

ADS5263EVM Evaluation Module

This user's guide gives an overview of the ADS5263EVM and describes how the evaluation module can be used to evaluate the performance, functions, and features of the ADS5263 device.

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1 Quick Look at the Evaluation Setup

Figure 1 shows an overview of the evaluation setup that includes the ADS5263EVM evaluation module (EVM), TSW1400 capture card, external equipment, and software requirements.



Figure 1. Evaluation Setup



TSW1400 Capture Card: The high-speed LVDS deserializer card is required for capturing data from the ADS5263EVM and its analysis using the TSW1400 graphical user interface (GUI).

For information pertaining to the TSW1400 card, see <u>http://www.ti.com/tool/tsw1400evm</u>.

Equipment: Signal generators (with low-phase noise) must be used as source of input signal and clock in order to get the desired performance. Additionally, band-pass filters are required in both the signal and clock paths to attenuate the harmonics and noise from the generators.

Power Supply: A single 5-V supply powers the EVM . The supplies for the ADS5263 device are derived from the 5-V supply. The power supply must be able to source up to 1.5 A. A 6-V supply can power the TSW1400 card using a laptop-style adapter.

USB Interface to PC: The USB connection from the ADS5263EVM and TSW1400 card to the personal computer (PC) must be set up; Step 3 in Section 3.1 explains the USB driver installation.

ADS5263EVM GUI: Section 3.1 explains the GUI installation procedure and its operation.

2 EVM Circuit Description

The complete schematic of the EVM can be found at the end of this user guide. Critical portions of the EVM are explained in the following text.

2.1 Power

The EVM requires a single 5-V supply for operation that can be supplied through banana jacks. Separate LDOs convert the 5-V input to generate the 3.3-V AVDD supply and the 1.8-V LVDD supply required for the ADS5263 operation.

2.2 Clock Input

The clock can be supplied to the analog-to-digital converter (ADC) in one of two ways. The default factoryconfigured option supplies a single-ended sine wave clock directly to the SMA connecter J31. This clock is converted to differential by the TC4-1W transformer from MiniCircuits and is ac coupled to the ADC. This transformer has an impedance ratio of 4, so the voltage applied on J31 is stepped up by a factor of 2.

The clock input must be from a clean, low-jitter source (such as SMA100A or 8644B) and filtered by a narrow band-pass filter. Taking into account the attenuation of the filter, the clock amplitude must be set appropriately to get about 1.5-V peak-to-peak at the clock pins of the ADS5263.

The clock source is commonly synchronized with the signal generator of the input frequency to keep the clock and input coherent for meaningful FFT analysis.





LVPECL Clock Option

Alternately, the clock may be supplied by an onboard LVPECL clock buffer (TI's CDCLVP1102). To use this option,

EVM Circuit Description

- Remove the coupling capacitors C59, C61.
- Replace the $0-\Omega$ resistors with $0.1-\mu$ F capacitors.
- Apply a single-ended, square-wave clock signal on SMA connector J33.



Figure 3. ADS5263 Clocking Using a LVPECL Buffer

2.3 Analog Input

The ADS5263 can be used as a quad-channel, 16-bit ADC or as a quad-channel, 14-bit ADC. Each channel can be configured to use either a transformer-coupled input or a TH77006 amplifier input, from a single-ended source. As a result, two input configurations exist detailed in Table 1.



Figure 4. Input Drive Circuit – Using Transformers

EVM Circuit Description





Table	1.	Two-Inpu	t Confic	urations
Table		i wo-mpu	COOMING	juialionis

EVM Config	Transformer Drive	THS770006 Drive	Description
1	On channels 1, 2, 3, 4	On channel 3	 All components in the transformer drive path for all four channels are available in the EVM.
			• All components in the THS path <i>for only channel 3</i> is available in the EVM.
2	On channels 1, 2, 3, 4	On channels 1, 2, 3, 4	• All components in the transformer and THS paths for all four channels are available in the EVM.

Note that the 16-bit ADC and the 14-bit ADC have different analog input pins. Analog input pins 1A, 2A, 3A, 4A correspond to the 16-bit ADC inputs while 1B, 2B, 3B, 4B correspond to the 14-bit ADC inputs. Each of the four transformer paths can be configured to drive either the 16-bit or 14-bit ADC inputs. Similarly, each of the four THS paths can be configured to drive either the 16-bit or 14-bit ADC inputs. This configuration is achieved using pairs of 0 Ω SMT resistors, as listed in Table 2.

Table 2. SMT Resistors

Drive Type	Chan 1A 16-Bit ADC	Chan 1B 14-Bit ADC	Chan 2A 16-Bit ADC	Chan 2B 14-Bit ADC
Transformer	R80,R81 = Open R169,R170 = 0 Ω R35, R153 =Open	R169, R170 = Open R35, R153 = 0 Ω	R98, R99 = Open R171, R172 = 0 Ω R154, R155 = Open	R171, R172 = Open R154, R155 = 0 Ω
THS770006	R80, R81 = 0 Ω R169, R170 = Open	This option is not supported	R98, R99 = 0 Ω R171, R172 = Open	This option is not supported
	n		r	
	O 1 O 4	<u>o</u> , <u>o</u>	O I (A	
Drive Type	Chan 3A 16-Bit ADC	Chan 3B 14-Bit ADC	Chan 4A 16-Bit ADC	Chan 4B 14-Bit ADC
Drive Type Transformer	Chan 3A 16-Bit ADC R138,R139 = Open R173, R174 = 0 Ω R165, R166 = Open	Chan 3B 14-Bit ADC R173, R174 = Open R165, R166 = 0 Ω	Chan 4A 16-Bit ADC R125, R126 = Open R175, R176 = 0 Ω R167, R168 = Open	Chan 4B 14-Bit ADC R175, R176 = Open R167, R168 = 0 Ω

2.4 Onboard Band-Pass Filter in THS Path

A provision exists in the EVM to include a band-pass filter in the analog input between the THS770006 amplifier and the ADS5263 input pins. Component placeholders are provided to support up to sixth-order LC band-pass filter on each of the four channels. This allows users to design their own filters, populate the EVM with the corresponding components, and verify the performance on the EVM itself.



ADS5263EVM GUI

www.ti.com



Figure 6. Band-Pass Filter

3 ADS5263EVM GUI

This section describes the software features accompanying the EVM kit. The ADS5263EVM control software allows users to write to the ADC registers found in the data sheet.

3.1 Installing the EVM GUI

The ADS5263EVM comes with a software install. To Download the software, visit the ADS5263 product folder under *Tools* & software.

Step 1 – Install the software before plugging in the USB cable for the first time.

• Unzip the installer file, and run the setup.exe file

Step 2 – Connect the USB cable from the PC to the EVM.

- If the USB driver has not been previously installed in the PC, then a Windows[™] message *Found New Hardware* appears. Proceed to Step 3 to complete the installation.
- If the message does not appear, then skip Step 3

Step 3 – Completing the USB Driver Installation

• In the Found New Hardware message, select *No, not this time* from the options, and press the Next button





• Select Install from a list or specific location (Advanced) as shown in the following illustration, and then click Next.



 Select Search for the best driver in these locations., and enter the file path C:\Program Files\Texas Instruments\CDM 2.04.06 WHQL Certified in the combo-box, or browse to it by clicking the Browse button. Once the file path has been entered in the box, click Next to proceed.

Please c	loose your searc	h and installa	tion options.		E T
€ Se	arch for the best driv	ver in these local	tions.		
Us pal	the check boxes b hs and removable m	elow to limit or e edia. The best d	xpand the default Iriver found will be	search, which ir installed.	icludes local
	Search removab	le media (floppy,	. CD-ROM)		
	Include this loca	tion in the searcl	h:		
	C:\Program Files	\Texas Instrume	ents\CDM 2.04.06	W 💌 🛛 Br	owse
C De	n't search. I will cho	ose the driver to	install.		
Ch the	ose this option to se driver you choose v	elect the device vill be the best m	driver from a list. A atch for your hard	Windows does r ware.	not guarantee tha
			11		

• Windows XP can be configured to warn when unsigned (non-WHQL certified) drivers are about to be installed. In that case, the following screen is displayed. Click on *Continue Anyway* to continue with the installation.

Hardwa	re Installation
♪	The software you are installing for this hardware: USB Serial Converter has not passed Windows Logo testing to verify its compatibility with Windows XP. (Tell me why this testing is important.) Continuing your installation of this software may impair or destabilize the correct operation of your system either immediately or in the future. Microsoft strongly recommends that you stop this installation now and contact the hardware vendor for software that has passed Windows Logo testing.
	Continue Anyway STOP Installation

• If Windows XP is configured to ignore file signature warnings, no message appears.

3.2 GUI Features

Once it is launched, the ADS5263 GUI comes up in the state shown in the following illustration. The ADS5263 has many programmable registers to control various modes. In the GUI, registers with similar functions are grouped into separate tabs such as:

- Top-level
- Interface

8

Dig Sig Proc



TEXAS INSTRUMENTS	ADS 5263 GUI	
Read Me rel/Pin Ctl Interface/Test Pattern Dig Sig Proc	Dig Sig Proc FILTER 1/0 Mapping Debug	ADSS263 Features SAVE COMMAND SEQUENCE Add addr/data to saving lat
Self-Reset Off Reg_Read Disable STAND_BY Normal ADC Operation GLOBAL_PDN Normal ADC Operation CONFIG PD PIN FOR pin works as standby Select 14BR ADC Mode Disable 16B_14B ADC Operation Enable 16-bit ADC operation LVDS Current for Data Buff 3.5mA LVDS Current for ADLIK Buff 3.5mA LVDS Current for LCLK Buff 3.5mA LVDS CURRENT LCLK Buff 3.5mA LVDS LCLK Buff 3.5mA LVDS CURRENT LCLK Buff 3.5m	I Gix Serialization Disable 1 Gix Serialization Disable 1 4ix Serialization Disable PAD two 0s Disable PAD two 0s Disable MSB_LSB LSB First DATA_FORMAT Offset Binary 2-WIRE 0.5X FRAME 1x frame dock Internal LVDS Termination for Data Buff No Termination Internal LVDS Termination for LCLK Buff No Termination Internal LVDS Termination for LCLK Buff No Termination	Serve saving list to a file COMMAND SEQUENCE PLAY BACK Commands play back Saving List Clear Saving List Saving List Clear Saving List address Data Last Data Last Data SCLF SCLF SCLF

Figure 7. ADS5263 GUI

Additionally, the GUI has a couple of interesting features – debug mode and command sequence. The debug mode is an alternate way of controlling the registers in the device by directly specifying the hexadecimal values for the register address and register data.

