数据手册



ISL6441EVAL 用戶使用手册

一 评估板介绍

1 概述

ISL6441EVAL 是关于 INTERSIL ISL6441,ISL6443 产品的评估套件,它由评估板 ISL6441 EVM 和包 括本文档在内的资料光盘组成。

ISL6441 EVM 是已完全装配好并经测试的 4 层印制电路板,可适用于 ISL6441,ISL6443 的评估。在使用本评估板之前,建议用户先详细阅读以下资料:

ISL6402 数据手册 FN9123.3

ISL6441 数据手册 FN9197.0

ISL6443 数据手册 FN9044.0

ISL6441,ISL6443 是高性能,三输出控制器,由两个同步降压型 PWM 控制器和一个线性调整器组成。 有关该产品更为详细的说明请参见 ISL6441,ISL6443 数据手册。

2 评估板外形图



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3 评估板参考 PCB 布局图





Bottom silk

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4 评估板原理图





二 评估板使用说明

ISL6441EVAL 是一个完全装配好并经测试的 ISL6441, ISL6443 评估装置下面详细说明。

1 推荐测试设备

- 1台4.5V-30V, 5A的稳压电源
- 3台滑线变阻器
- 1台两通道带探头的示波器
- 10 台万用表

2 输入电源及负载的连接

输入电源及负载连接示意图。



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ISL6441EVAL 输入电压范围是 4.5v-24v,但这里所指的输入电压范围 4.5v-24v 被划分成两个区间, 4.5v-5.6v 和 5.6v-24v。

当输入电压是在区间 4.5v-5.6v 时,请将跳线器 JP1 上插上短接片,这是为了将端子 P1(VIN)和端子 P9(VCC_5V)短接,确认短接片已插好后,打开稳压电源开关,将电压调整在 4.5v-5.6v 范围内,关稳压电源开关,将稳压电源的正端接到端子 P1(VIN),将稳压电源的负端接到端子 P2(GND),尽量用粗线连接,因为接上负载后,导线上会有一定的压降;

当输入电压是在区间 5.6v-24v 时,请取下跳线器 JP1 上的短接片,打开稳压电源开关,将电压调整在 5.6v-24v 范围内,关稳压电源开关,将稳压电源的正端接到端子 P1(VIN),将稳压电源的负端接到端子 P2(GND).

注意:当输入电压是在区间 4.5v-5.6v 时,跳线器 JP1 上插上短接片后,切勿将输入电压调到 5.6V 以上,这样可能损坏芯片。当输入电压是在区间 4.5v-5.6v 时,ISL6441EVAL 的 VOUT2 虽然设定在 5V,但由于压差太小,所以在 VOUT2 端得不到 5V 的输出电压,VOUT1 可输出 3.3V, VOUT3 输出为 2.5V.

3 输出电压调节

通过改变相应输出电压的反馈电阻,可更改输出电压。 Vout1=0.8*[1+R7/(R8//R8A)] Vout2=0.8*[1+R9/(R10//R10A)] Vout3=0.8*[1+R15/(R16//R16A)]

4 软起动功能

可改变 C6,C5 的值来改变软起动时间: tss(pwm1)=C6*(0.8V/5uA) tss(pwm2)=C5*(0.8V/5uA)

5 关闭功能

将跳线器 JP2 上插上短接片,可取消 PWM1(对应输出电压 VOUT1)的输出,不影响 PWM2;同样将跳线器 JP3 上插上短接片,可取消 PWM2(对应输出电压 VOUT2)的输出,不影响 PWM1。

端子 P5 直接连接到了 ISL6441 的脚 SD1 (19)上,

端子 P6 直接连接到了 ISL6441 的脚 SD2 (5)上

6 同步功能

多个 ISL6441 可实现同步,只有一个是主,其余都是从,同步到主 isl6441. 取下 R17,在 R19 上焊接 1K 的电阻,可实现同步,SYNC 上的脉冲可通过示波器观察。

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7 电源就绪

当两个 PWM 控制器的输出在额定电压范围的 ± 10%,或线性控制器的输出达到额定值的 75%时,该 脚变为高电平。ISL6441 的 PGOOD 脚是漏极开路输出的,评估板上通过一个 100K 的上拉电阻连接到脚 VCC_5V。如果你没有用到线性调整器,请将端子 P15(VOUT3)接到端子 P9(VCC_5V),以便你在没 有用到线性调整器时,可以对芯片的 PGOOD 功能进行评估。你可以通过端子 P8 监视 PGOOD 脚。

8 过流保护

通过更换过流设置电阻 Rocset,过流阈值 Ioc 是可以被调整的。

Rocset=(7*Rcs)/(Ioc*Rds(on)),其中:

Rocset: 过流设置电阻。

本评估板上与 PWM1 相对应的是 R11, 与 PWM2 相对应的是 R12

Rcs: 过流检测电阻

本评估板上与 PWM1 相对应的是 R3,与 PWM2 相对应的是 R4 Ioc: 你期望的过流阈值点。你可以根据自己的需要,对两个 PWM 控制 器设置不同的过流阈值点。 Rds(on): 与 PWM 控制器相对应的的低端 MOSFET 的通态电阻。

本评估板上就是指 MOSFET 管 Q1B, Q2B 的通态电阻。

三 评估板使用步骤

1. 根据输入电压范围,选择是否将 JP1 短接,如果你的输入电压范围在 4.5v~5.6v 之间,请用短 接片将 JP1 短接,如果你的输入电压范围在 5.6v~24.0v 之间,请一定取下 JP1 上的短接片,否则,可能 损坏芯片.

