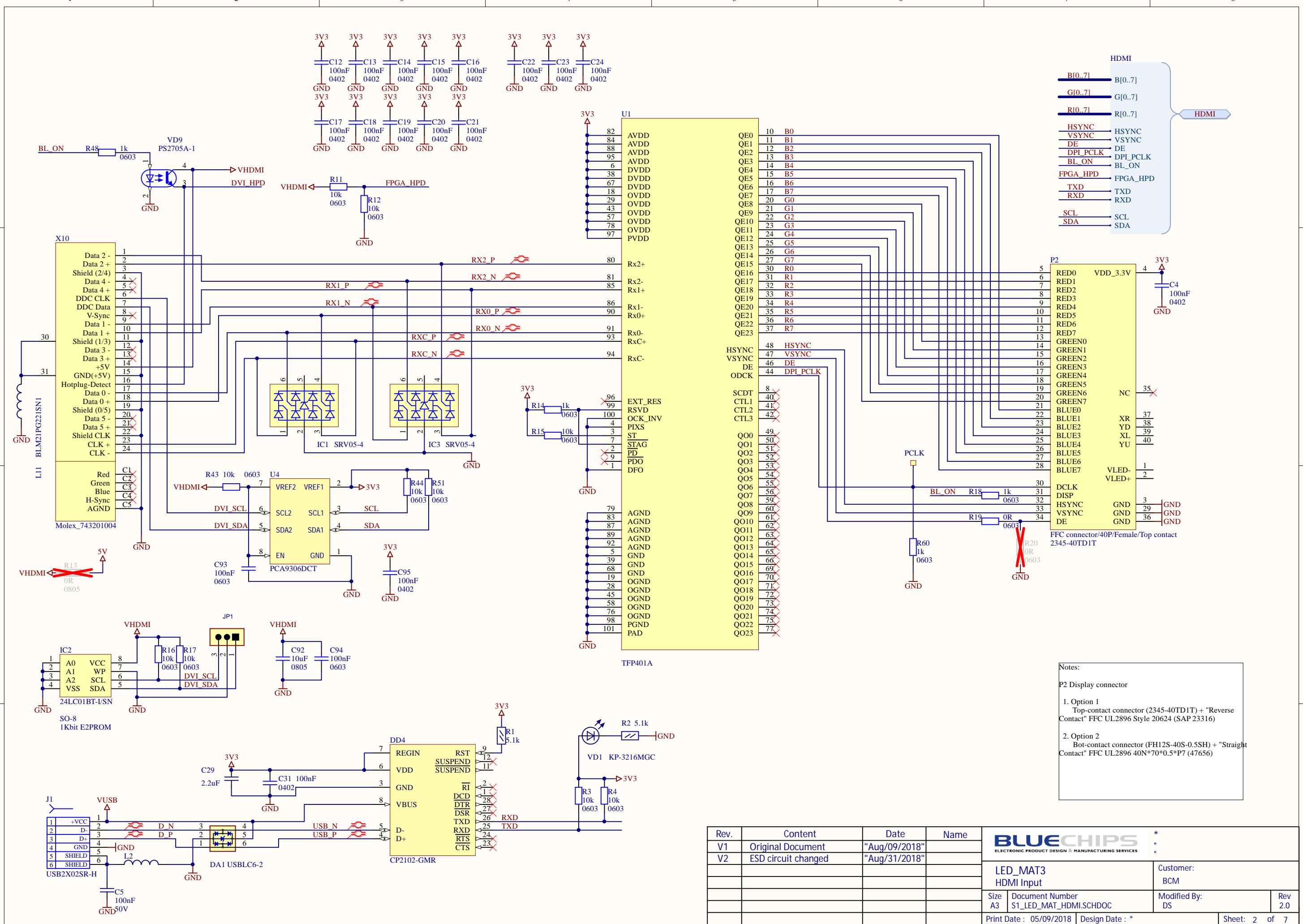
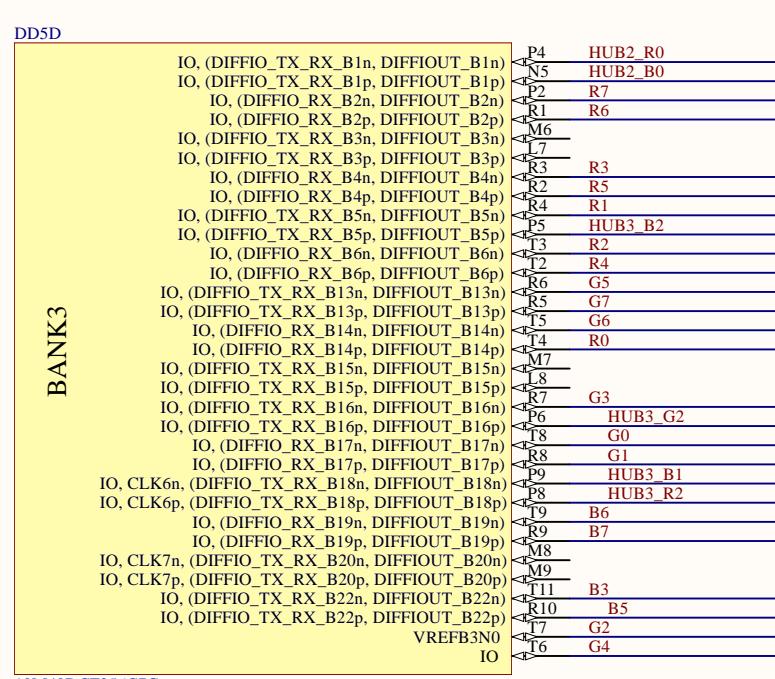
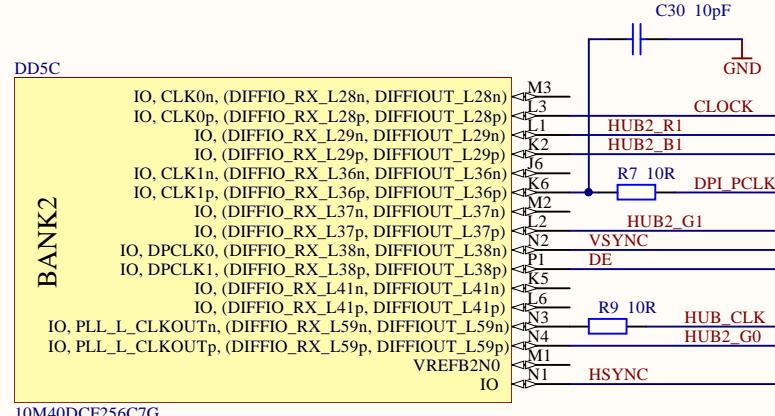
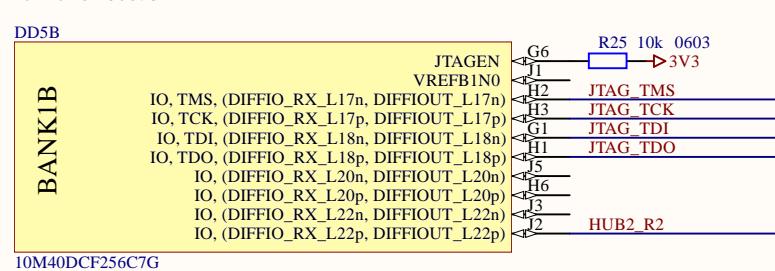
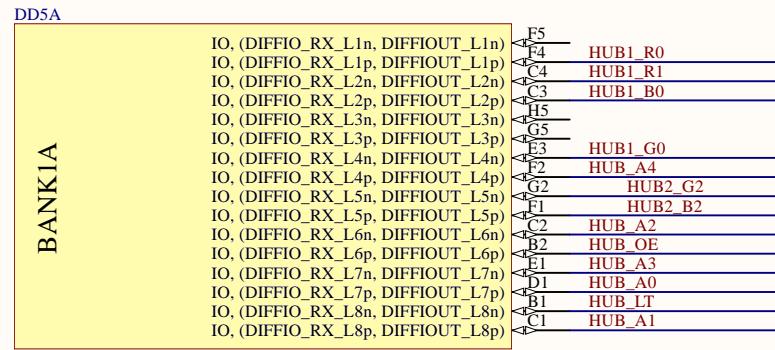