The command sequence can be used to record and store a sequence of register writes into a text file. The next time, after a device reset, the text file can be simply played back. The GUI configures the device with the registers stored in the text file.



	ADS 5203 G	01
Read Me vel/Pin Ctl Interface/Test Pattern Dig Sig Proc	Dig Sig Proc FILTER 1/0 Mapping Debug	AD55263 Features
Self-Reset Off Reg_Read STAND_BY Normal ADC Operation GLOBAL_PON Normal ADC operation CONFIG PD PIN PON pin works as standby Select 14Bit ADC Mode Disable	EMABLE SERALIZATI 16x Serialization Disable 14x Serialization Disable PAD two 0s Disable MSB_LSB LSB First DATA_FORMAT Offset Binary 2-WIRE 0.5X FRAME Ix frame dock	COMPAND SEQUENCE PLAY BACK Commands play back Commands play back Saving List Endex Addr Data
168_148 ADC Operation Enable 16-bit ADC operation LYDS Current for Data Buff 3.5mA LYDS Current for ADCLK Buff 3.5mA LYDS Current for LCLK Buff 3.5mA	ENABLE LYDS Internal LYDS Termination for Data Buff No Terminatio Internal LYDS Termination for ADCLK Buff No Terminatio Internal LYDS Termination for LCLK Buff No Terminatio	TERM
DEVICE PIN CONTROL		Digital Waveform Graph - Write SCLK - SDATA - SEN -

Figure 8. ADS5263 GUI

4 TSW1400 GUI

The TSW1400 GUI is required to transfer ADC data from the TSW1400 card. The data can be viewed in the time-domain. The spectrum of the captured data can be viewed in the Single Tone FFT tab.

For installation of the TSW GUI, see *TSW1400EVM: High-Speed LVDS Deserializer and Analysis System* user's guide. Also see Appendix Afor how to download the software.

If the PC is already pre-installed with TSW1400, it may be an earlier revision that does not support the ADS5263 device. Follow the steps outlined in the relevant section of the TSW1400EVM user's guide to *first uninstall* and then re-install the latest TSW1400 version.

4.1 Verify the Setup

Perform the following steps before launching the TSW1400 GUI:

- Connect the TSW1400 card to the ADS5263EVM.
- Connect the power supplies to both cards and power up.
- Connect the USB cables from the PC to the ADS EVM and TSW card.





Figure 9. EVM and TSW Card Connections

- Launch the ADS5263GUI, and initialize the device
 - First, reset the device by clicking the *Self-reset* button (this is a self-clearing bit that resets the device and clears itself to zero)
 - Put device in 2-wire, ...modes



Read Me rel/Pin Ctl Interface/Test Pattern Dig Sig Proc Dig Sig Proc FILTER I/O Mapping De Self-Reset Off Reg_Read Disable I6x Serialization	AD55263 Features
rel/Pin Cti Interface/Test Pattern Dig Sig Proc Dig Sig Proc FILTER I/O Mapping De Self-Reset Off Reg_Read Disable I6x Serialization	Add addr/data to saving list to a file
Self-Reset Off F Reg_Read Disable 16x Serialization	ABLE SERALIZATION
Reg_Read Disable 16x Serialization	
	Enable COMMAND SEQUENCE PLAY BACK
STAND_BY Normal ADC Operation 14x Serialization	Disable Commands play back
GLOBAL_PDN Normal ADC operation MSB LSB	MSB First
CONFIG PD PIN PDN pin works as standby	Saving List Clear Saving List
DATA_FORMAT	Offset Binary
2-WIRE 0.5X FRAME	0.5x frame clock
16B 14B ADC Operation Enable 16-bit ADC operation	
	ENABLE LYDS TERM
Internal LVDS Termination for Data	Buff No Termination
LVDS Current for Data Buff 3.5mA	Buff No Termination V address Data Last Data
LVDS Current for ADCLK Buff 3.5mA LVDS Current for LCLK Buff 3.5mA	× 46 × 8809 × 8808
DEVICE PIN CONTROL	Digital Waveform Graph - Write
	scuk ⁻
	SDATA -
E PDN	

Figure 10. Initializing the ADS5263GUI

- Apply input clock signal to SMA connector J31.
- The device is now ready for data capture by the TSW card.
 - Check the DCM LED on the TSW card it must be flashing. This indicates that the TSW card is able to correctly detect the bit clock output from the ADS EVM.
- Launch the TSW GUI; at this point, the TSW GUI communicates with the EVM and once proper communication is established, a message is displayed at the bottom left of the GUI.
- This completes the setup verification.





e Instrument Option	ns Data C	apture Options	Test Options	Device GUI Opti	ons Help				
TEXAS INSTRUMENTS	Ł	-	ADC			1000 - 10000 - 10000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 -		DAC	
Select ADC	\$ 65535- 10.0- -10.0- -20.0- -30.0	Real FFT Spur 1M2 Selec ADC ADC	t 65536 Sampling	5263_2 20000 25000 4 • Rect Rect	2W_16b 30000 35 angular ▼ => Ente / => En	MSBFi 000 40000 (Channel 1) (Channel 1) r 80MH: ter 5MH	z	55000 60000 rerages	65000 7000C RBW 1220.7 Hz
	-130.0-	. 5	M 10N	1 15	M 20	2 (U=)	5M 30	DM 351	M 40M
	•								,

Figure 11. Successful Interface Between TSW Card and Computer

4.2 Verify the Ramp Test Pattern

- Initialize the TSW GUI with the following settings.
 - Select the device.
 - Choose the channel.
 - Enter the ADC sample rate. For example, 80M for 80-MSPS sample rate.
- Using the ADS5263 GUI, enable the Ramp Test Pattern mode

Texas Instruments	AD	S 5263 GUI	
Read M	•		AD55263 Features
vel/Pin Ctl Interface/Test Pattern Dig Si	g Proc Dig Sig Proc FILTER I/O Mapping	Debug	SAVE COMMAND SEQUENCE
F ENABLE WORD WISE CONTROL			Add addr/data to saving list Save saving list to a file
WORD WISE CH1 BYTE-WISE	DUAL CUSTOM PATTERN	Disabled	COMMAND SEQUENCE PLAY BACK
WORD WISE CH2 BYTE-WISE WORD WISE CH3 BYTE-WISE	SINGLE CUSTOM PATTERN	Disabled	Saving List Clear Saving List
WORD WISE CH4BYTE-WISE	CUSTOM PATTERN A DATA 0 CUSTOM PATTERN A DATA 1 CUSTOM PATTERN A DATA 2 CUSTOM PATTERN A DATA 3 CUSTOM PATTERN A DATA 3 CUSTOM PATTERN A DATA 5 CUSTOM PATTERN A DATA 6 CUSTOM PATTERN A DATA 6 CUSTOM PATTERN A DATA 8 CUSTOM PATTERN A DATA 8	CUSTOM PATTERN B DATA 0 CUSTOM PATTERN B DATA 1 CUSTOM PATTERN B DATA 2 CUSTOM PATTERN B DATA 3 CUSTOM PATTERN B DATA 4 CUSTOM PATTERN B DATA 5 CUSTOM PATTERN B DATA 5 CUSTOM PATTERN B DATA 7 CUSTOM PATTERN B DATA 8 CUSTOM PATTERN B DATA 8	
	CUSTOM PATTERN A DATA 10 CUSTOM PATTERN A DATA 10 CUSTOM PATTERN A DATA 11 CUSTOM PATTERN A DATA 12 CUSTOM PATTERN A DATA 13 CUSTOM PATTERN A DATA 14 CUSTOM PATTERN A DATA 15	CUSTOM PATTERN B DATA 10 CUSTOM PATTERN B DATA 10 CUSTOM PATTERN B DATA 11 CUSTOM PATTERN B DATA 12 CUSTOM PATTERN B DATA 13 CUSTOM PATTERN B DATA 13 CUSTOM PATTERN B DATA 15	address Data Last Outa × 25 × 40 × 0 Digital Waveform Graph - Write SQLK - SQLK - SQLK - SQLK -
✓ RAMP TEST PATTERN ✓ SYNC PATTERN ✓ DESKEW PATTERN			SUATA- SEN-

Figure 12. Enabling Ramp Test Pattern in the ADS5263 GUI

- Press the Capture button in the TSW GUI.
- Time Domain:
 - Select the Time Domain tab in the GUI.
 - Graph shows the captured time domain data.
 It Must be a clean digital ramp that increases from code 0 to code 65535 from one sample to the next. Note that the starting code in the capture graph is not fixed and can be anywhere from 0 to 65535.

TEXAS

ISTRUMENTS



Figure 13. Verifying With Ramp Test Pattern

- Now, disable the Ramp Test Pattern in the ADS5263 GUI.
- This completes the verification of the ramp test pattern.

4.3 Verify With a Sine Wave Analog Input

- Note that for all performance evaluation, low-phase noise signal generators are required (see Figure 1) for both analog signal and sampling clock inputs.
- In the TSW GUI,
 - Enter the ADC input frequency being applied. For example, 3M for 3-MHz input frequency.
 - choose the desired channel
- Set the frequency in the signal generator to the value displayed in the field *ADC Input Coherent frequency* and connect the generator output to the desired channel.

This makes the input signal coherent with respect to the sampling clock, which is required for FFT analysis.

- Now, press the Capture button
- Frequency Domain:
 - Select the Single tone FFT tab in the GUI.
 - The fft graph shows the spectrum of the captured sine wave data





Figure 14. Spectrum of Captured Data

5 ADS5263EVM Schematics and Test Points

The schematics for the ADS5263EVM evaluation module are attached at the end of this document.

5.1 List of Test Points

Test Points	Name	Description
TP1	SDOUT	Serial register output
TP2	Ground	Board ground
TP9	VCM	1.5V common-mode output
TP12	SDATA	Serial interface data input
TP13	SCLK	Serial interface clock input
TP14	CSZ	Serial interface enable input
TP15	ADCRESETZ	Reset input
TP16	PD	Power down control input

Test Points on the EVM

6 ADS5263EVM PCB Layout

The following figures (Figure 15 through Figure 20) show the design of the ADS5263EVM printed-circuit board. PCB dimensions: L x W = 5 x 6 inches, four layers and 0.5-oz copper on outer layers and 1oz copper on inner layers.





