

概述

MAX7360评估板(EV kit)提供经过验证的设计,用于评估 MAX7360集成ESD保护电路的I²C接口、低EMI按键开关 控制器和8路LED驱动器/GPIO。评估板还包含Windows[®] 2000、Windows XP[®]和Windows Vista[®]兼容软件,提 供简易的图形用户接口(GUI)来验证MAX7360的功能。

MAX7360评估板PCB出厂时安装了MAX7360EWX+。

_ 特性

- ◆ 1.6V至3.3V宽电源电压范围
- ◆ 36焊球WLP封装
- ♦ Windows 2000、Windows XP和Windows Vista (32位)兼容软件
- ◆ USB至PC连接(包含电缆)
- ◆ USB供电
- ◆无铅(Pb)并符合RoHS标准
- ◆可选GPO输出LED (COL2至COL7)
- ◆ RGB LED 输出(PORT1、PORT2、PORT3)
- ◆ 白光LED (PORT0) (需要外部VH电源)
- ◆ LED输出(PORT4)
- ◆ 旋转编码器(PORT6、PORT7)
- ♦ I²C接口端
- ♦ 经过验证的PCB布局
- ◆ 完全安装并经过测试

PART	TYPE
MAX7360EVKIT+	EV Kit

QTY

2

+表示无铅(Pb)并符合RoHS标准。

DESIGNATION

C15, C16

元	件	列	表

DESIGNATION	QTY	DESCRIPTION
C1, C5–C9, C12, C17, C18, C37	10	0.1µF ±10%, 16V X7R ceramic capacitors (0603) Murata GRM188R71C104K
C2	0	Not installed, ceramic capacitor (0603)
C3, C13	0	Not installed, ceramic capacitors (1206)
C4	1	0.033µF ±10%, 25V X7R ceramic capacitor (0603) Murata GRM188R71E333K
C10, C39	2	1μF ±10%, 16V X5R ceramic capacitors (0603) TDK C1608X5R1C105K
C11, C38, C40	3	10μF ±20%, 16V X5R ceramic capacitors (1206) Murata GRM31CR61C106M

TDK C1608C0G1H100J 22pF ±5%, 50V C0G ceramic C30, C31 2 capacitors (0603) TDK C1608C0G1H220J H1, H2 2 20-pin headers USB type-B right-angle female J1 1 receptacle Not installed, dual-row (2×5) 0 JЗ 10-pin header JU1 1 Dual-row (2 x 4) 8-pin header JU2, JU9, 4 3-pin headers JU15, JU16 JU10-JU14. Not installed, headers-short 0 JU24, JU25 (PC trace)

本文是英文数据资料的译文,文中可能存在翻译上的不准确或错误。如需进一步确认,请在您的设计中参考英文资料。 有关价格、供货及订购信息,请联络Maxim亚洲销售中心:10800 852 1249 (北中国区),10800 152 1249 (南中国区), 或访问Maxim的中文网站: china.maxim-ic.com。

Windows、WIndows XP和Windows Vista是Microsoft Corp.的 注册商标。

评估板: MAX7360

Maxim Integrated Products 1

DESCRIPTION 10pF ±5%, 50V COG ceramic

capacitors (0603)

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DESIGNATION	QTY	DESCRIPTION
JU3–JU8, JU17–JU23	13	2-pin headers
KEY0–KEY63, SW1	65	Momentary, normally open switches
L1	1	Ferrite bead (0603) TDK MMZ1608R301A
LED1, LED6–LED15	11	Red LEDs (0805)
LED2, LED3, LED4	3	White LEDs (PLCC2)
LED5	1	RGB LED (PLCC4)
R1, R2	2	$27\Omega \pm 5\%$ resistors (0603)
R3	1	1.5k Ω ±5% resistor (0603)
R4	1	$470\Omega \pm 5\%$ resistor (0603)
R5, R18	2	2.2k Ω ±5% resistors (0603)
R6, R26–R29	5	10k Ω ±5% resistors (0603)
R7, R8	2	4.7k Ω ±5% resistors (0603)
R9, R25	2	33k Ω ±5% resistors (0603)
R10–R17, R24	9	$330\Omega \pm 5\%$ resistors (0603)
R19–R23	0	Not installed, resistors—short (PC trace) (0402)
RE67	1	Rotary encoder
U1	1	I ² C-interfaced low-EMI key- switch controller (36 WLP) Maxim MAX7360EWX+