Rev.	Content	Date	Name	* BLUECHIPS ELECTRONIC PRODUCT DESIGN & MANUFACTURING SERVICES	
V1	Original Document	"Aug/08/2018"	V1	LED_MAT_3 Top Connections	
V2	Test pin added	"Sep/03/2018"	V2	Customer: BCM	
				Size A3	Document Number Top.SchDoc
				Modified By: DS	Rev 2.0
				Print Date : 05/09/2018	Design Date : * Sheet: 1 of 7





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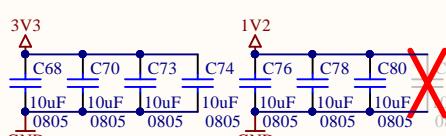
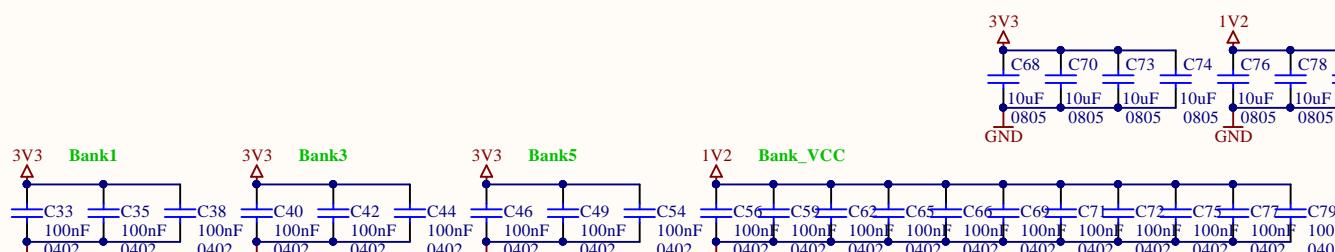
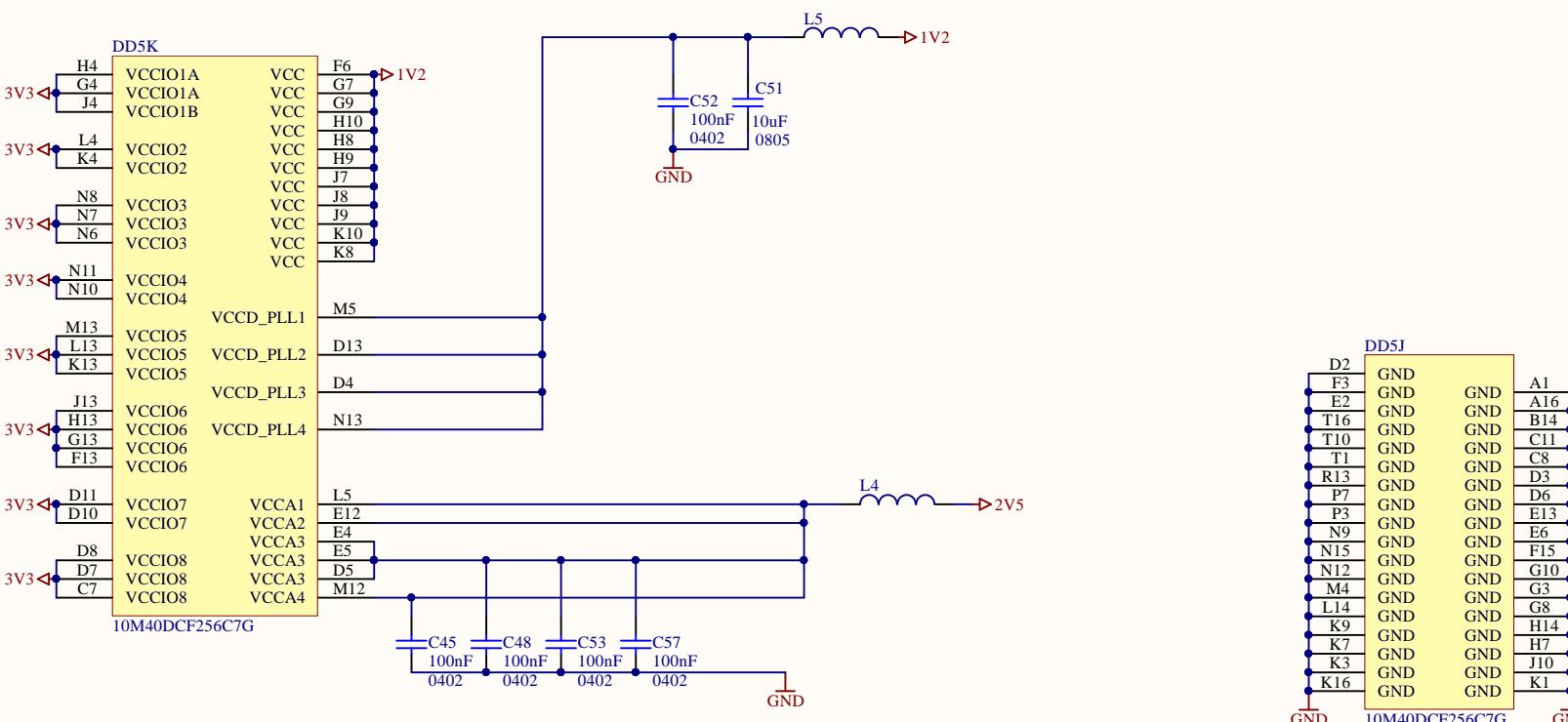
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Rev.	Content	Date	Name
V1	Original Document	"Aug/08/2018"	
V2	Changes to the power pins	"Sep/03/2018"	
LED_MAT_3			Customer: BCM
FPGA Power		Size: A3	Document Number: S3_LED_MAT_FPGA_POWER.SchDoc
Modified By: DS		Rev: 2.0	
Print Date : 05/09/2018 Design Date : "Day, Month DD, YYYY"			Sheet: 4 of 7