Figure 15. ADS5263EVM Top Layer Assembly Drawing – Top View



Figure 16. ADS5263EVM Bottom Layer Assembly Drawing – Bottom View





Figure 17. ADS5263EVM Top Layer Copper – Top View





Figure 18. ADS5263EVM Internal Layer 1, Ground – Top View





Figure 19. ADS5263EVM Internal Layer 2, Power - Top View





Figure 20. ADS5263EVM Bottom Layer Copper – Top View



7 Bill of Materials

Table 3. EVM Components List

I I	Qty	Reference Designator	Value	Manufacturer	Part Number	Description	
Image: Proceedings of the process of the pr	6	C1,C3,C5,C25,C29,C42	10 µF	AVX	1206YC106MAT2A	CAP CER 10UF 16V X7R 20% 1206	
Charl Line Coll Line Coll Coll Difler AVX ED-11/B IC Line Coll CAP CER. 100F SOU X7R: 10%, 6003 C10: Coll Coll Coll Coll Coll Coll Coll Col	4	C2,C4,C6,C40	1 μF	AVX	0603YC105KAT2A	CAP CER 1.0UF 16V X7R 10% 0603	
cit 200 Cit 200 <t< td=""><td></td><td>C10,C11,C12,C18,C19,C20,</td><td></td><td></td><td></td><td></td></t<>		C10,C11,C12,C18,C19,C20,					
2 Col.AU.COM.CONC.00.44, COM.CONC.00.4. CONT.00.44, COM.CONT.00.4. CONT.00.4. 0.1 µP AVX ECH.VB1CTORK CAP CER.100.F S0V X7R 10%, 0803 8 CAN.CONC.CONC.CONC.00. 220 pF AVX 0600042/1FAT2A CAP CER.100.F S0V X7R 10%, 0803 1 CH4 10 nP Parazonic ECJ.VICHACU, CAP CAR, CAP, CAP, VIPP CAP CER.NOV PHY 00001 2 CH50.CONC.CONC.CAC.0.01 220 pF AVX 0600042/1FAT2A CAP CER.NOV PHY 00001 3 CH50.CONC.CONC.CAP, CAP, P Parazonic ECJ.VIVHFYCICK CAP CER.NOV PHY 00000 4 CH50.CONC.CONC.CAP, AP µP AVX TALATSTORDAP CAP CER.NOV PHY 00001 2 JP22.PB MERESTS.117.005C1 MD DODE SCHOTTKY 15V 23A 02PA.44 2 JP22.PB MERESTS.117.005C1 MD Bearant Fersele Rid 3 J.J. RESCHOTTCH 15V 23A 02PA.44 AVY 1 J.J. RESCHOTTCH 15V 23A 02PA.44 AVY 2 JP22.PB MERESTS.117.000000 Bearant Fersele Rid 3 J.J.S. MERESTS.117.00000000 BEARATSARTARTARTARTARTARTARTARTARTARTARTARTARTA		C21,C26,C27,C30,C43,C44,					
2 02 </td <td></td> <td>C45,C46,C59,C60,C61,C94,</td> <td></td> <td></td> <td></td> <td></td>		C45,C46,C59,C60,C61,C94,					
Image: https://www.communication.com/section/s	32	C99,C115,C116,C118,C119,	0.1 µF	AVX	ECJ-1VB1C104K	CAP CER .10UF 50V X7R 10% 0603	
cite Control Participation Participation 8 C51,052,053,054,055,058,027,058 22.0 PP AVX C60,053,024,075,058 CAP 10000PF 1to CEM J220PF 1ts SUV https://doi.org/10.003 1 C151 14.7 pF Partasonic ECJ-1V0110703K CAP 2ERAMIC APP SUV B03 SMD 1 C151 4.7 pF Partasonic ECJ-1V0110703K CAP 2ERAMIC APP SUV B03 SMD 1 D2 MBRB25151, 400,057.100 MBRB25151, 400,057.100 JUMPER_3P,110CC JUMPER_3P,110C 2 JP2_JP13 HEADER 112, 100,400, AVY JUMPER_3P,110CC JUMPER_3P,110C JUMPER_3P,110C 1 J3 GED ALLED ELECTRONICS ST-3518 Bartone Female Red 1 J3 USB_MMLAB AMTEC ST-3518 Bartone Female Red 1 J3 USB_MMLAB SMA SAMTEC ST-3518 Bartone Female Red 1 J4 USB_MMLAB SMA SAMTEC SMACPAREL MOUNT SMACP PAREL MOUNT 2 L1A1/62,L133,L34,L35,L34,L37 S6 rH Perasonic ECA-ML32A8880J <td></td> <td>C124,C125,C126,C152,C154</td> <td></td> <td></td> <td></td> <td></td>		C124,C125,C126,C152,C154					
β Col. CSC CSC CSC CSC CSC CSG CSG CSG CSG CSG		C28,C41,C95,C96					
1 C 149 D ori Persacula EC-LVD21103K C 4P 0000PT EV CERMIX X77 0633 MD 2 C150/163 47 pF Persacula EC-LVD211447J CAP 0000PT EV CERMIX X77 0633 MD 1 D2 M6Rb25161 AVX TAMA75K00R DDE EC-LVD21147J CAP CERMIX X77 0633 MD 2 JP2_JP13 HEADER X05 01 CTR MW JUMPER_SP.10CC JUMPER_SP.10C 2 JP2_JP13 HEADER X02 01 CTR AVY JUMPER_SP.10CC JUMPER_SP.10C 1 J1 RED ALUED ELECTRONICS ST-311A Benara Femile Beak 1 J2 CTH-609-62F-D-A SMATEC DTH-609-62F-D-A Hgb speara femile Beak 1 J13 USB_MIN_AB AME DX3R0054V2F700 USB_MAN_AB JMATEC 1 L1 L7 IK at 00 MHz RESISTOR_SMT.080.0 OMM/SK, ZERO OMM JUMPER RESISTOR_SMT.080.0 OMM/SK, ZERO OMM JUMPER 2 L18.19 0.0 Persaconic EAJ-36EV1600 RESISTOR_SMT.080.0 OMM/SK, ZERO OMM JUMPER 3 JRJ.SR.TRAR 166,R12.39, SERO FMAT.1810, JUMPER	8	C51,C52,C53,C54,C55,C56, C57,C58	220 pF	AVX	06035A221FAT2A	CAP CERM 220PF 1% 50V NP0 0603	
2 C 150, C 153 47 pF Perasonic ECJ-VIC 1H470J C AP CERANC: ATP SIV OBD SMD 1 D12 47, DF AVX TAUATROOP CAP CERANC: ATP SIV OBD SMD 2 JP2_JP3 HEADER, 3POS 0.1 CR AVY JUMPER, 3P. 100C DIODE SCHOTTRY 15V 25A D2PAK 1 J HEADER, 32.00.300L AVY JUMPER, 3P. 10CC DIAMPER, 3P. 10CC 1 J A RED ALLED ELECTRONICS ST351A Barnan Franke Red 1 JB OTH-680-62F-D-A SMTEC OTH-680-62F-D-A High speed connector 1 JB OTH-680-62F-D-A SAMTEC SIMA_LPH-1H-1 JACK PAREL MOUNT SMA. 1 L7 IK at 100 MHz Parasonic EX-3452/900 RESISTOR, SMT.6003.0 OHM.5%, ZER O HM.JUMPER 2 L8L1.12L2L3L3L4LS.13L3L5 S6 H Parasonic EX-3452/900 RESISTOR, SMT.6003.0 OHM.5%, ZER O HM.JUMPER 2 K4.78 S0 D Parasonic EX-3452/900 RESISTOR, SMT.6003.0 OHM.5%, ZER O HM.JUMPER 2 K4.78 S0 D Parasonic	1	C149	10 nF	Panasonic	ECJ-1VB1C103K	CAP 10000PF 16V CERM X7R 0603	
1 C161 4.7 μF AVX TAA475/80208 1 D2 MBRD2518.1 MBRD2518.1/400SCT-ND DDDDE SCHOTTRY 15V 25A D2PAK 2 JP12,JP13 HEADER 3POS 0.1 CTR ANY JUMPER,3P,100CC JUMPER,3P,10CC 2 JP12,JP13 HEADER,152,100,400,40K ANY JUMPER,3P,10CC JUMPER,3P,10CC 1 J1 RED ALLED ELECTRONICS ST.351A Barana Female Red 1 J2 BLK ALLED ELECTRONICS ST.351A Barana Female Bed 1 J3 USB MINI AB JAE DXR065N22700 USB. MINI AB 3 JA1,16,117,J15,J16,J05,J05,J33 SNA SAMTEC SMA/J.PH-FSTTH1 ACK PAREL MOUNT SMA 2 L18,119 0.0 Parasonic ER.J3GEV0R00 ZERIO OHM JUMPER 3 R3A,67,764,8110,8110,8110,8110,8110,8110,8110,811	2	C150,C153	47 pF	Panasonic	ECJ-1VC1H470J	CAP CERAMIC 47PF 50V 0603 SMD	
1 D2 MRR22116. MRR22114. MRR2211, MRR221, TGCOSCTAD DIODE SCHOTTAY DIVER 2 JP2_JP3 HEADER 3905 0.1 CTR ANY JUMPER.3P, 100C JUMPER.3P, 10CC 1 J1 RED ALLED ELECTRONICS 57.351A Banana Female Red 1 J2 BLK ALLED ELECTRONICS 57.351B Banana Female Red 1 J3 BLK ALLED ELECTRONICS 57.351B Banana Female Red 1 J3 USB. MINI.AB JAE DXX005HV22FOA USB.JINIL.AB 3 J4.416.117.J18.J9.J9.J0.S1.J33 SMA SAMTEC OTH-98042F-D-A ERLSCOR 1 L7 1K at 100 MHz Panasonic ERLSCOR ERLSCOR MALLANER ERLSCOR MALLANER 1 L7 1K at 100 MHz Panasonic ERLSCOR MALLANER ERLSCOR MALLANER 2 L83.13.132.L33.L35.L36.L37 Se H Panasonic ERLSCOR MALLANER ERLSCOR MALLANER 3 L83.178.L32.L32.L33.L34.L35.L36.L37 Se H Panasonic ERLSCOR MALLANER <	1	C151	4.7 μF	AVX	TAJA475K020R		
