

具有可配置电压转换和三态输出的 8 位 双电源总线收发器

UM3608AO SSOP24
UM3608UO TSSOP24
UM3608QA QFN24 3.5×5.5

描述

UM3608是采用深微米CMOS技术的8通道总线收发器，适用于面向总线的应用。这款8位同相总线收发器配置双电源轨，在1.8V、2.5V、3.3V和5.5V电压节点之间进行通用低压双向转换。UM3608经过优化， V_{CCA} 和 V_{CCB} 可在1.65V至5.5V的电压范围内正常运行。A端口设计用于跟踪 V_{CCA} 。 V_{CCA} 可接受从1.65V至5.5V范围内的任一电源电压。B端口设计用于跟踪 V_{CCB} 。 V_{CCB} 可接受1.65V至5.5V间的任一电源电压值。

UM3608旨在实现两条数据总线间的异步通信。方向控制(DIR)输入和输出使能(OE)输入的逻辑电平激活B端口输出或者A端口输出，或者将两个输出端口都置于高阻抗模式。当B端口输出被激活时，此器件将数据从A总线发送到B总线，而当A端口输出被激活时，此器件将数据从B总线发送到A总线。A端口和B端口上的输入电路必须施加一个逻辑高或低电平，从而防止过大的 I_{CC} 和 I_{CCZ} 。

UM3608完全符合使用 I_{off} 的部分断电应用的规范要求。 I_{off} 电路禁用输出，从而可防止其断电时破坏性电流从该器件回流。 V_{CC} 隔离特性可确保只要有任何一个 V_{CC} 输入接地(GND)，则所有输出均处于高阻抗状态。为了确保加电或断电期间的高阻抗状态，OE应通过一个上拉电阻被连接至 V_{CC} ；UM3608旨在使控制引脚（DIR和OE）由 V_{CCA} 供电。

UM3608系列采用SSOP24、TSSOP24和QFN24 3.5×5.5封装。

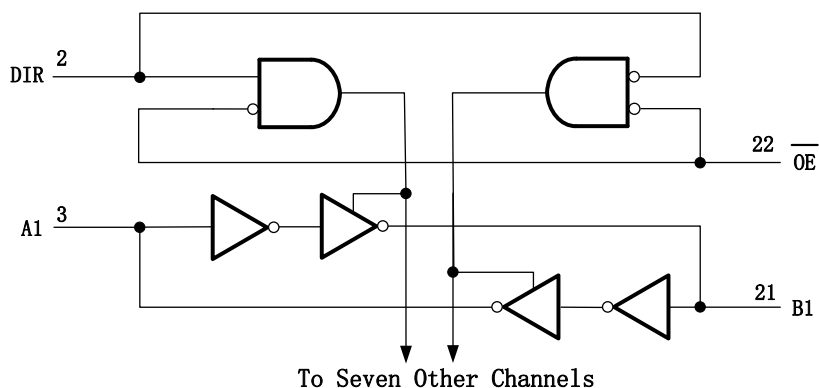
应用

- 个人电子产品
- 工业
- 企业
- 电信

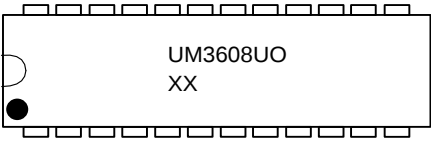
特性

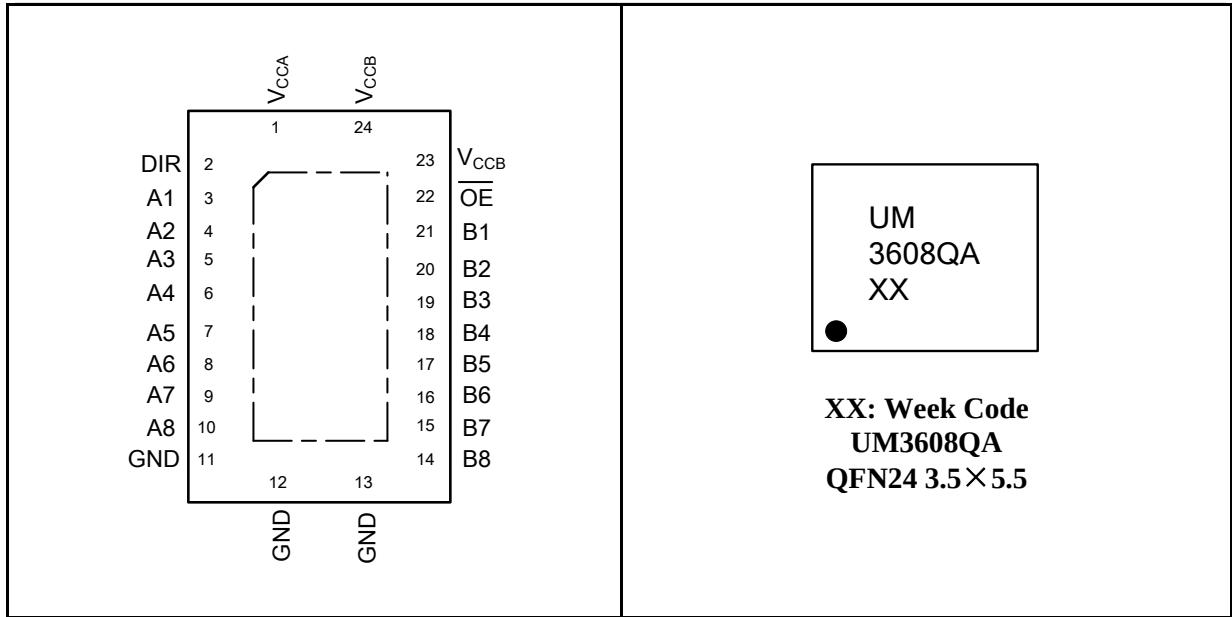
- 控制输入 V_{IH}/V_{IL} 电平以 V_{CCA} 电压为基准
- V_{CC} 隔离特性-如果任何一个 V_{CC} 输入接地(GND)，所有输出均处于高阻抗状态
- 完全可配置的双轨设计，支持各个端口在1.65V至5.5V的整个电源电压范围内运行
- 根据JESD78，Class II规范，闩锁性能（Latch-up）达到100mA
- ESD保护性能超过JESD22规范要求
4000V 人体放电模型 (A114-A)
100V 机器放电模型 (A115-A)
1000V 充电器件模型 (C101)
- 采用SSOP24、TSSOP24和QFN24 3.5×5.5封装
- 最大数据速率
150 Mbps ($V_{CCA} < 3.3\text{ V}$ 或 $V_{CCB} < 3.3\text{ V}$)
220 Mbps ($V_{CCA} \geq 3.3\text{ V}$ 且 $V_{CCB} \geq 3.3\text{ V}$)

