DA1469x Reference Design

Design Name	2522-db-vfbga86
Ref. Number	331-19-D
Version	D
Date	11/Dec/2018
Designer	Panos Raftopoulos

History Table

| Version	Date	Comments
A1.0	19/Mar/2018	Internal review release
A1.1	20/Mar/2018	Added pull-down resistor R24 to P1_1 Added options for DA14691/DA14695 - D9 single RED LED (D1 set as NP) - R25, R26 shorting LED pins to GND - R27, R28 shorting haptic driver pins to GND
A1.2	21/Mar/2018	Added RF filter option close to RFIOp (Z4,Z5,Z6) Changed L1 (DCDC inductor) to DFE201610E-R47M
	27/Mar/2018	Released for manufacturing
	10/Sep/2018	Added a current limiter mosfet on V30 (Q4) -> external loads now connect to the current-limited rail (V30x) Corrected the mismatch of the UART signals on J4 Added 0402 NP capacitor close to J3 pin-1 (C14)
B1.0	18/Sep/2018	Released for manufacturing
	04/Oct/2018	Changed R27, R28 to N.P. Changed C13 value to 2.2uF/25V Modified options for the QSPI flash package: - U2 --> 8SOIC 208mil - U2X --> 8USON 2x3mm - U2Y --> 8SOIC 150mil
C1.0	05/Oct/2018	Released to internal review
C1.1	15/Nov/2018	Changed ESD protection D7 D8 from ESD206B102ELSE6327XTSA1 (EOL) to ESD102U102ELSE6327XTSA1 (note: this part is polarized) Updated several parts as obsoleted/EOL and some with environmental compliance problems (K2, J3)
D1.0	11/Dec/2018	Added 0 ohm resistor (R29) shorting V18F to V18P Changed USB connector (J3) type to Molex 67503-1020 Changed default part# for 4.7uF capacitors to GRM155R61A475MEAAD

Configuration note

NOTE box

Changes in this Version.