BLUECHIPS
 ELECTRONIC PRODUCT DESIGN & MANUFACTURING SERVICES

 Bluechips Microhouse Co.,Ltd.
 155 Moo 5, T.ChaeChang A.SanKamphaeng
 50130 Thailand Tel.+66 53 371-0000

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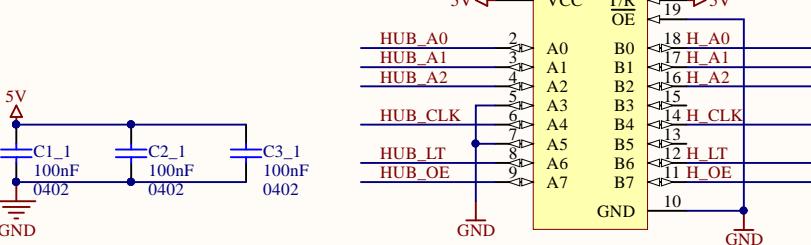
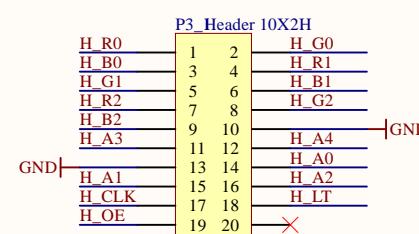
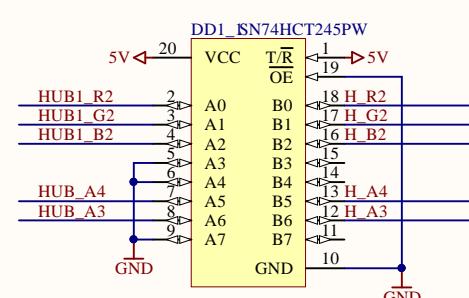
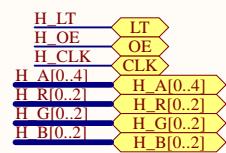
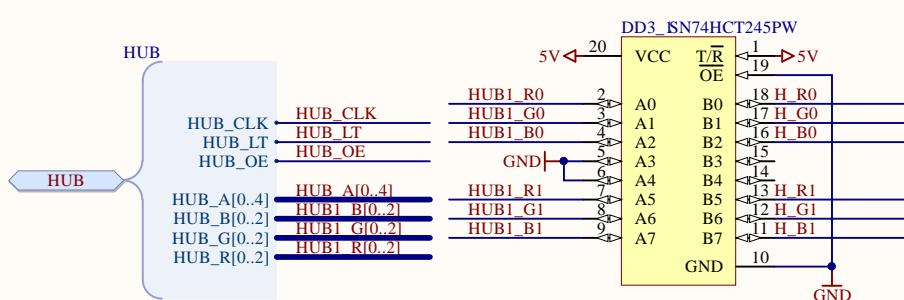
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Rev.	Content	Date	Name	BLUECHIPS *	
V1	Original Document	"Aug/08/2018"	ELECTRONIC PRODUCT DESIGN & MANUFACTURING SERVICES		
V2	No changes	"Sep/03/2018"	LED_MAT_3		Customer: BCM
			HUB		
			Size A3 Document Number LED_MAT_HUB.SchDoc		Modified By: * Rev 2.0
			Print Date : 05/09/2018 Design Date : *		Sheet: 5 of 7

