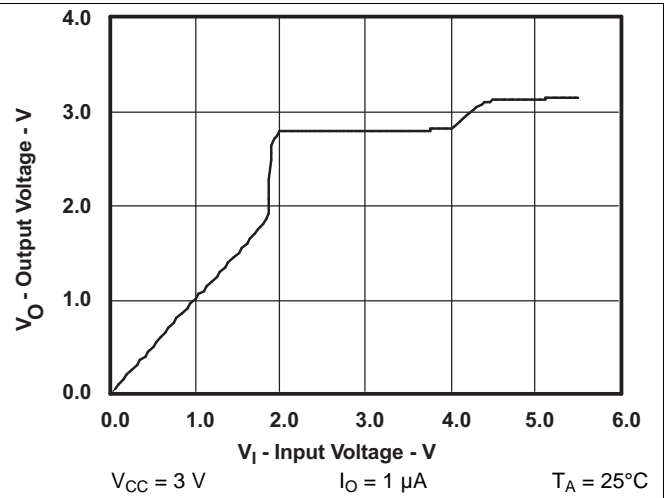


Figure 2. Data Output Voltage vs Data Input Voltage

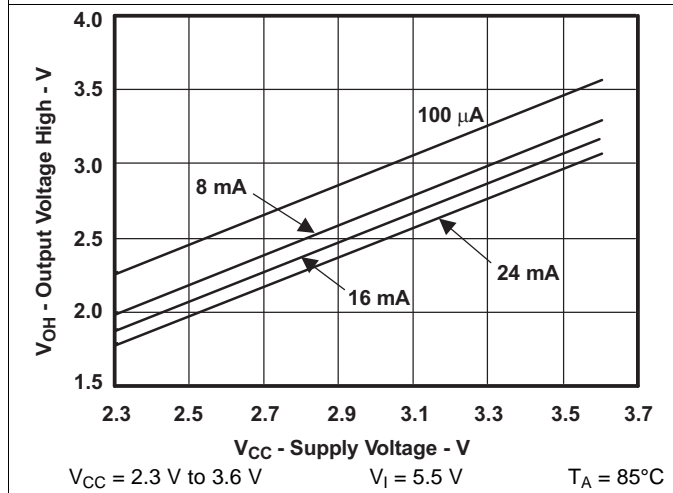


Figure 3. Output Voltage High vs Supply Voltage

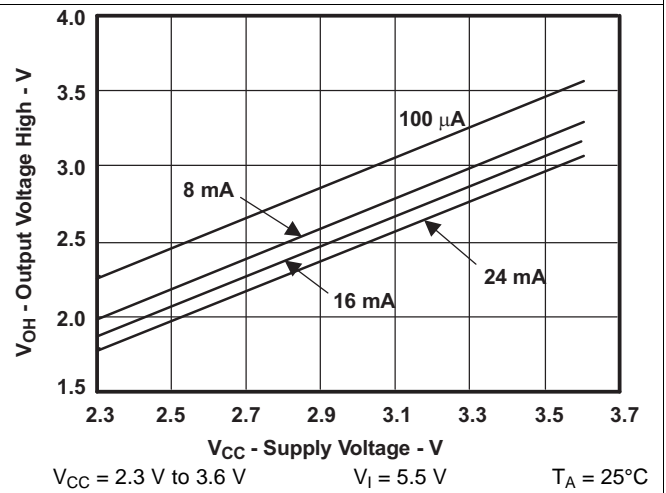


Figure 4. Output Voltage High vs Supply Voltage

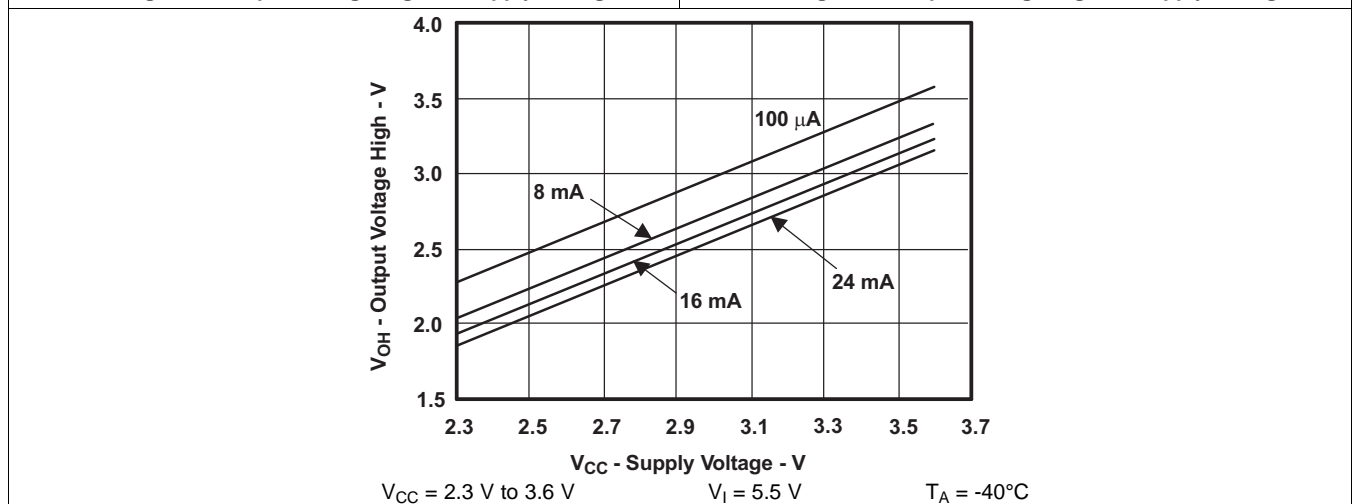
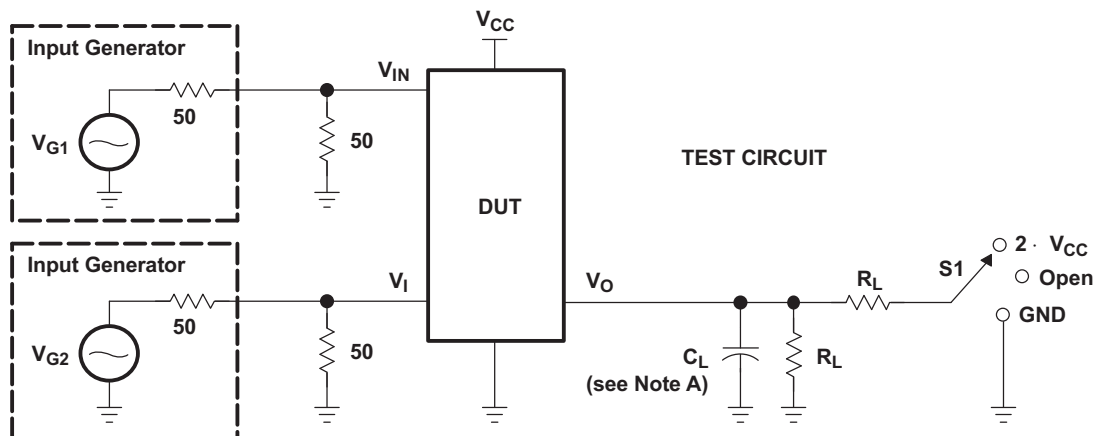
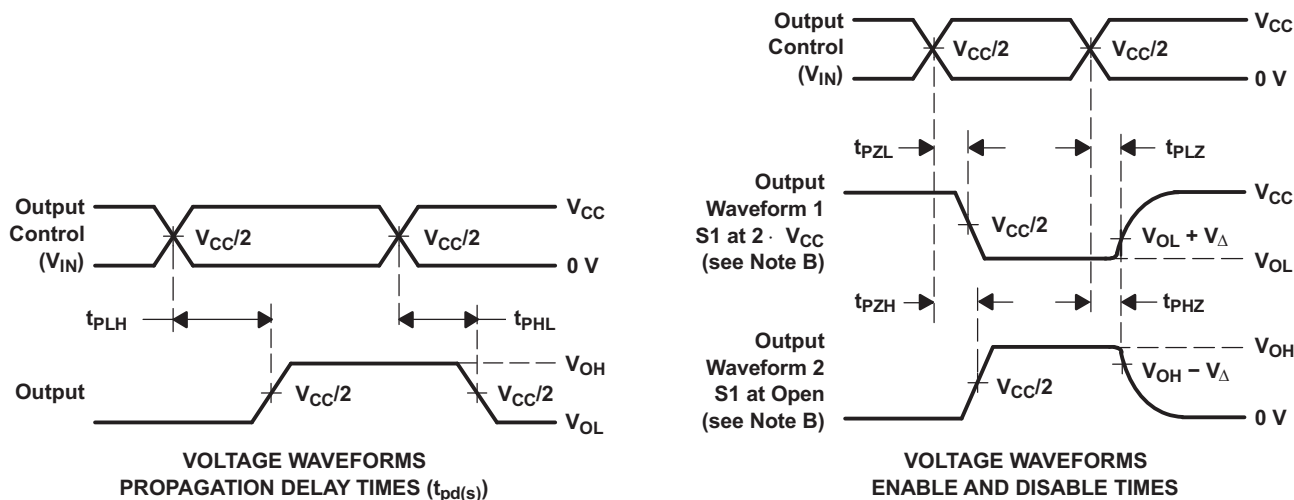


Figure 5. Output Voltage High vs Supply Voltage

7 Parameter Measurement Information



TEST	V _{CC}	S1	R _L	V _I	C _L	V
t _{pd(s)}	2.5 V ± 0.2 V	Open	500	3.6 V or GND	30 pF	
	3.3 V ± 0.3 V	Open	500	5.5 V or GND	50 pF	
t _{PLZ} /t _{PZL}	2.5 V ± 0.2 V	2 · V _{CC}	500	GND	30 pF	0.15 V
	3.3 V ± 0.3 V	2 · V _{CC}	500	GND	50 pF	0.3 V
t _{PHZ} /t _{PZH}	2.5 V ± 0.2 V	Open	500	3.6 V	30 pF	0.15 V
	3.3 V ± 0.3 V	Open	500	5.5 V	50 pF	0.3 V