2. 将输入电源连接到评估板上,注意极性不可接反

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四 评估板元件清单

1 U1 1 ISL6441 IRZ IC, Linear DualPWMController, I-MHz 28 QFN Intersil 2 D1, D2 2 BATSWT1 Diode, Shothky 30V200nA SOT-323 On Semi 3 Q1, Q2 2 FDS 6912A MOSPET, Dual NChan, 30V, 6A, 0.028m SOT-323 On Semi 4 Q3 1 IRF 7404 MOSPET, Dwart IEXFET P.Chan, 20V, 67, A0, 0.04m SOT-83 RE 5 L1, L2 2 SLF127ST-389M-S. Power The KPET P.Chan, 20V, 67, A0, 0.04m SOT-83 Mutan 6 L3 SLF127ST-389M-S. Power The KPET P.Chan, 20V, 67, A0, 0.04m SOT-83 Mutan 7 C1, C3 2 TMK32SB1/106KM Capacitor, Cramic, XR 104F, 10%, 25V SM, 1210 MaV SGenere 9 C4, C24, C28 3 12065C105KAT2A Capacitor, Cramic, XR 104F, 10%, 10V CAS, 400, 40X, Genere 10 C9, C10, C13, C14 4 04052C105KAT2A Capacitor, Cramic, XR 104F, 10%, 10V CAS, 103, AXX Genere 11 C14A, C12A 2 107FB150ML Capacitor, Cra	序	弓 标号	数量	型号	类别	描述	封装	厂家
2 D1, D2 2 BAT54WT1 Diode Schottky 30V.200mA SOT-32 On Semi 3 Q1, Q2 2 FDS6012A MOSFET, Dual NCLm.30V:6A, D028m SOT-8 Fairchild 4 Q3 1 IRF7404 MOSFET, Dual NCLm.30V:6A, D028m SOT-8 Fairchild 5 L1, L1 BLM21PC300SN Ferrite Bead SM (2005 Murata 6 L3 BLM21PC300SN Ferrite Bead SM (2005 Murata 7 C1, C3 2 TMK252B1106K Capacitor, Ceramic, X7R 10aF10%, 25V SM (210 AVX Generc 8 C2 1 12103D475KAT2A Capacitor, Tantalum 150£10%, 10V SA (26)-531. SANYO 11 C11A,C12A 4 08052C105KAT2A Capacitor, Tantalum Capacitor, Tantalum CASE-D31. SANYO 12 C11B,C11C,C12B, C12C,DNP 4 Capacitor, Ceramic, X7R 0.147, 10%, 15W, 15W SM (2605 AVX Generc 13 C15,C160/NP 2 Capacitor, Ceramic, X	1	U1	1	ISL6441IRZ	IC, Linear	DualPWMController,1.4MHz	28 QFN	Intersil
3 Q1, Q2 2 PDS0P12A MOSPET, Dual NChan, 30V6A, 0.028m SOIC-8 Fairchild 5 L1, L2 2 SLF1275T, SROM, S Power Chole, Coin 39ml 35%, 86.A PCC-N6 CHILJSN 6 L3 1 BLR/1275T, SROM, S Power Chole, Coin 39ml 35%, 86.A PCC-N6 CHILJSN 7 C1, C3 2 IVMS235B106KM Capacitor, Ceramic, XSR 10ml 70%, 25V SM, 1010 PX/Generc 8 C2 11M2325B106KM Capacitor, Ceramic, XSR 10ml 70%, 25V SM, 1006 AVX.Generc 9 C4,C24,C28 3 12065C105KA72A Capacitor, Ceramic, XTR 1.0mL 70%, 25V SM, 0805 AVX.Generc 11 C11A,C12A 2 10TP19150ML Capacitor, Caramita/TR 1.0mL 70%, 15V SM, 0805 AVX.Generc 12 C11B,C112,C12B, C12C(DNP) 2 Capacitor, Caramita/TR 0.1ml 70%, 15V SM, 0805 AVX.Generc 14 C55,C47,C32,C17,C18, C12 7 O80532C104KA72A Capacitor, Ceramita, XTR 0.1mL 710%, 16V </td <td>2</td> <td>D1, D2</td> <td>2</td> <td>BAT54WT1</td> <td>Diode,Schottky</td> <td>30V,200mA</td> <td>SOT-323</td> <td>On Semi</td>	2	D1, D2	2	BAT54WT1	Diode,Schottky	30V,200mA	SOT-323	On Semi
4 Q3 1 IRF744 MOSPET_Power.HEXETP P-Chan_20V.67A.0.04m SOIC-8 IR 5 L1.12 2 SELF27T-SR0A Power.Chock Coil SDIH 25%,8.6.0 PCC-NC CHILSIN 6 L3 1 BLM21PG300SN1 Ferrite Bead SM.0805 Murata 7 C1.C3 1 IMX21PG300SN1 Cermite, XB5 470E/10%,25V SM.1210 AVXGenerc 8 C2 1 12030475KAT2A Capacitor, Ceramic, XF8 470E/10%,25V SM.1200 AVXGenerc 10 C9/C10C13 C14 4 08052C105KAT2A Capacitor, Ceramic, X7R 1.0de 10%,25V SM.1200 AVXGenerc 11 C11AC12A 10TPB150ML Capacitor, Ceramic, X7R 1.0de 10%,25V SM.0805 AVXGenerc 12 C11BC11C12B_C12C(DNP) 1 Capacitor, Ceramic, X7R 0.1de 10%,25V SM.0805 AVXGenerc 13 C5/C5/C7/CSL17/C18, C20 7 08053C14KAT2A Capacitor, Ceramic, X7R 0.1de 10%, 5V Red SM.0905 AVXGenerc	3	Q1, Q2	2	FDS6912A	MOSFET, Dual	NChan,30V,6A,0.028m	SOIC-8	Fairchild