DESIGNATION	QTY	DESCRIPTION
U2	1	2.5V regulator (5 SC70) Maxim MAX8511EXK25+T (Top Mark: ADV)
U3	1	3.3V regulator (5 SC70) Maxim MAX8511EXK33+T (Top Mark: AEI)
U4	1	Low-power microcontroller (68 QFN-EP*) Maxim MAXQ2000-RAX+
U5	1	UART-to-USB converter (32 TQFP)
U6	1	93C46 type 3-wire EEPROM 16-bit architecture (8 SO)
Y2	1	16MHz crystal Hong Kong X'tals SSM16000N1HK188F0-0
Y3	0	Not installed, crystal (CMR200T)
Y4	1	6MHz crystal Hong Kong X'tals SSL60000N1HK188F0-0
—	18	Shunts
	1	USB high-speed A-to-B cables, 6ft
	1	PCB: MAX7360 EVALUATION KIT+

*EP = 裸焊盘。

元件供应商

元件列表(续)

SUPPLIER	PHONE	WEBSITE
Hong Kong X'tals Ltd.	852-35112388	www.hongkongcrystal.com
Murata Electronics North America, Inc.	770-436-1300	www.murata-northamerica.com
TDK Corp.	847-803-6100	www.component.tdk.com

注:与这些元件供应商联系时,请说明您正在使用MAX7360。

MAX7360评估文件

FILE	DESCRIPTION
MAX7360.EXE	Application program
FTD2XX.INF	USB device driver file
USB_Driver_Help.PDF	USB driver installation help file

快速入门

所需设备

步骤

- MAX7360评估板(包括USB电缆)
- 用户提供的操作系统为Windows 2000、Windows XP 或Windows Vista的计算机,带空闲的USB端口
- 外部14V、250mA直流电源(只有驱动白光LED时需要)

注:以下章节中,与软件相关的条目用粗体字标识。**粗体**字 表示直接与评估软件相关的条目,<u>粗体字加下划线</u>表示与 Windows操作系统相关的条目。

MAX7360评估板经过完全组装与测试。请按照以下步骤验 证电路板的工作情况:

- 访问<u>china.maxim-ic.com/evkitsoftware</u>,下载最新版本的评估软件7360Rxx.ZIP。将评估软件保存到临时文件夹并解压缩ZIP文件。
- 2) 运行临时文件夹中的INSTALL.EXE程序,将评估软件 安装到计算机中。将复制程序文件,并在Windows的 <u>Start | Programs</u>菜单中创建图标。
- 3) 确认所有的跳线(JU1至JU25)处于默认状态,如表1 所示。
- 4) 用USB电缆将PC和评估板连接起来。第一次安装USB 驱动时,会弹出New Hardware Found窗口。如果30s 后没有看到上述窗口,从评估板上拔掉USB电缆并重 新连接。在Windows中安装USB设备驱动需要管理员 权限。
- 5) 按照Add New Hardware Wizard的指导安装USB设备 驱动。选择Search for the best driver for your device 选项。使用Browse按钮将设备驱动的位置指定为C:\ Program Files\MAX7360 (默认安装目录)。在设备驱 动安装期间,Windows可能弹出警告信息,指出Maxim 设备驱动不具备数字签名。这并非故障状态,可继续安 全安装。详细信息请参考软件提供的USB_Driver_Help. PDF文档。
- 6) 确认评估板上的LED13点亮,表示USB已经连接并且 提供电源。