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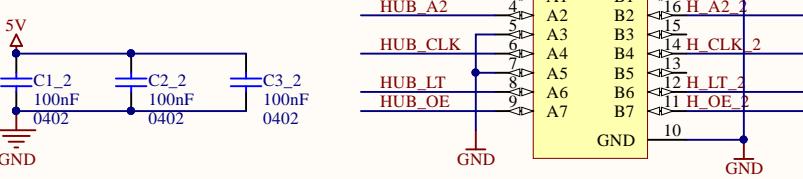
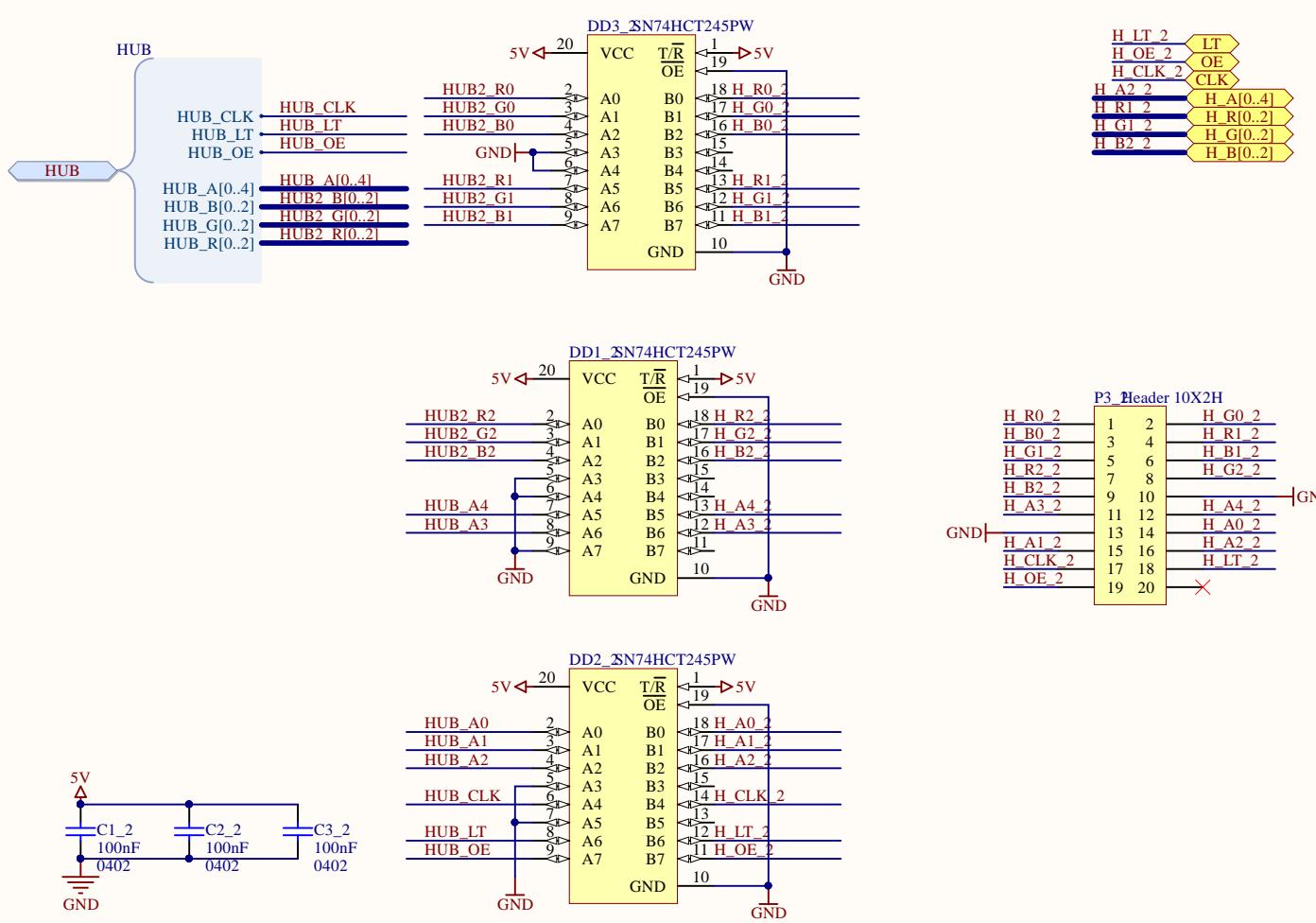
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Rev.	Content	Date	Name	BLUECHIPS *		
V1	Original Document	"Aug/08/2018"		ELECTRONIC PRODUCT DESIGN & MANUFACTURING SERVICES		
V2	No changes	"Sep/03/2018"		LED_MAT_3		
				HUB		
				Customer: BCM		
				Size A3 Document Number LED_MAT_HUB.SchDoc		
				Modified By: *		
				Rev. 2.0		
				Print Date : 05/09/2018 Design Date : *		
				Sheet: 5 of 7		