- NOTES:
- A. C_L includes probe and jig capacitance.
 - B. Waveform 1 is for an output with internal conditions such that the output is low except when disabled by the output control. Waveform 2 is for an output with internal conditions such that the output is high, except when disabled by the output control.
 - C. All input pulses are supplied by generators having the following characteristics: PRR 10 MHz, Z_O = 50 Ω, t_r 2.5 ns, t_f 2.5 ns.
 - D. The outputs are measured one at a time, with one transition per measurement.
 - E. t_{PLZ} and t_{PHZ} are the same as t_{dis}.
 - F. t_{PZL} and t_{PZH} are the same as t_{en}.
 - G. t_{PLH} and t_{PHL} are the same as t_{pd(s)}. The t_{pd} propagation delay is the calculated RC time constant of the typical ON-state resistance of the switch and the specified load capacitance, when driven by an ideal voltage source (zero output impedance).
 - H. All parameters and waveforms are not applicable to all devices.

Figure 6. Test Circuit and Voltage Waveforms

8 Detailed Description

8.1 Overview

The SN74CB3T3125 device is organized as four 1-bit bus switches with separate output-enable (1OE, 2OE, 3OE, and 4OE) inputs. When OE is low, the associated 1-bit bus switch is ON, and the A port is connected to the B port, allowing bidirectional data flow between ports. When OE is high, the associated 1-bit bus switch is OFF, and a high-impedance state exists between the A and B ports. This device is fully specified for partial-power-down applications using Ioff. The Ioff feature ensures that damaging current will not backflow through the device when it is powered down. The SN74CB3T3125 device has isolation during power off. To ensure the high-impedance state during power up or power down, OE should be tied to VCC through a pullup resistor; the minimum value of the resistor is determined by the current-sinking capability of the driver.

8.2 Functional Block Diagram

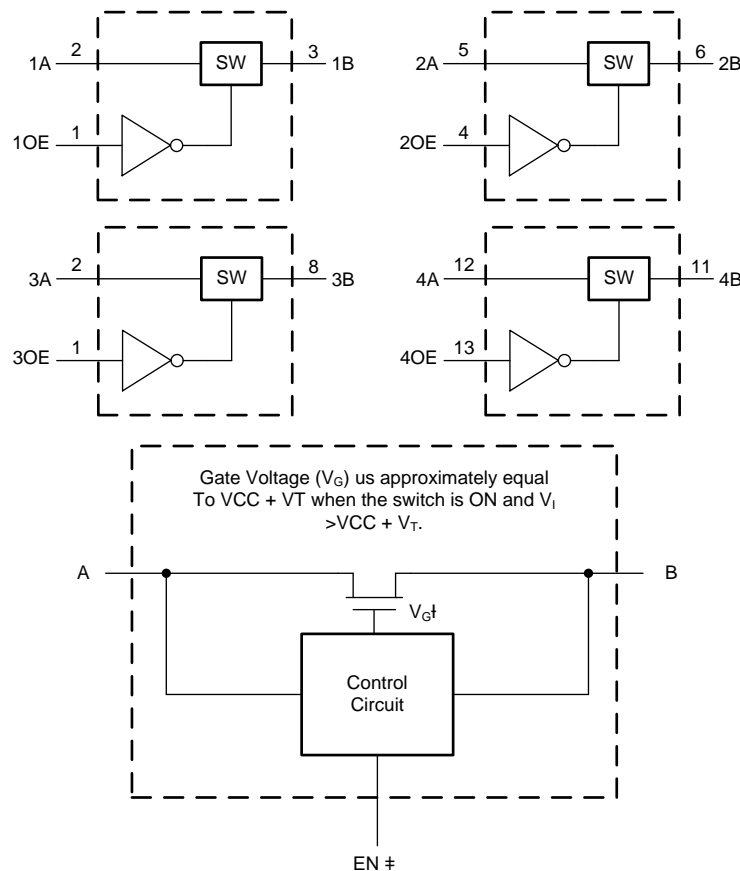


Figure 7. Simplified Schematic, Each FET Switch (SW)

8.3 Feature Description

The SN74CB3T3125 is ideal for low-power portable equipment. Power consumption is low by design, $I_{CC} = 20 \mu A$, On-state resistance is low ($r_{on} = 5 \Omega$) It has bidirectional data flow with near zero propagation delay. The device minimizes loading due to the low input/output capacitance $C_{io(OFF)} = 4.5 \text{ pF}$ Typical. Operating VCC range from 2.3 V to 3.6 V. The output tracks VCC. Data and control inputs provide undershoot clamp diodes. Control inputs can be driven by TTL or 5-V/3.3-V CMOS outputs. It supports mixed-mode signal operation on all data I/O ports. Data I/Os support 0- to 5-V signaling levels (0.8 V, 1.2 V, 1.5 V, 1.8 V, 2.5 V, 3.3 V, 5 V). The device is protected from damaging current, Ioff supports partial shutdown which prevents the current from flowing back through the device when it is powered down. In addition, it has 5-V tolerant I/Os with device powered up or powered down. The device is latch-up resistant with 250 mA exceeding the JESD 17 standard, providing protection from destruction due to latch-up. This device is protected against electrostatic discharge. It is tested per JESD 22 using 2000-V Human-Body Model (A114-B, Class II), and 1000-V Charged-Device Model (C101).