TP10 FIDUCIAL
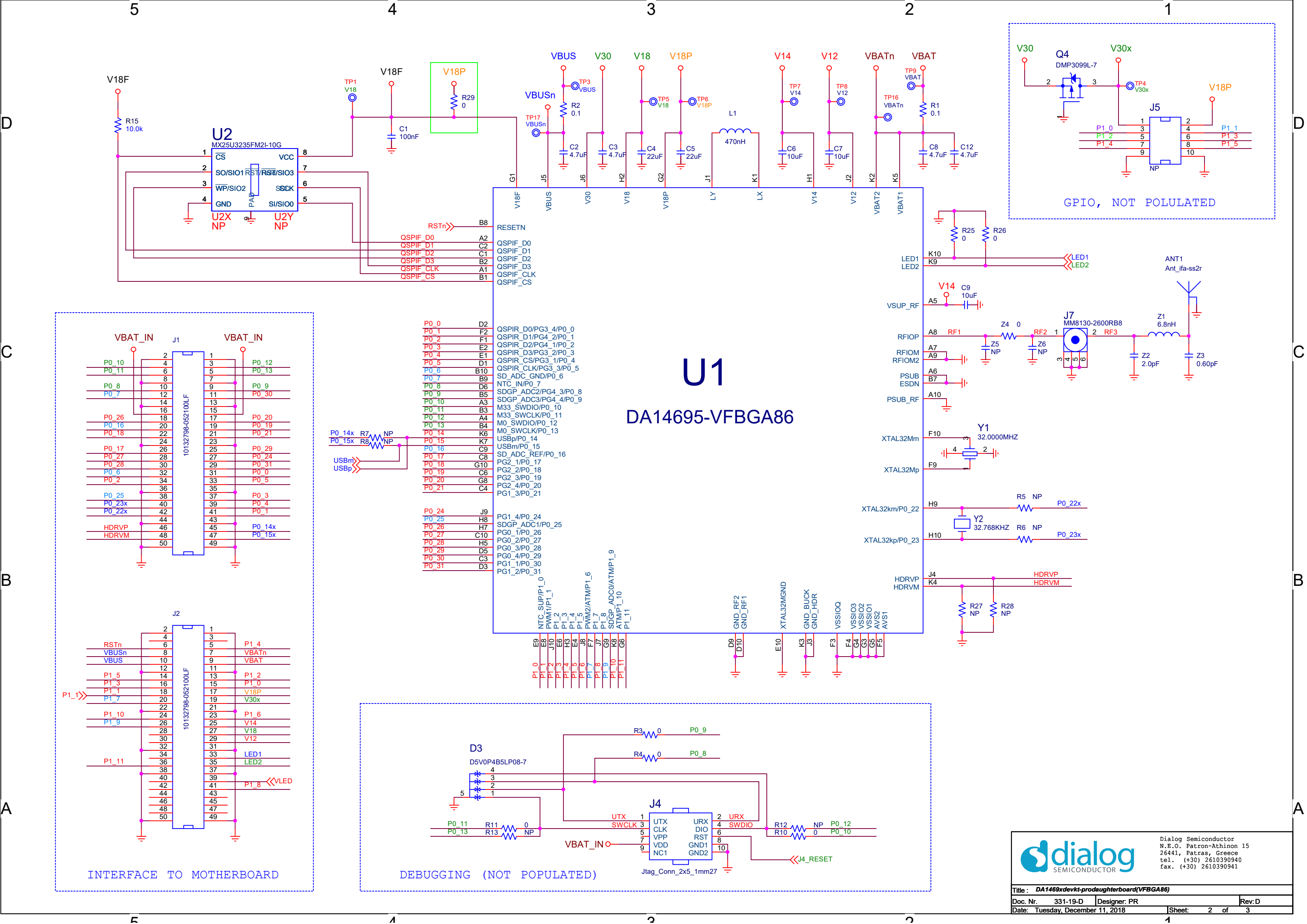
TP11 FIDUCIAL
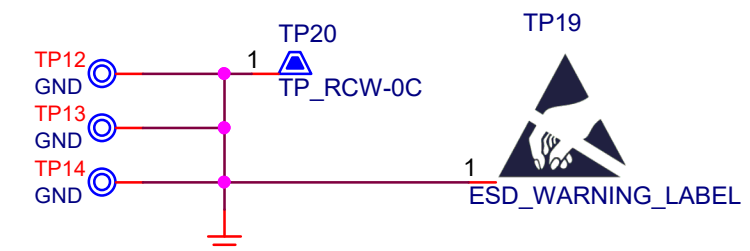
TP20
TP19
TP12 GND
TP13 GND
TP14 GND
1 TP_RCW-0C