Logic Diagram (Positive Logic)



Pin Configurations

V_{CCA} 1 24 V_{CCB} DIR 2 23 V_{CCB} A1 3 22 $\overline{OE}$ A2 4 21 B1 A3 5 20 B2 A4 6 19 B3 A5 7 18 B4 A6 8 17 B5 A7 9 16 B6 A8 10 15 B7 GND 11 14 B8 GND 12 13 GND	 XX: Week Code UM3608AO SSOP24
V_{CCA} 1 24 V_{CCB} DIR 2 23 V_{CCB} A1 3 22 $\overline{OE}$ A2 4 21 B1 A3 5 20 B2 A4 6 19 B3 A5 7 18 B4 A6 8 17 B5 A7 9 16 B6 A8 10 15 B7 GND 11 14 B8 GND 12 13 GND	 XX: Week Code UM3608UO TSSOP24



Pin Descriptions

Pin No.	Pin Name	Function
1	V _{CCA}	A-port supply voltage. $1.65\text{ V} \leq V_{CCA} \leq 5.5\text{ V}$.
2	DIR	Direction-control signal.
3	A1	Input/output A1. Referenced to V _{CCA} .
4	A2	Input/output A2. Referenced to V _{CCA} .
5	A3	Input/output A3. Referenced to V _{CCA} .
6	A4	Input/output A4. Referenced to V _{CCA} .
7	A5	Input/output A5. Referenced to V _{CCA} .
8	A6	Input/output A6. Referenced to V _{CCA} .
9	A7	Input/output A7. Referenced to V _{CCA} .
10	A8	Input/output A8. Referenced to V _{CCA} .
11-13	GND	Ground.
14	B8	Input/output B8. Referenced to V _{CCB} .
15	B7	Input/output B7. Referenced to V _{CCB} .
16	B6	Input/output B6. Referenced to V _{CCB} .
17	B5	Input/output B5. Referenced to V _{CCB} .
18	B4	Input/output B4. Referenced to V _{CCB} .
19	B3	Input/output B3. Referenced to V _{CCB} .
20	B2	Input/output B2. Referenced to V _{CCB} .
21	B1	Input/output B1. Referenced to V _{CCB} .
22	OE	3-state output-mode enables. Pull OE high to place all outputs in 3-state mode. Referenced to V _{CCA} .
23-24	V _{CCB}	B-port supply voltage. $1.65\text{ V} \leq V_{CCB} \leq 5.5\text{ V}$.

Ordering Information

Part Number	Marking	Package Type	Shipping Qty
UM3608AO	UM3608AO	SSOP24	2000pcs/13Inch Tape & Reel
UM3608UO	UM3608UO	TSSOP24	3000pcs/13Inch Tape & Reel
UM3608QA	UM3608QA	QFN24 3.5×5.5	3000pcs/13Inch Tape & Reel

Absolute Maximum Ratings (Note 1)

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

Symbol	Parameter		Value	Unit
V_{CCA}	Supply Voltage Range		-0.5 to +6.5	V
V_{CCB}	Supply Voltage Range		-0.5 to +6.5	V
V_I	Input Voltage Range (Note 2)	A ports	-0.5 to +6.5	V
		B ports	-0.5 to +6.5	
V_O	Voltage Range Applied to Any Output in the High-Impedance or Power-Off State (Note 2)	A ports	-0.5 to +6.5	V
		B ports	-0.5 to +6.5	
V_O	Voltage Range Applied to Any Output in the High or Low State (Note 2, 3)	A ports	-0.5 to ($V_{CCA}+0.5$)	V
		B ports	-0.5 to ($V_{CCB}+0.5$)	
I_{IK}	Input Clamp Current	$V_I < 0$	-50	mA
I_{OK}	Output Clamp Current	$V_O < 0$	-50	mA
I_O	Continuous Output Current		± 50	mA
	Continuous Current through V_{CCA} , V_{CCB} , or GND		± 100	mA
T_{OP}	Operating Temperature Range		-40 to +85	°C
T_J	Operating Junction Temperature		-40 to +125	°C
T_{STG}	Storage Temperature Range		-65 to +150	°C

Note 1: Stresses beyond those listed under "absolute maximum ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under "recommended operating conditions" is not implied. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.

Note 2: The input and output negative-voltage ratings may be exceeded if the input and output current ratings are observed.

Note 3: The value of V_{CCA} and V_{CCB} are provided in the recommended operating conditions table.

Package Thermal Impedance

Symbol	Parameter		Value	Unit
$R_{\theta JA}$	Junction-to-ambient thermal resistance	SSOP24	88.5	°C/W
		TSSOP24	90.6	
		QFN24 3.5×5.5	37.4	
$R_{\theta JC(top)}$	Junction-to-case (top) thermal resistance	SSOP24	48.7	°C/W
		TSSOP24	27.6	
		QFN24 3.5×5.5	38.1	
$R_{\theta JB}$	Junction-to-board thermal resistance	SSOP24	44.1	°C/W
		TSSOP24	45.3	
		QFN24 3.5×5.5	15.2	

ESD Rating

Symbol	Parameter	Value	Unit
ESD Protection	Human body model (HBM)	-4000 to +4000	V
	Charged device model (CDM)	-1000 to +1000	

Recommended Operating Conditions (Note 1, 2,3,4)