8.4 Device Functional Modes

Table 1 lists the functional modes for the SN74CB3T3125.

**Table 1. Function Table
(Each Bus Switch)**

INPUT OE	INPUT/OUTPUT A	FUNCTION
L	B	A port = B port
H	Z	Disconnect

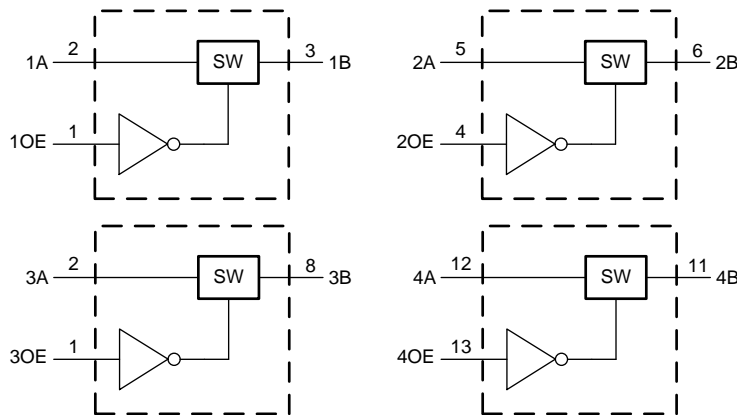
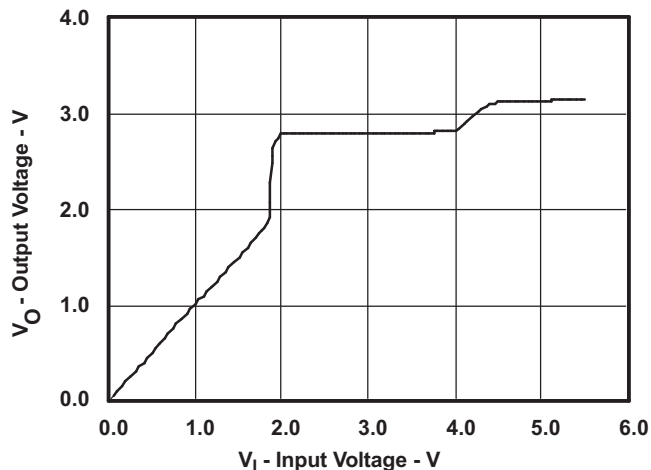


Figure 8. Logic Diagram (Positive Logic)

Typical Application (continued)

9.2.3 Application Curves



$$V_{CC} = 3 \text{ V}$$

$$I_O = 1 \text{ } \mu\text{A}$$

$$T_A = 25^\circ\text{C}$$

Figure 10. Data Output Voltage vs Data Input Voltage

10 Power Supply Recommendations

The power supply can be any voltage between the minimum and maximum supply voltage rating located in the Recommended Operating Conditions.

Each VCC terminal should have a good bypass capacitor to prevent power disturbance. For devices with a single supply, a 0.1- μF bypass capacitor is recommended. If there are multiple pins labeled VCC, then a 0.01- μF or 0.022- μF capacitor is recommended for each VCC because the VCC pins will be tied together internally. For devices with dual supply pins operating at different voltages, for example VCC and VDD, a 0.1- μF bypass capacitor is recommended for each supply pin. It is acceptable to parallel multiple bypass capacitors to reject different frequencies of noise. 0.1- μF and 1- μF capacitors are commonly used in parallel. The bypass capacitor should be installed as close to the power terminal as possible for best results.

11 Layout

11.1 Layout Guidelines

Reflections and matching are closely related to the loop antenna theory but are different enough to be discussed separately from the theory. When a PCB trace turns a corner at a 90° angle, a reflection can occur. A reflection occurs primarily because of the change of width of the trace. At the apex of the turn, the trace width increases to 1.414 times the width. This increase upsets the transmission-line characteristics, especially the distributed capacitance and self-inductance of the trace which results in the reflection. Not all PCB traces can be straight and therefore some traces must turn corners. Figure 11 shows progressively better techniques of rounding corners. Only the last example (BEST) maintains constant trace width and minimizes reflections.

