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Revisions			
Rev	Description	Date	Approved
X1	Initial release	30-Mar-2020	Lucie Hernandez
A	A085 Release	20-May-2020	Lucie Hernandez
B	A085 Release	10-July-2020	Lucie Hernandez
B1	A085 Release - R28 & R40 are DNP	27-July-2020	Lucie Hernandez

KITFS84AUTEVM

Automotive Board

		Analog Sensor Product Group 6501 William Cannon Drive West Austin, TX 78725-8598	
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© NXP SEMICONDUCTORS Designer: Lucie Hernandez		Classification: <FCP> <PUU> <PUB> KITFS84AUTEVM	
Drawn by: Lucie Hernandez		Page Title: TITLE, TOC & REV	
Approved: Lucie	Size: C	Document Number SCH-47345 PDF: SPF-47435	Rev B1
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Board Configuration - Main Target
(Other configuration possible thanks to OTP)

Vpre : 455KHz / 10A / 4.1V
BUCK1: 2.2MHz / 2.5A / 1.25V
BUCK3: 2.2MHz / 2.5A / 2.3V
BOOST: 2.2MHz / / 5.74V / In = VPRE
LDO1 : - /400mA / 3.3V / In = Vpre
LDO2 : - /150mA / 5V
VDDIO: Assigned on P3V3_KL25Z (set to 3.3V by default)

LPRE Coil Proposal (Primary)

VPRE	LPRE
455KHz	SPW7054VT-487N-D Itest 11.2 / Itemp@40°C 7.8A (7.5mm x 7mm)
2.2MHz	SPW6545VT-183N-D 6A / 2.2MHz Itest 13.4A / Itemp@40°C 5.2A (7mm x 6.5mm) hwhmm

LPRE Coil Proposal (Alternate)

VPRE	LPRE
455KHz	KSL6060-682ME SPW7054VT-688N-D 6A / 455KHz Itest 9.9A / Itemp@40°C 5.3A (7.5mm x 7mm)
2.2MHz	SPW7054VT-183N-D Itest 13.9A / Itemp@40°C 10.9A (7.5mm x 7mm)

Vpre Compensation Network :

- * Vpre Voltage : 4.1V
- * Vpre Frequency : 455 KHz
- * Vpre coil size 4.7uH / Rthmt : 15mOhms / Cout : 44uF
- * Comp. Network : C16=270pF / C19=15nF / R13=2.55KOhm

3-Terminal Capacitors

Mounted for evaluation purpose only.
Optional feature. Can be replace by a 0603 0 ohm resistors.

Alternate Vpre Transistor

Supplier	Part Number	Recommended Frequency	Main Characteristics (see note 2)
Nexperia	BUK9K18-40E	455KHz / 2.2MHz	VDS = 40V / Id = 30A / RDSon = 19.5mR / Qg = 7.5nC
Nexperia	BUK9K35-60E	455KHz / 2.2MHz	VDS = 60V / Id = 22A / RDSon = 35mR / Qg = 7nC
On Semi	NVMFD5C68ONL-D	455KHz / 2.2MHz	VDS = 60V / Id = 26A / RDSon = 28mR / Qg = 3nC
Vishay	SQJB42EP	455KHz	VDS = 40V / Id = 30A / RDSon = 9.5mR / Qg = 10nC
Diodes	DMTH4011SPD	455KHz / 2.2MHz	VDS = 40V / Id = 42A / RDSon = 15mR / Qg = 6nC
Nexperia	BUK9K25-40E	455KHz / 2.2MHz	VDS = 40V / Id = 18.2A / RDSon = 29mR / Qg = 5nC


Notes : Packages are very similar but require specific footprint per manufacturer when in production (for trial, footprint allows compatibility)
Notes : Main Characteristics are given for information only. Please refer to manufacturer datasheet for details and implementation.

Jumper & Switch - Default Setting Table:

REF DES	JUMPER_DEFAULT	PAGE NAME
J16	Short:2-3	04-USB-Interface
J3	Short:1-2	03-FS8416

DNP Table:

REF DES	ASSY_OPT	PAGE NAME
J8,C7,C25,C32,C10,C3,CSUP2, R40,C9,R58,R61,R38,R41,R28, J4,J9,R34,R7,R45,R11,R2,R43, J7,R35,R59,D2,R27,R24,R4	DNP	03-FS8416
R98,R83,J15	DNP	04-USB-Interface



Classification:

<CP><FUD><PUB>

Drawing Title:

KITFS84AUTEVM

Page Title:

NOTES

Size C

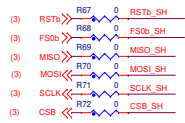
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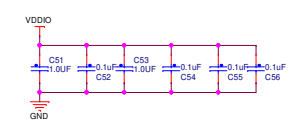
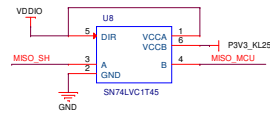
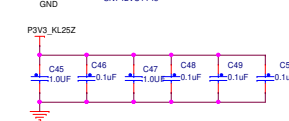
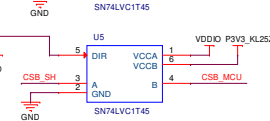
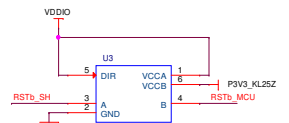
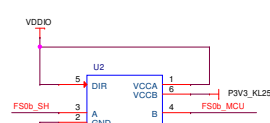
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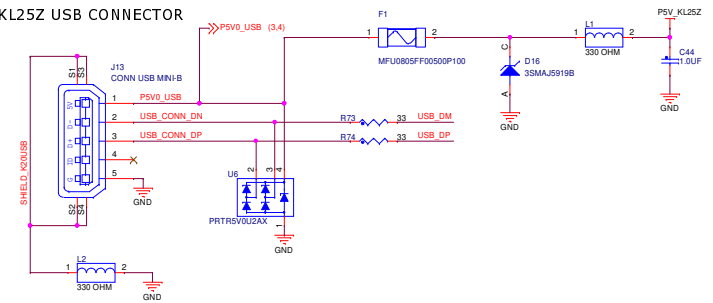
SPI / Reset / Fail Safe 0



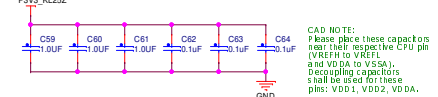
Level Shifter (1.65V / 5.5V)



KL25Z USB CONNECTOR

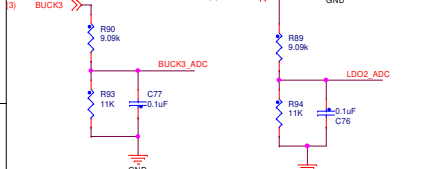
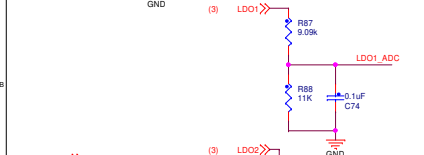
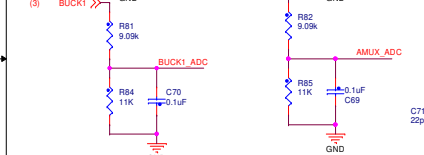
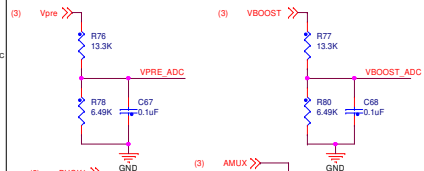


KL25Z Decoupling Caps

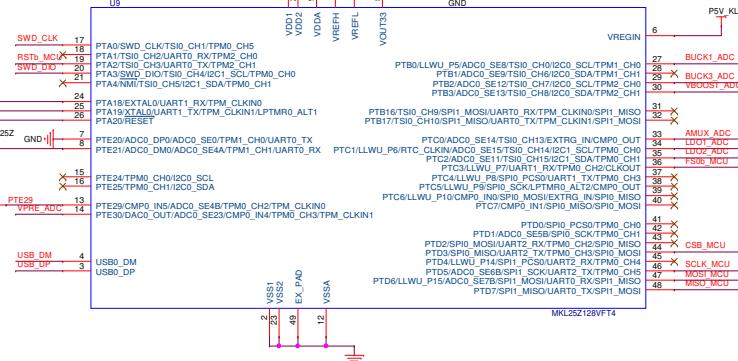


CAD NOTE:
Please place these capacitors near their respective C-U pin (VREFH to VREFL and VDDA to VSSA).
Decoupling capacitors shall be used for these pins: VDD1, VDD2, VDDA.

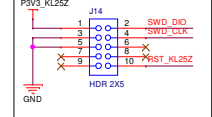
Analog Inputs



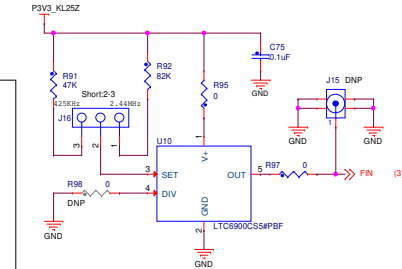
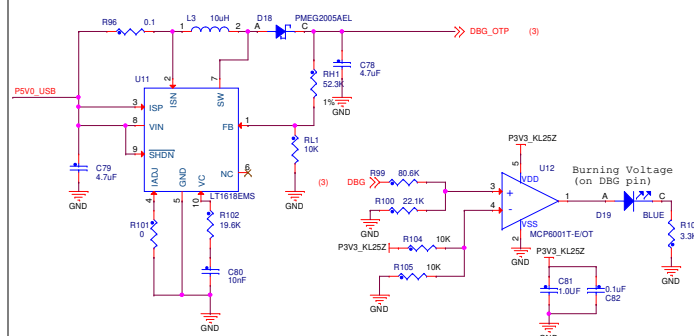
Board ID	Board Type
0 0	EVM
0 1	FFV
1 0	FRDM
1 1	Programming



SWD CONNECTOR



DEBUG & Programming Mode Voltage



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