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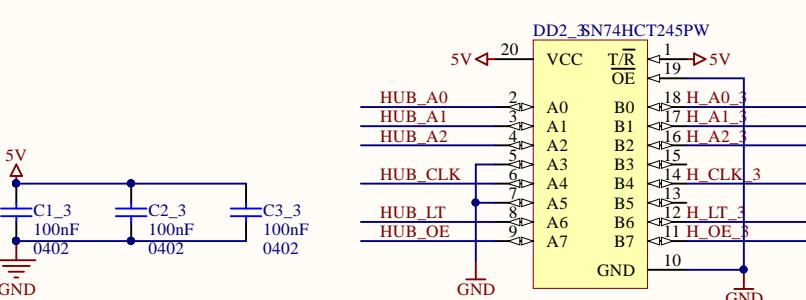
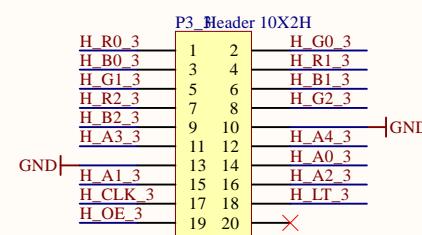
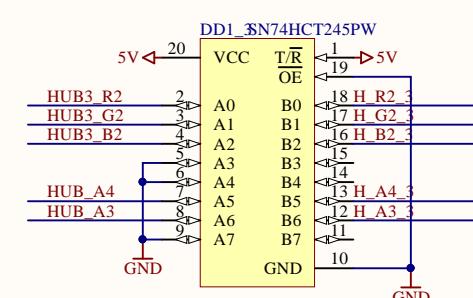
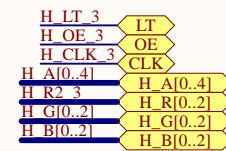
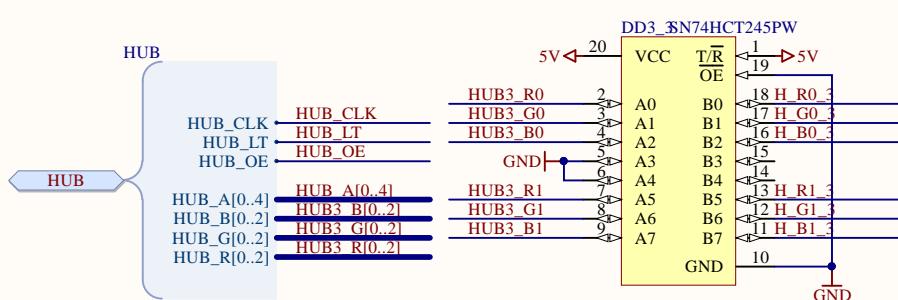
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Rev.	Content	Date	Name	BLUECHIPS *	
V1	Original Document	"Aug/08/2018"	ELECTRONIC PRODUCT DESIGN & MANUFACTURING SERVICES		
V2	No changes	"Sep/03/2018"			
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			HUB		Customer:
			BCM		
			Size A3		Modified By:
			Document Number LED_MAT_HUB.SchDoc		Rev. 2.0
			Print Date : 05/09/2018 Design Date : *		Sheet: 5 of 7

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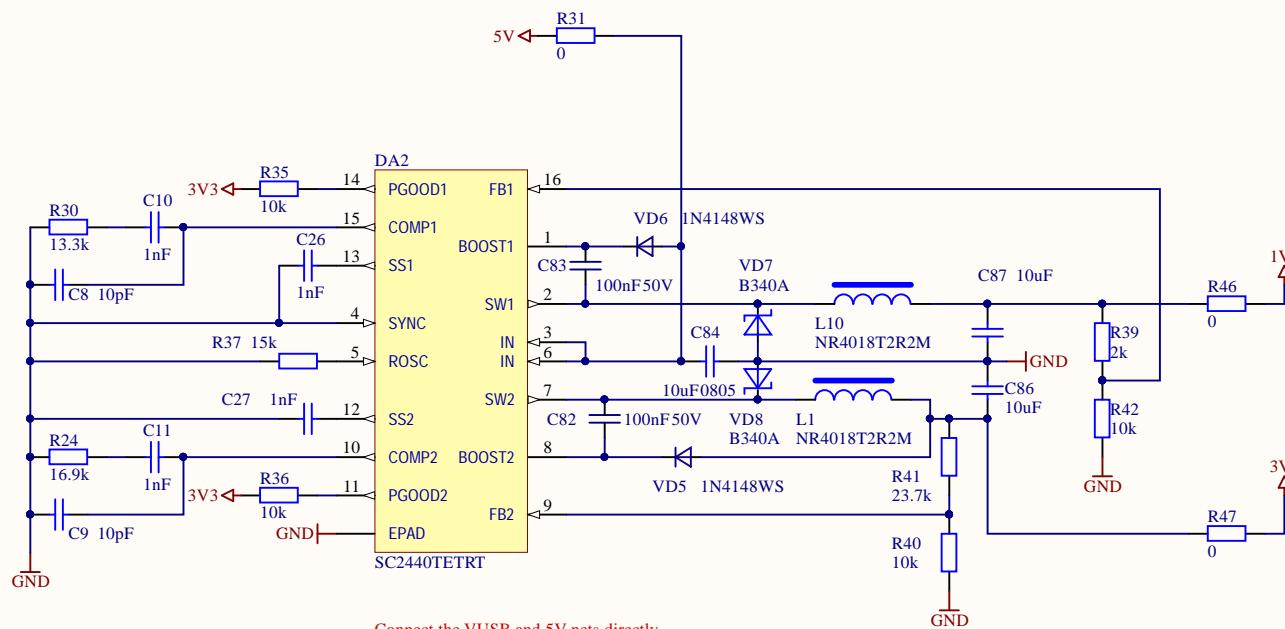
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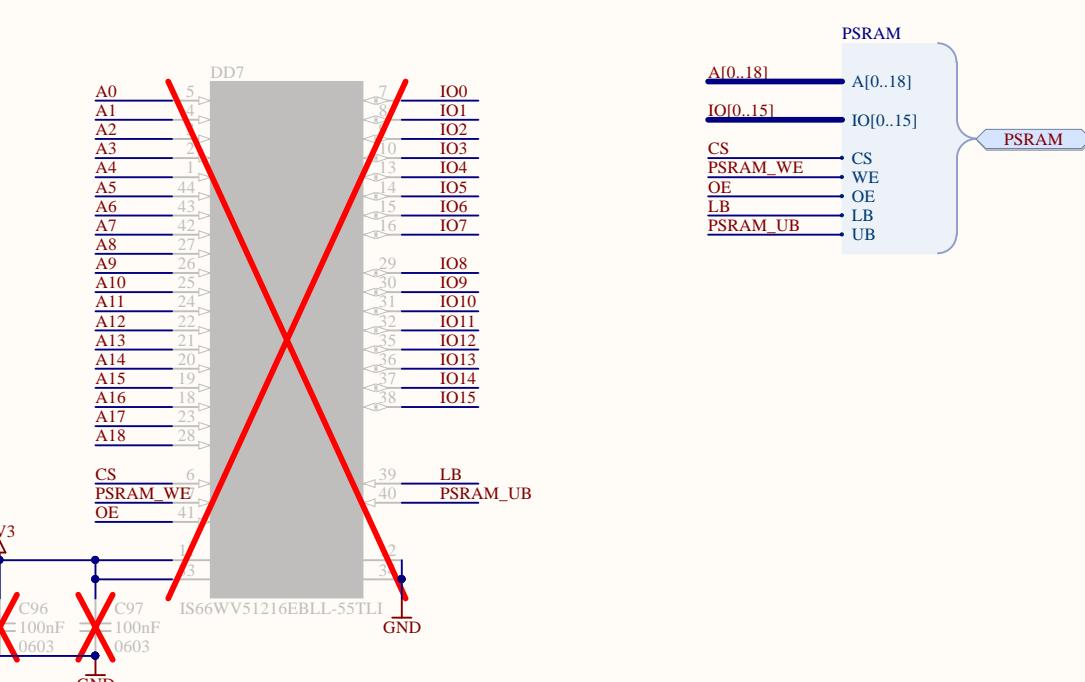
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Rev.	Content	Date	Name	* BLUECHIPS ELECTRONIC PRODUCT DESIGN & MANUFACTURING SERVICES	
V1	Original Document	"Aug/31/2018"		LET_MAT_3 RAM	
V2	Change the caps params	"Sep/03/2018"		Customer: BCM	
				Size: A3 Document Number: PSRAM.SchDoc	
				Modified By: DS	Rev: 2.0
				Print Date : 05/09/2018 Design Date : * Sheet: 7 of 7	