5 L1,L2 2 SLFL275T-3R9M-S Power Choke Coil 3.9Mt 25%, 8.6A PCC-N6 CHILLSN 6 L3 1 BLAUPEG000N1 Ferrite Bead SM.0805 Murata 7 C1, C3 2 TMK325B106KM Capacitor, Ceranic, XBS 100,10%,25V SM.1210 Taiyo Yuden/Generic 9 C4,C24,C28 3 12063C105KAT2A Capacitor, Ceranic, XBS 100,10%,25V SM.1200 AVX.Generc 10 C3,C10,C13, C14 4 0.0852C105KAT2A Capacitor, Ceranic, XTR 1.00,10%,10V SM.0805 AVX.Generc 11 C11A,C12A 2 10TFP150ML Capacitor, Caranic, TRR 0.10,10%,25V SM.0805 AVX.Generc 12 C11B,C11C,C12B,C12D,C1P,P 4 Capacitor, Caranic, TRR 0.10,10%,25V SM.0805 AVX.Generc 13 C1S,C16,OXP,D 2 Capacitor, Caranic, TRR 0.10,10%,25V SM.0805 AVX.Generc 14 C5,C6,C7,C8,C17,C18, C20 7 0.08032104KT2A Capacitor, Caranic, TRR 0.10,10%,5V,16V SM.0603	4	03	1	IRF7404	MOSFET, Power, HEXFET	P-Chan.20V.6.7A.0.04m	SOIC-8	IR
6 L3 1 BLM2/PG300SN1 Ferrite Bad SML 0805 Murda 7 C1, C3 2 TMK325B1106KM Capacitor, Cernnic, XSR 1/04, 10%, 25V SML 1210 AVX Generc 8 C2 3 120051075KAT2A Capacitor, Cernnic, XSR 1/04, 10%, 25V SML 1210 AVX Generc 9 C4, C24, C28 3 12006105KAT2A Capacitor, Cernnic, XSR 1.06, 10%, 25V SML 0805 AVX Generc 10 C1A, C12A 2 107PB150ML Capacitor, Tantahum 1504, 10%, 10V CASE-D3L SANVO 12 C1B, C1C, C12B, C12C, C0PN 4 Capacitor, Tantahum 1504, 10%, 25V SML 0805 AVX Generc 13 C1S, C16C/XE, C17, C18, C20 7 08032 C104KAT2A Capacitor, Cernnic, XTR 104, 10%, 15V CASE-D3 SANVO 14 C5, C6C, C2, C2, C17, C18, C20 7 08032 C104KAT2A Capacitor, Cernnic, XTR 104, 10%, 16V CASE-D3 SANVO 15 C19 1 25825M Capacitor, Cernnic, XTR 1046, 10%, 16V	5	L1, L2	2	SLF1275T-3R9M-S	Power Choke Coil	3.9uH 25%,8.6A	PCC-N6	CHILISN
7 C1, C3 2 TMK232B1106KM Capacitor, Ceramic, X5R 100F, 10%, 25V SM_1210 Taylo Yuden/Generic 9 C4, C2A, C28 3 120637105KAT2A Capacitor, Ceramic, X7R 100F, 10%, 25V SM_1206 AVX Generc 10 CS (210CL3, C14 4 06052C105KAT2A Capacitor, Ceramic, X7R 100F, 10%, 12V SM_1206 AVX Generc 11 C11A, C12A 2 100TPB150ML Capacitor, Tantalum 150uF, 20%, 10V CASE-D3L SANYO 12 C11B, C11C, C12B, C12C(DNP) 4 Capacitor, Tantalum 150uF, 20%, 10V CASE-D3L SANYO 13 C13, C16(DNP) 7 08053C104KAT2A Capacitor, Ceramic M_0805 AVX Generc 14 C5, C6, C7, C3, R, C17, C18, C20 7 08053C104KAT2A Capacitor, Ceramic, X7R 0.1uF, 10%, 125V SM_10805 AVX Generc 15 C19 1 16TPB47M Capacitor, Ceramic, X7R 0.1uF, 10%, 16V SM_0603 Panasonic 18 C23 1 1210ZC106MAT2A Capacitor, Ceramic, X7R 0.1uF, 10%, 16V SM_0603 Panasonic 18	6	L3	1	BLM21PG300SN1	Ferrite Bead		SM 0805	Murata
8 C2 1 12103D475KAT2A Capacitor, Ceramic, XTR 1.0.6F 10%, 25V SM_1206 AVX Generc 9 C4, C2A, C28 3 12063C105KAT2A Capacitor, Caramic, XTR 1.0.6F 10%, 25V SM_1206 AVX Generc 10 CSQL0.C13, C14 4 0805ZC105KAT2A Capacitor, Caramic, XTR 1.0.6F 10%, 10V SM_0805 AVX Generc 11 C11A, C12A 2 10TFB150ML Capacitor, Caramic, XTR 1.0.6F 10%, 10V SM_0805 AVX Generc 12 C11B, C11C, C12B, C12C, CDNP 2 Capacitor, Caramic, XTR 0.1.0F, 10%, 25V SM_0805 AVX Generc 13 C15, C16/QNP 2 Capacitor, Caramic, XTR 0.1.0F, 10%, 25V SM_0805 AVX Generc 14 C15, C16/QNP 1 16TFB47M Capacitor, Caramic, XTR 0.1.0F, 10%, 15V SM_0805 AVX Generc 16 C21 1 25SF50M Capacitor, Caramic, XTR 0.1.0F, 10%, 15V SM_0603 AVX Generc 17 C22 1 10603YC104KAT2A Capacitor, Caramic, XTR	7	C1, C3	2	TMK325BJ106KM	Capacitor, Ceramic, X5R	10uF,10%,25V	SM 1210	Taiyo Yuden/Generic