11.2 Layout Example

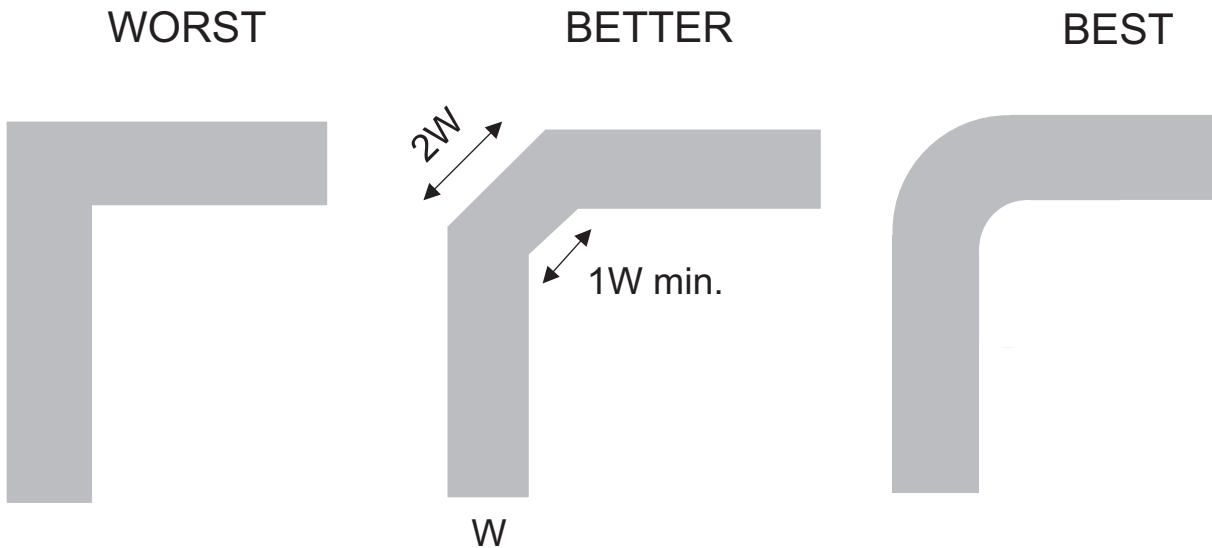


Figure 11. Example Layout

12 デバイスおよびドキュメントのサポート

12.1 デバイス・サポート

12.2 ドキュメントの更新通知を受け取る方法

ドキュメントの更新についての通知を受け取るには、ti.comのデバイス製品フォルダを開いてください。右上の「アラートを受け取る」をクリックして登録すると、変更されたすべての製品情報に関するダイジェストを毎週受け取れます。変更の詳細については、修正されたドキュメントに含まれている改訂履歴をご覧ください。

12.3 コミュニティ・リソース

The following links connect to TI community resources. Linked contents are provided "AS IS" by the respective contributors. They do not constitute TI specifications and do not necessarily reflect TI's views; see TI's [Terms of Use](#).

TI E2E™オンライン・コミュニティ *TIのE2E (Engineer-to-Engineer)* コミュニティ。エンジニア間の共同作業を促進するために開設されたものです。e2e.ti.comでは、他のエンジニアに質問し、知識を共有し、アイデアを検討して、問題解決に役立てることができます。

設計サポート *TIの設計サポート* 役に立つE2Eフォーラムや、設計サポート・ツールをすばやく見つけることができます。技術サポート用の連絡先情報も参照できます。

12.4 商標

E2E is a trademark of Texas Instruments.

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12.5 静電気放電に関する注意事項



すべての集積回路は、適切なESD保護方法を用いて、取扱いと保存を行うようにして下さい。

静電気放電はわずかな性能の低下から完全なデバイスの故障に至るまで、様々な損傷を与えます。高精度の集積回路は、損傷に対して敏感であり、極めてわずかなパラメータの変化により、デバイスに規定された仕様に適合しなくなる場合があります。

12.6 Glossary

[SLYZ022](#) — *TI Glossary*.

This glossary lists and explains terms, acronyms, and definitions.

13 メカニカル、パッケージ、および注文情報

以降のページには、メカニカル、パッケージ、および注文に関する情報が記載されています。この情報は、そのデバイスについて利用可能な最新のデータです。このデータは予告なく変更されることがあり、ドキュメントが改訂される場合もあります。本データシートのブラウザ版を使用されている場合は、画面左側の説明をご覧ください。

PACKAGING INFORMATION

Orderable Device	Status (1)	Package Type	Package Drawing	Pins	Package Qty	Eco Plan (2)	Lead finish/ Ball material (6)	MSL Peak Temp (3)	Op Temp (°C)	Device Marking (4/5)	Samples
SN74CB3T3125DGVR	ACTIVE	TVSOP	DGV	14	2000	RoHS & Green	NIPDAU	Level-1-260C-UNLIM	-40 to 85	KS125	Samples
SN74CB3T3125PW	OBSOLETE	TSSOP	PW	14		TBD	Call TI	Call TI	-40 to 85	KS125	
SN74CB3T3125PWR	ACTIVE	TSSOP	PW	14	2000	RoHS & Green	NIPDAU	Level-1-260C-UNLIM	-40 to 85	KS125	Samples
SN74CB3T3125RGYR	ACTIVE	VQFN	RGY	14	3000	RoHS & Green	NIPDAU	Level-2-260C-1 YEAR	-40 to 85	KS125	Samples

(1) The marketing status values are defined as follows:

ACTIVE: Product device recommended for new designs.

LIFEBUY: TI has announced that the device will be discontinued, and a lifetime-buy period is in effect.

NRND: Not recommended for new designs. Device is in production to support existing customers, but TI does not recommend using this part in a new design.

PREVIEW: Device has been announced but is not in production. Samples may or may not be available.

OBSOLETE: TI has discontinued the production of the device.

(2) **RoHS:** TI defines "RoHS" to mean semiconductor products that are compliant with the current EU RoHS requirements for all 10 RoHS substances, including the requirement that RoHS substance do not exceed 0.1% by weight in homogeneous materials. Where designed to be soldered at high temperatures, "RoHS" products are suitable for use in specified lead-free processes. TI may reference these types of products as "Pb-Free".