Symbol	Parameter		V _{CCI}	V _{CCO}	Min	Max	Unit
V _{CCA}	Supply Voltage				1.65	5.5	V
V _{CCB}					1.65	5.5	
V _{IH}	High Level Input Voltage	Data Inputs ⁽⁵⁾	1.65 V to 1.95 V		V _{CCI} ×0.65		V
			2.3 V to 2.7 V		1.7		
			3 V to 3.6 V		2		
			4.5 V to 5.5 V		V _{CCI} ×0.7		
V _{IL}	Low Level Input Voltage	Data Inputs ⁽⁵⁾	1.65 V to 1.95 V			V _{CCI} ×0.35	V
			2.3 V to 2.7 V			0.7	
			3 V to 3.6 V			0.8	
			4.5 V to 5.5 V			V _{CCI} ×0.3	
V _{IH}	High Level Input Voltage	Control inputs (referenced to V _{CCA}) ⁽⁶⁾	1.65 V to 1.95 V		V _{CCI} ×0.65		V
			2.3 V to 2.7 V		1.7		
			3 V to 3.6 V		2		
			4.5 V to 5.5 V		V _{CCI} ×0.7		
V _{IL}	Low Level Input Voltage	Control inputs (referenced to V _{CCA}) ⁽⁶⁾	1.65 V to 1.95 V			V _{CCI} ×0.35	V
			2.3 V to 2.7 V			0.7	
			3 V to 3.6 V			0.8	
			4.5 V to 5.5 V			V _{CCI} ×0.3	
V _I	Input voltage	Control Inputs			0	5.5	V
V _{I/O}	Input/output voltage	Active state			0	V _{CCO}	V
		Three-State			0	5.5	
I _{OH}	High-level output current			1.65 V to 1.95 V		-4	mA
				2.3 V to 2.7 V		-8	
				3 V to 3.6 V		-24	
				4.5 V to 5.5 V		-32	
I _{OL}	Low-level output current			1.65 V to 1.95 V		4	mA
				2.3 V to 2.7 V		8	
				3 V to 3.6 V		24	
				4.5 V to 5.5 V		32	
Δt/ΔV	Input Transition Rise or Fall Time	Data Inputs	1.65 V to 1.95 V			20	ns/V
			2.3 V to 2.7 V			20	
			3 V to 3.6 V			10	
			4.5 V to 5.5 V			5	

Note 1: V_{CCI} is the V_{CC} associated with the data input port.

Note 2: V_{CCO} is the V_{CC} associated with the output port.

Note 3: All unused or driven (floating) data inputs (I/Os) of the device must be held at logic HIGH or LOW (preferably V_{CCI} or GND) to ensure proper device operation and minimize power.

Note 4: All unused control inputs must be held at V_{CCA} or GND to ensure proper device operation and minimize power consumption.

Note 5: For V_{CCI} values not specified in the data sheet, V_{IH} min = V_{CCI} × 0.7 V, V_{IL} max = V_{CCI} × 0.3 V.

Note 6: For V_{CCA} values not specified in the data sheet, V_{IH} min = V_{CCA} × 0.7 V, V_{IL} max = V_{CCA} × 0.3 V.

Electrical Characteristics (Note 1, 2)

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

Parameter		Test Conditions	V _{CCA}	V _{CCB}	T _A =25 °C		-40 °C to 85 °C		Unit
					Typ	Max	Min	Max	
V _{OH}		I _{OH} =-100μA, V _I =V _{IH}	1.65V to 4.5V	1.65V to 4.5V			V _{CCO} -0.1		V
		I _{OH} =-4mA, V _I =V _{IH}	1.65V	1.65V			1.2		
		I _{OH} =-8mA, V _I =V _{IH}	2.3V	2.3V			1.9		
		I _{OH} =-24mA, V _I =V _{IH}	3V	3V			2.4		
		I _{OH} =-32mA, V _I =V _{IH}	4.5V	4.5V			3.8		
V _{OL}		I _{OL} =100μA, V _I =V _{IL}	1.65V to 4.5V	1.65V to 4.5V			0.1		V
		I _{OL} =4mA, V _I =V _{IL}	1.65V	1.65V			0.45		
		I _{OL} =8mA, V _I =V _{IL}	2.3V	2.3V			0.3		
		I _{OL} =24mA, V _I =V _{IL}	3V	3V			0.55		
		I _{OL} =32mA, V _I =V _{IL}	4.5V	4.5V			0.55		
I _I	DIR	V _I = V _{CCA} or GND	1.65V to 5.5V	1.65V to 5.5V	±1		±2		μA
I _{off}	A or B Port	V _I or V _O = 0 to 5.5 V	0V	0V to 5.5V	±1		±2		μA
			0V to 5.5V	0V	±1		±2		
I _{OZ}	A or B Port	V _O = V _{CCO} or GND, OE = V _{IH}	1.65V to 5.5V	1.65V to 5.5V	±1		±2		μA
I _{CCA}		V _I =V _{CCI} or GND I _O =0	1.65V to 5.5V	1.65 V to 5.5 V			15		μA
			5 V	0 V			15		
			0 V	5 V			-2		
I _{CCB}		V _I =V _{CCI} or GND I _O =0	1.65V to 5.5V	1.65 V to 5.5 V			15		μA
			5 V	0 V			-2		
			0 V	5 V			15		
I _{CCA} +I _{CCB}		V _I =V _{CCI} or GND I _O =0	1.65V to 5.5V	1.65V to 5.5V			25		μA
ΔI _{CCA}	A port	One A port at V _{CCA} – 0.6 V, DIR at V _{CCA} , B port = open	3V to 5.5V	3V to 5.5V			50		μA
	DIR	DIR at V _{CCA} – 0.6 V, B port = open, A port at V _{CCA} or GND					50		
ΔI _{CCB}	B port	One B port at V _{CCB} – 0.6 V, DIR at GND, A port = open	3V to 5.5V	3V to 5.5V			50		μA
C _i	Control inputs	V _I =V _{CCI} or GND	3.3V	3.3V	4		5		pF
C _{iO}	A or B Port	V _O = V _{CCA/B} or GND	3.3V	3.3V	8.5		10		pF

 Note 1: V_{CCI} is the supply voltage associated with the input port.

 Note 2: V_{CCO} is the supply voltage associated with the output port.

Switching Characteristics

Over recommended operating free-air temperature range, $V_{CCA} = 1.8V \pm 0.15V$ (unless otherwise noted)

Parameter	From (Input)	To (Output)	$V_{CCB}=1.8V \pm 0.15V$		$V_{CCB}=2.5V \pm 0.2V$		$V_{CCB}=3.3V \pm 0.3V$		$V_{CCB}=5V \pm 0.5V$		Unit
			Min	Max	Min	Max	Min	Max	Min	Max	
t_{PLH}	A	B	1.7	21.9	1.3	9.2	1	7.4	0.8	7.1	ns
t_{PHL}											
t_{PLH}	B	A	0.9	23.8	0.8	23.6	0.7	23.4	0.7	23.4	ns
t_{PHL}											
t_{PHZ}	$\overline{OE}$	A	1.5	29.6	1.5	29.4	1.5	29.3	1.4	29.2	ns
t_{PLZ}											
t_{PHZ}	$\overline{OE}$	B	2.4	32.2	1.9	18.2	1.7	17.6	1.3	16.3	ns
t_{PLZ}											
t_{PZH}	$\overline{OE}$	A	0.4	26.5	0.4	25.8	0.4	25.7	0.4	25.7	ns
t_{PZL}											
t_{PZH}	$\overline{OE}$	B	1.8	32	1.5	17.5	1.2	16.6	0.9	15.8	ns
t_{PZL}											