9 C4C24C28 3 12062C105KAT2A Capacitor, Caranic, X7R 1.0bf;10%,25V SM_1206 AVX Generc 10 CQCIQC13,C14 4 08052C105KAT2A Capacitor, Tantalum 150uF;20%,10V CASE-D3L SANYO 12 C11B,C11C_C12B,C12C(DNP) 4 Capacitor, Tantalum 150uF;20%,10V CASE-D3L SANYO 13 C15,C16(DNP) 2 Capacitor, Tantalum 150uF;20%,10V CASE-D3L SANYO 14 C55,C16(DNP) 2 M00532104KAT2A Capacitor, Caranic, X7R 0.1uF;10%, 25V SM_0053 AVX/Generc 15 C19 1 10TPB104KAT2A Capacitor, Caranic, X7R 0.1uF;10%, 25V SM_003 AVX/Generc 16 C21 1 255956M Capacitor, Caranic, X7R 0.1uF;10%, 25V Ratial SANYO 17 C22 1 0603YC104KAT2A Capacitor, Caranic, X7R 10uF; 20%, 10V SM_1003 AVX/Generc 18 C23 R17, R18 4 Resistor, Film 10u, 5%, 1V SM_0003 Panasonic<	8	C2	1	12103D475KAT2A	Capacitor, Ceramic, XR5	4.7uF,10%,25V	SM 1210	AVX/Generc
10 CSQC10213, C14 4 08052C105KAT2A Capacitor, Tantalum 1.0uF,10%,10V SML 9005 AVX/Generc 11 C11A,C12A 2 10TPB150ML Capacitor, Tantalum 150uF.20%,10V CASE-D3L SANYO 12 C11B,C112C (12B, C12(DNP) 4 Capacitor, Tantalum 150uF.20%,10V CASE-D3L SANYO 13 C15,C16(DNP) 2 Capacitor, Ceramic, X7R 0.1uF, 10%, 25V SML 9805 AVX/Generc 14 C5,C6,C7,CS,L71,C18, C20 7 08053C104KAT2A Capacitor, Caramic, X7R 0.1uF, 10%, 16V CASE-D3L SANYO 16 C21 1 10F1P47M Capacitor, Caramic, X7R 0.1uF, 10%, 16V SML 9805 PATACGENERC 17 C22 1 06037C104KAT2A Capacitor, Ceramic, X7R 0.1uF, 10%, 16V SML 9805 Panasonic 18 C23 1 10021C016MAT2A Capacitor, Ceramic, X7R 0.1uF, 10%, 16V SML 9805 Panasonic 21 R5, R6 (DNP) 0 Resistor, Film 14k, 5%, .1W SML 9803 Panasonic 22 R7 1 Resistor, Film	9	C4,C24,C28	3	12063C105KAT2A	Capacitor, Ceramic, X7R	1.0uF,10%,25V	SM_1206	AVX/Generc
11 C11A.C12A 2 10TPB150ML Capacitor, Tantalum 150uF.20%, 10V CASE-D3L SANYO 12 C11B.C11.C.C12R, C12CDNP) 4 Capacitor, Tantalum CASE-D3L SANYO 13 C15.C16(DNP) 2 Capacitor, Ceramic, TR 0.1uF, 10%, 25V SM_0805 AVX.Generc 14 C5.C6(7.28, C17, C18, C20 7 08053C104KAT2A Capacitor, Ceramic, TR 0.1uF, 10%, 25V SM_0805 AVX.Generc 15 C19 1 16TPP47M Capacitor, Caramic, XR 0.1uF, 10%, 16V SM_0603 AVX.Generc 16 C21 1 25SP56M Capacitor, Ceramic, XR 104F, 20%, 16V SM_0603 Panasonic 17 C22 1 0603YC104KAT2A Capacitor, Film 14k, 5%, 17W SM_0603 Panasonic 20 R3, R4 2 Resistor, Film 14k, 5%, 1W SM_0603 Panasonic 21 R5, R6 (DNP) 0 Resistor, Film 24k, 1%, 1/16W SM_0603 Panasonic 22 R1 1 Resistor, Film 24k, 1%, 1/16W SM_0603 Panasonic	10	C9,C10,C13, C14	4	0805ZC105KAT2A	Capacitor, Ceramic, X7R	1.0uF,10%,10V	SM_0805	AVX/Generc
12 C1IB_C11C_C12B_C122(DNP) 4 Capacior, Tantalum CASE_D3L. SANYO 13 C15,C16(DNP) 2 Capacior, Ceramic SM_0805 AVXGenerc 14 C5,C6,C7,C8,C17,C18,C20 7 08053C104KAT2A Capacitor, Ceramic, X7R 0.1uF.10%, 25V SM_0805 AVXGenerc 15 C19 1 16TPB47M Capacitor, Tantalum 4'UE, 20%, 16V CASE-D3 SANYO 16 C21 1 0603YC104KAT2A Capacitor, Caramic, X7R 0.1uF, 10%, 16V SM_0603 AVXGenerc 17 C22 1 0603YC104KAT2A Capacitor, Ceramic, X7R 0.1uF, 10%, 16V SM_0603 Panasonic 18 C23 1 1210ZC106MAT2A Capacitor, Ceramic, X7R 10uF, 20%, 10V SM_0603 Panasonic 20 R3, R4 2 Resistor, Film 10k, 5%, 1V SM_0603 Panasonic 21 R5, K6 (DNP) 0 Resistor, Film 21k, 1%, 116W SM_0603 Panasonic 22 R7 1 Resistor, Film 21k, 1%, 116W SM_0603 Panasonic 23 R8<	11	C11A,C12A	2	10TPB150ML	Capacitor, Tantalum	150uF,20%,10V	CASE-D3L	SANYO