2 JP2_JP2 HEADER SPOE 0.CTR ANY JUMPER.3P.10CC JUMPER.3P.10CC 2 JP12_JP13 HEADER_1x2_103.40L ANY ANY Banan Formale Red 1 J1 RED ALLED ELECTRONICS ST.351A Banan Formale Red 1 J2 BLK ALLED ELECTRONICS ST.351A Banan Formale Red 1 J3 OTH-060-02-FD-A SAMTEC OTH-000-02-FD-A Heysed connector 1 J13 USB_MIN_AB JAE OXRROH-02-OF-A Heysed connector 1 J13 USB_MIN_AB JAE OXRROH-02-OF-A Heysed connector 1 J13 USB_MIN_AB JAE OXRROH-02-OF-A Heysed connector 1 J14 IA16,17,J13,J13,J3 SMA SAMTEC SMA_J-PH STTH JACK PANEL MONTSMA 2 L141,19 O O Panasonic ERJ-3GE VORD PESISTOR,SMIT,0503, OHM,5%, ZERO OHM JUMPER 2 L141,19 O O Panasonic ERJ-3GE VORD RESISTOR,050, OHM,5%, ZERO OHM JUMP KeoROS S	1	D2	MBRB2515L	MBRB2515LT4GOSCT-ND	MBRB2515LT4GOSCT-ND	DIODE SCHOTTKY 15V 25A D2PAK	
2 PPL2JP13 HEADER_152_102_430L AVY C 1 U1 RED ALLED ELECTRONICS ST.361A Banana Female Red 1 J2 BLK ALLED ELECTRONICS ST.361A Banana Female Red 1 J8 QTH-069-02-P-0A SAMTEC QTH-069-02-P-0A High speed connector 1 J13 U5B_MIN_JAB JALE DELECTRONICS ST.361A Banana Female Red 8 J44_J16_J17_J16_J19_J00_J31_J3 SMA JALE DELECTRONICS ST.361A Banana Female Red 2 L16_L19 0 Panasonic EX_J3GEY0R00 RESISTOR_SMT.0603.0 OHM.5%, ZERO OHM JUMPER 23 L30_L31_L32_L33_L34_L35_L36_L37 56 H Panasonic ER_J-3GEY0R00 RESISTOR_SMT.0603.0 OHM.5%, ZERO OHM JUMPER 24 L47.75 S5 H Panasonic ER_J-3GEY0R00 RESISTOR_SMT.0603.0 OHM.5%, ZERO OHM JUMPER 25 R46.78 S0 Ω Panasonic ER_J-3EKF1692/V RES 56.26 C OHM 1/10W 1%.0603 SMD 26 R47.78 S6.2X Panasonic ER_J3	2	JP2,JP3	HEADER 3POS 0.1 CTR	ANY	JUMPER,3P,.100CC	JUMPER,3P,.1CC	
1 H RED ALLED ELECTRONICS ST-351A Banons Frande Red 1 J2 BLK ALLED ELECTRONICS ST-351B Banons Frande Red 1 J3 CTH-060-02-F-D-A Hgh speed connector 1 J13 USB_MIN_AB JAE DXR009HXE700 USB_MIN_AB 8 J14_J16_J17_J18_J19_J30_J31_J33 SMA SAMTEC SMA_J-P4+ST-T01 JACK PANEL MOUNT SMA 2 L17 1K at 100 MHz FRJ-3GEY0R00 RESISTOR_STOR03, 0 HM/S%, ZENO OHM JM/HER 3 RAJKE FRAID, R132, RAJKE FRAID, R132, R136, R136, R130, R141, R105, R160, R106, R170, R171, R171, R172, R175, R745, R188, R189, R1910, R199, R192 56.2K Panasonic ERJ-3GEY0R00 RESISTOR_STOR03, 0 OHM 5%, ZERO OHM JM/HER 2 R4, R78 S6.2K Panasonic ECG ERJ-3GEY0R00 RESISTOR_STOR03, 0 OHM 5%, ZERO OHM JM/HY 1% 0003 SMD 8 R158, R75, R38, R39, R40, R41, R42, R43 ZD Panasonic ERJ-3GEY0R00 RES 40.0 OHM 1/10W 1% 0003 SMD 8 R4, R78 S50, D Panasonic ERJ-3EKF02W RES 43.0 OHM 1/10W 1% 00003 SMD 8	2	JP12,JP13	HEADER_1x2_100_430L	ANY			
1 2 BLK ALLED FLETRONICS ST-3518 Bannar Famale Black 1 JB QTH-080-02-FD-A SAMTEC QTH-080-02-FD-A High speed connector 1 JJ3 USB_UMI_AB JAF DXR059FX2E700 USB_UMI_AB 8 JJ4_J16_J17_J18_J19_J30_J31_J33 SNA SAMTEC SNA_P-H-5T-TH JACK PANEL MOUNT SNA 1 17 TH at 100 MHz Panasonic ERJ-3GEV0R00 ZES0 OHM JUMPER 2 L18_L19 0.0 Panasonic EXAL3244860U Inductor 3 R35,878.76.87.08.110.8122, R135,878.78.8139,8141,8165, R168,8139,8141,8165, R168,8130,8141,8165, R168,8130,8141,8165, R168,8169,710.8171,8172, R157,8176,8188,8189,8100, R161,8162 0.0 Panasonic ECG ERJ-3EKF5522V RES 55.2K OHM 1/10W 1% 0603 SMD 8 R36,R37,R38,R39,814,18165, R168,R169,R10,8171,8172, R157,8176,8173,8183,8149,414,842,843 25.0 Panasonic ERJ-3EKF5022V RES 54.2X OHM 1/10W 1% 0603 SMD 8 R36,R37,R38,R39,R40,R41,R42,R43 25.0 Panasonic ERJ-3EKF1080V RES 100.0 OHM 1/10W 1% 0603 SMD 2 R45,R48 100 Panasonic </td <td>1</td> <td>J1</td> <td>RED</td> <td>ALLIED ELECTRONICS</td> <td>ST-351A</td> <td>Banana Female Red</td>	1	J1	RED	ALLIED ELECTRONICS	ST-351A	Banana Female Red	
1 88 CTH-000-2C+P-A SMTEC OTH-000-2C+P-A High speed connector 1 J13 USB_MINLAB JAE DX3R005HV2E700 USB_MINLAB 1 L7 11 kat 100 MHz DX3R005HV2E700 USB_MINLAB 1 L7 11 kat 100 MHz EXJ-36EV0R00 RESISTOR_SMT.0030.0 CHM.5%, ZERO.0 MM JUMPER 2 L18.119 0 Ω Panasonic EXJ-36EV0R00 RESISTOR_SMT.0030.0 CHM.5%, ZERO.0 MM JUMPER 8 L30.131.L32.L33.L34.L35.L36.L37 56 mH Panasonic EXJ-36EV0R00 RESISTOR_SMT.0603.0 CHM.5%, ZERO.0 MM JUMPER 8 L30.R138.R139.R141.R165, R159.R168.R199.R170.R171.R172, R175.R176.R168.R199.R109, R191.R192 0 Ω Panasonic ERJ-36EVF802V RES 56.2K OHM 1/10W 1% 0603 SMD 1 R46 50 Ω Panasonic ERJ-36EVF802V RES 49.9 OHM 1/10W 1% 0603 SMD 1 R46 10 Ω Panasonic ERJ-36EVF10R0V RES 10.0 OHM 1/10W 1% 0603 SMD 1 R46 10 Ω Panasonic ERJ-36EVF10R0V RES 10.0 OHM 1/10W 1% 0603 SMD 2 R457.R38.R38.R48.R58.R57 12 Δ Ω </td <td>1</td> <td>J2</td> <td>BLK</td> <td>ALLIED ELECTRONICS</td> <td>ST-351B</td> <td>Banana Female Black</td>	1	J2	BLK	ALLIED ELECTRONICS	ST-351B	Banana Female Black	
1 13 USE, MINL, AB JAE DX8005H42E700 USB, MINL, AB 8 J14, J16, J17, J18, J19, J30, J31, J33 SMA SAMTEC SMA-J-PH-ST-TH1 JACK PANEL MOUNT SMA 1 L7 1K at 100 MHz E SECTOR, SMT, 0063, 0 OHM, 5%, 2ERO OHM, JUMPER 2 L18, L19 0.0 Panasonic EK-JSGEY0R00 RESISTOR, SMT, 0063, 0 OHM, 5%, 2ERO OHM, JUMPER 3 R3, R5, R7, 89, R10, R132, R133, R14, R165, R138, R138, R14, R165, R159, R138, R143, R156, R159, R168, R190, R171, R172, R175, R176, R168, R190, R171, R172, R175, R176, R168, R198, R130, R143, R142, R43 SC Panasonic - ECG ERJ-3EKF982V RES 86 X OHM 1/10W 1%, 0603 SMD 1 R6 50.0 Panasonic ERJ-3EKF982V RES 84 9.0HM 1/10W 1%, 0603 SMD 2 R4, R78 56.2K Panasonic ERJ-3EKF1080V RES 100 OHM 1/10W 1%, 0603 SMD 3 R35, R77, R38, R34, R4, R42, R43 25.0 Panasonic ERJ-3EKF1080V RES 100 OHM 1/10W 1%, 0603 SMD 2 R45, R48 10.0 Panasonic ERJ-3EKF1080V RES 10.0 OHM 1/10W 1%, 0603 SMD 2 R45, R48 10.0 Panasonic	1	38 BL	QTH-060-02-F-D-A	SAMTEC	QTH-060-02-F-D-A	High speed connector	
6 114_316_17_318_318_30_31_33 SMA SMMTEC SMA_P4+ST-TH1 JACK PANEL MOUNT SMA 1 L7 11K at 100 MHz Panasonic ERJ-3GEY0R00 RESISTOR.SMT 0603_0 OHM,5%, ZERO OHM JUMPER 2 L18_L19 0.0 Panasonic EX/3GEY0R00 RESISTOR.SMT 0603_0 OHM,5%, ZERO OHM JUMPER 28 B.3.85.R7.R0.R10.R19.2, R133,R138,R138,R141,R165, R168,R189,R190, R191,R12, R137,R178,R188,R189,R190, R191,R192 0.0 Panasonic ERJ-3GEY0R00 RESISTOR.SMT 0603_0 OHM,5%, ZERO OHM JUMPER 2 R.4.878 56.2K Panasonic ERJ-3GEY0R00 RES 46.2K OHM 1/10W 1% 0603 SMD 1 R46 50.0 Panasonic ERJ-3GEY24R9W RES 49.9 OHM 1/10W 1% 0603 SMD 2 R43,R78 100 Panasonic ERJ-3GEY24R9W RES 49.9 OHM 1/10W 1% 0603 SMD 3 R45,R48 10.0 Panasonic ERJ-3GEY100V RES 10.0 OHM 1/10W 1% 0603 SMD 4 R46 10.0 Panasonic ERJ-3GEY080W RES 10.0 OHM 1/10W 1% 0603 SMD 2 R53,R56 10K Panasonic ERJ-3GEY600W RES 10.0 OHM 1/10W 1% 0603 SMD </td <td>1</td> <td>J13</td> <td>USB_MINI_AB</td> <td>JAE</td> <td>DX3R005HN2E700</td> <td>USB_MINI_AB</td>	1	J13	USB_MINI_AB	JAE	DX3R005HN2E700	USB_MINI_AB	
