

# K2GEVM

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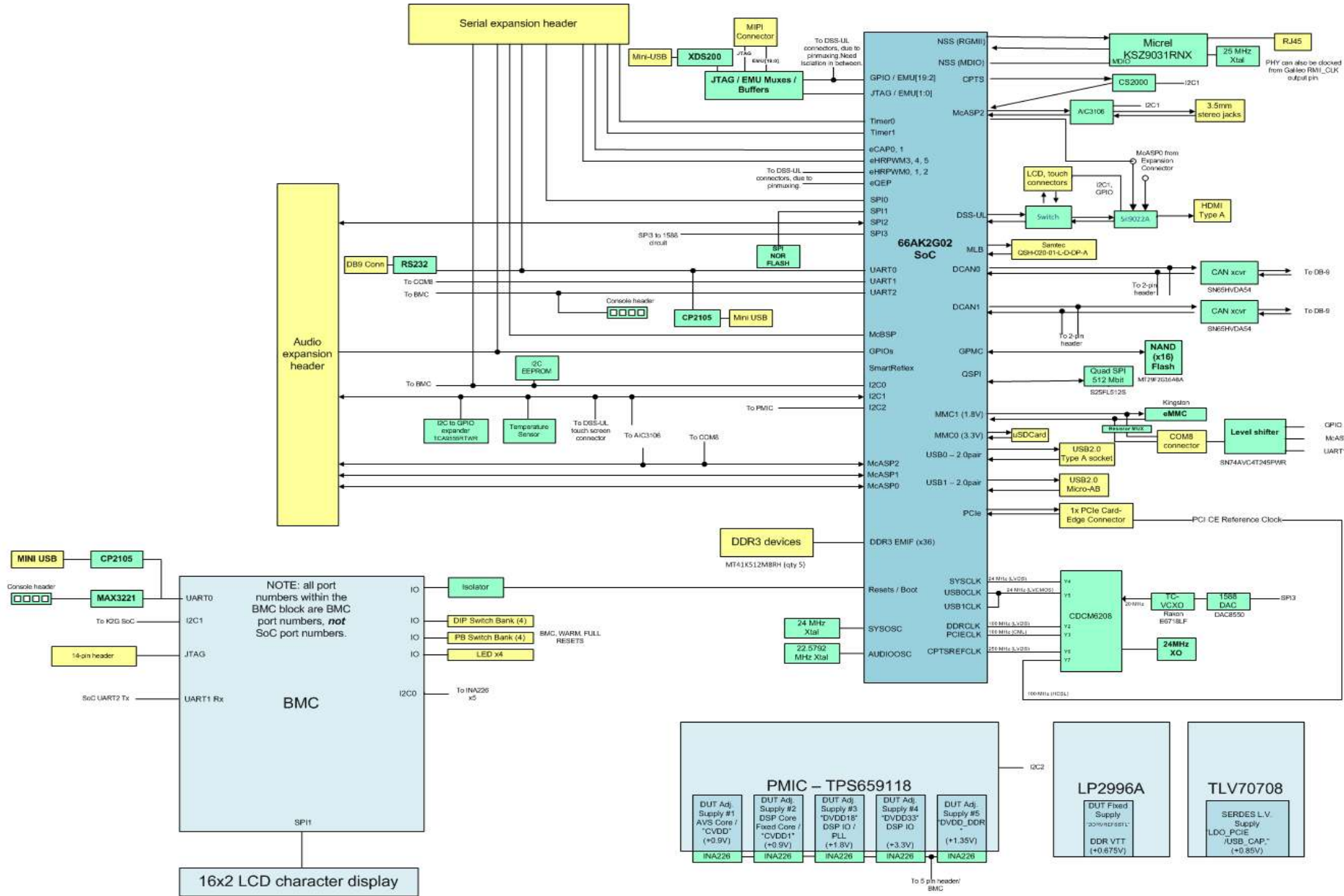
<b>REV</b>	D
<b>VER</b>	1.5

# REVISION HISTORY

VER #	DATE	DESCRIPTION OF CHANGES	AUTHOR
1.5	12th APR 2016	SOC pin names updated as per datasheet ' SPRS932A-DECEMBER 2015-REVISED FEBRUARY 2016 '	Mistral Design Team

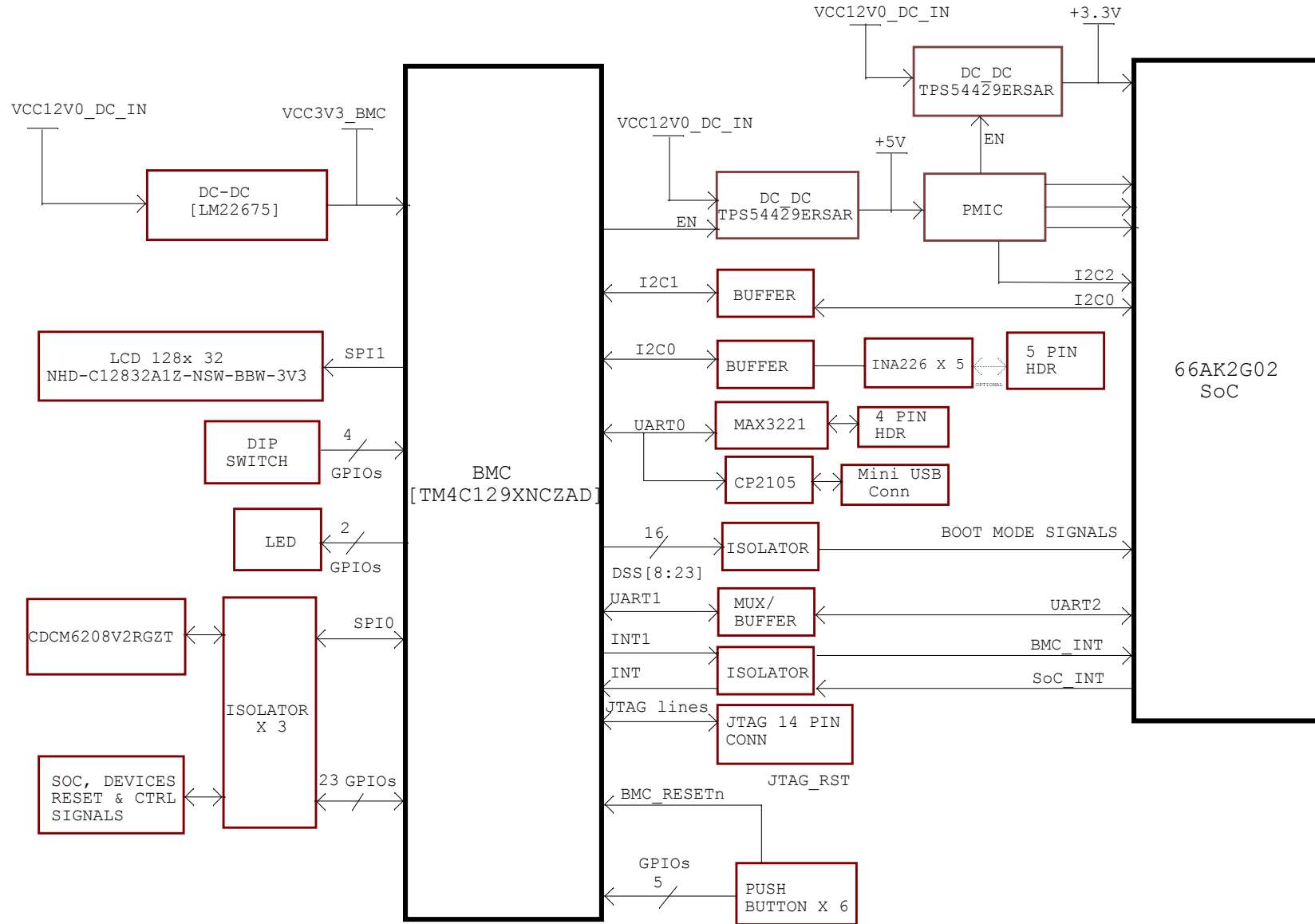
**NOTE: Refer to MS\_TI\_K2GEVM\_REVD\_ECR\_ECN document for changes implemented on version 1.5**