Switching Characteristics

Over recommended operating free-air temperature range, $V_{CCA} = 2.5V \pm 0.2V$ (unless otherwise noted)

Parameter	From (Input)	To (Output)	$V_{CCB}=1.8V \pm 0.15V$		$V_{CCB}=2.5V \pm 0.2V$		$V_{CCB}=3.3V \pm 0.3V$		$V_{CCB}=5V \pm 0.5V$		Unit
			Min	Max	Min	Max	Min	Max	Min	Max	
t_{PLH}	A	B	1.5	21.4	1.2	9	0.8	6.2	0.6	4.8	ns
t_{PHL}											
t_{PLH}	B	A	1.2	9.3	1	9.1	1	8.9	0.9	8.8	ns
t_{PHL}											
t_{PHZ}	$\overline{OE}$	A	1.4	17.8	1.4	17.7	1.4	16.5	1.4	16.6	ns
t_{PLZ}											
t_{PHZ}	$\overline{OE}$	B	2.3	29.6	1.8	13.3	1.7	11.7	0.9	11.5	ns
t_{PLZ}											
t_{PZH}	$\overline{OE}$	A	1	16.5	1	16.5	1	16.5	1	16.4	ns
t_{PZL}											
t_{PZH}	$\overline{OE}$	B	1.7	28.2	1.5	12.9	1.2	11.1	1	10.5	ns
t_{PZL}											

Switching Characteristics

Over recommended operating free-air temperature range, $V_{CCA} = 3.3V \pm 0.3V$ (unless otherwise noted)

Parameter	From (Input)	To (Output)	$V_{CCB}=1.8V \pm 0.15V$		$V_{CCB}=2.5V \pm 0.2V$		$V_{CCB}=3.3V \pm 0.3V$		$V_{CCB}=5V \pm 0.5V$		Unit
			Min	Max	Min	Max	Min	Max	Min	Max	
t_{PLH}	A	B	1.5	21.2	1.1	8.8	0.8	6.3	0.5	4.4	ns
t_{PHL}											
t_{PLH}	B	A	0.8	7.2	0.8	6.2	0.7	6.1	0.6	6	ns
t_{PHL}											
t_{PHZ}	$\overline{OE}$	A	1.6	14.6	1.6	14.5	1.6	14.3	1.6	14.2	ns
t_{PLZ}											
t_{PHZ}	$\overline{OE}$	B	2.1	29	1.7	10.8	1.5	10.1	0.8	12.1	ns
t_{PLZ}											
t_{PZH}	$\overline{OE}$	A	0.8	13.7	0.8	13.5	0.8	13.3	0.8	13.2	ns
t_{PZL}											
t_{PZH}	$\overline{OE}$	B	1.8	27.7	1.4	12.4	1.1	9.5	0.9	8.9	ns
t_{PZL}											

Switching Characteristics

Over recommended operating free-air temperature range, $V_{CCA} = 5V \pm 0.5V$ (unless otherwise noted)

Parameter	From (Input)	To (Output)	$V_{CCB}=1.8V \pm 0.15V$		$V_{CCB}=2.5V \pm 0.2V$		$V_{CCB}=3.3V \pm 0.3V$		$V_{CCB}=5V \pm 0.5V$		Unit
			Min	Max	Min	Max	Min	Max	Min	Max	
t_{PLH}	A	B	1.5	21.4	1	8.8	0.7	6	0.4	4.2	ns
t_{PHL}											
t_{PLH}	B	A	0.7	7	0.4	4.8	0.3	4.5	0.3	4.3	ns
t_{PHL}											
t_{PHZ}	$\overline{OE}$	A	0.3	11.6	0.3	11.5	0.3	11.3	0.3	11.2	ns
t_{PLZ}											
t_{PHZ}	$\overline{OE}$	B	2	28.7	1.6	9.7	1.4	8.9	0.7	7.8	ns
t_{PLZ}											
t_{PZH}	$\overline{OE}$	A	0.7	10.7	0.7	10.5	0.7	10.4	0.7	10.2	ns
t_{PZL}											
t_{PZH}	$\overline{OE}$	B	1.5	27.6	1.3	11.4	1	8.8	0.9	8.1	ns
t_{PZL}											

Operating Characteristics

$T_A = 25^\circ C$

Parameter		Test Conditions	$V_{CCA}=V_{CCB}=1.8V$	$V_{CCA}=V_{CCB}=2.5V$	$V_{CCA}=V_{CCB}=3.3V$	$V_{CCA}=V_{CCB}=5V$	Unit
			Typ	Typ	Typ	Typ	
$C_{pdA(1)}$	A-port input, B-port output	$C_L = 0,$ $f = 10\text{ MHz},$ $t_r = t_f = 1\text{ ns}$	4	4	4	4	PF
	B-port input, A-port output		55	55	55	55	
$C_{pdB(1)}$	A-port input, B-port output		55	55	55	55	
	B-port input, A-port output		4	4	4	4	