1 17 14 ka 100 MHz Parasonic ERJ-3GEY0R00 RESISTOR, SMT 0802.0 OHM, 5%, ZERO OHM JUMPER 2 L18,L19 0.0 0.0 Parasonic ERJ-3GEY0R00 RESISTOR, SMT 0802.0 OHM, 5%, ZERO OHM JUMPER 3 R13,R,R3,R,R10,R132, 0.0 Parasonic EXC-ML 32A6800 Industor 2 R13,R,R10,R132, 0.0 Parasonic ERJ-3GEY0R00 RESISTOR,SMT,0603.0 OHM,5%, ZERO OHM JUMPER 2 R44,R78 56.2K Parasonic ECG ERJ-3EKF9622V RES 56.2K OHM 1/10W 1% 0603 SMD 8 R36,R3,R38,R39,R40,R41,R42,R43 25.0 Parasonic ERJ-3EKF9489V RES 49.9 OHM 1/10W 1% 0603 SMD 8 R36,R37,R38,R39,R40,R41,R42,R43 25.0 Parasonic ERJ-3EKF1000V RES 10.0 OHM 1/10W 1% 0603 SMD 2 R45,R48 10.0 Parasonic ERJ-3EKF1002V RES 10.0 OHM 1/10W 1% 0603 SMD 2 R45,R48 10.0 Parasonic ERJ-3EKF1002V RES 10.0 OHM 1/10W 1% 0603 SMD 2 R33,R56 10K Parasonic ERJ-3EKF2002V RES 12.4 OHM 1/10W 1% 0603 SMD	8	J14,J16,J17,J18,J19,J30,J31,J33	SMA	SAMTEC	SMA-J-P-H-ST-TH1	JACK PANEL MOUNT SMA	
2 L18,L19 0.Ω Panasonic ERJ-3GEYQR00 RESISTOR.SMT.0603.0 0HM,5%, ZERO OHM JUMPER 8 L30,L31,L32,L33,L34,L35,L37 56 nH Panasonic EXC-ML32A680U Inductor 23 R3,85,R7.R9.R10,R142, R138,R138,R143,R141.R165, R166,R169,R170,R171,R172, R175,R178,R138,R138,R141,R165, R166,R169,R170,R171,R172, R175,R178,R138,R138,R141,R165, R166,R169,R170,R171,R172, R175,R178,R138,R138,R143,R141,R165, R166,R169,R170,R171,R172, R175,R178,R138,R138,R143,R141,R42,R43 56.2K Panasonic - ECG ERJ-3EKF5622V RES 56.2K OHM 1/10W 1% 0603 SMD 1 R6 50.0 Panasonic ERJ-3EKF5622V RES 49.9 OHM 1/10W 1% 0603 SMD 2 R44,R78 10.0 Panasonic ERJ-3EKF24R9V RES 49.9 OHM 1/10W 1% 0603 SMD 3 R36,R37,R38,R30,R40,R41,R42,R43 25.0 Panasonic ERJ-3EKF24R9V RES 10.0 OHM 1/10W 1% 0603 SMD 1 R46 10.0 Panasonic ERJ-3EKF1000V RES 10.0 OHM 1/10W 1% 0603 SMD 2 R458,R60,R61,R62,R63,R64,R65,R67 12.4 Ω Panasonic ERJ-3EKF1020V RES 10.0 OHM 1/10W 1% 0603 SMD 2 R477,R152 56K Panasonic ERJ-3EKF128MV RES 10.0 OHM 1/10W 1% 0603 S	1	L7	1K at 100 MHz				
Image: Control of the second secon	2	L18,L19	0 Ω	Panasonic	ERJ-3GEY0R00	RESISTOR,SMT,0603,0 OHM,5%,	
8 I Sol, S1, S2, IS3, S4, IS3, IS6, IS7 56 nH Panasonic EXCML32A880U Inductor 23 R38, R5, R7, R91 (0, R12, R133, R139, R139, R141, R165, R156, R169, R170, R171, R172, R156, R169, R170, R171, R172, R157, R176, R188, R189, R190, R181, R182 0 Ω Panasonic ERJ-3GEY0R00 RES S52, XC OHM J/J0WFER 2 R44, R78 S6.2K Panasonic ERJ-3GEY0R0V RES S62, XC OHM J/J0W 1% 0603, SMD 1 R6 S0.0 Panasonic ERJ-3GEY0R0V RES 24.9 OHM 1/J0W 1% 0603, SMD 2 R43, R78, R38, R40, R41, R42, R43 25 Ω Panasonic ERJ-3EKF24R9V RES 24.9 OHM 1/J0W 1% 0603, SMD 2 R45, R48 100 Panasonic ERJ-3EKF21R9V RES 24.9 OHM 1/J0W 1% 0603, SMD 3 R58, R69 10K Panasonic ERJ-3EKF10R0V RES 10.0 OHM 1/J0W 1% 0603, SMD 4 R46 10 Q Panasonic ERJ-3EKF10R0V RES 12.4 OHM 1/J0W 1% 0603, SMD 5 R58, R60, R61, R62, R63, R64, R65, R67 12.4 Ω Panasonic ERJ-3EKF10R0V RES 20.0 OHM 1/J0W 1% 0603, SMD 2 R77, R152 56K Panasonic <td< td=""><td></td><td></td><td></td><td></td><td></td><td>ZERO OHM JUMPER</td></td<>						ZERO OHM JUMPER	
23 RARE, RAM, RAM, RAM, RAS, A. 0 Π Panasonic EN-3GETURUU Resist ORS, MIT, DOLUU OHM, SM, ZERO OHM, JUM/PER R138, R138, R141, R141, R165, R166, R166, R166, R170, R171, R172, R175, R188, R189, R190, R191, R192 Fex. 30, F	8	L30,L31,L32,L33,L34,L35,L36,L37	56 nH	Panasonic	EXC-ML32A680U	Inductor	
H33.K138,K139,K131,K16b. R166,K170,K171,Z2, R157,K176,K188,R189,R190, R157,K172,K172,K172,K172,K172,K172,K172,K17	23	R3,R5,R7,R9,R10,R132,	0 0	Panasonic	ERJ-3GEY0R00	ZERO OHM JUMPER	
R156,R159,R170,R171,R12, R156,R159,R190,R190, R156,R159,R190,R190, R157,R78,R188,R199,R190, R154,R78,R188,R190, RES R25 R25 R25,82,COHM 1/10W 1%,0603 SMD 1 R8 50 Ω Panasonic ERJ-3EKF469R9V RES 49,9 OHM 1/0W 1%,0603 SMD 2 R4,R78 100 Panasonic ERJ-3EKF489V RES 24,9 OHM 1/0W 1%,0603 SMD 2 R45,R48 100 Panasonic ERJ-3EKF100V RES 10.0 OHM 1/10W 1%,0603 SMD 1 R46 10 Ω Panasonic ERJ-3EKF1080V RES 10.0 OHM 1/10W 1%,0603 SMD 2 R53,R56 10K Panasonic ERJ-3EKF1080V RES 10.0 OHM 1/10W 1%,0603 SMD 2 R77,R152 56K Panasonic ERJ-3EKF1284V RES 12.2 OHM 1/10W 1%,0603 SMD 2 R107,R106 250 Ω Vishay PLT06032500ATS RES 200 OHM 1/10W 1%,0603 SMD 2 R134,R135 200 Ω Panasonic ERJ-3EKF200V RES 10 OHM 100W 1%,0603 SMD 2 R134,R135 200 Ω Quasonic ERJ-3EKF126WV RES 10 OHM 10W 1%,0603 SMD <td></td> <td>R133,R138,R139,R141,R165,</td> <td></td> <td></td> <td></td> <td></td>		R133,R138,R139,R141,R165,					
NT/5,NT/6,KT48,NT49,NT49, Number of the second secon		R166,R169,R170,R171,R172,					
H191,R192 Fight R192 Fight		R175,R176,R188,R189,R190,					
2 R4,R78 56.2K Panasonic - EGG ER./3EKF6922V RES 56.2K OHM 1/10W 1% 0603 SMD 1 R6 50 Ω Panasonic ER./3EKF49R9V RES 4.9. OHM 1/10W 1% 0603 SMD 2 R45,R37,R38,R39,R40,R41,R42,R43 25 Ω Panasonic ER./3EKF49R9V RES 24.9 OHM 1/10W 1% 0603 SMD 2 R45,R48 100 Panasonic ER./3EKF10R0V RES 100. OHM 1/10W 1% 0603 SMD 1 R46 10 Ω Panasonic ER./3EKF10R0V RES 10.0 OHM 1/10W 1% 0603 SMD 2 R53,R56 10K Panasonic ER./3EKF10R0V RES 12.4 OHM 1/10W 1% 0603 SMD 2 R77,R152 56K Panasonic ER./3EKF10R0V RES 50.0 OHM 1/10W 1% 0603 SMD 2 R107,R108 250 Ω Vishay PL060322500AST5 RES 50.0 OH 0.05% SPPM 0603 SMD 2 R134,R135 200 Ω Panasonic ER./3EKF490V RES 49.9 OHM 1/10W 1% 0603 SMD 2 R134,R135 200 Ω Q Panasonic ER./3EKF4980V RES 49.9 OHM 1/10W 1% 0603 SMD 1 R142 50 Ω Q<		R191,R192					
1 R6 50 Ω Panasonic ERJ-3EKF49R9V RES 49.9 OHM 1/10W 1% 0603 SMD 8 R36,R37,R38,R39,R40,R41,R42,R43 25 Ω Panasonic ERJ-3EKF24R9V RES 24.9 OHM 1/10W 1% 0603 SMD 2 R45,R48 100 Panasonic ERJ-3EKF1000V RES 100.0HM 1/10W 1% 0603 SMD 1 R46 10 Ω Panasonic ERJ-3EKF1000V RES 10.0 OHM 1/10W 1% 0603 SMD 2 R53,R56 10K Panasonic ERJ-3EKF1002V RES 10.0 OHM 1/10W 1% 0603 SMD 8 R59,R60,R61,R62,R63,R64,R65,R67 12.4 Ω Panasonic ERJ-3EKF102V RES 12.4 OHM 1/10W 1% 0603 SMD 2 R77,R152 56K Panasonic ERJ-3EKF202V RES 250.0 OHM 0.05% 5PPM 0603 SMD 2 R107,R108 200 Ω Panasonic ERJ-3EKF200V RES 250.0 OHM 1/10W 1% 0603 SMD 2 R136,R137 15 Ω Vishay CRCW06035R10FNEA RES 15 OHM 1/10W 1% 0603 SMD 1 R142 50 Ω Panasonic ERJ-3EKF49R9V RES 49.9 OHM 1/10W 1% 0603 SMD 2 R186,R167 0 Ω Vishay	2	R4,R78	56.2K	Panasonic - ECG	ERJ-3EKF5622V	RES 56.2K OHM 1/10W 1% 0603 SMD	