# BLOCK DIAGRAM - K2GEVM

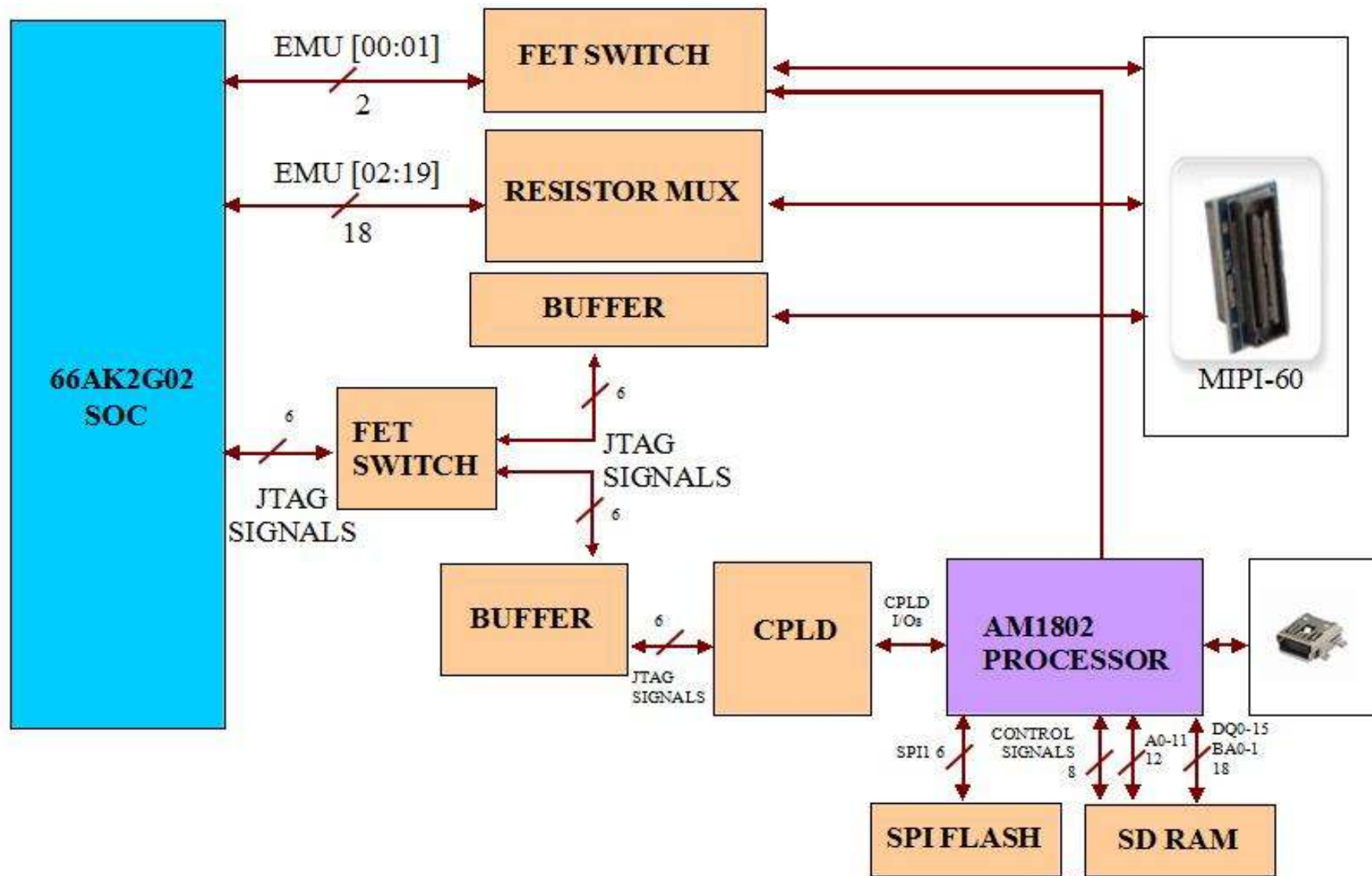


Project : <b>K2G EVM</b>		Designed for TI by Mistral Solutions Pvt Ltd		Title: <b>BLOCK DIAGRAM - K2G EVM</b>	
Size	Document Number	Rev			
C	MS_TI_K2GEVM_SCH_REV D	D			
Date:	Wednesday, April 13, 2016	Sheet	3	of 50	