13 C15.C16(DNP) 2 Capacitor, Ceramic SML 0805 AVX.Genere 14 C5.C6.C7.C8.C17.C18, C20 7 08055.C104KAT2A Capacitor, Tantalum 47uF.20%, 16V CASE-D3 SANYO 15 C19 1 16TPB47M Capacitor, Tantalum 47uF.20%, 16V CASE-D3 SANYO 16 C21 1 25SP56M Capacitor, Tantalum 50uF.20%, 25V Radial SANYO 17 C22 1 06035*C104KAT2A Capacitor, Ceramic, X7R 10uF.10%, 16V SML0603 AVX.Genere 18 C23 1 12102C106MAT2A Capacitor, Ceramic, X7R 10uF.10%, 16V SML0603 Panasonic 20 R3, R4 2 Resistor, Film 14k, 5%, 1W SML0603 Panasonic 21 R5, R6 (DNP) 0 Resistor, Film 24k, 1%, 1/16W SML0603 Panasonic 22 R7 1 Resistor, Film 27k, 1%, 1/16W SML0603 Panasonic 23 R8 1 Resistor, Film 27k, 1%, 1/16W SML0603 Panasonic 24 R9	12	C11B,C11C,C12B, C12C(DNP)	4		Capacitor, Tantalum		CASE-D3L	SANYO
14 C5,C6,C7,C8,C17,C18,C20 7 08053C104KAT2A Capacitor, Tantalatum 0,1uF, 10%, 25V SM,0805 AVX.Generc 15 C19 1 16TPB47M Capacitor, Tantalatum 7uF, 20%, 15V CASE-D3 SANYO 16 C21 1 25SP56M Capacitor, Tantalatum 56uF, 20%, 25V Radial SANYO 17 C22 1 0603YC104KAT2A Capacitor, Cramic, X7R 0.1uF, 10%, 16V SM_0603 AVX.Generc 18 C23 1 120ZC106MAT2A Capacitor, Ceramic, X7R 10uF, 20%, 10V SM_1210 AVX.Generc 20 R3, R4 2 Resistor, Film 10uF, 20%, 10V SM_0603 Panasonic 21 R5, R6 (DNP) 0 Resistor, Film 14k., 15%, 1/16W SM_0603 Panasonic 23 R8 1 Resistor, Film 21k., 1%, 1/16W SM_0603 Panasonic 24 R9 1 Resistor, Film 21k, 1%, 1/16W SM_0603 Panasonic 25 R10 1 Resistor, Film 26k, 5%, 1/16W SM_0603 Panasonic 26	13	C15,C16(DNP)	2		Capacitor, Ceramic		SM_0805	AVX/Generc
15 C19 1 1 GTPB47M Capacitor, Tantalum 47uF, 20%, 16V CASE-D3 SANYO 16 C21 1 25SP56M Capacitor, Caminum 56uF, 20%, 25V Radial SANYO 17 C22 1 0603YC104KAT2A Capacitor, Ceramic, X7R 0.1uF, 10%, 16V SM_0603 Panasonic 18 C23 1 1210ZC106MAT2A Capacitor, Ceramic, X7R 10uF, 20%, 10V SM_0603 Panasonic 20 R3, R4 2 Resistor, Film 100k, 5%, .1W SM_0603 Panasonic 21 R5, R6 (DNP) 0 Resistor, Film 14k, .5%, .1W SM_0603 Panasonic 22 R7 1 Resistor, Film 24k, 1%, 1/16W SM_0603 Panasonic 23 R8 1 Resistor, Film 9.1k, 1%, 1/16W SM_0603 Panasonic 24 R9 1 Resistor, Film 9.1k, 1%, 1/16W SM_0603 Panasonic 25 R10 1 Resistor, Film 9.0k, .5%, 1/16W SM_0603 Panasonic 26 R11, R12 2 Resisto	14	C5,C6,C7,C8,C17,C18, C20	7	08053C104KAT2A	Capacitor, Ceramic, X7R	0.1uF, 10%, 25V	SM_0805	AVX/Generc
16 C21 1 25875M Capacitor, Aluminum 56uF, 20%, 25V Radial SANYO 17 C22 1 06037Cl04KAT2A Capacitor, Ceramic, X7R 0.luF, 10%, 16V SM_0603 AVX/Generc 18 C23 1 1210ZC106MAT2A Capacitor, Ceramic, X7R 10uF, 20%, 10V SM_003 Panasonic 19 R1, R2, R17, R18 4 Resistor, Film 100k, 5%, .1W SM_0003 Panasonic 20 R3, R4 2 Resistor, Film 14k, 5%, .1/16W SM_0805 Panasonic 21 R5, R6 (DNP) 0 Resistor, Film 24k, 1%, .1/16W SM_0603 Panasonic 23 R8 1 Resistor, Film 24k, 1%, .1/16W SM_0603 Panasonic 24 R9 1 Resistor, Film 27k, 1%, .1/16W SM_0603 Panasonic 25 R10 1 Resistor, Film 5%, .1/16W SM_0603 Panasonic 26 R14, R12 2 Resistor, Film 5%, .1/16W SM_0603 Panasonic 26 R14 1 Resistor, Film	15	C19	1	16TPB47M	Capacitor, Tantalum	47uF, 20%, 16V	CASE-D3	SANYO
17 C22 1 0603YC104KAT2A Capacitor, Ceramic, X7R 0.1uF, 10%, 16V SM_0603 AVX/Generc 18 C23 1 1210ZC106MAT2A Capacitor, Ceramic, X7R 10uF, 20%, 10V SM_1210 AVX/Generc 19 R1, R2, R17, R18 4 Resistor, Film 10k, 5%, 1W SM_0603 Panasonic 20 R3, R4 2 Resistor, Film 1.4k, 5%, 1W SM_0603 Panasonic 21 R5, R6 (DNP) 0 Resistor, Film 24k, 1%, 1/16W SM_0603 Panasonic 22 R7 1 Resistor, Film 24k, 1%, 1/16W SM_0603 Panasonic 23 R8 1 Resistor, Film 91k, 1%, 1/16W SM_0603 Panasonic 24 R9 1 Resistor, Film 91k, 1%, 1/16W SM_0603 Panasonic 25 R10 1 Resistor, Film 26k, 1%, 1/16W SM_0603 Panasonic 26 R11, R12 2 Resistor, Film 100, 5%, 1/16W SM_0603 Panasonic 28 R14 1 Resistor, Film 100, 5%, 1/16W <td>16</td> <td>C21</td> <td>1</td> <td>25SP56M</td> <td>Capacitor, Aluminum</td> <td>56uF, 20%, 25V</td> <td>Radial</td> <td>SANYO</td>	16	C21	1	25SP56M	Capacitor, Aluminum	56uF, 20%, 25V	Radial	SANYO