Bill of Materials

LED_MAT_3 - 2nd Run

BOM Origin:	Top Connections
Source Data From:	LED_MAT_3.PRJPCB
Project:	LED_MAT_3.PRJPCB
Variant:	LED_MAT_3 - 2nd Run

Creation Date:	05/09/2018	16:28:02
Print Date:	05-Sep-18	4:28:28 PM
PCB Revision:		
Contact Person:		

Overall Requirements for mentioned components (Unless stated otherwise in Remarks)

Operating Temperature Range for all mentioned Components:	0...70
Resistor maximum error in value, over temperature range:	1 ppm or %
Capacitor maximum error in value, over temperature range:	10 ppm or %

Legend column Remarks:		
M = for this part use only quoted manufacturer		
C = for this part consult TRS for alternative part		
A = for this part any manufacturer is possible		

-Grayed-Out price, is indication price per component @ 1000 pieces
-Red Price, is indication price for all components to quantity

Designator	Category	Type	Value	SAP	Description	Package	Manufacturer	Manufacturer Part Number	Remarks	Quantity	Supplier	Supplier Order Code	EXTRA INFO (TRS-Internal only)		Temperature Range	Voltage Range	#Column Name	Column Name	Error Comm.	
													Price (@100)	Price (@1000)	Same Error: Temperature or Voltage_min					
C1_1, C1_2, C1_3			100nF	25311	Capacitor ceramic	0402	SAMSUNG	CL05B104K0NNNC		67			0.2	13.4	0.2	13.4				
C2_1, C2_2, C2_3																				
C4, C7, C12, C13																				
C14, C15, C16																				
C17, C18, C19																				
C20, C21, C22																				
C23, C24, C21																				
C22, C23, C24																				
C25, C26, C27																				
C28, C29, C28																				
C29, C30, C29																				
C30, C31, C29																				
C5, C25, C26, C28			100nF	6269	Capacitor SMD	0605	SAMSUNG	CP21B104K0NNNC		4			0.17	0.26	0.17	0.26				
C10, C11, C26, C28	Capacitor	COG	10pF	27149	Capacitor ceramic	0605	SAMSUNG	CL10C100JBNNNC		3			0.17	0.26	0.17	0.26				
C27, C28	Capacitor	NPO	1nF	20669	Capacitor ceramic	0603	MURATA	GRM1885C1H123A01D		5			0.2	0.2	0.2	0.2				
C29			2.2uF	21298	Capacitor SMD	0605	TDK	C2012XTR1CZ25K125AB		1			0.11	0.63	0.11	0.63				
C31, C32, C30, C31			10uF	28046, 15447	Capacitor ceramic	0605				14			0.2	2.6	0.2	2.6				
C32, C34, C34			100nF	21527	Capacitor ceramic	0603				2			0.2	0.4	0.2	0.4				
D1			100nF	21527	Very low capacitance ESD protection	ST	USBLC6-2SC8			1			0.05	20	0.05	20				
D2			10nA	19450	2.5 MHz Dual Switching Regulator, 2A	TSSOP-16	SEMTECH	SG2440T-TR		1			0.15	43.10	0.15	43.10				
D3			100mA	16903	500mA, Low-Noise LDO Voltage Regulator	SOT23-5	SPIKE	SX3019B5-5		1			0.2	5.2	0.2	5.2				
D01_1, D01_2, D01_3, D02_1, D02_2, D02_3, D03_1, D03_2, D03_3				12529	Octal 3-State Noninverting Bus Transceiver	SOT-23	NEOPERIA	SN4RC1242P		9			0.14	28.25	0.14	28.25				
D04				CP2102-GMR	USB to UART bridge	QFN28	SILICON	CP2102-GMR		1			0.2	2	0.2	2				
D05				BG4256	FFGA	0402	ALTERA	10M40DCF2967GA		1	ARROW		1800	1800	1800	1800				
D06				SC8	M24C64-WMN6TP	SOT-23	SEMTECH	M24C64-WMN6TP		1			0.2	7.05	0.2	7.05				
I1, IC3	Diode			2A05-4	Low voltage Transient Voltage Suppressors Diode Array	SOT-23-6L	SEMTECH	SRV05-4-TCT		1	Digikey		SRV05-4TR-ND	0.05	15.50	0.05	15.50			
I2				2A05-4	1Kbit EEPROM	SO-8	MICROCHIP	24LC018-I/SN		1			0.2	3.21	0.2	3.21				
J1				9683	1K 8C Serial EEPROM	SO-8	USB	USB202SR-H		1			0.15	3.14	0.15	3.14				