RoHS Exempt: TI defines "RoHS Exempt" to mean products that contain lead but are compliant with EU RoHS pursuant to a specific EU RoHS exemption.

Green: TI defines "Green" to mean the content of Chlorine (Cl) and Bromine (Br) based flame retardants meet JS709B low halogen requirements of <=1000ppm threshold. Antimony trioxide based flame retardants must also meet the <=1000ppm threshold requirement.

(3) MSL, Peak Temp. - The Moisture Sensitivity Level rating according to the JEDEC industry standard classifications, and peak solder temperature.

(4) There may be additional marking, which relates to the logo, the lot trace code information, or the environmental category on the device.

(5) Multiple Device Markings will be inside parentheses. Only one Device Marking contained in parentheses and separated by a "~" will appear on a device. If a line is indented then it is a continuation of the previous line and the two combined represent the entire Device Marking for that device.

(6) Lead finish/Ball material - Orderable Devices 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.

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TAPE AND REEL INFORMATION

QUADRANT ASSIGNMENTS FOR PIN 1 ORIENTATION IN TAPE


*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
SN74CB3T3125DGVR	TVSOP	DGV	14	2000	330.0	12.4	6.8	4.0	1.6	8.0	12.0	Q1
SN74CB3T3125PWR	TSSOP	PW	14	2000	330.0	12.4	6.9	5.6	1.6	8.0	12.0	Q1
SN74CB3T3125RGYR	VQFN	RGY	14	3000	330.0	12.4	3.75	3.75	1.15	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)
SN74CB3T3125DGVR	TVSOP	DGV	14	2000	367.0	367.0	35.0
SN74CB3T3125PWR	TSSOP	PW	14	2000	367.0	367.0	35.0
SN74CB3T3125RGYR	VQFN	RGY	14	3000	367.0	367.0	35.0

GENERIC PACKAGE VIEW

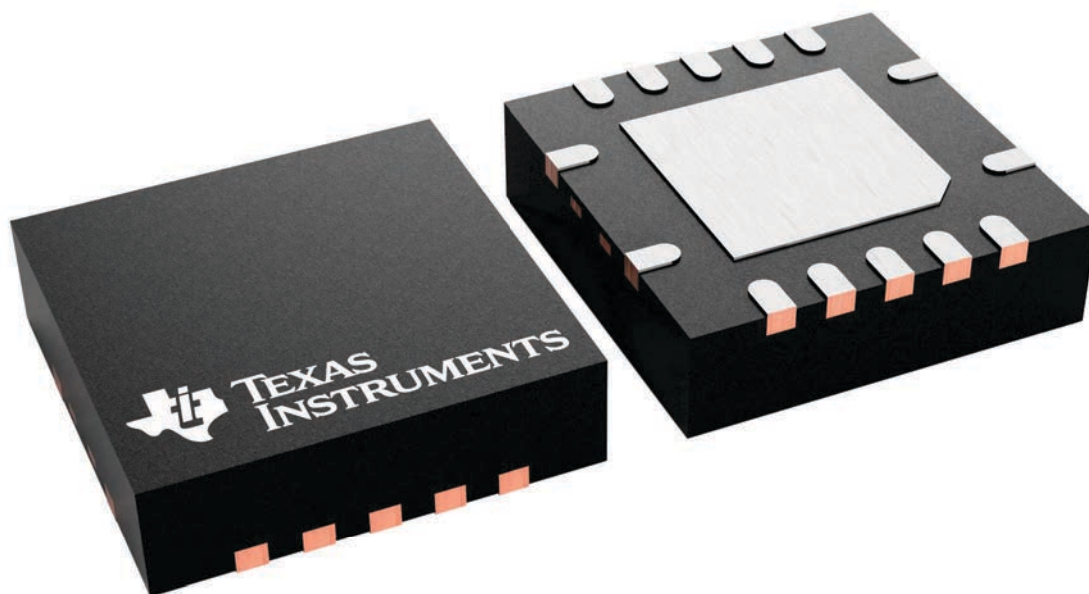
RGY 14

VQFN - 1 mm max height

3.5 x 3.5, 0.5 mm pitch

PLASTIC QUAD FLATPACK - NO LEAD

This image is a representation of the package family, actual package may vary.
Refer to the product data sheet for package details.