- 7) 点击<u>Start | Programs</u>菜单中的图标打开MAX7360评 估软件。将会出现评估软件主窗口,如图1所示。
- 8) 几秒钟之后软件自动连接到评估板。
- 9) 点击Initialize EV kit 按钮,配置用于演示的默认设置。
- 10) 按键扫描演示:按下评估板上的KEY0至KEY63键盘矩阵中的按键。根据去抖时间和中断寄存器设置,确认依次按下5到6个按键后,按键扫描码会显示在软件历史窗口中。最新的扫描码显示在Key Grid中。
- 11) 旋转编码器演示:选中软件的Port Configuration标签 (图2),然后旋转评估板上的旋转编码器(RE67)。INTI 中断触发软件读取轴角编码器的变化量,软件对变化量 进行累加并报告(注:轴角编码器上的机械旋钮只是近 似于实际编码位置)。
- 12) 端口输入演示:在评估板上按下SW1并保持,然后在软件的Port Configuration标签中,按下0x49 GPIO Port Status下面的Read按钮。验证Port5没有被选中,表示 PORT5引脚为逻辑低电平(由于SW1闭合)。
- 13) 松开SW1,中断引脚INTI再次触发软件读取**0x49 GPIO** Port Status。此时Port5被选中,表示PORT5引脚为逻 辑高电平。
- 14) 将JU9移到2-3位置,由USB对PORT0至PORT4 LED 供电。LED6 (PORT4)应微亮。
- 15) 在软件的PWM Intensity标签(图3)中,设置0x54 Port P4 PWM Intensity为100,并按下Write按钮。此时LED6 应全亮。
- 16) 在软件的PWM Configuration标签(图4)中设置0x5C Port P4 Configuration,选择Blink Period为010 512ms, 并按下Write按钮。随后,LED6将会闪烁。
- 17) 端口输出RGB彩色LED演示:选择软件的PWM Intensity 标签并按下Pick RGB Color (P1=Red,P2=Green,P3= Blue)按钮。将出现标准的窗口色彩拾取对话框。选择一 种色彩并按下OK。选定的RGB值将写入PORT1、PORT2 和PORT3的PWM亮度寄存器。

- 评估板: MAX7360
- 18) 端口输出白光LED演示(警告:当工作于高亮度LED时, 需佩戴眼睛保护器):在EXT VH和GND之间连接外 部14V直流电源,将JU9移到1-2位置,用EXT VH为 PORT0至PORT4 LED供电。
- 19) 将JU16移到2-3位置,将PORT0连接到串行连接的白 光LED串LED2、LED3和LED4。
- 20) 在软件的PWM Intensity标签中,设置0x50 Port P0 PWM Intensity为255,并按下Write按钮。
- 21) 在软件的Port Configuration标签中,将0x43 GPIO Constant Current中Constant Current值设置为11: 20mA。白光LED此时以50%占空比闪烁。
- 22) 在软件的PWM Configuration标签中,将0x58 Port P0 Configuration中Blink Period值设置为000 no blinking,并按下Write按钮。白光LED此时长亮。

软件详细说明

通过评估软件主窗口(图1),可直接访问全部的寄存器并控制中断响应。软件启动后会自动搜索MAX7360评估板硬件,当找到硬件并连接后,会在左下角显示I²C的**Device**Address。

自动读取

寄存器

如果选中Auto Read all复选框,软件会每隔250ms自动读 取寄存器。可通过<u>Options | Polling Rate</u>菜单条目调整读取 速率。

MAX7360的每个寄存器都显示在软件的主窗口中(图1至 4)。每个寄存器都有各自的Read和Write按钮。按下Read entire FIFO now按键将重复读取寄存器0x00,直到全部 读取FIFO中的按键按下事件。

按键阵列

当接收到一个按键按下事件,按键位置会显示在Key Grid 区域。阵列显示为8行8列。寄存器0x02 Debounce / Port Enable决定了在Key Grid中有多少个列引脚被用作通用输 出(GPO)。

中断响应

虽然PC软件不能像真正的底层硬件那样快速响应中断,却为评估提供了很大的灵活性。软件每秒钟查询两次INTK和INTI输出引脚的状态。Periodic Actions复选框决定中断有效时的软件处理方式。

历史窗口

每次寄存器的读、写操作都记录在中断处理方式下面带有滚 动条的文本窗口中。

使用LED12至LED7作为GPO指示器

如需将COL7配置为漏极开路GPO,首先应将**0x02 Debounce** / Port Enable寄存器设置为Output Ports GPO7 / Scan COL6 - COL0,从而改变按键扫描的分区。然后点击Write 按钮,最后通过在JU8上安装短路器,连接LED12至COL7 引脚。如需驱动COL7为低电平点亮LED,应设置**0x04 Ports** 寄存器值以取消选中GPO7复选框,然后按下Write按钮。

将其它COL引脚配置为漏极开路GPO的流程与上面类似。 通过写**0x02 Debounce / Port Enable**寄存器,可以选择用 于按键扫描和输出端口的COL引脚数。按键扫描一般使用 最少数量的COL引脚。根据需要设置跳线JU3至JU8使能 LED输出。对**0x04 Ports**寄存器写端口数据(未选中 = 输出 低电平,选中 = 没有驱动输出)。关于端口寄存器的详细信 息请参考MAX7360 IC数据资料。

