



Project -
 Title **VFC-HS v.1**
 EDA Number **EDA-03836-V1-0**
 Designer J. Pospisil
 File EDA-03836-V1-0_pcb-mat.xls
 Date 13 December 2018

Rev.
 Drawn by B. Civel
 EDMS URL <https://edms.cern.ch/item/EDA-03836-V1-0>

Ref	Qty	Scem	Description	Val&Device	Manufacturer	Part Number	Case
C1	361		±10% 50V X5R SMD Multilayer Chip Ceramic Capacitor	470nF	GENERIC	CC0402_470NF_50V_10%_X5R	0402
C20, C21							
C31, C32							
C36 > C44							
C46 > C49							
C51 > C54							
C57, C58							
C81							
C86							
C95							
C97 > C100							
C103							
C153, C154							
C221							
C231							
C241							
C245							
C253 > C255							
C259							
C262							
C265							
C270							
C272							
C276							
C279, C280							
C282							
C284							
C287, C288							
C292							
C294							
C296							
C302							
C304, C305							
C308							
C310 > C314							
C316, C317							
C326 > C328							
C333 > C336							
C339, C340							
C350 > C356							
C364							
C366, C367							
C369							
C377, C378							
C380 > C383							
C386							
C389 > C402							
C405 > C413							
C415 > C423							
C426 > C432							
C434 > C439							

Ref	Qty	Scem	Description	Val&Device	Manufacturer	Part Number	Case
C441, C442 C445 > C447 C451 > C458 C461, C462 C464 C469, C470 C473 > C477 C484, C485 C487 > C503 C505 C507 C509 > C517 C519 > C524 C526 > C539 C543 > C551 C557 C560 C562 > C580 C584 > C597 C599 C601 > C606 C608 > C615 C618 C621 > C629 C631 > C638 C642 > C644 C647, C648 C652 > C660 C663 > C668 C670 > C681 C683 > C690 C692 > C695 C697 > C708 C712 > C719 C722, C723 C725 C727, C728 C731 > C733							
C2 C22 C55, C56 C64 C82 C84 C90 C92 C101 C104, C105 C117 C126 C135 C137 > C139 C152 C216	20		±10% 16V Low ESR 2R0 Solid Tantalum Chip Capacitor	4.7uF	GENERIC	CTE3216-18_4.7UF_16V_10%_LESR2000	A
C3, C4 C12 > C14 C35 C69 > C78 C83	56		±20% 10V X5R SMD Multilayer Chip Ceramic Capacitor	100uF	GENERIC	CC1206_100UF_10V_20%_X5R	1206

Ref	Qty	Scem	Description	Val&Device	Manufacturer	Part Number	Case
C88, C89 C94 C96 C102 C107 C109 > C112 C115, C116 C118, C119 C121 C123 C128 C132 C136 C140 > C149 C189 C193 C196 C200, C201 C210 C239, C240 C242 C244							
C5 C19 C24, C25 C30 C45 C50 C59 C155, C156 C218 C230 C232 > C234 C243 C267 C271 C275 C285, C286 C290 C295 C361 C365 C370 C384 C404 C424 C483 C556 C600 C669 C696 C711	35		±10% 16V X5R SMD Multilayer Chip Ceramic Capacitor	10uF	GENERIC	CC0805_10UF_16V_10%_X5R	0805
C6 > C11 C190 > C192 C235 > C238 C246	14		±10% 10V Solid Tantalum Chip Capacitor	330uF	GENERIC	CTE7343-31_330UF_10V_10%	D
C15 > C18 C23 C27 > C29	68		±10% 16V X7R SMD Multilayer Chip Ceramic Capacitor	22nF	GENERIC	CC0402_22NF_16V_10%_X7R	0402

Ref	Qty	Scem	Description	Val&Device	Manufacturer	Part Number	Case
C33, C34 C60 C62 C65 > C68 C79, C80 C85 C87 C91 C93 C106 C108 C113, C114 C120 C122 C124, C125 C127 C129 > C131 C133, C134 C150, C151 C157, C158 C187, C188 C260, C261 C268, C269 C329, C330 C341 C343 C373, C374 C518 C542 C661, C662 C682 C691 C709, C710 C720, C721 C724 C726 C729, C730 C772, C773							
C26 C61 C63 C159 > C186 C194, C195 C197 > C199 C202 > C206 C208, C209 C211 > C215 C217 C219, C220 C222 > C229 C247 > C252 C256 > C258 C263, C264 C266 C273, C274 C277, C278 C281 C283 C289	189		±10% 16V X7R SMD Multilayer Chip Ceramic Capacitor	100nF	GENERIC	CC0402_100NF_16V_10%_X7R	0402