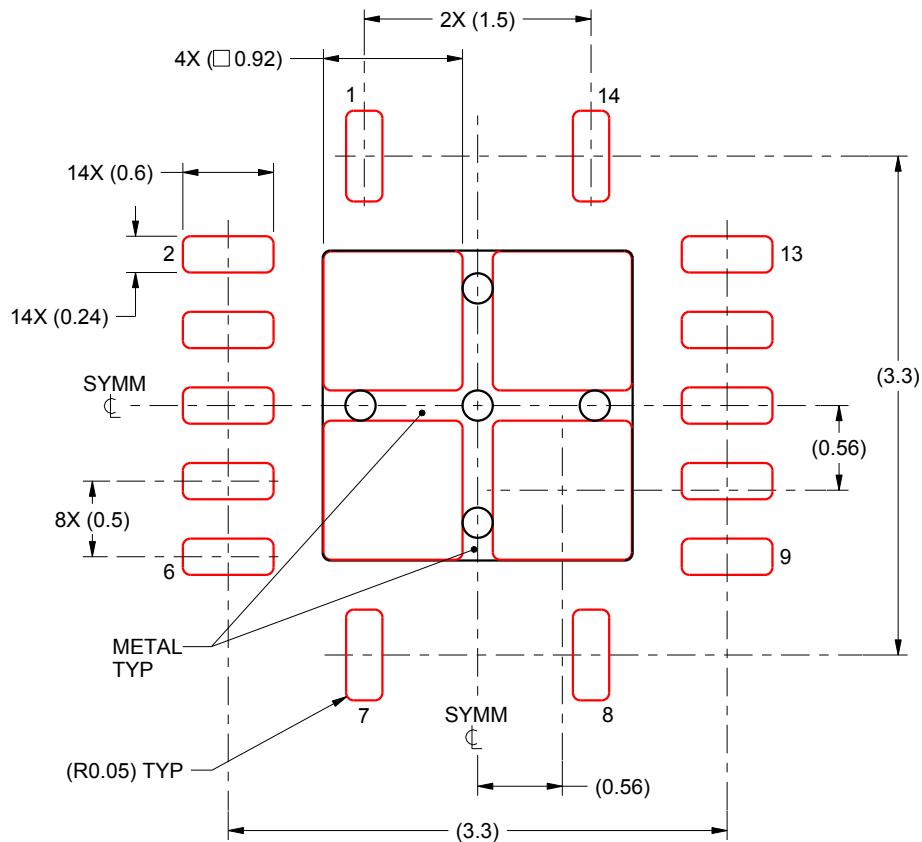
4231541/A

EXAMPLE STENCIL DESIGN

RGY0014A

VQFN - 1 mm max height

PLASTIC QUAD FLATPACK - NO LEAD



SOLDER PASTE EXAMPLE
BASED ON 0.125 mm THICK STENCIL

EXPOSED PAD
80% PRINTED SOLDER COVERAGE BY AREA
SCALE:20X

4219040/A 09/2015

NOTES: (continued)

5. Laser cutting apertures with trapezoidal walls and rounded corners may offer better paste release. IPC-7525 may have alternate design recommendations.

DGV (R-PDSO-G**)

PLASTIC SMALL-OUTLINE

24 PINS SHOWN



- NOTES: A. All linear dimensions are in millimeters.
 B. This drawing is subject to change without notice.
 C. Body dimensions do not include mold flash or protrusion, not to exceed 0,15 per side.
 D. Falls within JEDEC: 24/48 Pins – MO-153
 14/16/20/56 Pins – MO-194