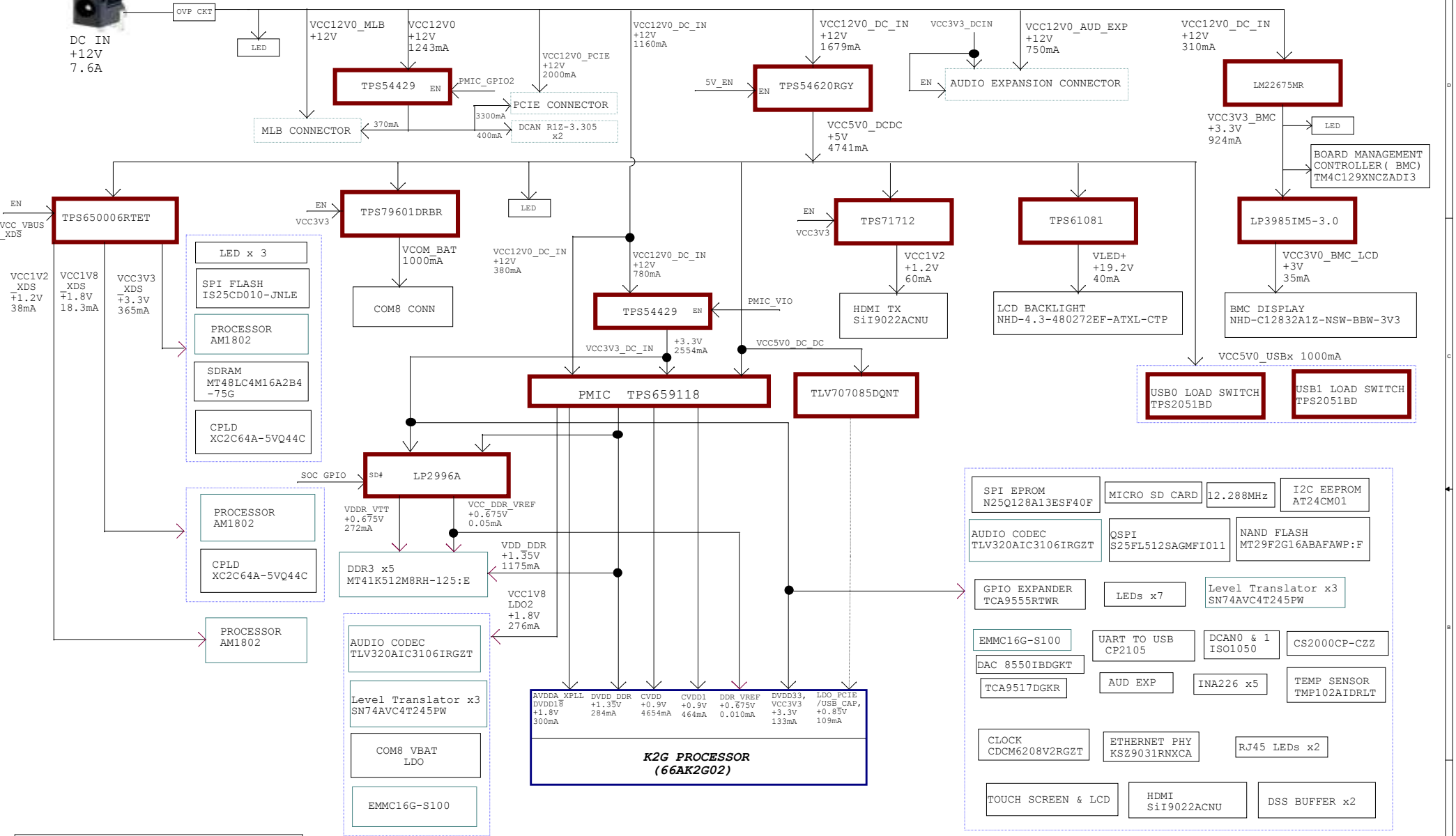
# BLOCK DIAGRAM - BMC



# BLOCK DIAGRAM - XDS200



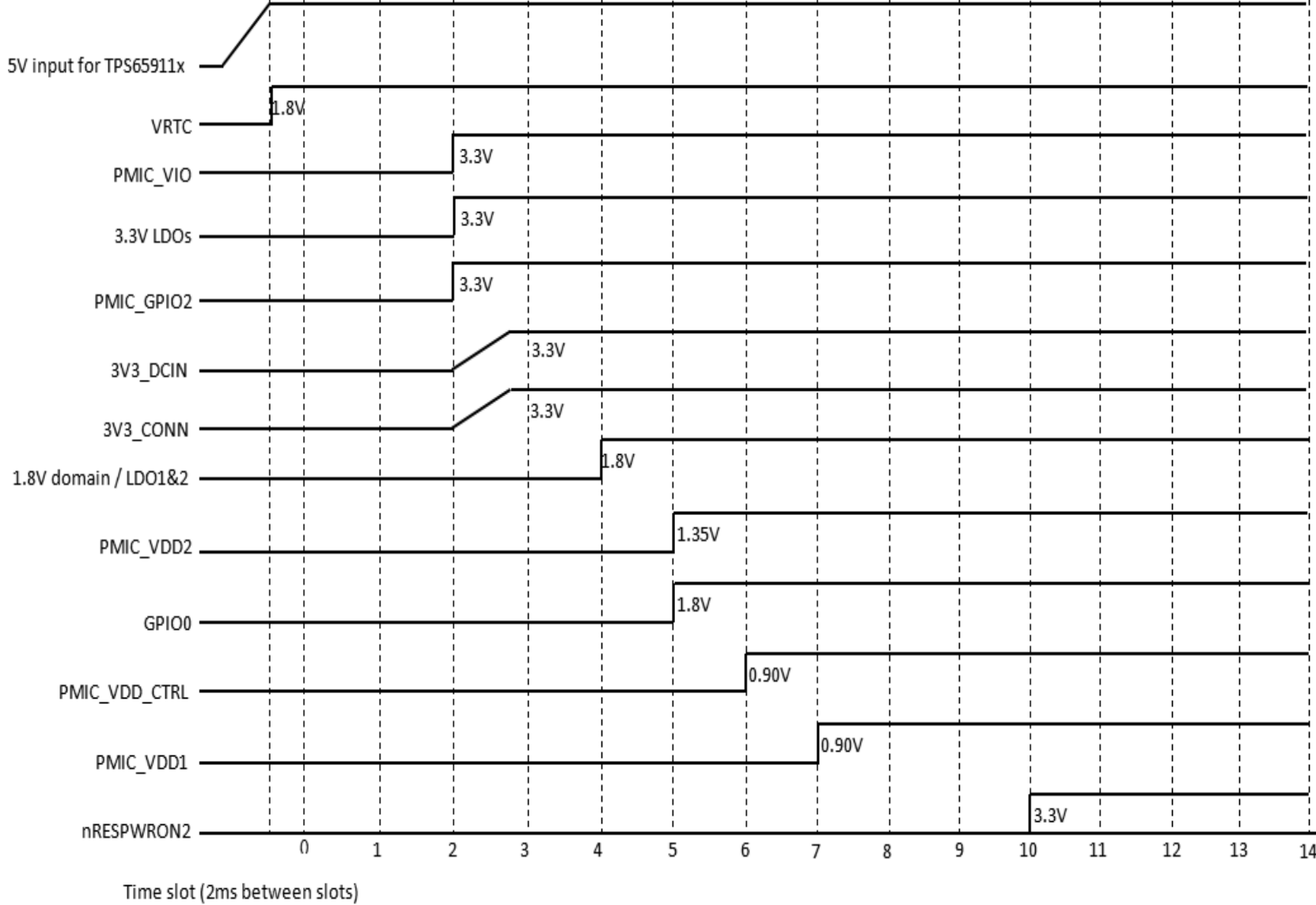
# POWER FLOW DIAGRAM



**NOTE:**

- REGULATORS
- DEVICES
- Multiple powered device

# BOARD POWER UP SEQUENCE



## SoC I2C ADDRESS TABLE

I2C0 DEVICES	7 BIT ADDRESS
EEPROM	0x50 (PAGE 0)
	0x51 (PAGE 1)
BMC	0x0 (PROGRAMMABLE)
SERIAL EXPANSION CONNECTOR	TBD
PCIe CONNECTOR	TBD

I2C2 DEVICES	7 BIT ADDRESS
PMIC	0x2D (GENERAL PURPOSE) TBD
	0x12 (VOLTAGE SCALING) TBD

I2C1 DEVICES	7 BIT ADDRESS
HDMI TRANSMITTER	0x3B
	0x3F
	0x62
AUDIO CODEC	0x1B
TOUCH SCREEN	0x70 (WRITE)
	0x71 (READ)
I/O EXPANDER	0x20
TEMPERATURE SENSOR	0x48
MLB CONNECTOR	TBD
AUDIO EXPANSION CONNECTOR	0x4A, 0x4B, 0x4C, 0x4D
CLOCK GENERATOR (CS2000CF-02D)	0x4F

## BMC I2C ADDRESS TABLE

BMC I2C0 DEVICES	7 BIT ADDRESS
PMBUS	0x40 : 3.3V
	0x41 : CVDD
	0x42 : CVDD1
	0x43 : 1.8V
	0x44 : DVDD_DSR

BMC I2C1 DEVICES	7 BIT ADDRESS
PROCESSOR	ALWAYS MASTER

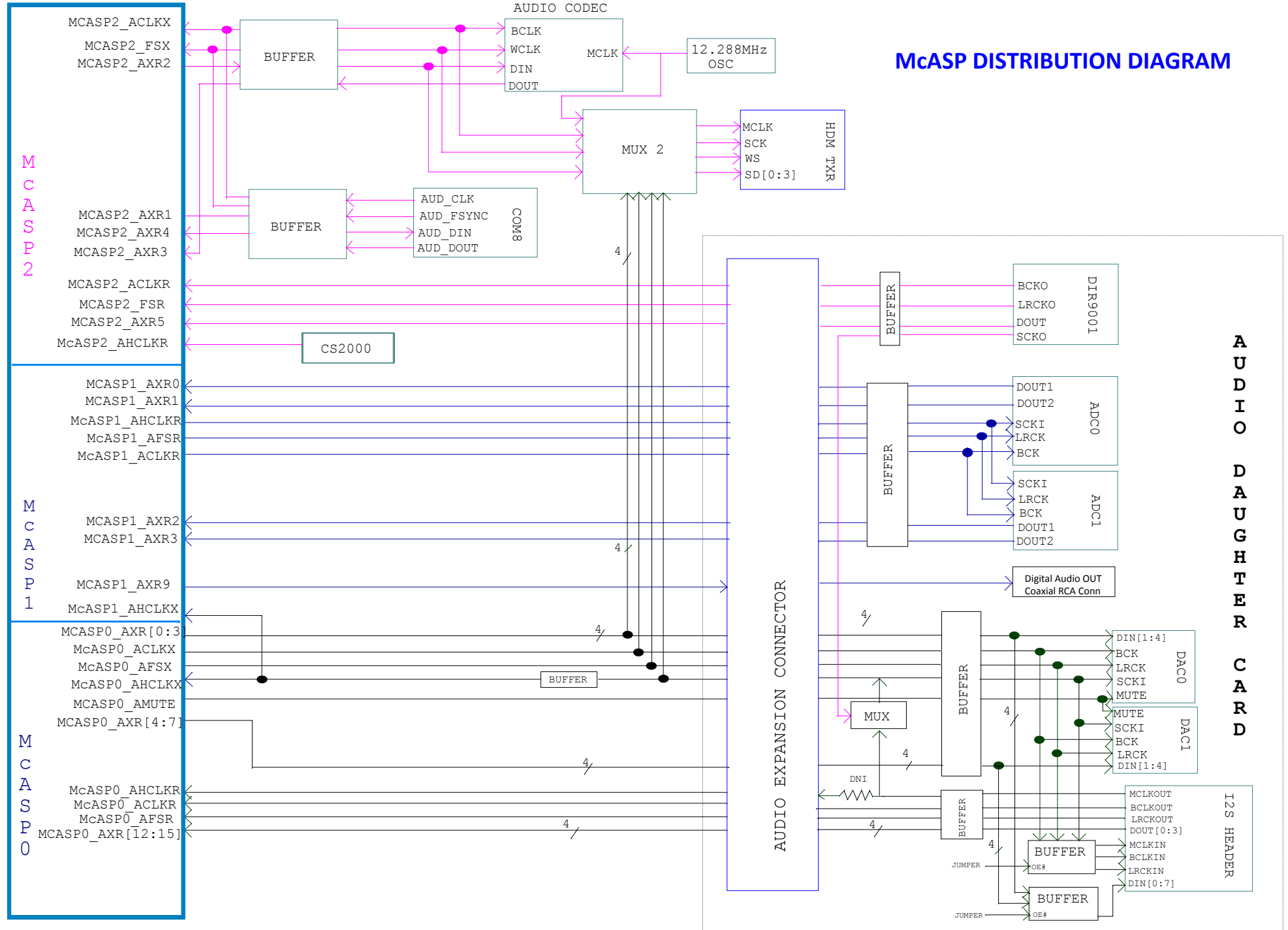
## McASP CONFIGURATION

McASP PORT	DEVICES	DEVICE MODE
McASP0	DAC- PCM1690 x2	SLAVE
	I2S HEADER	MASTER
McASP1	ADC- PCM1865 x2	SLAVE
McASP2	HDMI TRANSMITTER (DEFAULT)	SLAVE
	AUDIO CODEC AIC3106	
	DIR9001 (DEFAULT)	MASTER
COM8		

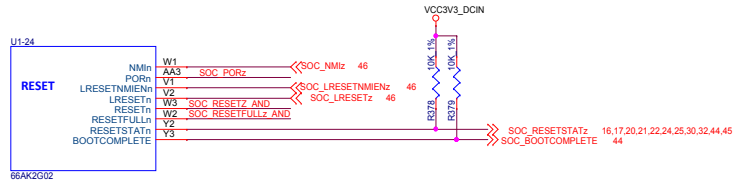
Project :	Designed for TI by Mistral Solutions Pvt Ltd	Title	I2C TREE
K2G EVM	 	Size	Document Number
		C	MS_TI_K2GEVM_SCH_REV D
		Date:	Thursday, April 14, 2016