若将INTK引脚配置为GPO引脚,首先将寄存器0x03 Interrupt 的FIFO Level和Time组合框设置为Not Used,然后点击 Write按钮。当配置为GPO时,INTK引脚由0x04 Ports寄 存器控制(图1)。

高级用户界面

高级用户通过选择**Options | Interface (Advanced Users)** 菜单列表可使用串行接口。

对于I²C总线,点击图5所示的2-wire interface标签。按下Hunt for active listeners按钮,可在Target Device Address组合框中获得当前MAX7360的从地址。在General commands标签中的Command下拉列表中选择1-SMBusWriteByte(addr,cmd,data8)。在Command byte和 Data Out组合框中输入期望值,然后按下Execute按钮。

ile Options View Help									
Key Scan Configuration Port Configuration PWM Intensity PWM Configuration Interface History	Key (Grid							
0x00 Keys FIFD		C1	C2	C3	C4	C5	C6	C7	CS
Read KEY24-Press FIFO_Empty Read entire FIFO now Write	B1	0	8	16	24	32	40	48	56
0x01 Configuration	R2	1	9	17	25	33	41	49	57
Read Power Up IV Clear INT on read IV Key-Release IV Key-Press Wakeup Write 0x40 reserved 0 IV 0x10 reserved 0 IV 0x04 reserved 0 IV Timeout disable	R3	2	10	18	26	34	42	50	58
0x02 Debounce / Port Enable	R4	3	11	19	27	35	43	51	59
Read No GPO Output Ports / Scan COL7 · COL0 40 msec debounce Write	R5	4	12	20	28	36	44	52	60
0x03 Interrupt	R6	5	13	21	29	37	45	53	61
Read FIFO Level: 2 Time: 15 x debounce INTK pin = Interrupt Write	R7	6	14	22	30	38	46	54	62
Ox04 Ports Read Image: Constraint of the state of the	R8 Per Wr	iodic ien IN Read Read	15 Actio ITK is FIF(FIF('23 ns sacti Don	31 ve: timer	39 I: tick	47 NTK inad	55 pin	63
0x06 Sleep (Idle time to auto-shutdown) Read	ন থ ম ম	ien IN Read Read	ITI is d Rot d GPI	activ ary S O Po	e: witch rt Sta	II itus	NTI ; inac	pin: tiv	: 1 e
	GU GU GU GU GU GU GU	I-FIF(I-FIF(I-FIF(I-FIF(I-FIF(I-FIF(I-FIF(D(1) = D(2) = D(3) = D(4) = D(5) = D(6) = D(6) = D(7) =	= 0x8 = 0x4 = 0x8 = 0x4 = 0x4 = 0x9 = 0x5 = 0x5	D KEN D KEN B KEN B KEN D KEN D KEN B KEN	/00-F /00-F /08-F /08-F /16-F /16-F /16-F /24-F	Press Press Press Press Press Press Press	FIFO = FII FIFO = FII FIFO = FI FIFO	M FO_ FO_ M FO_ FO_ Er
Device Address: 0x70 🚽 🖵 Auto Read all 🛛 Initialize EV kit 🔹 Read All 👘 Write All				— "		-)		->

图1. MAX7360评估软件主窗口(按键扫描配置标签页)