1 ESD_WARNING_LABEL
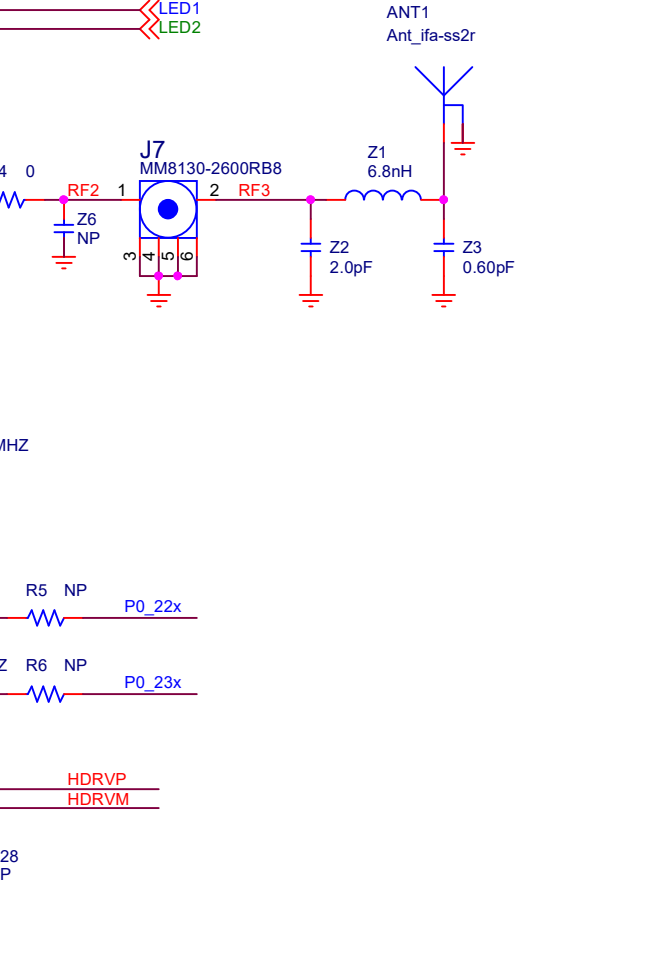
Title : DA1469x devkt-pro daughterboard (VFBGA86)
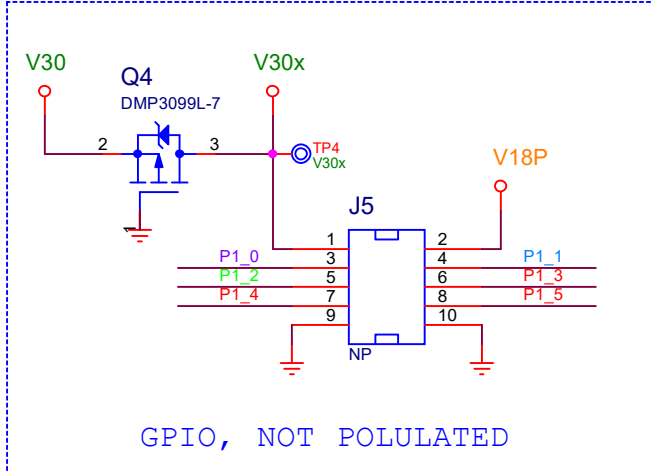