8 R36,R37,R39,R40,R41,R42,R43 2 5 Ω Panasonic ERJ-3EKF24R9V RES 24.9 OHM 1/10W 1% 0603 SMD 2 R45,R48 100 Panasonic ERJ-3EKF100VV RES 100 OHM 1/10W 1% 0603 SMD 1 R46 10 Ω Panasonic ERJ-3EKF10R0V RES 10.0 OHM 1/10W 1% 0603 SMD 2 R53,R56 10K Panasonic ERJ-3EKF10R0V RES 10.0 OHM 1/10W 1% 0603 SMD 8 R59,R60,R61,R62,R63,R64,R65,R67 12.4 Ω Panasonic ERJ-3EKF10R2V RES 12.4 OHM 1/10W 1% 0603 SMD 2 R77,R152 56K Panasonic ERJ-3EKF5602V RES 20.0 OHM 1/10W 1% 0603 SMD 2 R107,R108 250 Ω Vishay PL060322500AST5 RES 200 OHM 1/10W 1% 0603 SMD 2 R136,R137 15 Ω Vishay CRCW06035R10FNEA RES 15 OHM 1/10W 1% 0603 SMD 1 R142 50 Ω Panasonic ERJ-3EKF49R9V RES 49.9 OHM 1/10W 1% 0603 SMD 2 R186,R187 0 Ω Vishay CRCW06035R10FNEA RES 15 OHM 1/10W 1% 0603 SMD 1 R142 50 Ω Q	1	R6	50 Ω	Panasonic	ERJ-3EKF49R9V	RES 49.9 OHM 1/10W 1% 0603 SMD	
2 R45,R48 100 Panasonic EKJ-3EKF1000V RES 100 OHM 1/10W 1% 0603 SMD 1 R46 10 Ω Panasonic ERJ-3EKF10R0V RES 10.0 OHM 1/10W 1% 0603 SMD 2 R53,R56 10 K Panasonic ERJ-3EKF10R0V RES 10.0 OHM 1/10W 1% 0603 SMD 2 R53,R56 12.4 Ω Panasonic ERJ-3EKF10R0V RES 12.4 OHM 1/10W 1% 0603 SMD 2 R77,R152 56K Panasonic ERJ-3EKF5002V RES 50.0 OHM 1/10W 1% 0603 SMD 2 R107,R108 250 Ω Vishay PLT0603Z500AST5 RES 20 OHM 1/10W 1% 0603 SMD 2 R134,R135 200 Ω Panasonic ERJ-3EKF200V RES 15 OHM 1/10W 1% 0603 SMD 2 R136,R137 15 Ω Vishay CRCW0603S10FNEA RES 15 OHM 1/10W 1% 0603 SMD 1 R142 50 Ω Panasonic ERJ-3EKF200V RES 49.9 OHM 1/10W 1% 0603 SMD 2 R186,R187 0 Ω Vishay CRCW0603S10FNEA RES 15 OHM 1/10W 1% 0603 SMD 1 TP1,Tp2,TP9,TP12,TP13, TP14,TP15,TP16,TP17,TP18,TP19 TO OL Vishay/Dale	8	R36,R37,R38,R39,R40,R41,R42,R43	25 Ω	Panasonic	ERJ-3EKF24R9V	RES 24.9 OHM 1/10W 1% 0603 SMD	
1 H46 10 Li Panasonic ERJ-3EKF10R0V RES 10.0 OHM 1/10W 1% 0603 SMD 2 R53,R56 10K Panasonic ERJ-3EKF102V RES 10.0 K OHM 1/10W 1% 0603 SMD 2 R53,R56 124 Ω Panasonic ERJ-3EKF12R4V RES 12.4 OHM 1/10W 1% 0603 SMD 2 R77,R152 56K Panasonic ERJ-3EKF12R4V RES 56.0K OHM 1/10W 1% 0603 SMD 2 R107,R108 250 Ω Vishay PLT060322500AST5 RES 20 OHM 0.05% 5PPM 0603 SMD 2 R134,R135 200 Ω Panasonic ERJ-3EKF2000V RES 150 OHM 1/10W 1% 0603 SMD 1 R142 50 Ω Vishay CRCW0603SR10FNEA RES 150 OHM 1/10W 1% 0603 SMD 2 R136,R137 15 Ω Vishay/Dale CRCW04023K00FKED RES 150 OHM 1/10W 1% 0603 SMD 1 R142 50 Ω Ω Panasonic ERJ-3EKF49R9V RES 49.9 OHM 1/10W 1% 0603 SMD 2 R186,R187 Ω Ω Ω Vishay/Dale CRCW04023K00FKED RES 150 OHM 1/10W 1% 0603 OHM 5%, 2ERO OHM JUMPER 11 TP1,Tp2,T	2	R45,R48	100	Panasonic	ERJ-3EKF1000V	RES 100 OHM 1/10W 1% 0603 SMD	
2 R53,R56 10K Panasonic ERJ-3EKF1022V RES 10.0K OHM 1/10W 1% 0603 SMD 8 R59,R60,R61,R62,R63,R64,R65,R67 12.4 Ω Panasonic ERJ-3EKF12R4V RES 12.4 OHM 1/10W 1% 0603 SMD 2 R77,R152 56K Panasonic ERJ-3EKF5602V RES 56.0K OHM 1/10W 1% 0603 SMD 2 R17,R152 56K Panasonic ERJ-3EKF5602V RES 250 OHM 0.05% SPPM 0603 SMD 2 R134,R135 200 Ω Panasonic ERJ-3EKF2000V RES 250 OHM 1/10W 1% 0603 SMD 2 R136,R137 15 Ω Vishay CRCW06035R10FNEA RES 15 OHM 1/10W 1% 0603 SMD 1 R142 50 Ω Panasonic ERJ-3EKF49R9V RES 49.9 OHM 1/10W 1% 0603 SMD 2 R186,R187 0 Ω Vishay CRCW04023K00FKED RESISTOR,SMT.0603.0 OHM,5%, ZERO OHM JUMPER 11 TP1,TP2,TP9,TP12,TP13, TP14,TP15,TP16,TP17,TP18,TP19 T C4-1W MINI CIRCUITS TC4-1WG2+ Transformer 1 U1 ADSS263_QFN64 Texas Instruments 16-Bit Quad channel ADC 1 U1 ADSS263_QFN	1	R46	10 Ω	Panasonic	ERJ-3EKF10R0V	RES 10.0 OHM 1/10W 1% 0603 SMD	
8 K99,K60,K61,K62,K63,K64,K65,K67 12.4 Ω Panasonic ERJ-3EKF12R4V RES 12.4 OHM 1/10W 1% 0603 SMD 2 R77,R152 56K Panasonic ERJ-3EKF5602V RES 26.0 KO HM 1/10W 1% 0603 SMD 2 R107,R108 250 Ω Vishay PLT060322500ASTS RES 250 OHM 1/10W 1% 0603 SMD 2 R134,R135 200 Ω Panasonic ERJ-3EKF200V RES 250 OHM 1/10W 1% 0603 SMD 2 R136,R137 15 Ω Vishay CRCW06036R10FNEA RES 15 OHM 1/10W 1% 0603 SMD 1 R142 50 Ω Panasonic ERJ-3EKF49R9V RES 49.9 OHM 1/10W 1% 0603 SMD 2 R186,R187 0 Ω Vishay CRCW06036R10FNEA RES 15 OHM 1/10W 1% 0603 SMD 1 TP14,TP15,TP17,TP13,TT T POINT R	2	R53,R56	10K	Panasonic	ERJ-3EKF1002V	RES 10.0K OHM 1/10W 1% 0603 SMD	
2 K/7,R152 56K Panasonic ERJ-3EKF-5602V RES 56.0K OHM 0.15% SPPM 0603 SMD 2 R107,R108 250 Ω Vishay PLT060322500AST5 RES 250 OHM 0.05% SPPM 0603 SMD 2 R134,R135 200 Ω Panasonic ERJ-3EKF2000V RES 200 OHM 1/10W 1% 0603 SMD 2 R136,R137 15 Ω Vishay CRCW06035R10FNEA RES 15 OHM 1/10W 1% 0603 SMD 1 R142 50 Ω Panasonic ERJ-3EKF49R9V RES 49.9 OHM 1/10W 1% 0603 SMD 2 R186,R187 0 Ω Vishay/Dale CRCW04023K00FKED RESISTOR,SMT,0603.0 OHM,5%, ZERO OHM JUMPER 11 TP1,TP2,TP9,TP12,TP13, TP14,TP15,TP16,TP17,TP18,TP19 T POINT R	8	R59,R60,R61,R62,R63,R64,R65,R67	12.4 Ω	Panasonic	ERJ-3EKF12R4V	RES 12.4 OHM 1/10W 1% 0603 SMD	
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2 R13,R135 200 Ω Panasonic ERJ-3ERF2000V RES 200 DHM 1/10W 1% 0603 SMD 2 R136,R137 15 Ω Vishay CRCW06035R10FNEA RES 15 OHM 1/10W 1% 0603 SMD 1 R142 50 Ω Panasonic ERJ-3EKF49R9V RES 49.9 OHM 1/10W 1% 0603 SMD 2 R186,R187 0 Ω Vishay/Dale CRCW04023K00FKED RESISTOR,SMT,0603,0 OHM,5%, ZERO OHM JUMPER 11 TP1,TP2,TP9,TP12,TP13, TP14,TP15,TP16,TP17,TP18,TP19 T POINT R RESISTOR,SMT,0603,0 OHM,5%, ZERO OHM JUMPER 1 T15 TC4-1W MINI CIRCUITS TC4-1WG2+ Transformer 1 T15 TC4-1W MINI CIRCUITS TC4-1WG2+ Transformer 1 U1 ADS5263_QFN64 Texas Instruments 16-Bit Quad channel ADC 1 U1 ADS5263_QFN64 Texas Instruments TPS73201D8VT IC LDO REG 250MA ADJ-V SOT23-5 2 U1,U12 TPS77533D Texas Instruments TPS77533D IC 3.3V 500MA LDO REG 8-SOIC 1 U19 THS770006 Texas Instruments TPS770006IRGER IC AMP DIFF ADC DVR 16BIT 24VQFN 1 U21 CDCLVP1102	2	R107,R108	250 Ω	Vishay	PL1060322500AS15	RES 250 OHM 0.05% 5PPM 0603 SMD	
2R136,R137IS ΩVISIAYCRCW0603SR UP NEARES IS OHM 1/10W 1% 0603 SMD1R14250 ΩPanasonicERJ-3EKF49R9VRES 49.9 OHM 1/10W 1% 0603 SMD2R186,R1870 ΩVishay/DaleCRCW04023K00FKEDRESISTOR,SMT,0603,0 OHM,5%, ZERO OHM JUMPER11TP1,TP2,TP9,TP12,TP13, TP14,TP15,TP16,TP17,TP18,TP19T POINT RCCR162+Transformer1T15TC4-1WMINI CIRCUITSTC4-1WG2+Transformer1T15TC4-1WCOIL CRAFTWBC1-1TLBTransformer1U1ADS5263_QFN64Texas Instruments16-Bit Quad channel ADC1U6FT245RLFTDIFT245RLIC USB TO PARALLEL FIFO 28-SSOP1U10TPS73201-SOT23Texas InstrumentsTPS7320IDBVTIC LDO REG 250MA ADJ-V SOT23-52U11,U12TPS77533DTexas InstrumentsTPS77533DIC 3.3V 500MA LDO REG 8-SOIC1U19THS770006Texas InstrumentsTPS770006IRGERIC AMP DIFF ADC DVR 16BIT 24VQFN1U21CDCLVP1102Texas InstrumentsCDCLVP1102RGTTIC CLK BUFF 1:2 LVPECL SGL 16QFN2Z_SH-H3,Z_SH-H4SHUNT-HEADERLLLL2Z_SH-H3,Z_SH-H4SHUNT-JUMPER-0402LLL	2	R134,R135	200 \	Panasonic	CRCW00025D40ENEA	RES 200 OHM 1/10W 1% 0603 SMD	