MAX7360 Evaluation Kit	
File Options View Help	
Key Scan Configuration Port Configuration PWM Intensity PWM Configuration Interface History	
Read PIC Configuration	B1 0 8 16 24 32 40 48 56
Ox41 GPIO Port I/O Direction (1=output, 0=input)	R2 1 9 17 25 33 41 49 57
Read P Port/ J Port5 J Port5 J Port4 J Port3 J Port2 J Port1 J Port0 Write	R3 2 10 18 26 34 42 50 58
Read Street Configuration Write Write	R4 3 11 19 27 35 43 51 59
Ox43 GPID Constant Current	R5 4 12 20 28 36 44 52 60
	R6 5 13 21 29 37 45 53 61
Read Port7 Port6 Port5 Port4 Port3 Port2 Port1 Port0 Write	R7 6 14 22 30 38 46 54 62 R8 7 15 23 31 39 47 55 63
Ox45 GPIO Common PWM Ratio	Periodic Actions
Ox46 Rotary Switch Configuration Read F	J When INTK pin: 1 I I
Ox48 Timeout Flag Read Timeout	When INTI is active: INTI pin: 1 Read Rotary Switch inactive
Ox49 GPI0 Port Status Read Port7 ✓ Port7 ✓ </td <td>Read GPIO Port Status GUI-EIE0[2] = 0x40 KEY00-Belease EIE0</td>	Read GPIO Port Status GUI-EIE0[2] = 0x40 KEY00-Belease EIE0
0x4A Rotary Switch Count Read	GUI-FIFO[3] = 0x88 KEY08-Press FIFO_M GUI-FIFO[4] = 0x88 KEY08-Press FIFO_M GUI-FIFO[5] = 0x90 KEY16-Press FIFO_M GUI-FIFO[5] = 0x50 KEY16-Release FIFO_ GUI-FIFO[6] = 0x50 KEY24-Press FIFO_Er GUI-FIFO[7] = 0x18 KEY24-Press FIFO_Er
Device Address: 0x70 🔪 🗖 Auto Read all 🛛 Initialize EV kit 🔹 Read All 🔹 Write All	
Device Address 0x70	

图2. MAX7360评估软件主窗口(端口配置标签页)

He options view Help			5 J			,	Kauf	5.0 A						
Key Scan Configuration Port C	onfiguration	PWM Int	ensity PWM Co	nfiguration Ir	nterface Hi	story	I Ney C		<u></u>	<u>co c</u>			67	
ReadRead	10					Write	 	0	8	16 2	4 32	2 40	48	56
-0x51 Port P1 PWM Intensity Read	18					Write	R2	1	9	17 2	5 3	3 41	49	57
−0x52 Port P2 PWM Intensity Read	, 196	 				Write	R3 R4	2 3	10	18 2 19 2	6 34 7 35	4 42 5 43	50 51	58 59
−0x53 Port P3 PWM Intensity Read P	,					Write	R5 B6	4 5	12	20 2	8 36 9 30	6 44 7 45	52 53	60 61
0x54 Port P4 PWM Intensity Read	,	 				Write	R7	6	14	22 3		3 46	54	62
0x55 Port P5 PWM Intensity Read 0x56 Port P6 PWM Intensity Read	0					Write	Peri Wh	odic en IN Read Read	Actior TK is I FIFO I FIFO	active on tim	er tick	INTI	(pin	L: 1 ve
0x57 Port P7 PWM Intensity Read● =EV Kit RGB LED Color	0					Write	When INTI is active: INTI pin: 1							
During Addapter [0.70	Pick B	GB Color (I	P1=Red,P2=Gree	n,P3=Blue))	GU GU GU GU GU GU	I-FIF(I-FIF(I-FIF(I-FIF(I-FIF(I-FIF(I-FIF()[2] =)[3] =)[4] =)[5] =)[6] =)[7] =)[8] =	0x40 k 0x88 k 0x48 k 0x90 k 0x50 k 0x58 k 0x58 k	EY00 EY08 EY08 EY16 EY16 EY24 EY24	I-Rele I-Pres: I-Pres: I-Pres: I-Pres: I-Rele	ase F s FIFC ase F s FIFC ase F s FIFC ase F	IFO_)_M IFO_)_M IFO_)_Er IFO_

图3. MAX7360评估软件主窗口(PWM亮度标签页)