(1) Power dissipation capacitance per transceiver

Typical Characteristics

Figure 1 V_{OL} Voltage vs I_{OL} Current

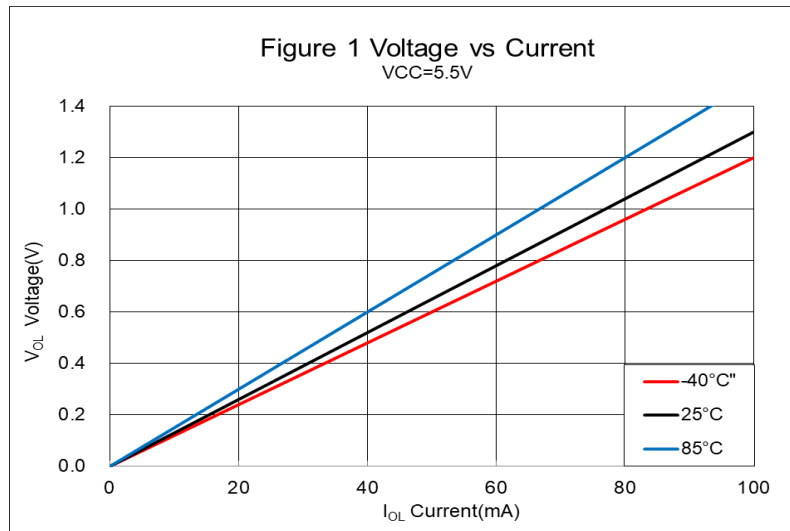
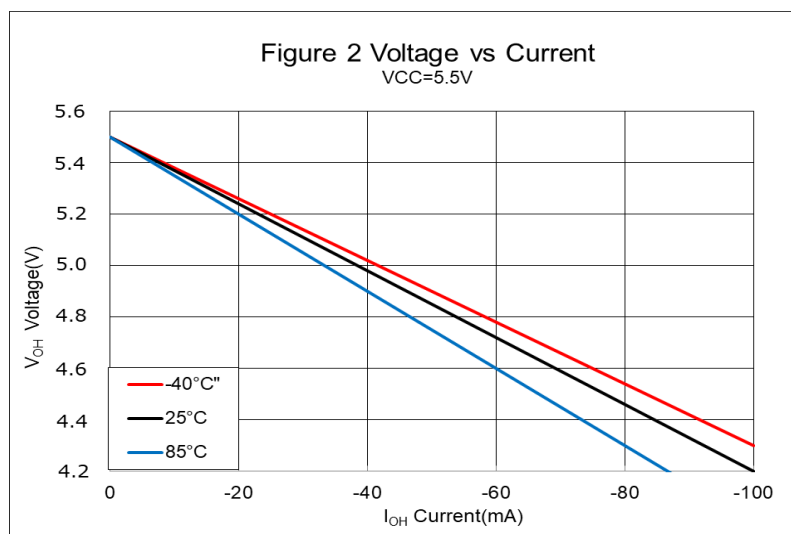
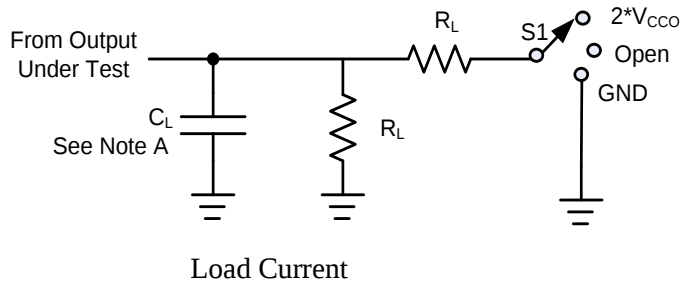


Figure 2 V_{OH} Voltage vs I_{OH} Current

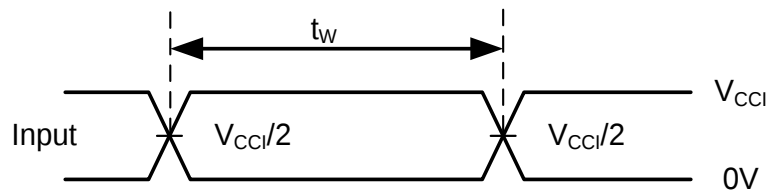


Parameter Measurement Information

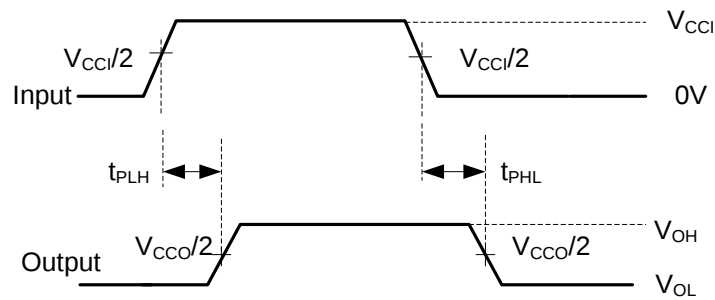


TEST	S1
tpd	Open
t_{PLZ}/t_{PZL}	$2 \times V_{CCO}$
t_{PHZ}/t_{PZH}	GND

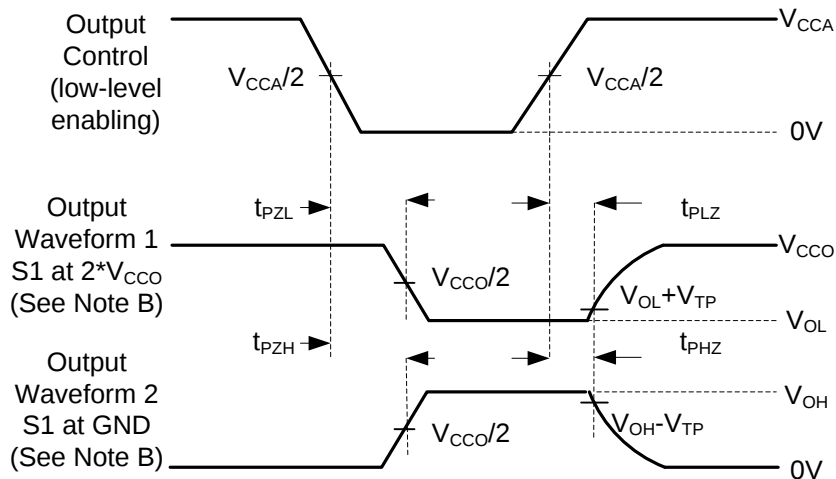
V_{CCO}	C_L	R_L	V_{TP}
$1.8\text{ V} \pm 0.15\text{ V}$	15PF	$2\text{ k}\Omega$	0.15V
$2.5\text{ V} \pm 0.2\text{ V}$	15PF	$2\text{ k}\Omega$	0.15V
$3.3\text{ V} \pm 0.3\text{ V}$	15PF	$2\text{ k}\Omega$	0.3V
$5\text{ V} \pm 0.5\text{ V}$	15PF	$2\text{ k}\Omega$	0.3V



VOLTAGE WAVEFORMS PULSE DURATION



VOLTAGE WAVEFORMS PROPAGATION DELAY TIMES



VOLTAGE WAVEFORMS ENABLE AND DISABLE TIMES

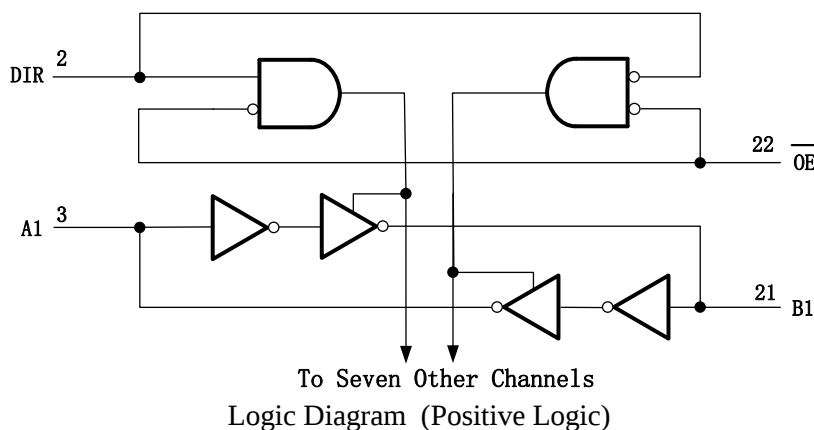
NOTES:

- C_L includes probe and jig capacitance.
- 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.
- All input pulses are supplied by generators having the following characteristics: $PRR \leq 10 \text{ MHz}$, $Z_O = 50\Omega$, $dv/dt \geq 1 \text{ V/ns}$.
- The outputs are measured one at a time, with one transition per measurement.
- t_{PLZ} and t_{PHZ} are the same as t_{dis} .
- t_{PZL} and t_{PZH} are the same as t_{en} .
- t_{PLH} and t_{PHL} are the same as t_{pd} .
- V_{CCI} is the V_{CC} associated with the input port.
- V_{CCO} is the V_{CC} associated with the output port.
- All parameters and waveforms are not applicable to all devices.