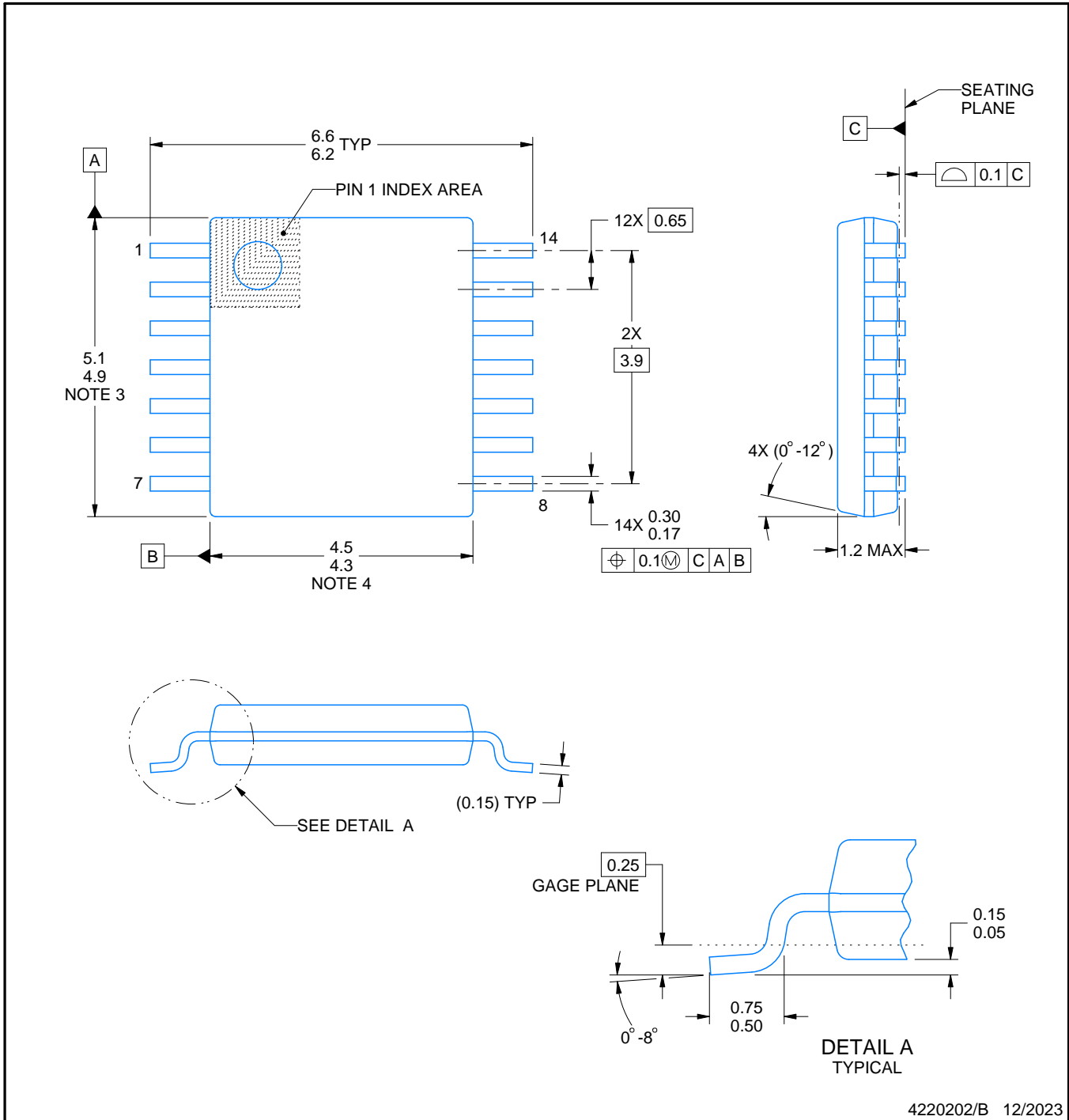
PW0014A



PACKAGE OUTLINE

TSSOP - 1.2 mm max height

SMALL OUTLINE PACKAGE



4220202/B 12/2023

NOTES:

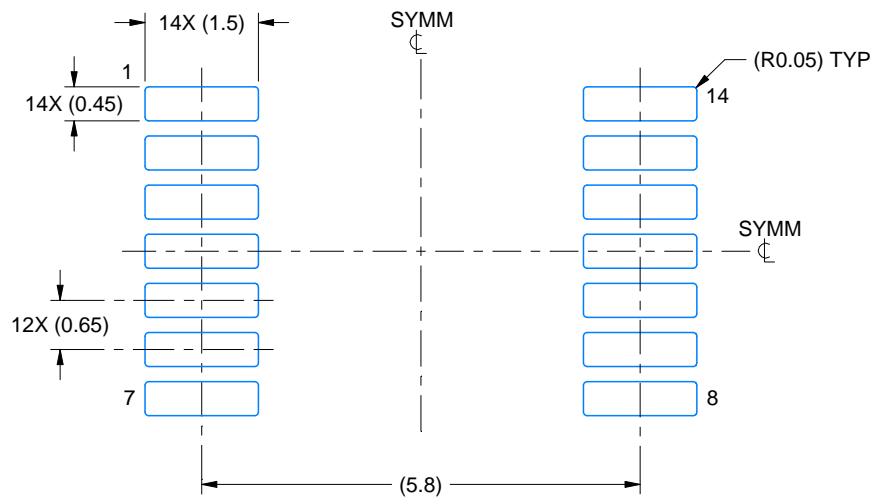
1. All linear dimensions are in millimeters. Any dimensions in parenthesis are for reference only. Dimensioning and tolerancing per ASME Y14.5M.
2. This drawing is subject to change without notice.
3. This dimension does not include mold flash, protrusions, or gate burrs. Mold flash, protrusions, or 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

PW0014A

TSSOP - 1.2 mm max height

SMALL OUTLINE PACKAGE



LAND PATTERN EXAMPLE
EXPOSED METAL SHOWN
SCALE: 10X



4220202/B 12/2023

NOTES: (continued)

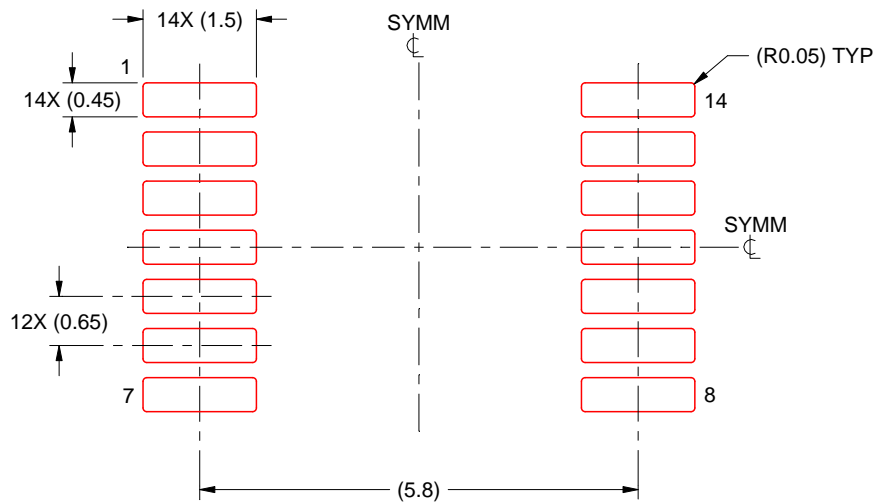
- 6. Publication IPC-7351 may have alternate designs.
- 7. Solder mask tolerances between and around signal pads can vary based on board fabrication site.

EXAMPLE STENCIL DESIGN

PW0014A

TSSOP - 1.2 mm max height

SMALL OUTLINE PACKAGE



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

4220202/B 12/2023

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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