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评估板: N

👬 MAX7360 Evaluation	Kit														
File Options View Help															
Key Scan Configuration Port	Configuration PWM I	ntensity PWM Config	uration Inter	face Hi	istory	Key 6	àrid								
0x58 Port P0 Configuration Read PT Int Mask		Blink Period	Blink On		Write	B1	C1	C2		C4	C5 32	C6 40	C7 48	C8 56	
F Edge/Level	☐ Common PWM	001 256ms 💌	00 50%	_		B2	1	9	17	25	33	41	49	57	
Ox59 Port P1 Configuration Read PT Int Mask		Blink Period	Blink On		Write	R3	2	10	18	26	34	42	50	58	
F Edge/Level	☐ Common PWM	000 no blinking 💌	00 50%	•		R4	3	11	19	27	35	43	51	59	
0x5A Port P2 Configuration Read The Int Mask		Blink Period	Blink On		Write	R5	4	12	20	28	36	44	52	60	
	Common PWM	000 no blinking 💌	00 50%	<u> </u>		R6	5	13	21	29	37	45	53	61	
Ox5B Port P3 Configuration Read III Int Mask		Blink Period	Blink On		Write	R7	6	14	22	30	38	46	54	62	
☐ Edge/Level	Common PWM	000 no blinking 💌	00 50%	_			_' 					4′			
Ox5C Port P4 Configuration	┌─ Common PWM	Blink Period	Blink On	•	Write	Periodic Actions When INTK is active: INTK pin: 1 ▼ Read FIFO inactive ■ Bead FIFO on time: tick									
Ox5D Port P5 Configuration Read I Int Mask Edge/Level	┌─ Common PWM	Blink Period	Blink On 00 50%	•	Write		en IN Reac	TI is I Rota	activ ary Si	e: witch	IÌ	TI j inac	pin tiv	: 1 'e	
Ox5E Port P6 Configuration Read T Int Mask Edge/Level	┌─ Common PWM	Blink Period	Blink On	•											
Ox5F Port P7 Configuration Read I Int Mask		Blink Period	, Blink On		Write	GU GU GU GU	I-FIFC I-FIFC I-FIFC I-FIFC)[4] =)[5] =)[6] =)[7] =	0x48 0x90 0x50 0x50	3 KEN 0 KEN 0 KEN 3 KEN	/08-R /16-P /16-R /24-P	eleas ress eleas ress	se FI FIFO se FI FIFO	FO_ L_M FO_ L_Er	
Device Address: 0x70	Auto Read all	Initialize EV kit	Read All		Write All	i gu	I-FIFC	D[8] =	0x58	3 KEN	′24-R	elea:	se Fl	F0_ 📄	
Device Address 0x70															

图4. MAX7360评估软件主窗口(PWM配置标签页)

评估板: MAX7360

Options Help	
Connection 2-wire interface Logging	
Device Address	
Target Device Address: 0x70 _ 0111000 r/w Hunt for active	listeners
General commands SMBus register watch Low Level commands	
Command (SMBus Protocols, Raw Block Read/Write, EEPROM Read/Write)	
4 - SMBusReadByte(addr,cmd) -> data8 Execute PAS	5 <mark>5</mark>
Command bute: 0x49 V Data Out	~
Byte count: 11 Jatain: Joxee	
Found a device at 0x70 One Device was found at 0x70	<u> </u>
Executing protocol Q - SMBusQuick(addr) -> device present?	
SMBusQuick(0x70)> Success: Device is Present Executing protocol 4 - SMBusBeadBute(addr.cmd) -> date8	
CmodSMBusReadByte(0x70,0x49) -> 0xDF	
Executing protocol 4 - SMBusReadByte(addr,cmd) -> data8 CmodSMBusBeadByte(0x70.0x49) -> 0xFF	

图5. 高级用户界面(2线接口标签页)

硬件详细说明

MAX7360评估板对MAX7360提供了经过验证的布局,评 估板包括易于使用的USB至PC连接器。

MAX7360 (U1)对按键矩阵(KEY0至KEY63)进行扫描。评 估板带有一个8 x 8按键矩阵。若需演示GPO性能,可通过跳 线选择COL2至COL7的LED指示器。FTDI FT232BL (U5)提 供USB引擎。U2将USB 5V电源降压至2.5V。LED13用于指 示是否连接USB 5V电源。低电压RISC微控制器MAXQ2000 (U4)处理PC机运行程序发送的命令。该电路板装载的固件 与MINIQUSB接口模块相同。

用外部I²C总线代替USB

如需断开电路板的I²C总线,则切断位于PCB背面的跳线 JU10和JU11处的连接。如果外部I²C总线已经具有合适的 上拉电阻,则切断跳线JU12和JU13处的连线。不要连接 USB连接器(J1)。将JU2的短路器移至2-3引脚,在GND和 EXT VCC椭圆焊盘提供2.5V至3.6V电源。将外部I²C总线 连接到H2接头的SCL和SDA测试点。