18 C23 1 1210ZC106MAT2A Capacitor, Ceramic, X7R 10uF, 20%, 10V SM_1210 AVX/Generc 19 R1, R2, R17, R18 4 Resistor, Film 100k, 5%, .1W SM_0603 Panasonic 20 R3, R4 2 Resistor, Film 14k, 5%, .1W SM_0603 Panasonic 21 R5, R6 (DNP) 0 Resistor, Film TBD SM_0805 Panasonic 22 R7 1 Resistor, Film 24k, 1%, 1/16W SM_0603 Panasonic 23 R8 1 Resistor, Film 21k, 1%, 1/16W SM_0603 Panasonic 24 R9 1 Resistor, Film 27k, 1%, 1/16W SM_0603 Panasonic 25 R10 1 Resistor, Film 27k, 1%, 1/16W SM_0603 Panasonic 26 R11, R12 2 Resistor, Film 100, 5%, .1W SM_0603 Panasonic 27 R13 1 Resistor, Film 100, 5%, .1W SM_0603 Panasonic 29 R15 1 Resistor, Film 10k, 1%, 1/16W SM_0603 Panasonic	17	C22	1	0603YC104KAT2A	Capacitor, Ceramic, X7R	0.1uF, 10%, 16V	SM_0603	AVX/Generc
19 R1, R2, R17, R18 4 Resistor, Film 100k., 5%, .1W SM_0603 Panasonic 20 R3, R4 2 Resistor, Film 14k., 5%, .1W SM_0603 Panasonic 21 R5, R6 (DNP) 0 Resistor, Film TBD SM_0805 Panasonic 22 R7 1 Resistor, Film 24k., 1%, 1/16W SM_0603 Panasonic 23 R8 1 Resistor, Film 24k., 1%, 1/16W SM_0603 Panasonic 24 R9 1 Resistor, Film 27k., 1%, 1/16W SM_0603 Panasonic 25 R10 1 Resistor, Film 5.6k., 1%, 1/16W SM_0603 Panasonic 26 R11, R12 2 Resistor, Film 100, 5%, .1W SM_0603 Panasonic 27 R13 1 Resistor, Film 100, 5%, .1W SM_0603 Panasonic 28 R14 1 Resistor, Film 100, 5%, .1W SM_0603 Panasonic 30 R16 1 Resistor, Film 10k, 1%, 1/16W SM_0603 Panasonic 31	18	C23	1	1210ZC106MAT2A	Capacitor, Ceramic, X7R	10uF, 20%, 10V	SM_1210	AVX/Generc
20 R3, R4 2 Resistor, Film 1.4k, 5%, .1W SM_0603 Panasonic 21 R5, R6 (DNP) 0 Resistor, Film TBD SM_0805 Panasonic 22 R7 1 Resistor, Film 24k, 1%, 1/16W SM_0603 Panasonic 23 R8 1 Resistor, Film 9.1k, 1%, 1/16W SM_0603 Panasonic 24 R9 1 Resistor, Film 27k, 1%, 1/16W SM_0603 Panasonic 25 R10 1 Resistor, Film 5.6k, 1%, 1/16W SM_0603 Panasonic 26 R11, R12 2 Resistor, Film 5.0k, 1%, 1/16W SM_0603 Panasonic 27 R13 1 Resistor, Film 2.7, 5%, 1/16W SM_0603 Panasonic 28 R14 1 Resistor, Film 1.0, 5%, .1W SM_0603 Panasonic 30 R16 1 Resistor, Film 1.1/16W SM_0603 Panasonic 31 R19 (DNP) 1 Resistor, Film 1.1/16W SM_0603 Panasonic 33 R10A,R16A<	19	R1, R2, R17, R18	4		Resistor, Film	100k., 5%, .1W	SM_0603	Panasonic
21 R5, R6 (DNP) 0 Resistor, Film TBD SM_0805 Panasonic 22 R7 1 Resistor, Film 24k, 1%, 1/16W SM_0603 Panasonic 23 R8 1 Resistor, Film 9.1/16W SM_0603 Panasonic 24 R9 1 Resistor, Film 9.1/16W SM_0603 Panasonic 25 R10 1 Resistor, Film 27k, 1%, 1/16W SM_0603 Panasonic 26 R11, R12 2 Resistor, Film 80k, 5%, 1/16W SM_0603 Panasonic 27 R13 1 Resistor, Film 80k, 5%, 1/16W SM_0603 Panasonic 28 R14 1 Resistor, Film 100, 5%, 1W SM_0603 Panasonic 30 R16 1 Resistor, Film 10k, 1%, 1/16W SM_0603 Panasonic 31 R19 (DNP) 1 Resistor, Film 10k, 1%, 1/16W SM_0603 Panasonic 32 R8A 1 Resistor, Film 10k, 1%, 1/16W SM_0603 Panasonic 33 R10A, R16A	20	R3, R4	2		Resistor, Film	1.4k., 5%, .1W	SM_0603	Panasonic