Ref	Qty	Scem	Description	Val&Device	Manufacturer	Part Number	Case
C291 C293 C297 > C301 C303 C306, C307 C309 C315 C331, C332 C342 C357 > C360 C362, C363 C368 C371, C372 C375, C376 C379 C385 C387, C388 C403 C414 C425 C433 C559 C734 > C771 C774 > C811							
C207 C318 > C325 C337, C338 C344 > C349 C440 C443, C444 C448 > C450 C459, C460 C463 C465 > C468 C471, C472 C478 > C482 C486 C504 C506 C508 C525 C540, C541 C552 > C555 C561 C581 > C583 C598 C616, C617 C619, C620 C630 C639 > C641 C645, C646 C649 > C651	66		±10% 16V X5R SMD Multilayer Chip Ceramic Capacitor	1nF	GENERIC	CC0201_1NF_16V_10%_X5R	0201
C558 C607	2		±10% 50V X7R SMD Multilayer Chip Ceramic Capacitor	100pF	GENERIC	CC0603_100PF_50V_10%_X7R	0603
Cage1	1		1x2 Press Fit SFP Ganged (Single Row) Cage		TYCO ELECTRONICS	1761014-3	
Cage2	1		1x4 Press Fit Cage For Use with SFP+ Connector (Small Form-factor Pluggable)		TYCO ELECTRONICS	2007132-1	
D1 > D4	4		30V 200mA Dual Series Small Signal Schottky Diode	BAT54S	FAIRCHILD SEMICONDUCTOR	BAT54S	SOT23-3
DDR1, DDR2	2		+1.35V, 8Gb (64 Meg x 16 x 8 banks) DDR3L SDRAM	MT41K512M16HA-125:E	MICRON TECHNOLOGY	MT41K512M16HA-125:E	BGA96
F1 > F10	10		Thin Film Chip Fuse	3A-24V	BOURNS	SF-0603F300-2	