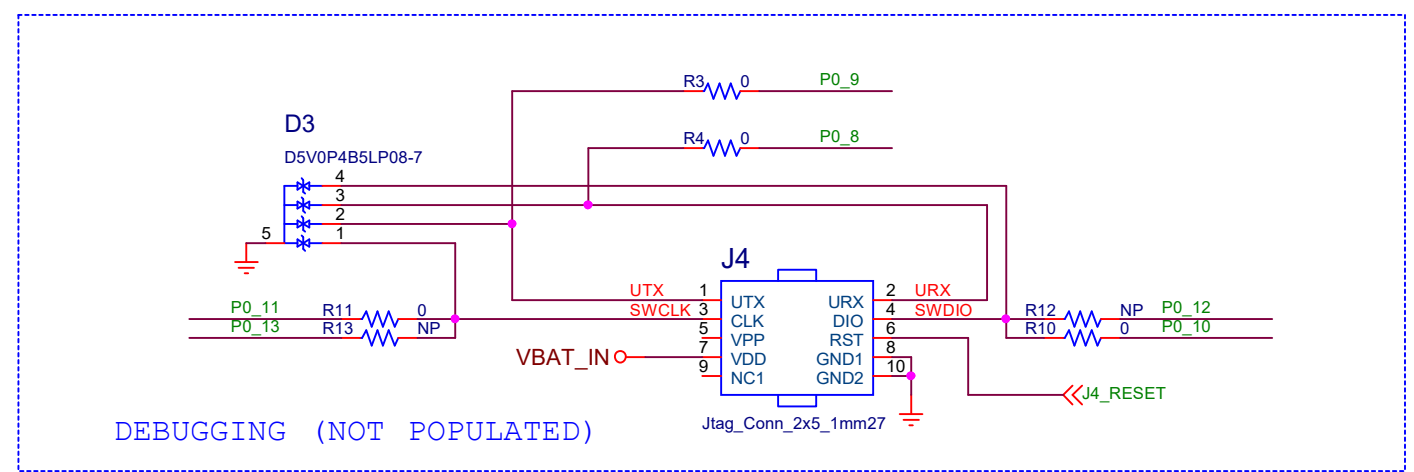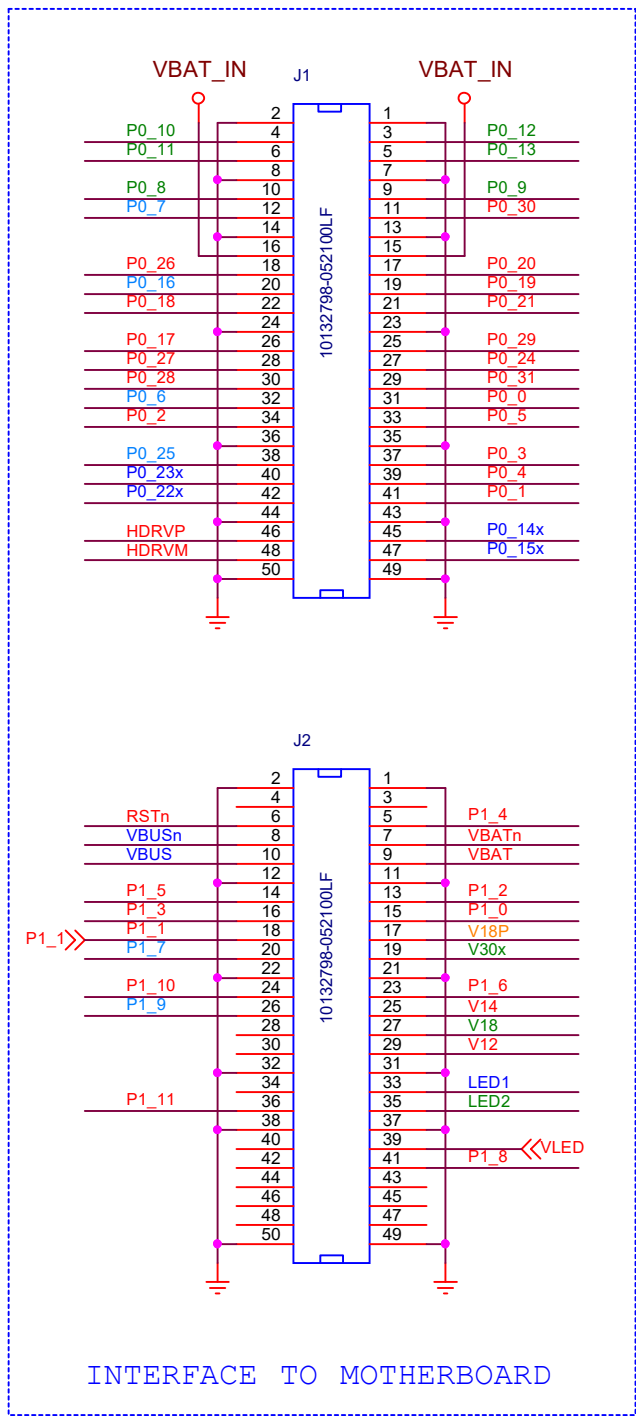Doc. Nr.   331-19-D   Designer: PR   Rev:D
Date: Tuesday, December 11, 2018   Sheet: 1   of   3