22 R7 1 Resistor, Film 24k, 1%, 1/16W SM_0603 Panasonic 23 R8 1 Resistor, Film 9.1k, 1%, 1/16W SM_0603 Panasonic 24 R9 1 Resistor, Film 27k, 1%, 1/16W SM_0603 Panasonic 25 R10 1 Resistor, Film 27k, 1%, 1/16W SM_0603 Panasonic 26 R11, R12 2 Resistor, Film 80k, 5%, 1/16W SM_0603 Panasonic 27 R13 1 Resistor, Film 100, 5%, .1W SM_0603 Panasonic 28 R14 1 Resistor, Film 100, 5%, .1W SM_0603 Panasonic 29 R15 1 Resistor, Film 10k, 1%, 1/16W SM_0603 Panasonic 30 R16 1 Resistor, Film 10k, 1%, 1/16W SM_0603 Panasonic 31 R19 (DNP) 1 Resistor, Film 10k, 1%, 1/16W SM_0603 Panasonic 33 R10A, R16A 2 Resistor, Film 5k, 5%, 1/16W SM_0603 Panasonic 36	21	R5, R6 (DNP)	0		Resistor, Film	TBD	SM_0805	Panasonic
23 R8 1 Resistor, Film 9.1k, 1%, 1/16W SM_0603 Panasonic 24 R9 1 Resistor, Film 27k, 1%, 1/16W SM_0603 Panasonic 25 R10 1 Resistor, Film 27k, 1%, 1/16W SM_0603 Panasonic 26 R11, R12 2 Resistor, Film 56k, 1% SM_0603 Panasonic 27 R13 1 Resistor, Film 100, 5%, .1W SM_0805 Panasonic 28 R14 1 Resistor, Film 20, .5%, .1% SM_0603 Panasonic 29 R15 1 Resistor, Film 100, .5%, .1W SM_0603 Panasonic 30 R16 1 Resistor, Film 10k, 1%, 1/16W SM_0603 Panasonic 31 R19 (DNP) 1 Resistor, Film 10k, 1%, 1/16W SM_0603 Panasonic 32 R8A 1 Resistor, Film 47k, 5%, 1/16W SM_0603 Panasonic 33 R10A,R16A 2 Resistor, Film 56k, 5%, 1/16W SM_0603 Panasonic 34 1	22	R7	1		Resistor, Film	24k., 1%, 1/16W	SM_0603	Panasonic
24 R9 1 Resistor, Film 27k, 1%, 1/16W SM_0603 Panasonic 25 R10 1 Resistor, Film 5.6k, 1%, 1/16W SM_0603 Panasonic 26 R11, R12 2 Resistor, Film 80k, 5%, 1/16W SM_0603 Panasonic 27 R13 1 Resistor, Film 100, 5%, 1/W SM_0603 Panasonic 28 R14 1 Resistor, Film 2.7, 5%, 1/16W SM_0603 Panasonic 29 R15 1 Resistor, Film 10k, 1%, 1/16W SM_0603 Panasonic 30 R16 1 Resistor, Film 10k, 1%, 1/16W SM_0603 Panasonic 31 R19 (DNP) 1 Resistor, Film 10k, 1%, 1/16W SM_0603 Panasonic 32 R8A 1 Resistor, Film 10k, 1%, 1/16W SM_0603 Panasonic 33 R10A,R16A 2 Resistor, Film 56k, 5%, 1/16W SM_0603 Panasonic 34	23	R8	~ 1		Resistor, Film	9.1k., 1%, 1/16W	SM_0603	Panasonic
25 R10 1 Resistor, Film 5.6k., 1%, 1/16W SM_0603 Panasonic 26 R11, R12 2 Resistor, Film 80k., 5%, 1/16W SM_0805 Panasonic 27 R13 1 Resistor, Film 100., 5%, .1W SM_0805 Panasonic 28 R14 1 Resistor, Film 2.7., 5%, 1/16W SM_0603 Panasonic 29 R15 1 Resistor, Film 18k., 1%, 1/16W SM_0603 Panasonic 30 R16 1 Resistor, Film 10k., 1%, 1/16W SM_0603 Panasonic 31 R19 (DNP) 1 Resistor, Film 10k., 1%, 1/16W SM_0603 Panasonic 32 R8A 1 Resistor, Film 10k., 1%, 1/16W SM_0603 Panasonic 33 R10A,R16A 2 Resistor, Film 56k., 5%, 1/16W SM_0603 Panasonic 34 Misc. 35 P1 - P16 16 36 JP1, JP2, JP3 3 单排针(2针) 3 4 4 4 4 4 4 4 <td>24</td> <td>R9</td> <td>1</td> <td></td> <td>Resistor, Film</td> <td>27k., 1%, 1/16W</td> <td>SM_0603</td> <td>Panasonic</td>	24	R9	1		Resistor, Film	27k., 1%, 1/16W	SM_0603	Panasonic
26 R11, R12 2 Resistor, Film 80k., 5%, 1/16W SM_0603 Panasonic 27 R13 1 Resistor, Film 100., 5%, 1/16W SM_0603 Panasonic 28 R14 1 Resistor, Film 2.7., 5%, 1/16W SM_0603 Panasonic 29 R15 1 Resistor, Film 2.7., 5%, 1/16W SM_0603 Panasonic 30 R16 1 Resistor, Film 10k., 1%, 1/16W SM_0603 Panasonic 31 R19 (DNP) 1 Resistor, Film 10k., 1%, 1/16W SM_0603 Panasonic 32 R8A 1 Resistor, Film 7k., 5%, 1/16W SM_0603 Panasonic 33 R10A,R16A 2 Resistor, Film 56k., 5%, 1/16W SM_0603 Panasonic 34	25	R10	1		Resistor, Film	5.6k., 1%, 1/16W	SM_0603	Panasonic