Detailed Description

The UM3608 is an 8-bit, dual supply non-inverting bus transceiver. Pin A and direction control pin are support by V_{CCA} and pin B is support by V_{CCB} . The A port is able to accept I/O voltages ranging from 1.65 V to 5.5 V, while the B port can accept I/O voltages from 1.65 V to 5.5 V. The high on DIR allows data transmission from A to B and a low on DIR allows data transmission from B to A.

Functional Block Diagram



Feature Description

Fully Configurable Dual-Rail Design Allows Each Port to Operate Over the Full 1.65V to 5.5V Power-Supply Range

Both V_{CCA} and V_{CCB} can be supplied at any voltage between 1.65V and 5.5V making the device suitable for translating between any of the voltage nodes (1.8V, 2.5V, 3.3V and 5V).

I_{off} Supports Partial-Power-Down Mode Operation

I_{off} prevents backflow current by disabling I/O output circuits when device is in partial-power-down mode.

Device Functional Modes

The UM3608 is bus transceiver that can operate from 1.65V to 5.5V (V_{CCA}) and 1.65V to 5.5V (V_{CCB}). The signal translation between 1.65V and 5.5V requires direction control and output enable control. When OE is low and DIR is high, data transmission is from A to B. When OE is low and DIR is low, data transmission is from B to A. When OE is high, both output ports will be high-impedance.

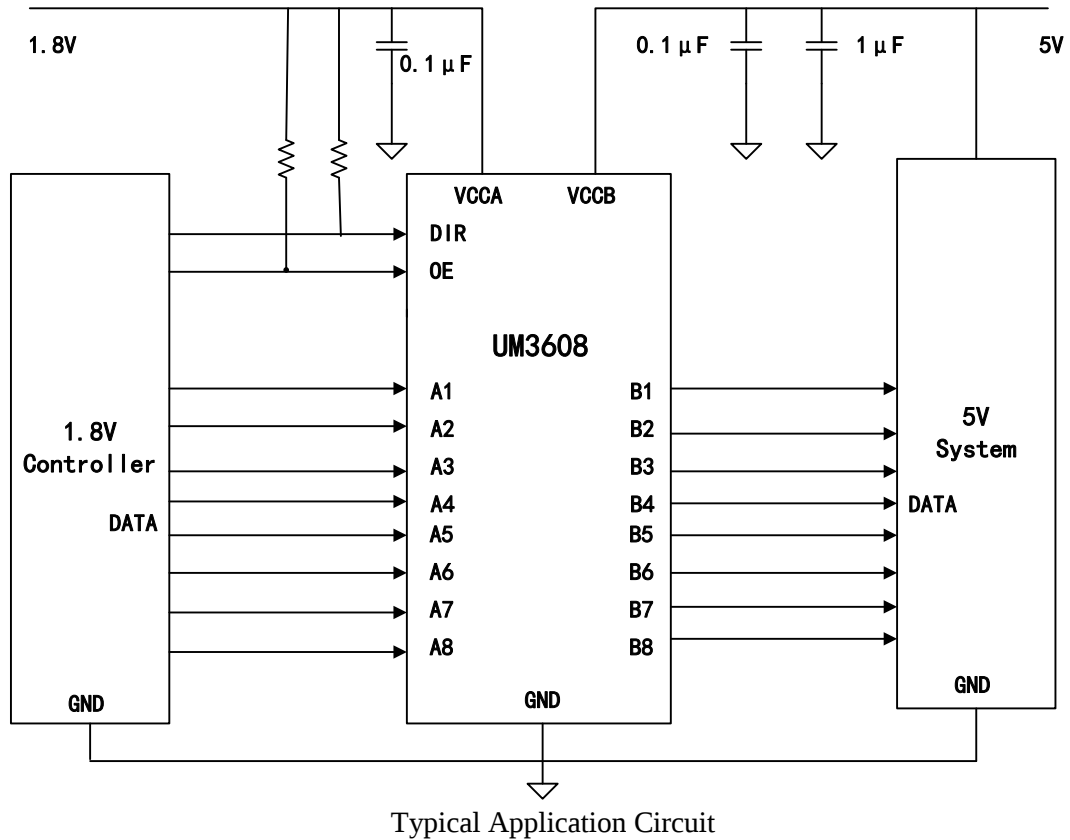
Table 1. Function Table(1)
(Each 8-Bit Section)

CONTROL INPUTS		OUTPUT CIRCUITS		OPERATION
OE	DIR	A PORT	B PORT	
L	L	Enabled	Hi-Z	B data to A bus
L	H	Hi-Z	Enabled	A data to B bus
H	X	Hi-Z	Hi-Z	Isolation

(1) Input circuits of the data I/Os are always active.