U1 — DA14695-VFBGA86

V18F V18F V18P VBUS V30 V18 V18P V14 V12 VBATn VBAT
V30 Q4 DMP3099L-7 V30x V18P

U2 — MX25U3235FM2I-10G

Pin	Name	Pin	Name
1	CS	8	VCC
2	SO/SIO1	7	RST/SIO3
3	WP/SIO2	6	SCK
4	GND	5	SI/SIO0

U2X NP   U2Y NP

R15 10.0k   R29 0   C1 100nF

TP1 V18   TP17 VBUSn   TP3 VBUS   TP5 V18   TP6 V18P   TP7 V14   TP8 V12   TP16 VBATn   TP9 VBAT   TP4 V30x

R2 0.1   R1 0.1
C2 4.7uF   C3 4.7uF   C4 22uF   C5 22uF   L1 470nH   C6 10uF   C7 10uF   C8 4.7uF   C12 4.7uF

VBUSn VBUS

J5 — GPIO, NOT POLULATED
P1_0 P1_1 P1_2 P1_3 P1_4 P1_5
J5 NP

RSTn — B8 RESETN
QSPIF_D0 — A2 QSPIF_D0
QSPIF_D1 — C2 QSPIF_D1
QSPIF_D2 — C1 QSPIF_D2
QSPIF_D3 — B2 QSPIF_D3
QSPIF_CLK — A1 QSPIF_CLK
QSPIF_CS — B1 QSPIF_CS

G1 V18F   J5 VBUS   J6 V30   H2 V18   G2 V18P   J1 LY   K1 LX   H1 V14   J2 V12   K2 VBAT2   K5 VBAT1

R25 0   R26 0
K10 LED1   K9 LED2   LED1 LED2
A5 VSUP_RF   V14 C9 10uF
A8 RFIOP   RF1   Z4 0   RF2   J7 MM8130-2600RB8   RF3
A7 RFIOM   A9 RFIOM2   Z5 NP   Z6 NP   Z2 2.0pF   Z3 0.60pF
Z1 6.8nH
ANT1 Ant_ifa-ss2r
A6 PSUB   B7 ESDN
A10 PSUB_RF

F10 XTAL32Mm   Y1 32.0000MHZ
F9 XTAL32Mp

H9 XTAL32km/P0_22   R5 NP   P0_22x
Y2 32.768KHZ
H10 XTAL32kp/P0_23   R6 NP   P0_23x