P1	Header	Header	1x3, 2.54mm	10347	Header 1x3, 2.54mm	JH1 VEI				1			0.05	0.125	0.05	0.125				
L1, L10				2.2uH	Power choke	2A05-4	TAIYO YUDE	NR4018T2R2M		2			0.15	6.25	0.15	6.25				
L2, L4, L5				2A05-4	Ferrite bead	SO-8	Murata	BLM21P222SN1		3			0.05	0.18	0.05	0.18				
L11				2A05-4	General 0402 - type Chip Inductor	SO-8	Murata	BLM21P222SN1		1			0.05	0.05	0.05	0.05				
P2				9837	FPC connector/40P/Female or Top contact	QUPIN		2345-40TD1		1			0.15	1	0.15	1				
P3_1, P3_2, P3_3					Header, 10-Pin, Dual row, Right Angle					3			0.15	1.5	0.15	1.5				
P4					Header, 8-Pin, Dual row, Right Angle					1			0.15	0.5	0.15	0.5				
PCB	PCB	PCB	70x127.5x1.6mm 6	70x127.5x1.6mm 6	X0X	PNEC_Bridge_v1	PCB/FR4/1.6mm/8L/ENIG	70x127.5x1.6mm	J.	J.	J.	J.	0.05	60	0.05	60				
R1, R2			1k	20669	Resistor SMD	0603	YAGEO	RC0803FR-072K1L		2			0.05	0.14	0.05	0.14				
R3, R4, R6, R8, R11, R12, R15, R21, R22, R23, R24, R25, R33, R34, R35, R36, R40, R42, R43, R44, R45, R46, R47, R48, R56, R57, R58, R59	Resistor		10k	9516, 12611, 12657, 14053	Resistor	0603	YAGEO	RC0603FR-0710RL		30			0.05	0.6	0.05	0.6				
R7, R9, R23, R26	Resistor		10R	4437	10% / 1% / 0603	0603	YAGEO	RC0603FR-0710RL		4			0.05	0.05	0.05	0.05				
R10			10R	14209	Resistor	0603	YAGEO	RC0603FR-0702RL		1			0.05	0.02	0.05	0.02				
R21, R22	Resistor		4.7k	3760	4.7k / 1% / 0603	0603	YAGEO	RC0603FR-074K7L		2			0.05	0.04	0.05	0.04				
R23			4.7k	3760	Resistor	0603	YAGEO	RC0603FR-074K7L		1			0.05	0.04	0.05	0.04				
R30			13.3k	2A05-4	Resistor	0603	YAGEO	RC0603FR-0713K3L		1			0.05	0.03	0.05	0.03				
R31, R45, R46, R47	Resistor		0	94293	Resistor	0603	YAGEO	RC0603FR-072KL		4			0.05	0.08	0.05	0.08				
R37			10k	2A05-4	Resistor	0603	YAGEO	RC0603FR-0710KL		1			0.05	0.05	0.05	0.05				
R39			2k	2A203	Resistor	0603	YAGEO	RC0603FR-072KL		1			0.05	0.02	0.05	0.02				
R41			23.7k	48390	23.7k / 1% / 0603	0603	YAGEO	RC0603FR-0723KL		1			0.05	0.02	0.05	0.02				
S1	Switch	KMR211GLFS		KMR211GLFS	Minimicro Tact Switch for SMT	SOT-23	KMR211GLFS	CAK Components		1	Digikey		401-1426-2-ND	4.71	4.71	4.71				
SW1	Switch	DSH-P04SSGER-G		22630	10P SP4T 1.2mm	SOT-23	DSH-P04SSGER-G	SWTRONIC		1			0.05	13.00	0.05	13.00				
U1			1k	2A05-4	Power DVDR 165MHz HSYNC fix	TDFP-100		TPTP41A		1			0.05	1.00	0.05	1.00				
U2	IC	SO	W25Q32JVSSIQ	95399	32Mb Quad Serial Flash in SOIC package	SO-8 WIDE	WINBOND	W25Q32JVSSIQ		1	ARROW		W25Q32JVSSIQ	0.05	30	0.05	30			
U3	IC		MC6315-3002U	55315	3V VOLTAGE SUPERVISOR	TOT-143	MICROCHIP	MC6315-3002U		1	Mouse		988-MC6315-3002U/VR	12	12	12				
U4	IC		PCAS930DCT	39541	Bi-directional Translator	TSSOP-8	PCAS930DCT			1			0.25	22.5	0.25	22.5				
V01, VD2			Green	64527	SMD LED GREEN	3216	KINGBRIGHT	KP-3216MG		2			0.05	7	0.05	7				
V03, VD3			Yellow	41324	SMD LED YELLOW	3216	KINGBRIGHT	KP-3216SYC		1			0.05	4.34	0.05	4.34				
V05, VD5			Blue	B340A	100nF	SMD 100nF, 2A SMA Package	SOT-23	AMTEK	AMTEK		1		0.05	1.00	0.05	1.00				
V07, VD7			Red	B340A	100nF	SMD 100nF, 2A SMA Package	SOT-23	AMTEK	AMTEK		1		0.05	1.00	0.05	1.00				
V09			Diode	B340A	100nF	SMD 100nF, 2A SMA Package	SOT-23	AMTEK	AMTEK		1		0.05	1.00	0.05	1.00				
X10			Motor	Motor, 1A3D1004	24417	DVI Connector	DVI / 29pole / 90°	AMTEK	DVI-29SWINL		1		0.05	3.21	0.05	3.21				
XP1	Connector			28254	Header, 5-Pin, Dual row	FC1				1			0.05	0.5	0.05	0.5				
YT1				25MHz	3225	SMD Oscillator with Stop Function	SOT-23	TOKEANT	SOT23-25MHz/PIE-BBA		1		0.05	10	0.05	10				