Application Information

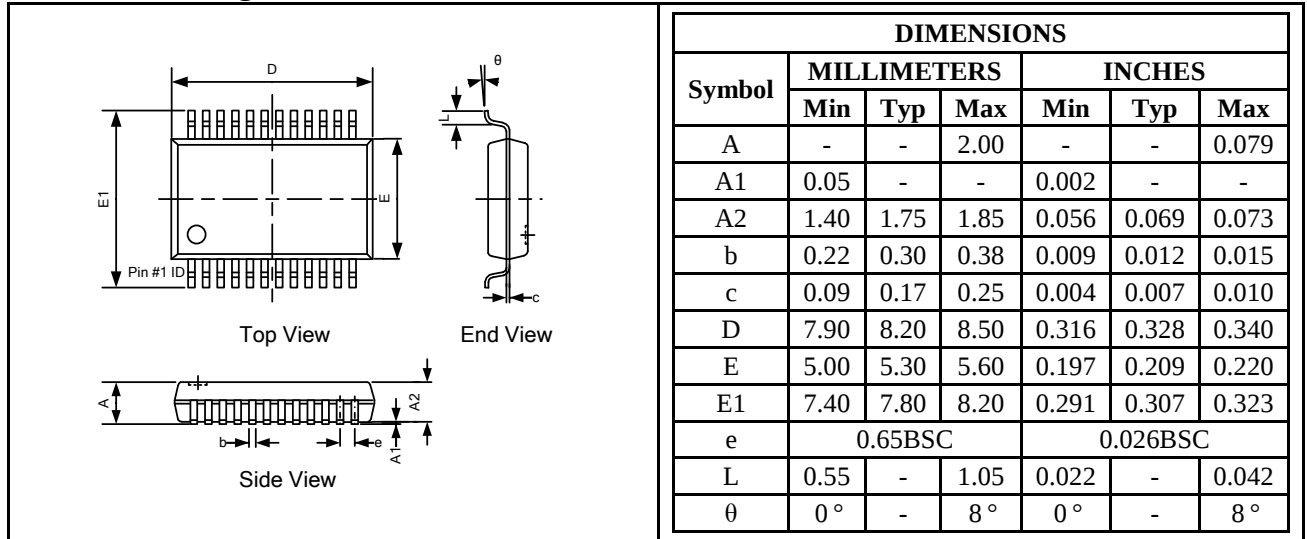
The UM3608 device can be used in level-translation applications for interfacing devices or systems operating at different interface voltages with one another. The maximum output current can be up to 32 mA when device is powered by 5 V.