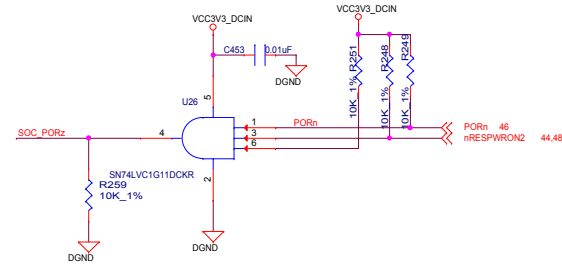
# McASP DISTRIBUTION DIAGRAM



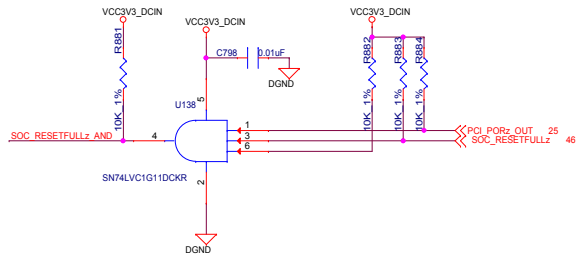
## SoC RESET



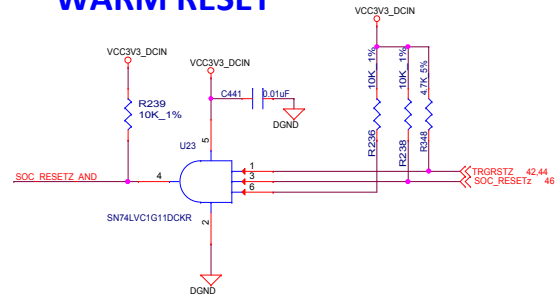
## POWER ON RESET



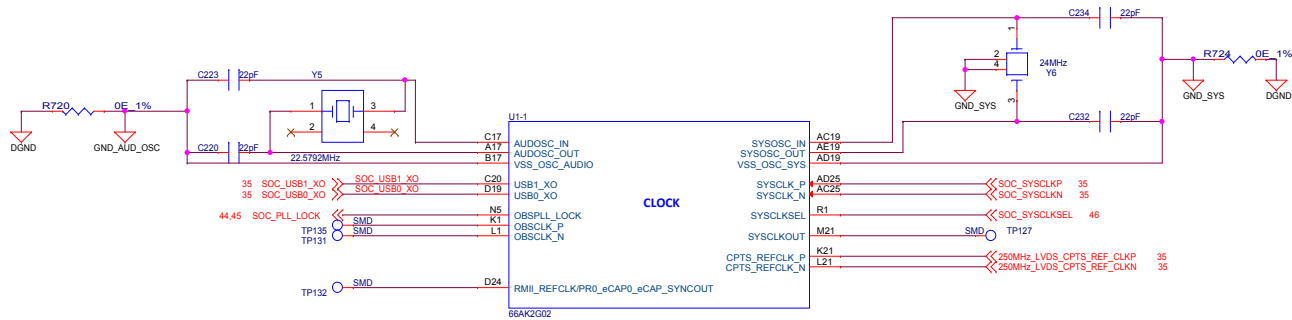
## FULL RESET



## WARM RESET

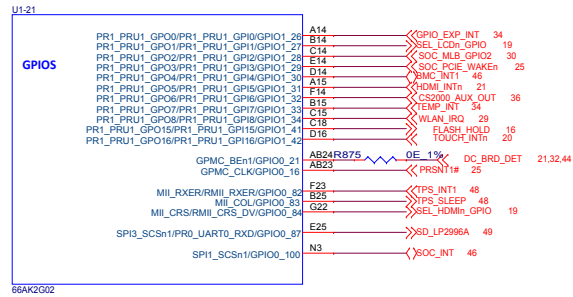


## SoC CLOCK

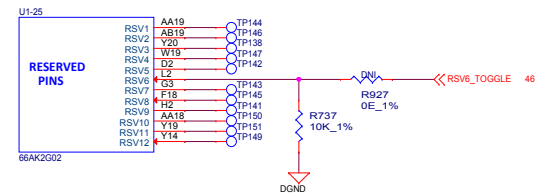
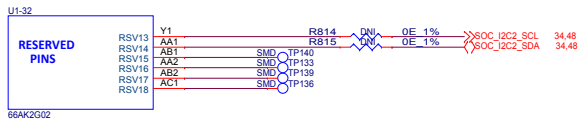


Project : <b>K2G EVM</b>		Designed for TI by Mistral Solutions Pvt Ltd		Title: <b>SOC CLOCK &amp; RESET</b>	
		Size	Document Number	Rev	
		C	MS_TI_K2GEVM_SCH_REV D	D	
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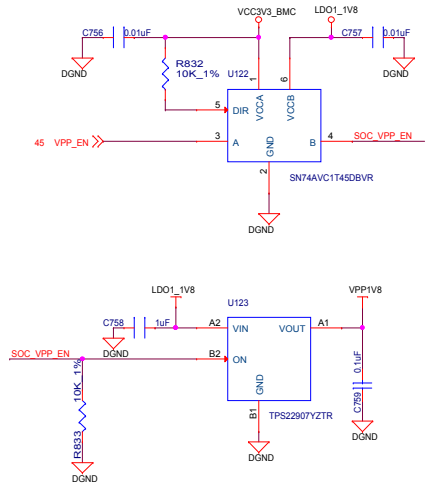
## SoC GPIOs



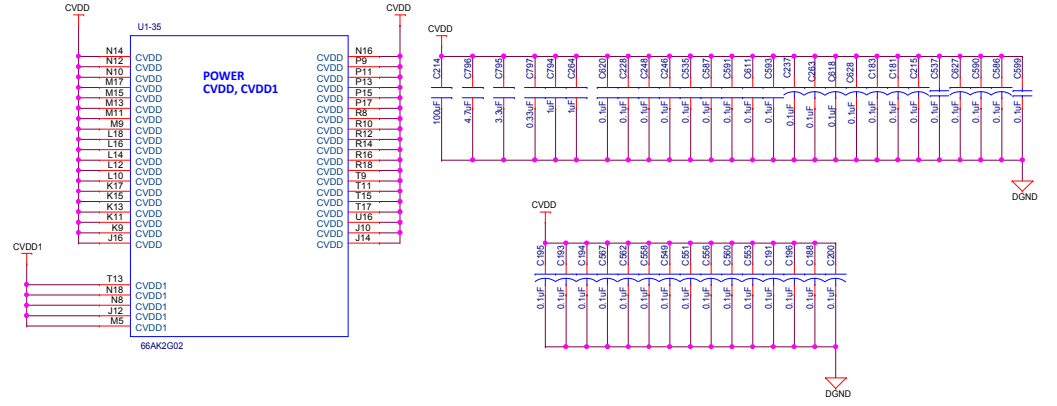
## RESERVED PINS



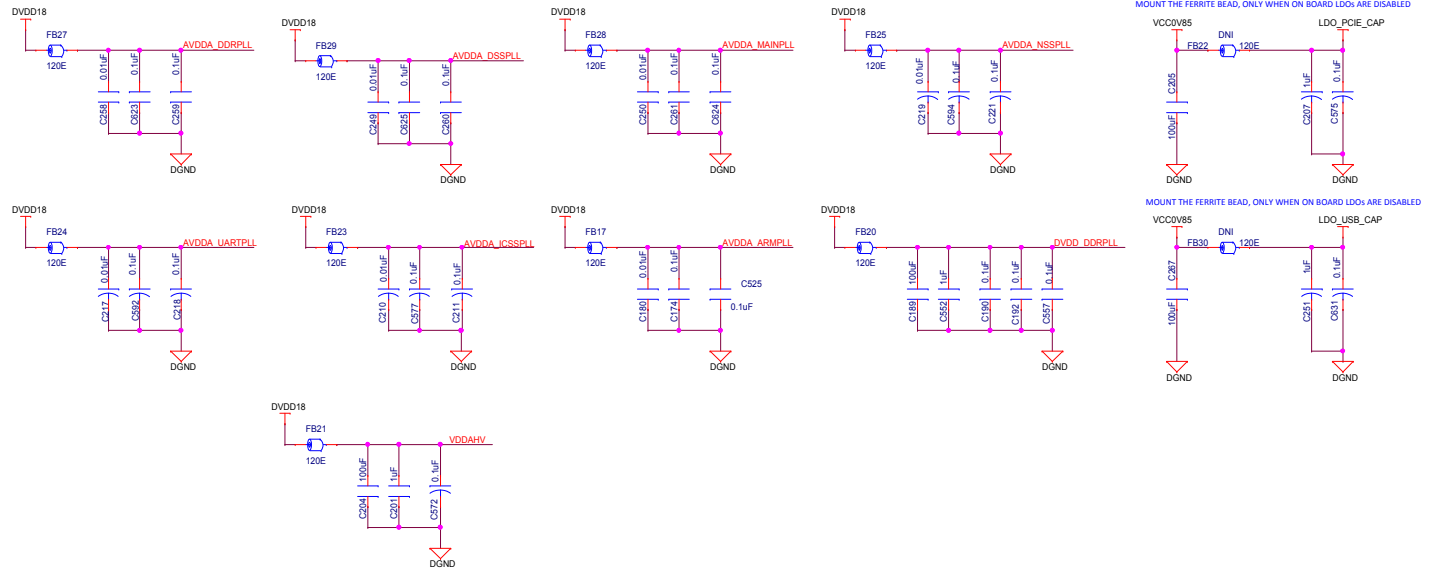
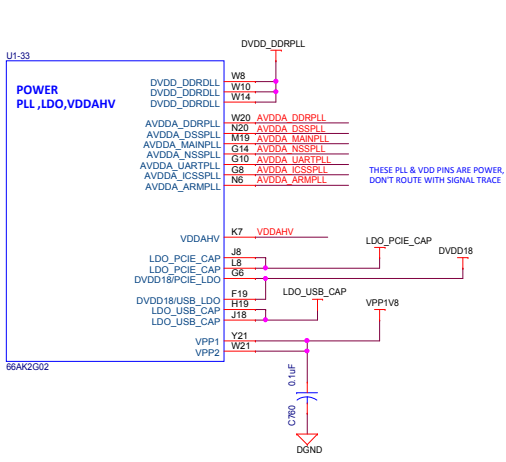
# VPP POWER GENERATION