Ref	Qty	Scem	Description	Val&Device	Manufacturer	Part Number	Case
FPGA1	1		Arria V GT Family FPGA, 504k Logic Elements, 1517-Pin BGA, Speed Grade 3, Industrial Temperature Grade, Pb-Free	5AGTFD7K3F40I3N	ALTERA	5AGTFD7K3F40I3N	BGA1517
IC1 IC5 IC12 IC16 > IC19 IC23 IC25 IC42, IC43 IC48	12		8-Bit Universal Bus Transceiver and Two 1-Bit Bus Transceivers with 3-State Outputs	SN74VMEH22501DGGR	TEXAS INSTRUMENTS	SN74VMEH22501DGGR	TSSOP48
IC2 IC39	2		4-Channel I2C-Bus Multiplexer with Interrupt Logic	PCA9544APW	NXP SEMICONDUCTORS	PCA9544APW	SSOP20
IC3, IC4 IC14 IC20, IC21 IC29 IC37 IC41	8		8-Bit I2C-Bus and SMBus Low Power I/O Port with Interrupt	PCA9534PW	ANALOG DEVICES	PCA9534PW	SSOP16
IC6 > IC8 IC44 IC46, IC47	6		TPS40303 DC/DC Converter Module	PCBM_EDA-02878-V3-1	CERN	EDA-02878-V3-1	
IC9 IC22 IC34 IC36	4		2.5V/3.3V, Four LVPECL Outputs, SiGe Clock Fanout Buffer	ADCLK944BCPZ	ANALOG DEVICES	ADCLK944BCPZ	QFN16
IC10	1		512Mbit (64MB), 2.7V-3.6V, Multiple I/O Serial NOR Flash Memory,with Reset# & Hold#	MT25QL512ABB8ESF-0SIT	MICRON TECHNOLOGY	MT25QL512ABB8ESF-0SIT	SOIC16
IC11 IC40	2		3V LVDS Quad CMOS Differential Line Receiver	DS90LV048ATM/NOPB	TEXAS INSTRUMENTS	DS90LV048ATM/NOPB	SOIC16
IC13	1		Continuous Rate 10 Mb/s to 675 Mb/s Clock And Data Recovery IC With Integrated Limiting Amplifier	ADN2814ACPZ	ANALOG DEVICES	ADN2814ACPZ	QFN32
IC15	1		3.3V Sink/Source DDR Termination Regulator	TPS51200DRCT	TEXAS INSTRUMENTS	TPS51200DRCT	SON10
IC24	1		0.16 MHz to 710 MHz Four Inputs (2 Differential, 2 Single-ended) I2C-Programmable Quad Clock Generator	Si5338N-B-GM	SILICON LABS	Si5338N-B-GM	QFN24
IC26	1		3.3V, 2 Differential Channel, 2 : 1 Multiplexer/Demultiplexer Switch	CBTL02043ABQ	NXP SEMICONDUCTORS	CBTL02043ABQ	QFN20
IC27	1		1.7V-5.5V, 64K (8K x 8-bit) I2C Serial EEPROM	24AA64T-I/MC	MICROCHIP TECHNOLOGY	24AA64T-I/MC	DFN8
IC28	1		Programmable Resolution 1-Wire Digital Thermometer (-55°C to +125°C)	DS18B20U+	DALLAS MAXIM	DS18B20U+	uSOP8
IC30, IC31	2		Single, 16-Bit nanoDAC with 2.5V, 5ppm/°C On-Chip Reference	AD5660CRMZ-2	ANALOG DEVICES	AD5660CRMZ-2	MSOP8
IC32	1		Dual Retriggerable Monostable Multivibrator	SN74LV123APW	TEXAS INSTRUMENTS	SN74LV123APW	TSSOP16
IC33	1		4 High-Speed Differential Line Driver	SN75LVDS391D	TEXAS INSTRUMENTS	SN75LVDS391D	SOIC16
IC35	1		Dual 1.5 Gbps 2:1/1:2 LVDS Mux/Buffer with Pre-Emphasis	DS15MB200TSQ/NOPB	TEXAS INSTRUMENTS	DS15MB200TSQ/NOPB	QFN48
IC38	1		2.7V to 5.25V, Micro Power, 8-Channel, 125 kSPS, 12-Bit ADC	AD7888AR	ANALOG DEVICES	AD7888AR	SOIC16
IC45	1		Single Output LDO, 3.0A, Adj.(0.8 to 3.3V), Fast Transient Response, Programmable SoftStart	TPS74401RGWT	TEXAS INSTRUMENTS	TPS74401RGWT	QFN20
IC49	1		10k, 10-Bit, Nonvolatile Linear-Taper Digital Potentiometer	MAX5483EUD+	MAXIM	MAX5483EUD+	TSSOP 14
J1, J2	2		Straight Through-hole 50 Ohm Micro Mini RF Jack, MMCX Series		SAMTEC	MMCX-J-P-H-ST-TH1	
J3 J13	2		2.54mm Pitch C-Grid® Header, Low Profile, Dual Row, Vertical, Shrouded Header		MOLEX	70246-1004	
J4, J5 J8 > J11	6		20 Position, Pitch 0.8mm SFP+ Receptacle (Small Form-factor Pluggable)		TYCO ELECTRONICS	1888247-1	
J6, J7	2	09.46.11.188.8	Size 00 ,Low Profile Dual 50 Ohms Coaxial Elbow Sockets (90°)		LEMO	EPY.00.250.NTNY	
J12	1		560 Contacts (14 Rows yzabcdefgijklm) Surface Mount Female Connector, VITA 57.4		SAMTEC	ASP-184329-01	
L1 > L33	33		±25% 2A SMD EMIFIL Suppression Chip Ferrite Bead	220R@100MHz	MURATA	BLM21PG221SN1D	0805
LD1, LD2	2		Quad-Level 2mm HE Red LED, PCB Edge Mounting		BIVAR	H485CHDL	
LD3 > LD22	20		High Brightness and High Reliability Chip 0603(1608mm) Red LED SML-D12x8 Series		ROHM	SML-D12U8WT86	
OSC1	1		10-160MHz 3.3V ±50ppm CMOS Any-Rate I2C Programmable XO Oscillator Si570 Series	10-160MHz	SILICON LABS	570CAC000121DG	
OSC2	1		3.3V, ±10ppm, -20..70°C, 7x5mm Surface Mount LVPECL High Performance Differential VCXO (SiT3821 Series)	125MHz	SI TIME	SiT3821AC-2DF-33EE125.000000	
OSC3	1		3.3V, ±100ppm, 15pF, 0..70°C, HCMOS Tri-State Surface Mount, VCXO Voltage Controlled Oscillator (CFPV-45 Series)	20MHz	IQD FREQUENCY PRODUCTS	LFVCXO026156	