J4 HDRVP   HDRVP
K4 HDRVM   HDRVM
R27 NP   R28 NP

Port labels (U1)
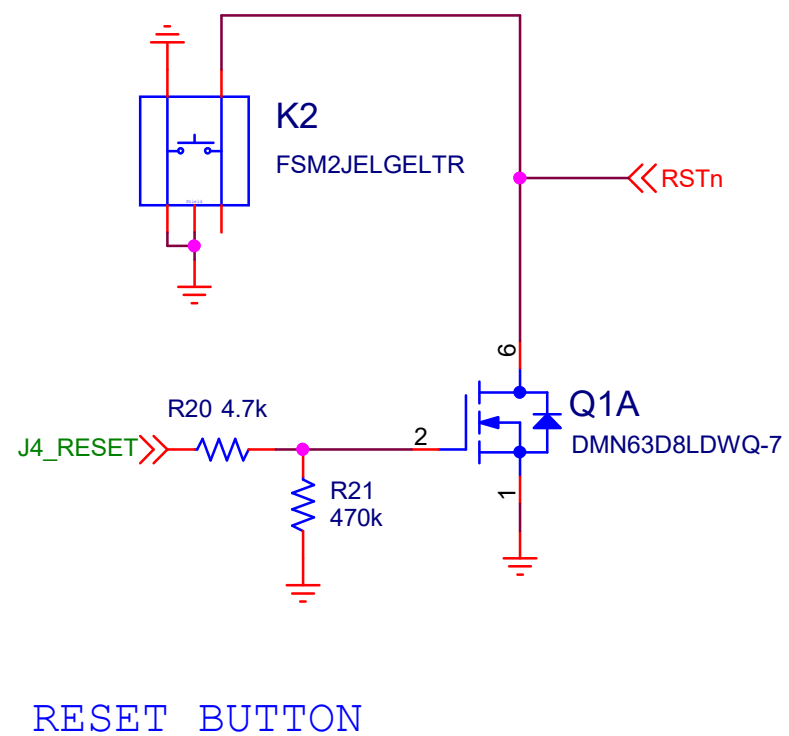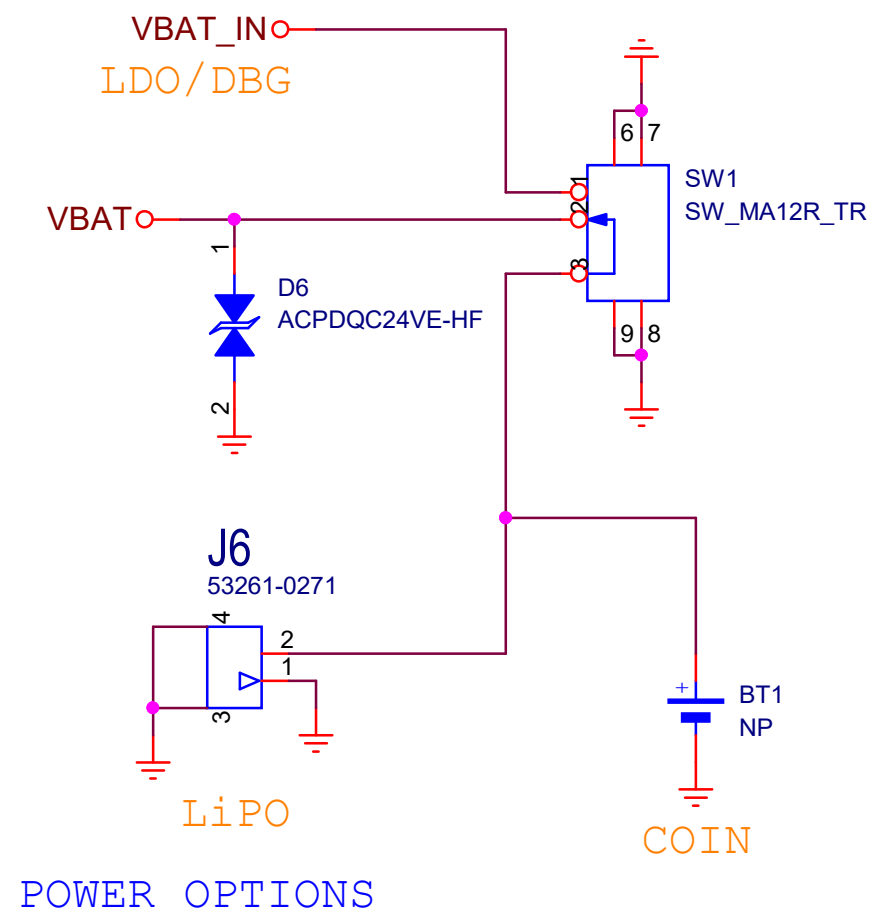
P0_0 — D2 QSPIR_D0/PG3_4/P0_0
P0_1 — F2 QSPIR_D1/PG4_2/P0_1
P0_2 — F1 QSPIR_D2/PG4_1/P0_2
P0_3 — E2 QSPIR_D3/PG3_2/P0_3
P0_4 — E1 QSPIR_CS/PG3_1/P0_4
P0_5 — D1 QSPIR_CLK/PG3_3/P0_5
P0_6 — B10 SD_ADC_GND/P0_6
P0_7 — B9 NTC_IN/P0_7
P0_8 — D6 SDGP_ADC2/PG4_3/P0_8
P0_9 — B5 SDGP_ADC3/PG4_4/P0_9
P0_10 — A3 M33_SWDIO/P0_10
P0_11 — B3 M33_SWCLK/P0_11
P0_12 — A4 M0_SWDIO/P0_12
P0_13 — B4 M0_SWCLK/P0_13
P0_14x P0_15x   R7 NP   R8 NP
P0_14 — K7 USBp/P0_14
P0_15 — K6 USBm/P0_15
P0_16 — C9 SD_ADC_REF/P0_16
USBm USBp
P0_17 — C8 PG2_1/P0_17
P0_18 — G10 PG2_2/P0_18
P0_19 — C6 PG2_3/P0_19
P0_20 — G8 PG2_4/P0_20
P0_21 — C4 PG1_3/P0_21