表1. MAX7360评估板跳线说明(JU1至JU25)
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JUMPER	SIGNAL	SHUNT POSITION	DESCRIPTION
JU1	AD0	1-2*	AD0 = GND, selecting I ² C address 0x70
		3-4	AD0 = SCL, selecting I ² C address 0x74
		5-6	AD0 = VCC, selecting I ² C address 0x78
		7-8	AD0 = SDA, selecting I ² C address 0x7C
JU2	VCC	1-2*	Power VCC from 3.3V LDO
		2-3	Power VCC from external user-supplied power supply
JU3	GPO2	1-2	COL2 drives GPO2 LED
		Open*	COL2 connects to key matrix
JU4	GPO3	1-2	COL3 drives GPO3 LED
		Open*	COL3 connects to key matrix
11.15	CPO4	1-2	COL4 drives GPO4 LED
JU5	GPO4	Open*	COL4 connects to key matrix
JU6	GPO5	1-2	COL5 drives GPO5 LED
		Open*	COL5 connects to key matrix
JU7	GPO6	1-2	COL6 drives GPO6 LED
		Open*	COL6 connects to key matrix
JU8	GPO7	1-2	COL7 drives GPO7 LED
		Open*	COL7 connects to key matrix
JU9	VH	1-2*	Power VH from external user-supplied power supply (VH < 14V)
		2-3	Power VH from USB+5V supply
1110	SDA	PCB trace shorted*	SDA connected to on-board I ² C bus
JU 10		PCB trace cut open	SDA must be connected to an external I ² C bus
JU11	SCL	PCB trace shorted*	SCL connected to on-board I ² C bus
		PCB trace cut open	SCL must be connected to an external I ² C bus
JU12	SDA	PCB trace shorted*	SDA connected to on-board pullup resistor
		PCB trace cut open	SDA pullup resistor must be provided externally

表1. MAX7360评估板跳线说明(JU1至JU25) (续)

JUMPER	SIGNAL	SHUNT POSITION	DESCRIPTION
JU13	SCL	PCB trace shorted*	SCL connected to on-board pullup resistor
		PCB trace cut open	SCL pullup resistor must be provided externally
JU14	TEST	PCB trace shorted*	U1 pin A1 is connected to GND
		PCB trace cut open	U1 pin A1 is not connected
JU15	VLED	1-2*	Power GPO2–GPO7 LEDs from 3.3V LDO
		2-3	Power GPO2–GPO7 LEDs from external user-supplied 3.3V power supply
JU16	PORT0	1-2*	PORT0 drives single red LED
		2-3	PORT0 drives 3 series-connected white LEDs (requires VH = 14V)
		Open	PORT0 unconnected
JU17	DODTE	1-2*	PORT5 is pulled high by 2.2k Ω resistor, and pulled low by momentary switch SW1
	PORI5	Open	PORT5 not connected unless momentary switch SW1 is pressed
1110	PORT1	1-2*	PORT1 drives red channel of RGB color LED
JU18		Open	PORT1 unconnected
	PORT2	1-2*	PORT2 drives green channel of RGB color LED
JU 19		Open	PORT2 unconnected
JU20	PORT3	1-2*	PORT3 drives blue channel of RGB color LED
		Open	PORT3 unconnected
JU21 F	PORT4	1-2*	PORT4 drives single red LED
		Open	PORT4 unconnected
JU22	PORT6	1-2*	PORT6 connects to rotary encoder RE67
		Open	PORT6 unconnected
11.100	PORT7	1-2*	PORT7 connects to rotary encoder RE67
JU23		Open	PORT7 unconnected
JU24	INTI	PCB trace shorted*	INTI connected to MINIQUSB GPIO K1 input
		PCB trace cut open	INTI not connected to MINIQUSB
JU25	INTK	PCB trace shorted*	INTK connected to MINIQUSB GPIO K6 input
		PCB trace cut open	INTK not connected to MINIQUSB

*默认位置。



图6a. MAX7360评估板原理图(1/5)



图6b. MAX7360评估板原理图(2/5)





图6d. MAX7360评估板原理图(4/5)



图6e. MAX7360评估板原理图(5/5)



图7. MAX7360评估板元件布局——元件层



图8. MAX7360评估板PCB布局——元件层



图9. MAX7360评估板PCB布局—焊接层

Maxim北京办事处 北京8328信箱 邮政编码 100083 免费电话: 800 810 0310

电话: 010-6211 5199 传真: 010-6211 5299

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_ Maxim Integrated Products, 120 San Gabriel Drive, Sunnyvale, CA 94086 408-737-7600