Ref	Qty	Scem	Description	Val&Device	Manufacturer	Part Number	Case	
P0	1		Har-bus HM Type B19, 95 Contacts (abcde), Pitch 2mm, 3.4mm Press-in Terminations, Female Angled Connector, with Pre-installed Upper Shield (f)		HARTING	17 25 095 2102		
P1, P2	2		DIN 41612, har-bus 64, 160 poles,5 Rows z+a+b+c+d, Angled solder pins, Male contacts, Pitch 2.54mm		HARTING	02 01 160 2101		
PB1	1		12VDC 50mA SPST Tactile Push-Button Switch		TYCO ELECTRONICS	FSM2JSMA or 2-1437565-7		
R1 R29 > R31 R34 R40 R42, R43 R48 R89 R93 R124 > R128 R138 > R140 R160 > R163 R165 R167 R169, R170 R175 R177 R180 R183 > R188 R191 R199, R200 R217 R221 R224 > R229 R231 R234 R236, R237 R239 > R245 R248 > R251 R264 > R279 R281 > R287 R289 R291, R292 R296 > R302 R306 R311 R320, R321 R325, R326 R330 R332 > R334	105		±1% 0.0625W ±100ppm/°C General Purpose Thick Film Chip Resistor	4k7	GENERIC	R0402_4K7_1%_0.0625W_100PPM	0402	
R2 > R6 R8 > R12 R19 > R21 R33 R35 > R39 R44 R46 R103 R129 R136, R137 R145 R147 R166 R179 R195	52			±1% 0.0625W ±100ppm/°C General Purpose Thick Film Chip Resistor	1k	GENERIC	R0402_1K_1%_0.0625W_100PPM	0402

Ref	Qty	Scem	Description	Val&Device	Manufacturer	Part Number	Case
R198 R201 R204 R211 R216 R303 > R305 R307 > R310 R312 > R319 R327, R328							
R7 R132 R168 R193 R215	5		±1% 0.0625W ±100ppm/°C General Purpose Thick Film Chip Resistor	2k	GENERIC	R0402_2K_1%_0.0625W_100PPM	0402
R13 R22, R23 R25 > R28	7		±1% 0.0625W ±100ppm/°C General Purpose Thick Film Chip Resistor	200	GENERIC	R0402_200R_1%_0.0625W_100PPM	0402
R15	1		±1% 0.0625W ±100ppm/°C General Purpose Thick Film Chip Resistor	750	GENERIC	R0402_750R_1%_0.0625W_100PPM	0402
R16	1		±1% 0.0625W ±100ppm/°C General Purpose Thick Film Chip Resistor	1k2	GENERIC	R0402_1K2_1%_0.0625W_100PPM	0402
R17	1		±1% 0.0625W ±100ppm/°C General Purpose Thick Film Chip Resistor	6k8	GENERIC	R0402_6K8_1%_0.0625W_100PPM	0402
R18	1		±1% 0.0625W ±100ppm/°C General Purpose Thick Film Chip Resistor	9k1	GENERIC	R0402_9K1_1%_0.0625W_100PPM	0402
R24 R32 R45 R87 R131 R134 R146 R148 R153 R159 R192 R196 R203 R205 > R209 R212 R214 R230 R238 R246, R247 R288 R290 R293 > R295 R322 > R324	32		±1% 0.0625W ±100ppm/°C General Purpose Thick Film Chip Resistor	11k	GENERIC	R0402_11K_1%_0.0625W_100PPM	0402
R41 R97 > R100 R110 R115 R118 R123 R130 R133 R135 R141 R143 R149 > R152 R154 > R158 R164 R171 > R174	40		±1% 0.0625W ±100ppm/°C General Purpose Thick Film Chip Resistor	100	GENERIC	R0402_100R_1%_0.0625W_100PPM	0402