# SoC POWER - CVDD, CVDD1

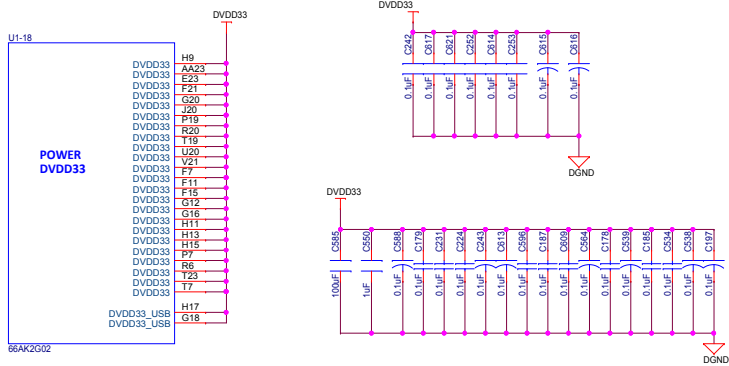


# SoC POWER - PLL

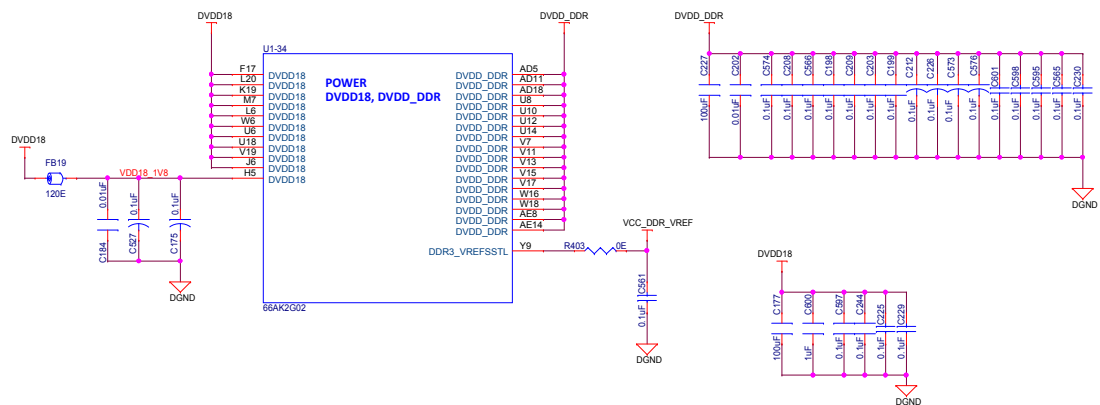


Project :	Designed for TI by Mistral Solutions Pvt Ltd	Title	SOC POWER - CVDD, CVDD1 & PLL	
K2G EVM		Size	Document Number	Rev
		C	MS_TI_K2GEVM_SCH_REV D	D
		Date:	Thursday, April 14, 2016	Sheet 12 of 50