P0_24 — J9 PG1_4/P0_24
P0_25 — H8 SDGP_ADC1/P0_25
P0_26 — H7 PG1_1/P0_26
P0_27 — C10 PG0_2/P0_27
P0_28 — H5 PG0_3/P0_28
P0_29 — D5 PG0_4/P0_29
P0_30 — C3 PG1_1/P0_30
P0_31 — D3 PG1_3/P0_31

NTC_SUP/P1_0 PWM1/P1_1 P1_2 P1_3 P1_4 P1_5 PWM2/ATM/P1_6 P1_7 P1_8 SDGP_ADC0/ATM/P1_9 ATM/P1_10 P1_11
E9 E8 J10 E6 H3 H4 J8 F7 F8 G9 K8 G6
P1_0 P1_1 P1_2 P1_3 P1_4 P1_5 P1_6 P1_7 P1_8 P1_9 P1_10 P1_11

D9 GND_RF2   D10 GND_RF1   E10 XTAL32MGND   K3 GND_BUCK   J3 GND_HDR   F3 VSSIOQ
F4 VSSIO3   G4 VSSIO2   G3 VSSIO1   G5 AVS2   F5 AVS1

J1 — INTERFACE TO MOTHERBOARD (101327 98-052100LF)

VBAT_IN   VBAT_IN
P0_10 P0_12
P0_11 P0_13
P0_8   P0_9
P0_7   P0_30
P0_26 P0_20
P0_16 P0_19
P0_18 P0_21
P0_17 P0_29
P0_27 P0_24
P0_28 P0_31
P0_6   P0_0
P0_2   P0_5
P0_25 P0_3
P0_23x P0_4
P0_22x P0_1
HDRVP P0_14x
HDRVM P0_15x

J2

RSTn   P1_4
VBUSn VBATn
VBUS   VBAT
P1_5   P1_2
P1_3   P1_0
P1_1   V18P
P1_7   V30x
P1_10 P1_6
P1_9   V14
       V18
       V12
P1_11 LED1
       LED2
       P1_8 VLED

DEBUGGING (NOT POPULATED)

D3 — D5V0P4B5LP08-7
R3 0 — P0_9
R4 0 — P0_8
P0_11 R11 0
P0_13 R13 NP
R12 NP P0_12
R10 0 P0_10
VBAT_IN
J4 — Jtag_Conn_2x5_1mm27
UTX URX
SWCLK SWDIO
1 UTX   URX 2
3 CLK   DIO 4
5 VPP   RST 6
7 VDD   GND1 8
9 NC1   GND2 10
J4_RESET