Ref	Qty	Scem	Description	Val&Device	Manufacturer	Part Number	Case
R176 R178 R181, R182 R189, R190 R194 R232, R233 R235 R257 R259							
R47 R50 R67 R88 R91, R92 R252 > R256 R258	12		±1% 0.25W ±100ppm/°C General Purpose Thick Film Chip Resistor	150	GENERIC	R1206_150R_1%_0.25W_100PPM	1206
R49 R68 R90 R94	4		±1% 0.0625W ±100ppm/°C General Purpose Thick Film Chip Resistor	11	GENERIC	R0402_11R_1%_0.0625W_100PPM	0402
R51 > R66 R69 > R86 R95, R96 R101, R102 R104 > R109 R111 > R114 R116, R117 R119 > R122	54		±1% 0.0625W ±100ppm/°C General Purpose Thick Film Chip Resistor	51	GENERIC	R0402_51R_1%_0.0625W_100PPM	0402
R197	1		±1% 0.0625W ±100ppm/°C General Purpose Thick Film Chip Resistor	4k12	GENERIC	R0402_4K12_1%_0.0625W_100PPM	0402
R202 R280	2		±1% 0.0625W ±100ppm/°C General Purpose Thick Film Chip Resistor	100k	GENERIC	R0402_100K_1%_0.0625W_100PPM	0402
R210	1		±1% 0.0625W ±100ppm/°C General Purpose Thick Film Chip Resistor	8k2	GENERIC	R0402_8K2_1%_0.0625W_100PPM	0402
R213	1		±1% 0.0625W ±100ppm/°C General Purpose Thick Film Chip Resistor	820	GENERIC	R0402_820R_1%_0.0625W_100PPM	0402
R218	1		±1% 0.0625W ±100ppm/°C General Purpose Thick Film Chip Resistor	1k1	GENERIC	R0402_1K1_1%_0.0625W_100PPM	0402
R219, R220 R222, R223	4		±1% 0.125W ±100ppm/°C General Purpose Thick Film Chip Resistor	2M2	GENERIC	R0805_2M2_1%_0.125W_100PPM	0805
R260 > R263	4		±1% 0.0625W ±100ppm/°C General Purpose Thick Film Chip Resistor	240	GENERIC	R0402_240R_1%_0.0625W_100PPM	0402
R329 R331	2		±1% 0.0625W ±100ppm/°C General Purpose Thick Film Chip Resistor	2k4	GENERIC	R0402_2K4_1%_0.0625W_100PPM	0402
SW1, SW2 SW5	3	07.88.24.516.1	Male Jumper Pitch 10.16mm		STELVIO-KONTEK	3130004000500	
SW3	1		8 Way SPST SMD DIP Switch, Latched, Contact Rating 0.025A 24VDC		TYCO	1-1571983-0 or GDH08S04	
T1, T2 T4 > T6 T8 > T10	8		30V 850mA N-Channel Enhancement Mode Field-Effect Transistor	BSH103	NEXPERIA	BSH103	SOT23-3
T3 T7 T16	3		40V 200mA NPN General-Purpose Amplifier	BSR17A	FAIRCHILD SEMICONDUCTOR	BSR17A	SOT23-3
T11 T14	2		40V 200mA PNP General Purpose Transistor	MMBT3906LT1G	ON SEMICONDUCTOR	MMBT3906LT1G	SOT23-3
T12, T13 T18	3		-12V -5.1A P-Channel TrenchFET® Power MOSFET	Si2333CDS-T1-GE3	VISHAY SILICONIX	Si2333CDS-T1-GE3	SOT23-3
T15 T17 T19	3		20V 10A(Q1) 20V 12A (Q2) Dual SO-8 MOSFET For POL Cconverter	IRF9910Pbf	INTERNATIONAL RECTIFIER	IRF9910Pbf	DO8
W1	1		2 Contacts, Pitch 2.54mm, Single Row Through Mount Straight Header (Post Lead = 6.35mm, Tail Lead 3.05mm, Insulator 1.52mm)		SAMTEC	MTLW-102-07-L-S-250	

Ref	Qty	Scem	Description	Val&Device	Manufacturer	Part Number	Case				
Accessories											
for P1, P2	4		M2.5 Hexagon Nut ~0,8d, ISO 4032 - DIN 934, Stainless Steel A2	M2.5	BOSSARD	BN628 Art.1241427					
for P1, P2	4		M2.5 L=10mm Hexalobular Socket Pan Head Screw, Fully Threaded, Stainless Steel A2	M2.5x10	BOSSARD	BN5687 Art.3061600					
for P1, P2	4		Waved Spring Washer for M2.5 Screw - Steel 440-520 HV - Zinc Plated Blue	D5xd2.7	BOSSARD	BN83728 Art.8051127					
Not Mounted											
R14	1		1A (0.05R Max DC Resistance) Zero Ohm Jumper	0	GENERIC	R0402_0R_JUMPER	0402				
R142	2		±1% 0.0625W ±100ppm/°C General Purpose Thick Film Chip Resistor	100	GENERIC	R0402_100R_1%_0.0625W_100PPM	0402				
R144											
SW4	1	09.55.10.960.9	Closed Insulated Black Jumper Pitch 2.54mm		STELVIO-KONTEK	3131730000400					
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;"></td> <td style="width: 15%;">Dimensions: 160 x 233.35mm</td> <td style="width: 40%;">Through Pins SMD pins on Top SMD pins on Bottom Total number of pins</td> <td style="width: 30%; text-align: right;">621 4660 1382 6663</td> </tr> </table>									Dimensions: 160 x 233.35mm	Through Pins SMD pins on Top SMD pins on Bottom Total number of pins	621 4660 1382 6663
	Dimensions: 160 x 233.35mm	Through Pins SMD pins on Top SMD pins on Bottom Total number of pins	621 4660 1382 6663								