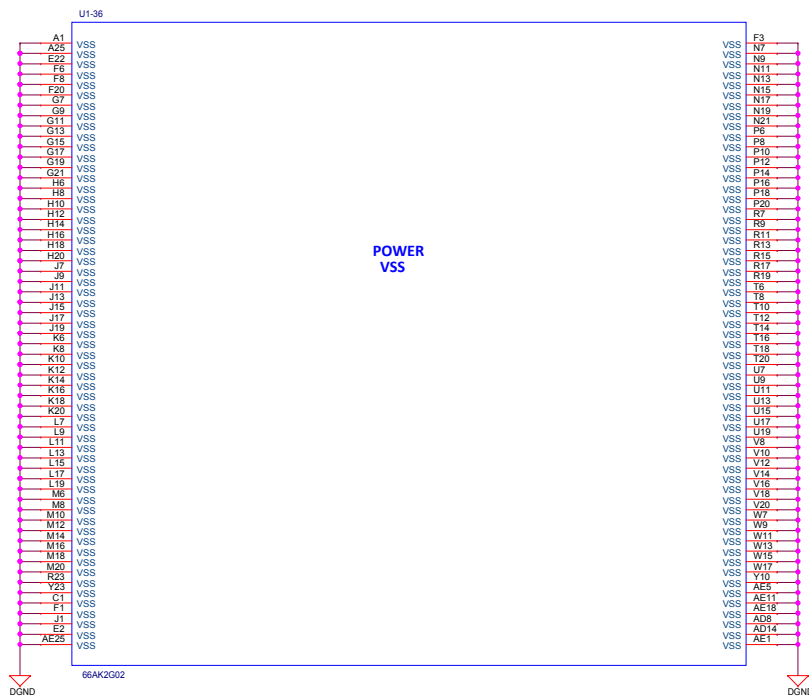
# SoC POWER - DVDD33



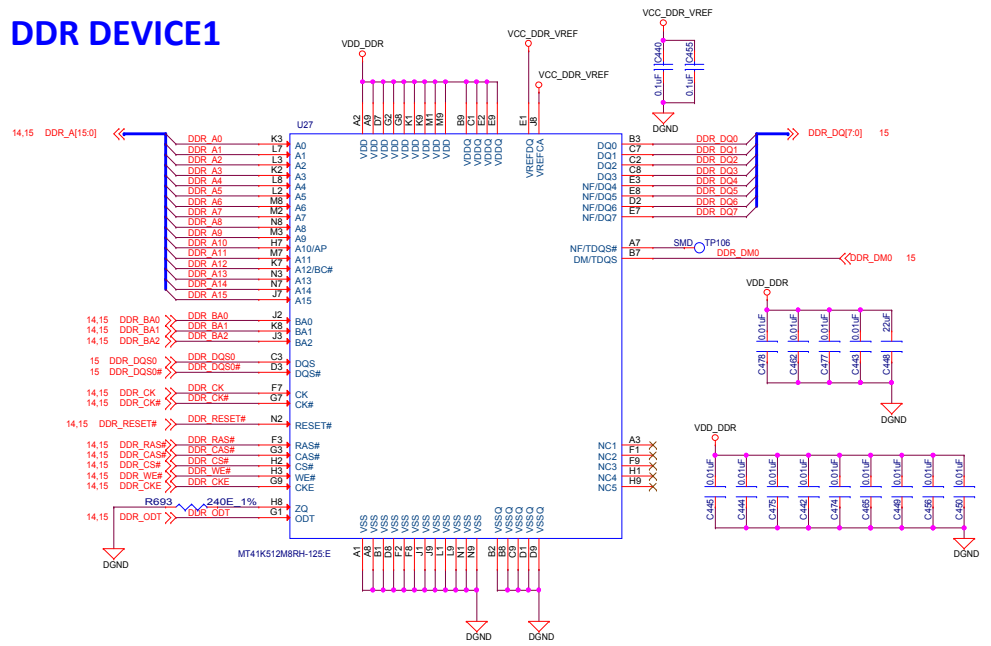
# SoC POWER - DVDD18, DVDD\_DDR



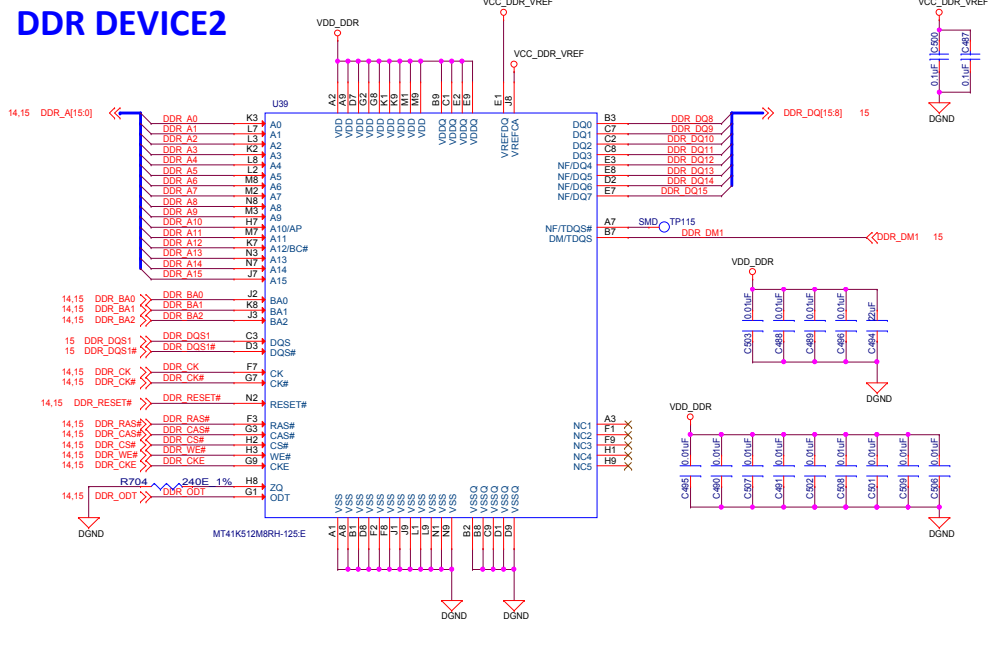
# SoC POWER - VSS



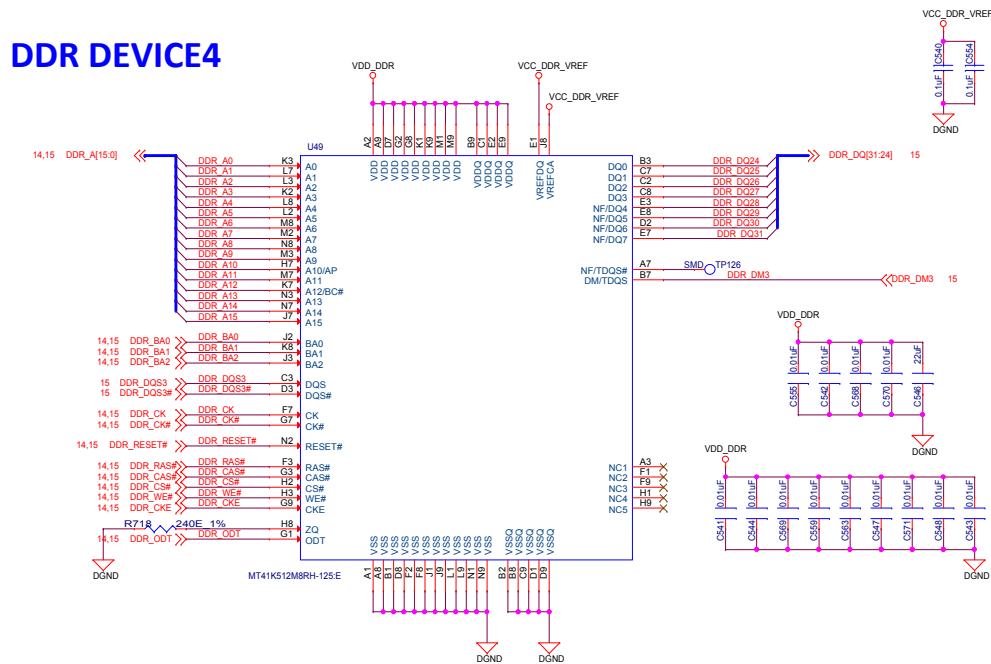
# DDR DEVICE1



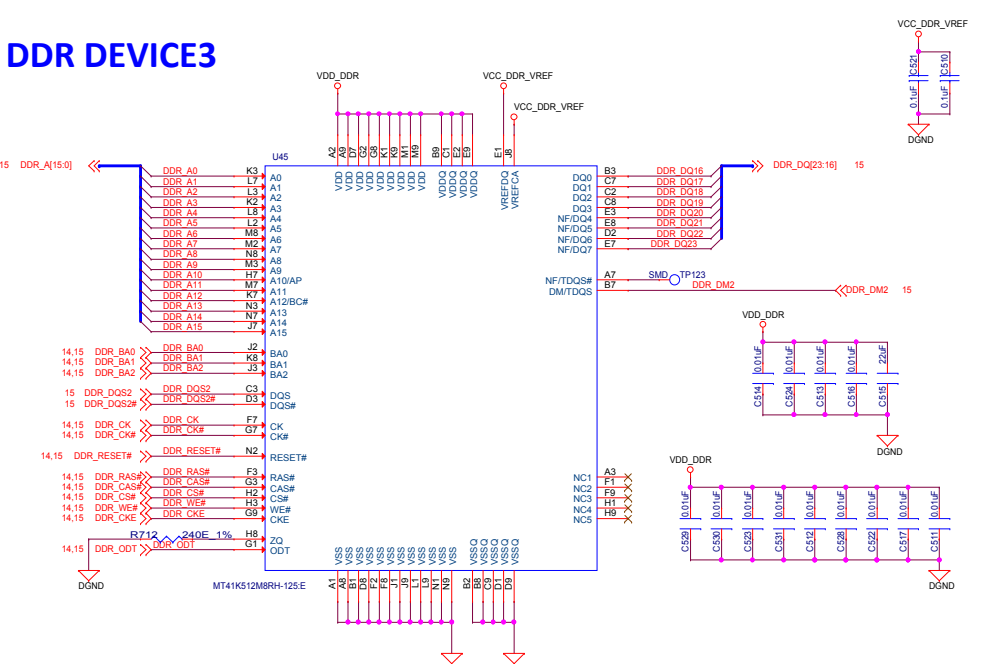
# DDR DEVICE2



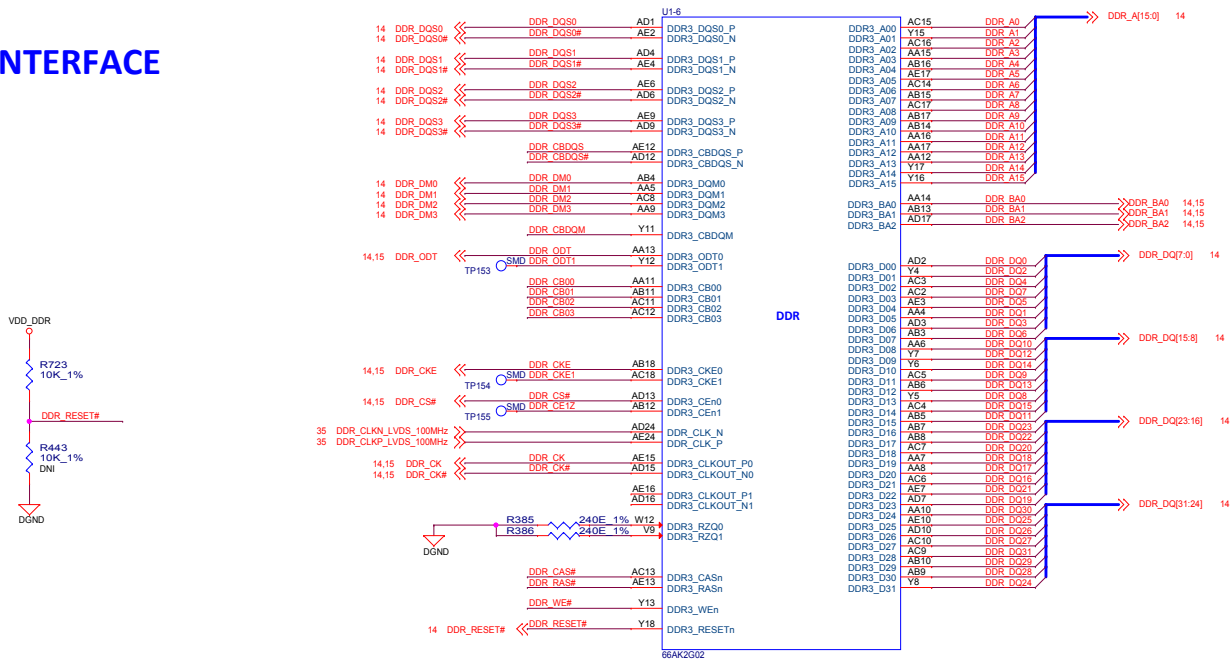
# DDR DEVICE4



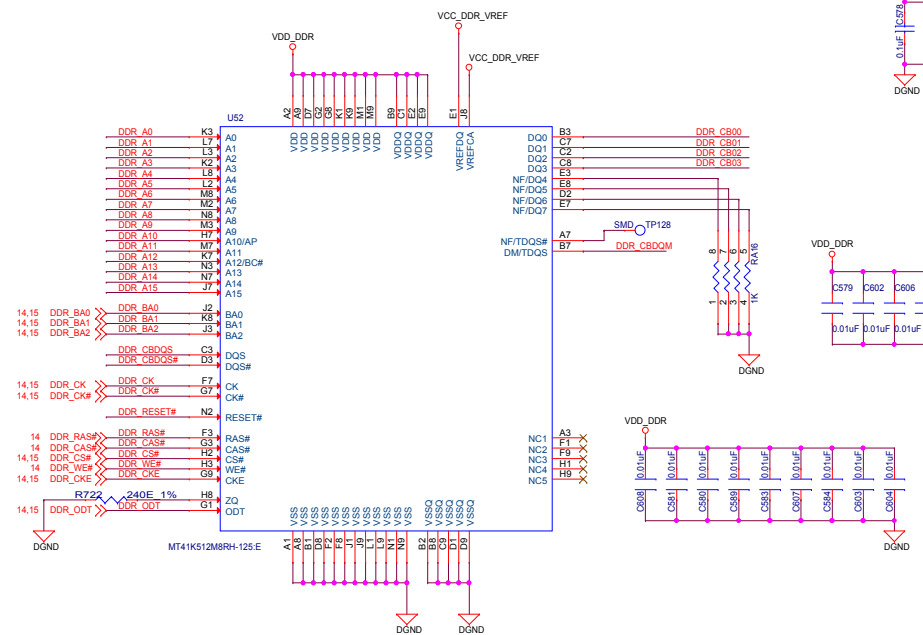
# DDR DEVICE3



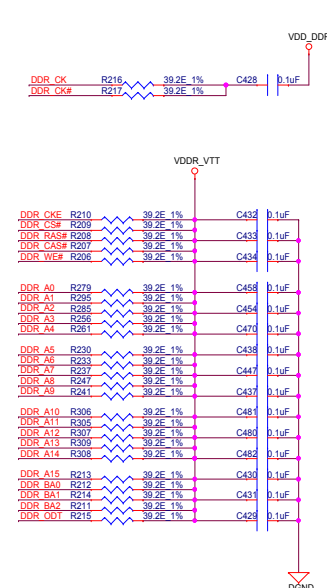
# SoC DDR INTERFACE



# ECC DEVICE



# DDR TERMINATION



Project :