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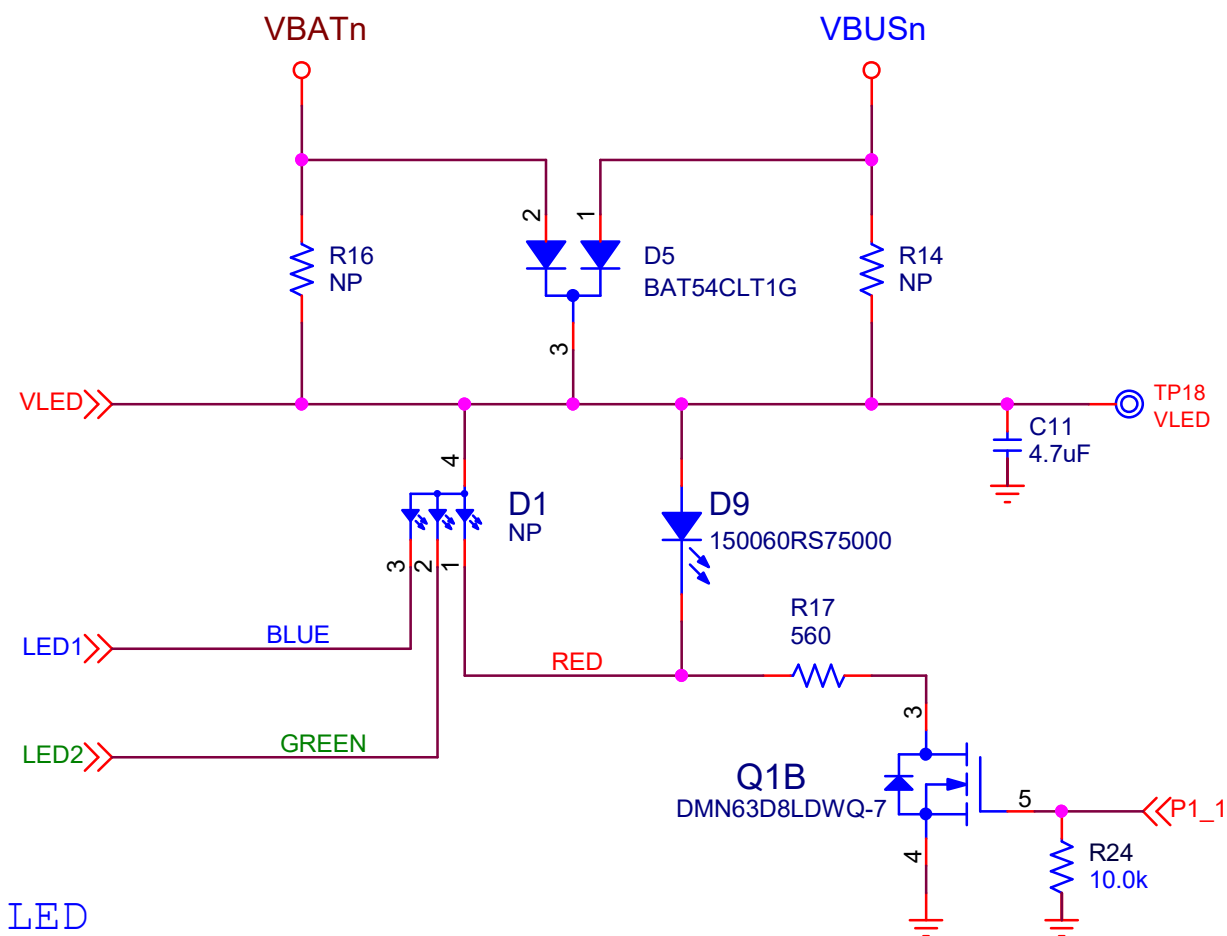Date: Tuesday, December 11, 2018   Sheet: 2 of 3

USER LED

VBATn

VBUSn

R16 NP

D5 BAT54CLT1G

R14 NP

VLED

TP18 VLED

C11 4.7uF

D1 NP

D9 150060RS75000

LED1 — BLUE

LED2 — GREEN

RED

R17 560

Q1B DMN63D8LDWQ-7

P1_1

R24 10.0k

POWER OPTIONS

VBAT_IN

LDO/DBG

VBAT

D6 ACPDQC24VE-HF

SW1 SW_MA12R_TR

J6 53261-0271

BT1 NP

LiPO

COIN

RESET BUTTON

K2 FSM2JELGELTR

RSTn

R20 4.7k

J4_RESET

R21 470k

Q1A DMN63D8LDWQ-7

USB + OVP CIRCUIT

VBUS

TP15 VBUS_IN

VBUS_IN

R9 NP

C14 NP

D2 ACPDQC24VE-HF

C13 2.2UF

R22 2.2k

Q5 BC807-25_215

Q2 DMP3099L-7

J3

USBm

USBp

R23 4.7k

D4 BZX84C5V6-7-F DIODES Inc.

R18 10.0k

D8

D7

ESD206B102ELSE6327XTSA1-EOL

Title : *DA1469x devkt-pro daughterboard (VFBGA86)*

Doc. Nr. 331-19-D | Designer: PR | Rev:D

Date: Tuesday, December 11, 2018 | Sheet: 3 of 3