IR142S0 IIParlasonicERJ-3ERF49R9VRES 49.9 OHM I/T0V 1% 0603 SMD2R186,R1870 ΩVishay/DaleCRCW04023K00FKEDRESISTOR,SMT,0603,0 OHM,5%, ZERO OHM JUMPER11TP1,TP2,TP9,TP12,TP13, TP14,TP15,TP16,TP17,TP18,TP19T POINT RRESZERO OHM JUMPER1T15TC4-1WMINI CIRCUITSTC4-1WG2+Transformer1T15TC4-1WMINI CIRCUITSTC4-1WB2+Transformer1U1ADS5263_QFN64Texas Instruments16-Bit Quad channel ADC1U0FT245RLFTDIFT245RLIC USB TO PARALLEL FIFO 28-SSOP1U10TPS73201-SOT23Texas InstrumentsTPS73201BVTIC LDO REG 250MA ADJ-V SOT23-52U11,U12TPS77533DTexas InstrumentsTPS77533DIC 3.3V 500MA LDO REG 8-SOIC1U19THS770006Texas InstrumentsTPS770006IRGERIC AMP DIFF ADC DVR 16BIT 24VQFN1U21CDCLVP1102Texas InstrumentsCDCLVP1102RGTTIC CLK BUFF 1:2 LVPECL SGL 16QFN2Z_SH-H3,Z_SH-H4SHUNT-HEADERIII2Z_SH-J1,Z_SH-J2SHUNT-JUMPER-0402III	2	R130,R137	15 12	Visnay		RES 15 OHM 1/10W 1% 0603 SMD	
2R186,R1870 ΠVISNAY/DateCRCW04023K00FREDRESISTOR,SM1,003,0 OHM,5%, ZERO OHM JUMPER11TP1,TP2,TP9,TP12,TP13, TP14,TP15,TP16,TP17,TP18,TP19T POINT RZERO OHM JUMPER1T15TC4-1WMINI CIRCUITSTC4-1WG2+Transformer8T26,T27,T28,T29,T30,T31,T32,T33WBC1-1COIL CRAFTWBC1-1TLBTransformer1U1ADS5263_QFN64Texas Instruments16-Bit Quad channel ADC1U6FT245RLFTDIFT245RLIC USB TO PARALLEL FIFO 28-SSOP1U10TPS73201-SOT23Texas InstrumentsTPS77533DIC 3.3V 500MA LDO REG 8-SOIC1U19THS770006Texas InstrumentsTPS775006IRGERIC AMP DIFF ADC DVR 16BIT 24VQFN1U21CDCLVP1102Texas InstrumentsCDCLVP1102RGTTIC CLK BUFF 1:2 LVPECL SGL 16QFN2Z_SH-H3,Z_SH-H4SHUNT-JUMPER-0402 </td <td>1</td> <td>R142</td> <td>50 Ω</td> <td>Panasonic</td> <td>ERJ-3EKF49R9V</td> <td>RES 49.9 OHM 1/10W 1% 0603 SMD</td>	1	R142	50 Ω	Panasonic	ERJ-3EKF49R9V	RES 49.9 OHM 1/10W 1% 0603 SMD	
11TP1,TP2,TP9,TP12,TP13, TP14,TP15,TP16,TP17,TP18,TP19T POINT RImage: Constraint of the system	2	R180,R187	0.02	visnay/Dale	CRCW04023K00FKED	ZERO OHM JUMPER	
TP14,TP15,TP16,TP17,TP18,TP19CellMINI CIRCUITSTC4-1WG2+Transformer1T15TC4-1WMINI CIRCUITSTC4-1WG2+Transformer8T26,T27,T28,T29,T30,T31,T32,T33WBC1-1COIL CRAFTWBC1-1TLBTransformer1U1ADS5263_QFN64Texas Instruments16-Bit Quad channel ADC1U6FT245RLFTDIFT245RLIC USB TO PARALLEL FIFO 28-SSOP1U10TPS73201-SOT23Texas InstrumentsTPS7320IDBVTIC LDO REG 250MA ADJ-V SOT23-52U11,U12TPS77533DTexas InstrumentsTPS77533DIC 3.3V 500MA LDO REG 8-SOIC1U19THS770006Texas InstrumentsTPS770006IRGERIC AMP DIFF ADC DVR 16BIT 24VQFN1U21CDCLVP1102Texas InstrumentsCDCLVP1102RGTTIC CLK BUFF 1:2 LVPECL SGL 16QFN2Z_SH-H3,Z_SH-H4SHUNT-HEADER2Z_SH-J1,Z_SH-J2SHUNT-JUMPER-0402Ic MathematicsIc Mathematics	11	TP1,TP2,TP9,TP12,TP13,	T POINT R			-	
1T15TC4-1WMINI CIRCUITSTC4-1WG2+Transformer8T26,T27,T28,T29,T30,T31,T32,T33WBC1-1COIL CRAFTWBC1-1TLBTransformer1U1ADS5263_QFN64Texas Instruments16-Bit Quad channel ADC1U6FT245RLFTDIFT245RLIC USB TO PARALLEL FIFO 28-SSOP1U10TPS73201-SOT23Texas InstrumentsTPS73201DBVTIC LDO REG 250MA ADJ-V SOT23-52U11,U12TPS77533DTexas InstrumentsTPS77533DIC 3.3V 500MA LDO REG 8-SOIC1U19THS770006Texas InstrumentsTPS770006IRGERIC AMP DIFF ADC DVR 16BIT 24VQFN1U21CDCLVP1102Texas InstrumentsCDCLVP1102RGTTIC CLK BUFF 1:2 LVPECL SGL 16QFN2Z_SH-H3,Z_SH-H4SHUNT-HEADERSHUNT-JUMPER-0402MUNT-MEADERL2Z_SH-J1,Z_SH-J2SHUNT-JUMPER-0402MUNT-MEADERLL		TP14,TP15,TP16,TP17,TP18,TP19					
8T26,T27,T28,T29,T30,T31,T32,T33WBC1-1COIL CRAFTWBC1-1TLBTransformer1U1ADS5263_QFN64Texas Instruments16-Bit Quad channel ADC1U6FT245RLFTDIFT245RLIC USB TO PARALLEL FIFO 28-SSOP1U10TPS73201-SOT23Texas InstrumentsTPS7320IDBVTIC LDO REG 250MA ADJ-V SOT23-52U11,U12TPS77533DTexas InstrumentsTPS77533DIC 3.3V 500MA LDO REG 8-SOIC1U19THS770006Texas InstrumentsTPS770006IRGERIC AMP DIFF ADC DVR 16BIT 24VQFN1U21CDCLVP1102Texas InstrumentsCDCLVP1102RGTTIC CLK BUFF 1:2 LVPECL SGL 16QFN2Z_SH-H3,Z_SH-H4SHUNT-HEADERSHUNT-JUMPER-0402	1	T15	TC4-1W	MINI CIRCUITS	TC4-1WG2+	Transformer	
1U1ADS5263_QFN64Texas Instruments16-Bit Quad channel ADC1U6FT245RLFTDIFT245RLIC USB TO PARALLEL FIFO 28-SSOP1U10TPS73201-SOT23Texas InstrumentsTPS7320IDBVTIC LDO REG 250MA ADJ-V SOT23-52U11,U12TPS77533DTexas InstrumentsTPS77533DIC 3.3V 500MA LDO REG 8-SOIC1U19THS770006Texas InstrumentsTPS770006IRGERIC AMP DIFF ADC DVR 16BIT 24VQFN1U21CDCLVP1102Texas InstrumentsCDCLVP1102RGTTIC CLK BUFF 1:2 LVPECL SGL 16QFN2Z_SH-H3,Z_SH-H4SHUNT-HEADEREE2Z_SH-J1,Z_SH-J2SHUNT-JUMPER-0402III	8	T26,T27,T28,T29,T30,T31,T32,T33	WBC1-1	COIL CRAFT	WBC1-1TLB	Transformer	
1U6FT245RLFTDIFT245RLIC USB TO PARALLEL FIFO 28-SSOP1U10TPS73201-SOT23Texas InstrumentsTPS7320IDBVTIC LDO REG 250MA ADJ-V SOT23-52U11,U12TPS77533DTexas InstrumentsTPS77533DIC 3.3V 500MA LDO REG 8-SOIC1U19THS770006Texas InstrumentsTPS770006IRGERIC AMP DIFF ADC DVR 16BIT 24VQFN1U21CDCLVP1102Texas InstrumentsCDCLVP1102RGTTIC CLK BUFF 1:2 LVPECL SGL 16QFN2Z_SH-H3,Z_SH-H4SHUNT-HEADEREE2Z_SH-J1,Z_SH-J2SHUNT-JUMPER-0402EE	1	U1	ADS5263_QFN64	Texas Instruments		16-Bit Quad channel ADC	
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2 U11,U12 TPS77533D Texas Instruments TPS77533D IC 3.3V 500MA LDO REG 8-SOIC 1 U19 THS770006 Texas Instruments TPS770006IRGER IC AMP DIFF ADC DVR 16BIT 24VQFN 1 U21 CDCLVP1102 Texas Instruments CDCLVP1102RGTT IC CLK BUFF 1:2 LVPECL SGL 16QFN 2 Z_SH-H3,Z_SH-H4 SHUNT-HEADER E E 2 Z_SH-J1,Z_SH-J2 SHUNT-JUMPER-0402 Image: Content of the second s	1	U10	TPS73201-SOT23	Texas Instruments	TPS7320IDBVT	IC LDO REG 250MA ADJ-V SOT23-5	
1 U19 THS770006 Texas Instruments TPS770006IRGER IC AMP DIFF ADC DVR 16BIT 24VQFN 1 U21 CDCLVP1102 Texas Instruments CDCLVP1102RGTT IC CLK BUFF 1:2 LVPECL SGL 16QFN 2 Z_SH-H3,Z_SH-H4 SHUNT-HEADER E E 2 Z_SH-J1,Z_SH-J2 SHUNT-JUMPER-0402 E E	2	U11,U12	TPS77533D	Texas Instruments	TPS77533D	IC 3.3V 500MA LDO REG 8-SOIC	
1 U21 CDCLVP1102 Texas Instruments CDCLVP1102RGTT IC CLK BUFF 1:2 LVPECL SGL 16QFN 2 Z_SH-H3,Z_SH-H4 SHUNT-HEADER	1	U19	THS770006	Texas Instruments	TPS770006IRGER	IC AMP DIFF ADC DVR 16BIT 24VQFN	
2 Z_SH-H3,Z_SH-H4 SHUNT-HEADER 2 Z_SH-J1,Z_SH-J2 SHUNT-JUMPER-0402	1	U21	CDCLVP1102	Texas Instruments	CDCLVP1102RGTT	IC CLK BUFF 1:2 LVPECL SGL 16QFN	
2 Z_SH-J1,Z_SH-J2 SHUNT-JUMPER-0402	2	Z_SH-H3,Z_SH-H4	SHUNT-HEADER				
	2	Z_SH-J1,Z_SH-J2	SHUNT-JUMPER-0402				