Designed for TI by Mistral Solutions Pvt Ltd

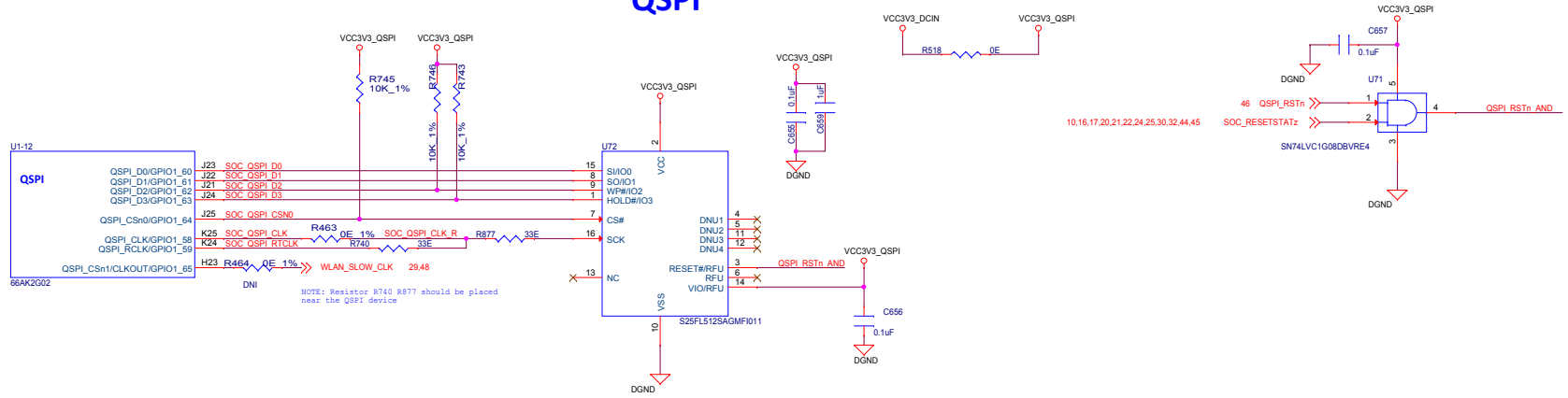
Title : SOC DDR MODULE, ECC & TERMINATION

K2G EVM

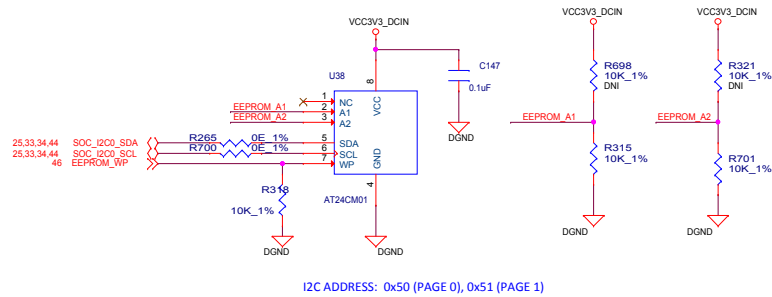


Size	Document Number	Rev
C	MS_TI_K2GEVM_SCH_REVD	D
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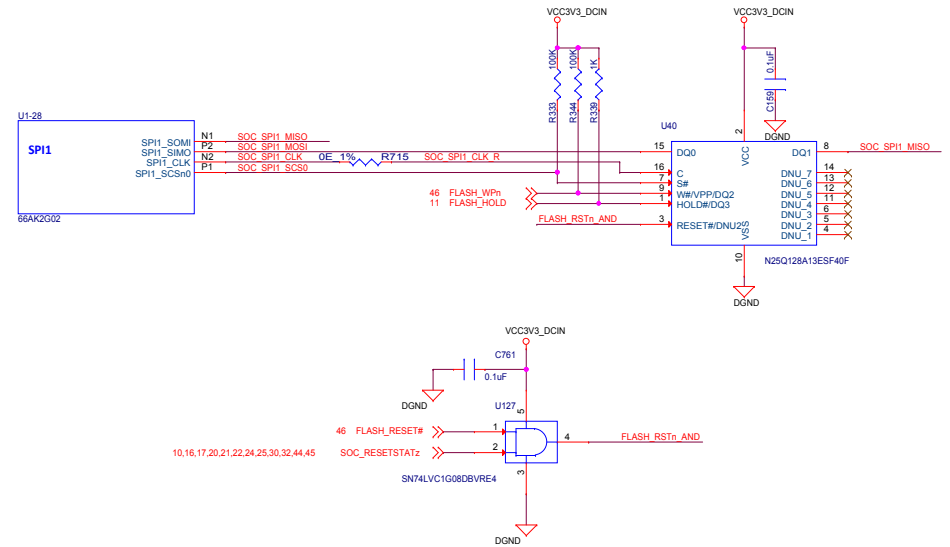
# QSPI



# I2C EEPROM FLASH



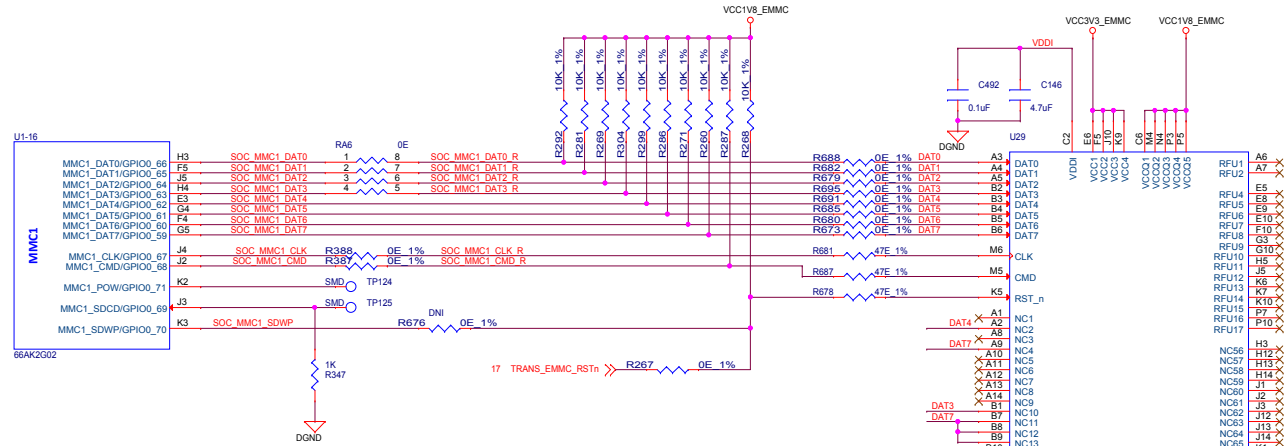
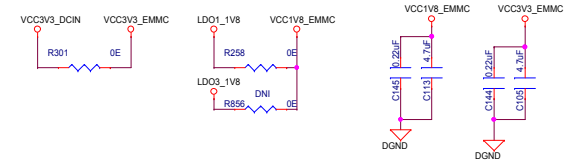
# SPI NORFLASH



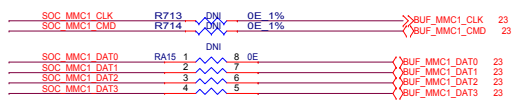
Project :	Designed for TI by Mistral Solutions Pvt Ltd	Title	QSPI, I2C & SPI EEPROM FLASH	
K2G EVM	 	Size	Document Number	Rev
		C	MS_TI_K2GEVM_SCH_REV D	D
		Date:	Thursday, April 14, 2016	Sheet 16 of 50