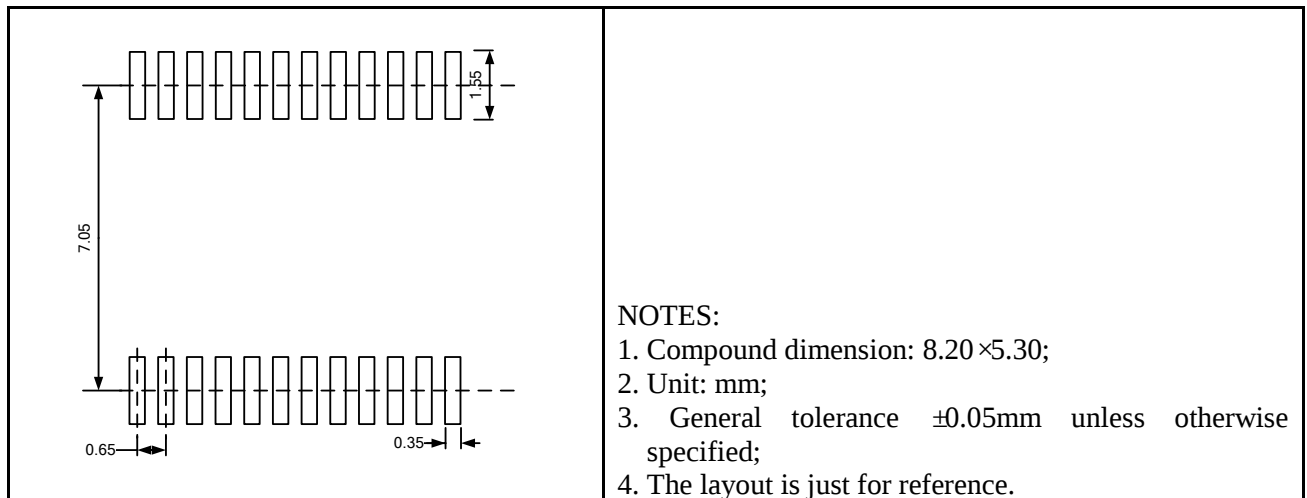
Package Information

UM3608AO SSOP24

Outline Drawing



Land Pattern

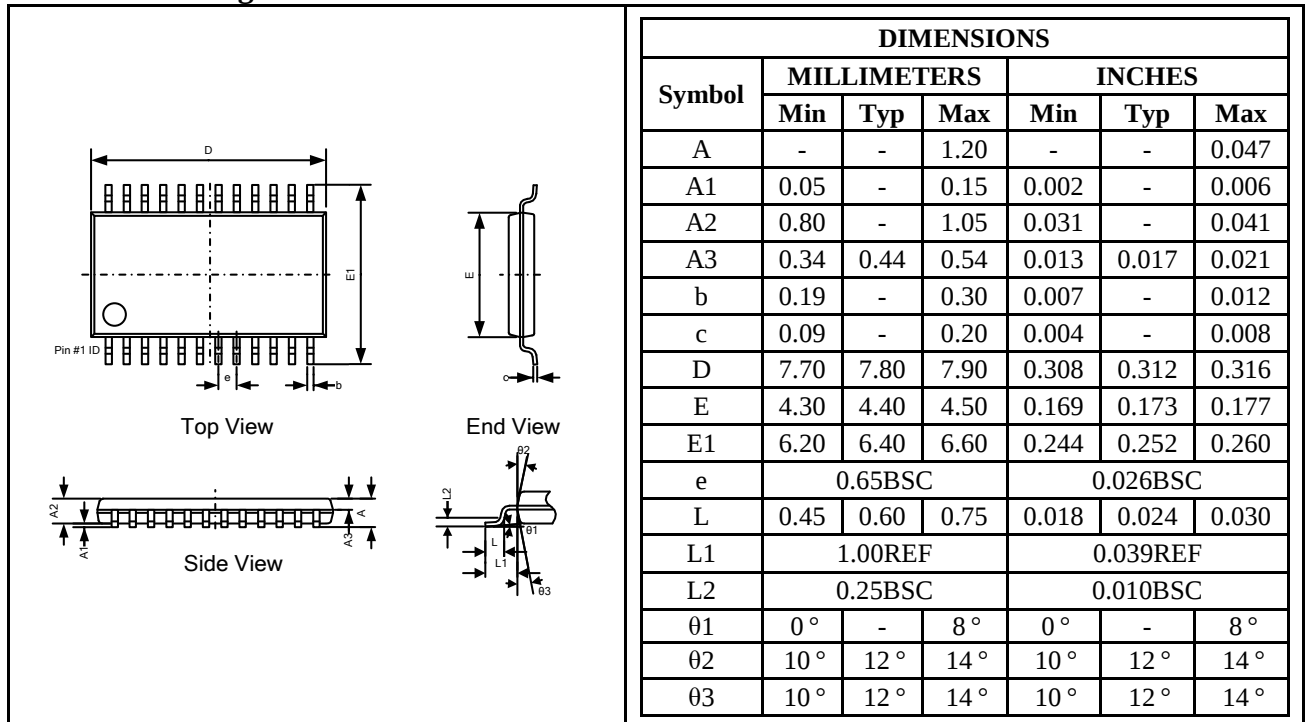


Tape and Reel Orientation

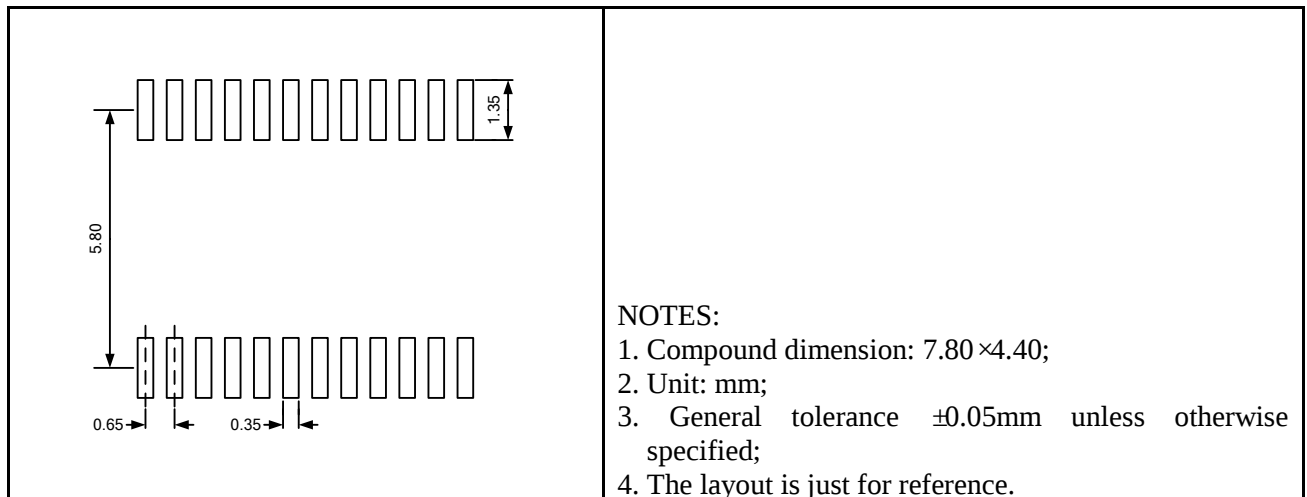


UM3608UO TSSOP24

Outline Drawing



Land Pattern

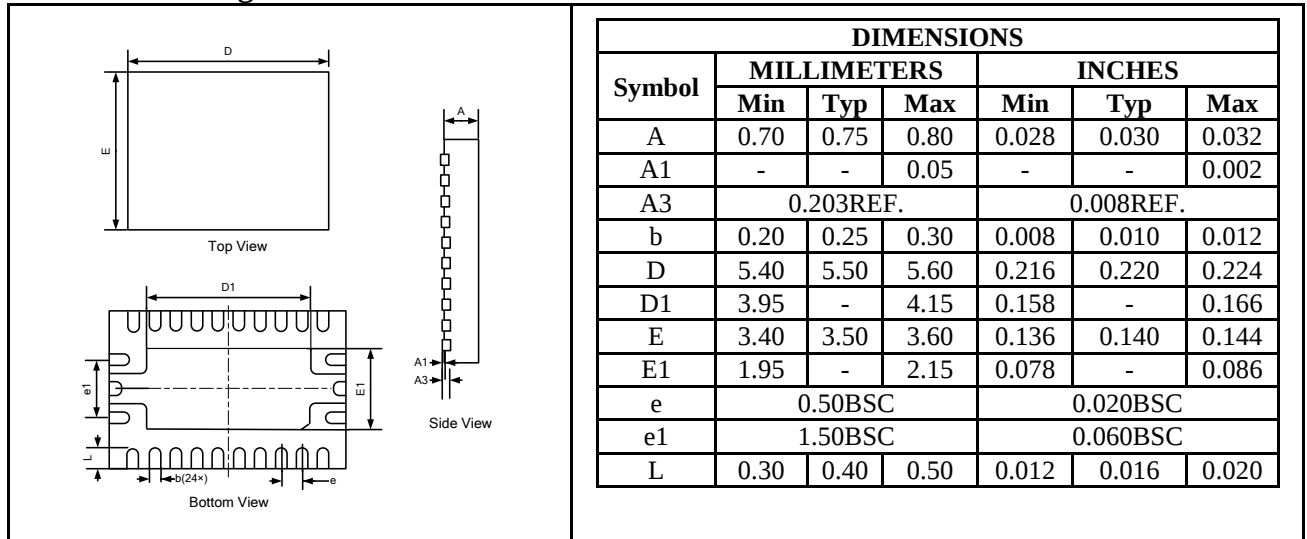


Tape and Reel Orientation

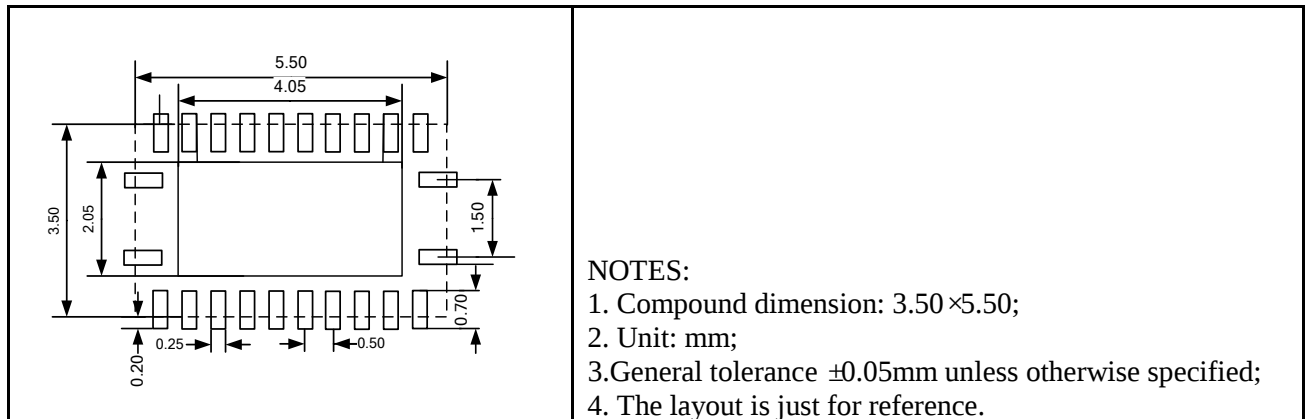


UM3608QA QFN24 3.5×5.5

Outline Drawing



Land Pattern



Tape and Reel Orientation



GREEN COMPLIANCE

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http://www.union-ic.com/index.aspx?cat_code=RoHSDeclaration

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