SAP-Bill of Materials

LED_MAT_3 - 2nd Run

BOM Origin:	Top Connection
Source Data From:	LED_MAT_3.PPJPCB
Project:	LED_MAT_3.PPJPCB
Variant:	LED_MAT_3 - 2nd Run

Creation Date:	05/09/2018	16:29:22
Print Date:	05-Sep-18	4:29:44 PM
PCB Revision:		
Contact Person:		

Overall Requirements for mentioned components (Unless stated otherwise in Remarks)

Operating Temperature Range for all mentioned components:	-40...+85	C
Resistor maximum error in value, over temperature range:	1	(ppm or %)
Capacitor maximum error in value, over temperature range:	10	(ppm or %)

SAP	Quantity	Designator	Layer	Description
3	1	P3_1, P3_2, P3_3	Top	Header, 10-Pin, Dual row, Right Angle
1	1	P4	Top	Header, 8-Pin, Dual row, Right Angle
10347	1	JP1	Top	Header, 3-Pin
12529	9	D01_1, D01_2, D01_3, D02_1, D02_2, D02_3, D03_1, D03_2, D03_3	Top	Octal 3-State Noninverting Bus Transceiver
14209	1	R19	Top	Resistor
16897	2	V05, V06	Top	Fast switching diode
1869	3	VD4, VD7, VD8	Top	Shottky rectifiers, 2A, SMA Package
19450	1	DA2	Top	2.5 MHz Dual Switching Regulator, 2A
20660	2	R1, R2	Top	Resistor SMD
20669	5	C10, C11, C26, C27, C88	Top	Capacitor ceramic
21298	1	C29	Top	Capacitor SMD
21527	2	C93, C94	Top	Capacitor ceramic
21600	1	I2C	Top	1K I2C Serial EEPROM
22417	1	X10	Top	DVI Connector
22496	1	SW1	Top	DIP SW 4pol. 1.27mm
23111	1	L3	Top	General 0402 - type Chip Inductor
24778	1	L1	Top	Ferrite bead
24779	1	L2	Top	Ferrite bead
24784	1	R30	Top	12.5k / 1% / 0603
25311	18	C1_1, C1_2, C1_3, C2_1, C2_2, C2_3, C3_1, C3_2, C3_3, C4, C7, C24, C24, C31, C32, C91, C91, C95	Top	Capacitor ceramic
25396	2	L1, L10	Top	Power choke
27149	2	C8, C9	Top	Capacitor ceramic
27426	1	DA1	Top	Very low capacitance ESD protection
28046, 15447	6	C84, C85, C86, C87, C89, C92	Top	Capacitor ceramic
28254	1	XP1	Top	Header, 5-Pin, Dual row
30088	1	DD1	Top	USB to UART bridge
32324	2	I3, I4, I5	Top	Low Capacitance Transient Voltage Suppressors Diode Array
32749	1	V09	Top	Photocoupler, SOP package
34851	1	S1	Top	Microminiature Tact Switch for SMT
3616, 12611, 12657, 14053	26	R3, R4, R6, R8, R11, R12, R15, R16, R17, R27, R28, R35, R36, R40, R42, R43, R44, R51, R52, R53, R54, R55, R56, R57, R58, R59	Top	Resistor
3716, 12598, 14067	7	R5, R10, R14, R18, R29, R45, R60	Top	Resistor
3760	2	R21, R22	Top	4.7k / 1% / 0603
39541	1	U4	Top	Bidirectional Translator
41324	1	V3	Top	SMD LED YELLOW
44342	4	R1, R9, R23, R25	Top	100k / 1% / 0603
44675	1	R24	Top	15.9k / 1% / 0603
48380	1	R41	Top	23.7k / 1% / 0603
53437	1	DD6	Top	M24C64-WN6NTP
54293	4	R31, R45, R46, R47	Top	0 / 1% / 0603
54293	1	R39	Top	2k / 1% / 0603
54592	2	VD1, VD2	Top	SMD LED GREEN
55316	1	U5	Top	3V VOLTAGE MONITOR
55399	1	U2	Top	32Mbit Quad Serial Flash in SOIC W package
5269	4	C5, C25, C82, C83	Top	Capacitor SMD
8042	1	Y1	Top	SMD Oscillator with Stop Function
9663	1	J1	Top	USB-B
9739	1	X1	Top	2-pin HPWRR connector
9837	1	P2	Top	
XXX	1	D05	Top	FPGA
XXX	1	U1	Top	PanelBus DVI Receiver 185MHz, HSYNC fix
16960	1	D44	None	500mA Low-Noise LDO Voltage Regulator
XXX	1	PCB	None	PNEC_Bridge_v1 PCB/FPGA/1.55mm/8L/ENIG
24778	2	L4, L5	Bottom	Ferrite bead
25311	49	C12, C13, C14, C15, C16, C17, C18, C19, C20, C21, C22, C23, C24, C25, C26, C27, C28, C29, C40, C41, C42, C43, C44, C45, C46, C47, C48, C49, C50, C52, C53, C54, C55, C56, C57, C58, C59, C60, C61, C62, C63, C64, C65, C66, C67, C68, C71, C72, C75, C77, C79	Bottom	Capacitor ceramic
27149	1	C30	Bottom	Capacitor ceramic
28046, 15447	8	C51, C68, C70, C73, C74, C76, C78, C80	Bottom	Capacitor ceramic
3616, 12611, 12657, 14053	4	R25, R32, R33, R34	Bottom	Resistor
53840	1	R37	Bottom	15k / 1% / 0603