Bill of Materials

Qty	Reference Designator	Value	Manufacturer	Part Number	Description
4	STANDOFF HEX M3 THR ALUM 18MM		Digi-Key	24436K-ND	STANDOFF HEX M3 THR ALUM 18MM
4	SCREW STEEL M3 THR 6MM		Digi-Key	29311K-ND	SCREW STEEL M3 THR 6MM



High Speed Data Converter Pro (HSDCPro) GUI Installation

Download the HSDCPro GUI Installer using this link: HSDCPro GUI

- Unzip the saved folder and run the installer executable to obtain the pop-up shown in Figure 21.
- Click the *Install* button.

High Speed Data Converter Pro v2.1 Setup					
Please disconnect any TSW 1400/05/06 boards before installing High Speed Data Converter Pro.					
Installer will now self extract and proceed with installation.					
Cancel Nullsoft Install System v2.46	[]				

Figure 21. HSDCPro Install (Begin)

• Leave the destination directories as the default location, for the TSW1400GUI installation and press the NEXT button as shown in Figure 22.



Appendix A

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🚚 High Speed Data Converter Pro
Destination Directory Select the primary installation directory.
All software will be installed in the following locations. To install software into a different locations, click the Browse button and select another directory.
Directory for High Speed Data Converter Pro C:\Program Files (x86)\Texas Instruments\High Speed Data Converter Pro\ Browse
Directory for National Instruments products C:\Program Files (x86)\National Instruments\ Browse
<< Back Next >> Cancel

Figure 22. HSDCPro Install (Install Directory)

• Read the License Agreement from Texas Instruments and select *I accept the License Agreement* and press the *Next* button as shown in Figure 23.



ų,	High Speed Data Converter Pro
	License Agreement You must accept the licenses displayed below to proceed.
	GUI Software Evaluation and Internal Use License Agreement
	Important - Please read the following license agreement carefully. This is a legally binding agreement. After you read this license agreement, you will be asked whether you accept and agree to the terms of this license agreement. Do not click "I have read and agree" unless: (1) you are authorized to accept and agree to the terms of this license agreement on behalf of yourself and your company; and (2) you intend to enter into and to be bound by the terms of this legally binding agreement on behalf of yourself and your company.
	I accept the License Agreement
-	<< Back Next >> Cancel

Figure 23. HSDCPro Install (TI License Agreement)

• Read the License Agreement from National Instruments and select *I accept the License Agreement* and press the *Next* button as shown in Figure 24.



🕼 High Speed Data Converter Pro
License Agreement You must accept the licenses displayed below to proceed.
NATIONAL INSTRUMENTS SOFTWARE LICENSE AGREEMENT
INSTALLATION NOTICE: THIS IS A CONTRACT. BEFORE YOU DOWNLOAD THE SOFTWARE AND/OR COMPLETE THE INSTALLATION PROCESS, CAREFULLY READ THIS AGREEMENT. BY DOWNLOADING THE SOFTWARE AND/OR CLICKING THE APPLICABLE BUTTON TO COMPLETE THE INSTALLATION PROCESS, YOU CONSENT TO THE TERMS OF THIS AGREEMENT AND YOU AGREE TO BE BOUND BY THIS AGREEMENT. IF YOU DO NOT WISH TO BECOME A PARTY TO THIS AGREEMENT AND BE BOUND BY ALL OF ITS TERMS AND CONDITIONS, CLICK THE APPROPRIATE BUTTON TO CANCEL THE INSTALLATION PROCESS, DO NOT INSTALL OR USE THE SOFTWARE, AND RETURN THE SOFTWARE WITHIN THIRTY (30) DAYS OF RECEIPT OF THE SOFTWARE (WITH ALL ACCOMPANYING WRITTEN MATERIALS, ALONG WITH THEIR CONTAINERS) TO THE PLACE YOU OBTAINED THEM. ALL RETURNS SHALL BE SUBJECT TO NI'S THEN CURRENT RETURN POLICY.
The software to which this National Instruments license applies is High Speed Data Converter Pro. (accept the License Agreement) (I do not accept the License Agreement)
<< <u>B</u> ack <u>N</u> ext >> <u>C</u> ancel

Figure 24. HSDCPro Install (NI License Agreement)

• Press the Next button as shown in Figure 25.



I High Speed Data Converter Pro	- • • ×
Start Installation Review the following summary before continuing.	
Upgrading • National Instruments system components	
Adding or Changing • High Speed Data Converter Pro Files	
Click the Next button to begin installation. Click the Back button to change the installation settings.	
<u>Save File</u> << <u>B</u> ack <u>Next >></u>	<u>C</u> ancel

Figure 25. HSDCPro Install (Start Installation)

• The window shown in Figure 26 should appear indicating that the installation is in progress.



High Speed Data Converter Pro	
Querry II Deserve and ESC Constants	
Uverall Progress: 5% Complete	
	<< Back Next >> Cancel

Figure 26. HSDCPro Install (Installation Progress)

• The window shown in Figure 27 appears indicating Installation Complete. Press the Next button.

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ų	High Speed Data Converter Pro	J
	Installation Complete	
	The installer has finished updating your system.	
	<< <u>B</u> ack <u>Next >></u> <u>F</u> inish	-

Figure 27. HSDCPro Install (Installation Complete)

• The window shown in Figure 28 appears briefly to complete the process.

Appendix A

www.ti.com

High Speed Data Converter Pro v2.1 Setup: Installing
Cancel Nullsoft Install System v2.46 < Back Close

Figure 28. HSDCPro Install (h)

• As shown in Figure 29 a restart might be requested depending on whether or not the PC already had the National Instruments MCR Installer. If requested, hit the *Restart* button to complete the installation.

High Speed Data Converter Pro								
	ou must restart your computer to complete this operation. you need to install hardware now, shut down the computer. If you noose to restart later, restart your computer before running any of this ftware.							
	Restart Shut Down Restart Later							

Figure 29. HSDCPro Install

EVM CONFIGURATION MODES

DEFAULT (SINGLE AMP) CONFIGURATION

Default Config (with transformer drive on 3 channels &

THS770006 on one channel (IN3A)

OPTIONAL (4 CHANNEL AMP) CONFIGURATION

THS7700 Config - THS770006-based drive on all 4 channels

Channel (IN1A, IN2A, IN3A IN4A)































* Denotes components uninstalled in default configuration











Revision History

Cł	Changes from Original (May 2011) to A Revision		
•	Changed Appendix A to TSW1400 software.	25	

NOTE: Page numbers for previous revisions may differ from page numbers in the current version.

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This kit is designed to allow product developers to evaluate electronic components, circuitry, or software associated with the kit to determine whether to incorporate such items in a finished product and software developers to write software applications for use with the end product. This kit is not a finished product and when assembled may not be resold or otherwise marketed unless all required FCC equipment authorizations are first obtained. Operation is subject to the condition that this product not cause harmful interference to licensed radio stations and that this product accept harmful interference. Unless the assembled kit is designed to operate under part 15, part 18 or part 95 of this chapter, the operator of the kit must operate under the authority of an FCC license holder or must secure an experimental authorization under part 5 of this chapter.

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CAUTION

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

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NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

FCC Interference Statement for Class B EVM devices

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

3.2 Canada

3.2.1 For EVMs issued with an Industry Canada Certificate of Conformance to RSS-210

Concerning EVMs Including Radio Transmitters:

This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

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Concernant les EVMs avec antennes détachables

Conformément à la réglementation d'Industrie Canada, le présent émetteur radio peut fonctionner avec une antenne d'un type et d'un gain maximal (ou inférieur) approuvé pour l'émetteur par Industrie Canada. Dans le but de réduire les risques de brouillage radioélectrique à l'intention des autres utilisateurs, il faut choisir le type d'antenne et son gain de sorte que la puissance isotrope rayonnée équivalente (p.i.r.e.) ne dépasse pas l'intensité nécessaire à l'établissement d'une communication satisfaisante. Le présent émetteur radio a été approuvé par Industrie Canada pour fonctionner avec les types d'antenne énumérés dans le manuel d'usage et ayant un gain admissible maximal et l'impédance requise pour chaque type d'antenne. Les types d'antenne non inclus dans cette liste, ou dont le gain est supérieur au gain maximal indiqué, sont strictement interdits pour l'exploitation de l'émetteur

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