27 R13 1 Resistor, Film 100., 5%, 1/16W SM_0805 Panasonic 28 R14 1 Resistor, Film 2.7., 5%, 1/16W SM_0603 Panasonic 29 R15 1 Resistor, Film 18k, 1/16W SM_0603 Panasonic 30 R16 1 Resistor, Film 10k., 1%, 1/16W SM_0603 Panasonic 31 R19 (DNP) 1 Resistor, Film 10k., 1%, 1/16W SM_0603 Panasonic 32 R8A 1 Resistor, Film 3M_0603 Panasonic 33 R10A,R16A 2 Resistor, Film 47k., 5%, 1/16W SM_0603 Panasonic 34	26	R11, R12	2		Resistor, Film	80k., 5%, 1/16W	SM_0603	Panasonic
28 R14 1 Resistor, Film 2.7, 5%, 1/16W SM_0603 Panasonic 29 R15 1 Resistor, Film 18k, 1%, 1/16W SM_0603 Panasonic 30 R16 1 Resistor, Film 10k, 1%, 1/16W SM_0603 Panasonic 31 R19 (DNP) 1 Resistor, Film 10k, 1%, 1/16W SM_0603 Panasonic 32 R8A 1 Resistor, Film 47k, 5%, 1/16W SM_0603 Panasonic 33 R10A,R16A 2 Resistor, Film 47k, 5%, 1/16W SM_0603 Panasonic 34	27	R13	1		Resistor, Film	100., 5%, .1W	SM_0805	Panasonic
29 R15 1 Resistor, Film 18k,, 1%, 1/16W SM_0603 Panasonic 30 R16 1 Resistor, Film 10k,, 1%, 1/16W SM_0603 Panasonic 31 R19 (DNP) 1 Resistor, Film SM_0603 Panasonic 32 R8A 1 Resistor, Film SM_0603 Panasonic 33 R10A,R16A 2 Resistor, Film 47k., 5%, 1/16W SM_0603 Panasonic 33 R10A,R16A 2 Resistor, Film 56k., 5%, 1/16W SM_0603 Panasonic 34 - - - - - - - 35 P1 - P16 16 - - - - 36 JP1, JP2, JP3 3 单排针(2针) - - - - 37 短接片 3 短接片 - - - - - 38 SP1,SP2 2 单排针(3针) - - - - - 38 SP1,SP2 2 单排针(3针) - - - - - - 39 Effettion 1 IS 64/1 EVM - - - - - <td>28</td> <td>R14</td> <td>1</td> <td></td> <td>Resistor, Film</td> <td>2.7., 5%, 1/16W</td> <td>SM_0603</td> <td>Panasonic</td>	28	R14	1		Resistor, Film	2.7., 5%, 1/16W	SM_0603	Panasonic
30 R16 1 Resistor, Film 10k., 1%, 1/16W SM_0603 Panasonic 31 R19 (DNP) 1 Resistor, Film SM_0603 Panasonic 32 R8A 1 Resistor, Film 47k., 5%, 1/16W SM_0603 Panasonic 33 R10A,R16A 2 Resistor, Film 56k., 5%, 1/16W SM_0603 Panasonic 34	29	R15	1		Resistor, Film	18k., 1%, 1/16W	SM_0603	Panasonic
31 R19 (DNP) 1 Resistor, Film SM_0603 Panasonic 32 R8A 1 Resistor, Film 47k., 5%, 1/16W SM_0603 Panasonic 33 R10A,R16A 2 Resistor, Film 47k., 5%, 1/16W SM_0603 Panasonic 34	30	R16	1		Resistor, Film	10k., 1%, 1/16W	SM_0603	Panasonic
32 R8A 1 Resistor, Film 47k., 5%, 1/16W SM_0603 Panasonic 33 R10A,R16A 2 Resistor, Film 56k., 5%, 1/16W SM_0603 Panasonic 34 - - - - - - 35 P1 - P16 16 - - - 36 JP1, JP2, JP3 3 单排针(2针) - - - 37 短接片 3 短接片 - - - 38 SP1,SP2 2 单排针(3针) - - - 39 Englife 1 ISI 6401 EVM - - -	31	R19 (DNP)	1		Resistor, Film		SM_0603	Panasonic
33 R10A,R16A 2 Resistor, Film 56k., 5%, 1/16W SM_0603 Panasonic 34 - - - - - - - - 35 P1 - P16 16 - - - - - 36 JP1, JP2, JP3 3 単排针(2针) - - - - 37 短接片 3 短接片 - - - - 38 SP1,SP2 2 単排针(3针) - - - - 39 Englife 1 ISI 64/1 EVM - - - -	32	R8A	1		Resistor, Film	47k., 5%, 1/16W	SM_0603	Panasonic
Misc. 35 P1 - P16 16 36 JP1, JP2, JP3 3 单排针(2针) 37 短接片 3 短接片 38 SP1,SP2 2 单排针(3针) 39 F1對転 1 ISI 6441 EVM	33 34	R10A,R16A	2		Resistor, Film	56k., 5%, 1/16W	SM_0603	Panasonic
35 P1 - P16 16 36 JP1, JP2, JP3 3 单排针(2针) 37 短接片 3 短接片 38 SP1,SP2 2 单排针(3针) 39 F1,91% 1 US (644) EVM		Misc.						
36 JP1, JP2, JP3 3 单排针(2针) 37 短接片 3 短接片 38 SP1,SP2 2 单排针(3针) 39 F1無地 1 IS 6441 EVM	35	P1 - P16	16					
37<	36	JP1, JP2, JP3	3	单排针(2针)				
38 SP1,SP2 2 单排针(3针) 39 印制矩 1 ISI 6441 EVM	37	短接片	3	短接片				
	38	SP1.SP2	2	单排针(3针)				
	30		1	ISI 6441 EVM				

ISL6441EVM 元器件清单