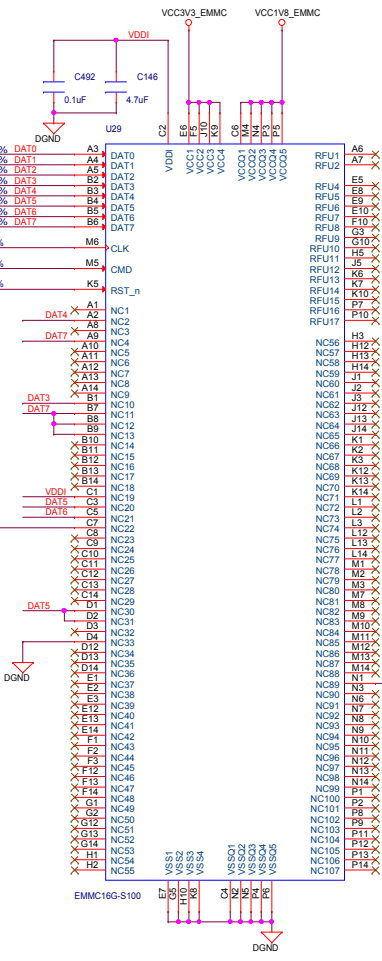
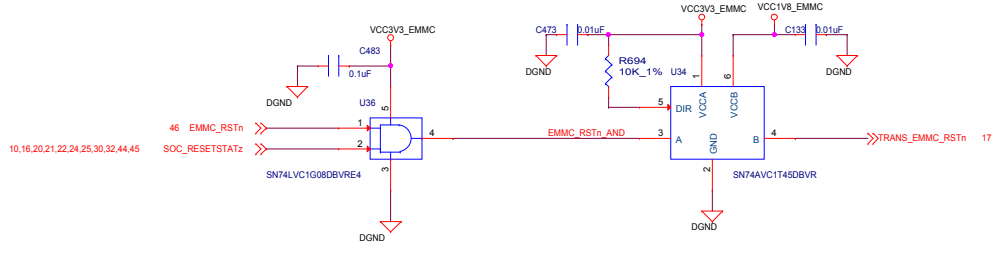
# eMMC FLASH



NOTE: MMC1 IS BY DEFAULT CONNECTED TO EMMC. IF COM8 TO BE USED RESISTOR RA6, R387, R388 & R822 SHOULD BE DNI AND RA15, R713, R714 & R393 SHOULD BE MOUNTED



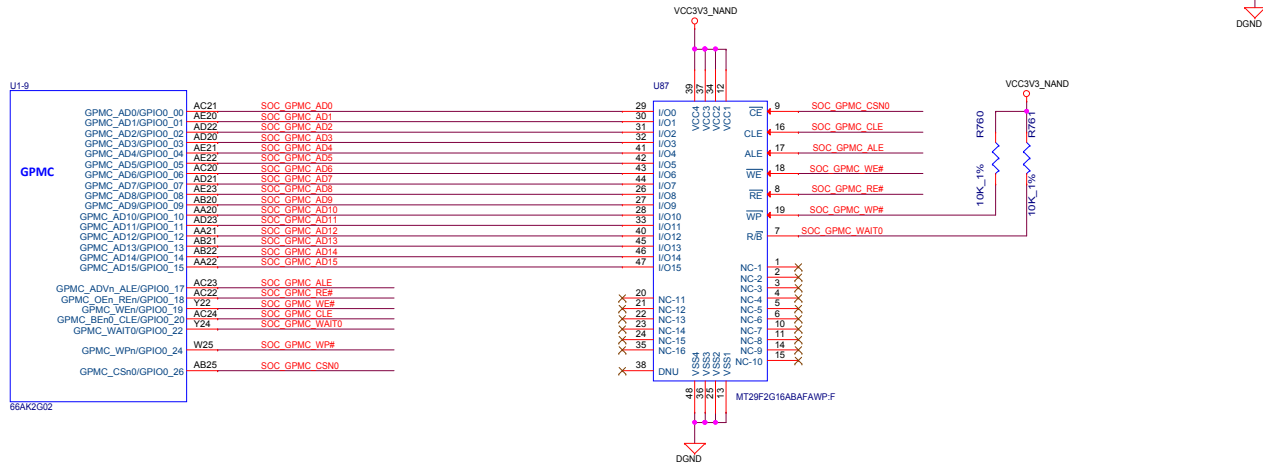
# eMMC RESET



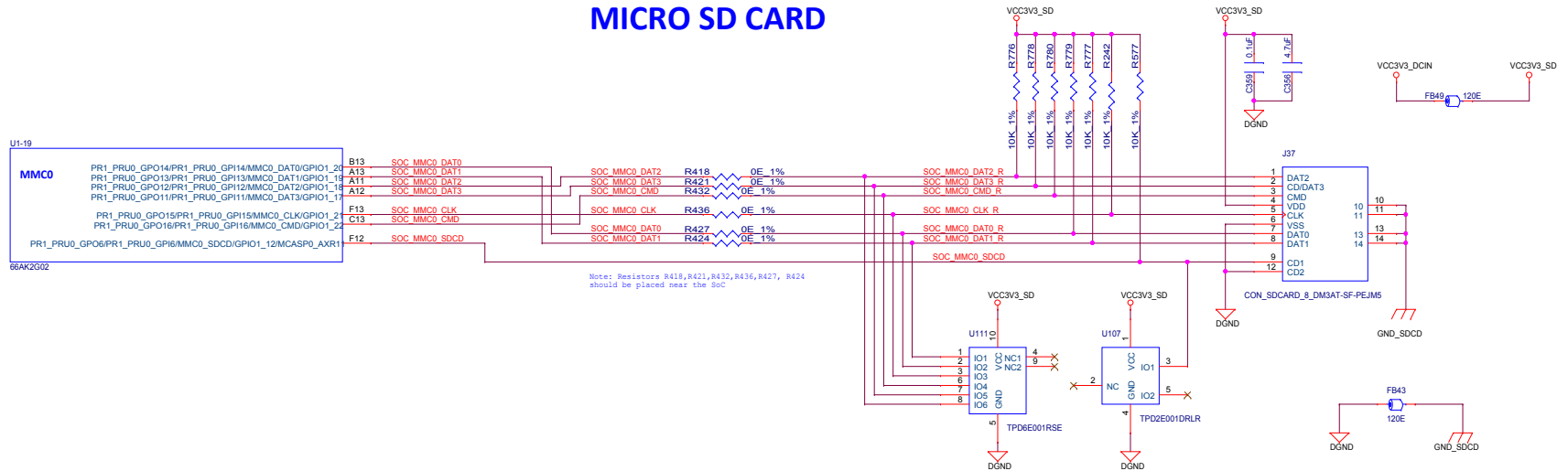
Note: NC pins are connected to eMMC Signals for routing

Project : <b>K2G EVM</b>	Designed for TI by Mistral Solutions Pvt Ltd 	Title <b>EMMC FLASH</b>
Size C		Document Number MS_TI_K2GEVM_SCH_REVD
Date Thursday, April 14, 2016		Rev D
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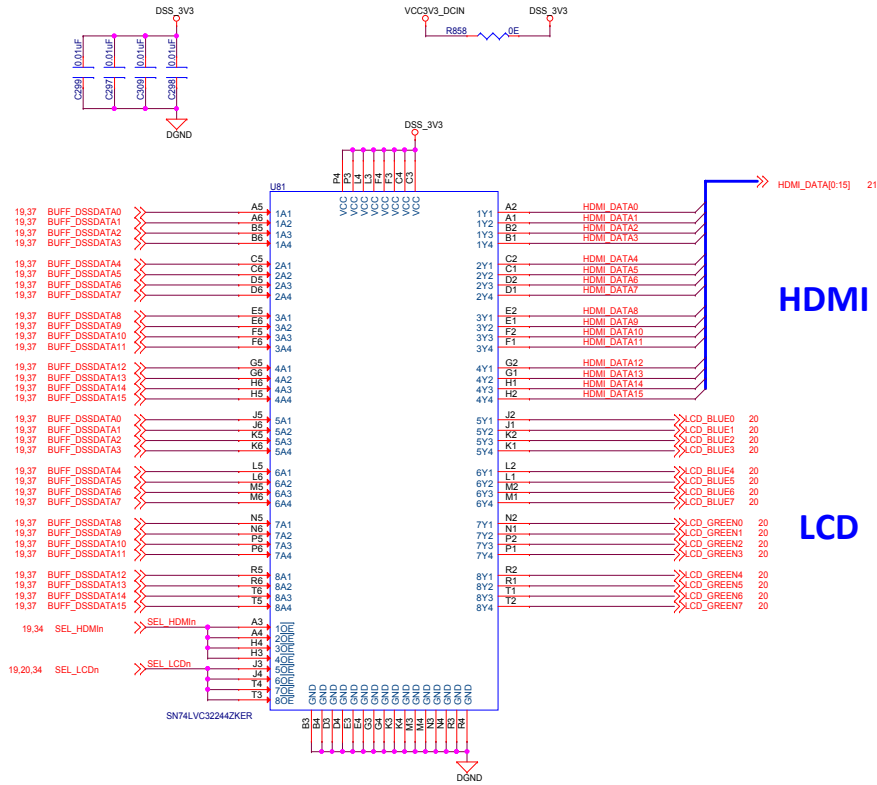
# NAND Flash



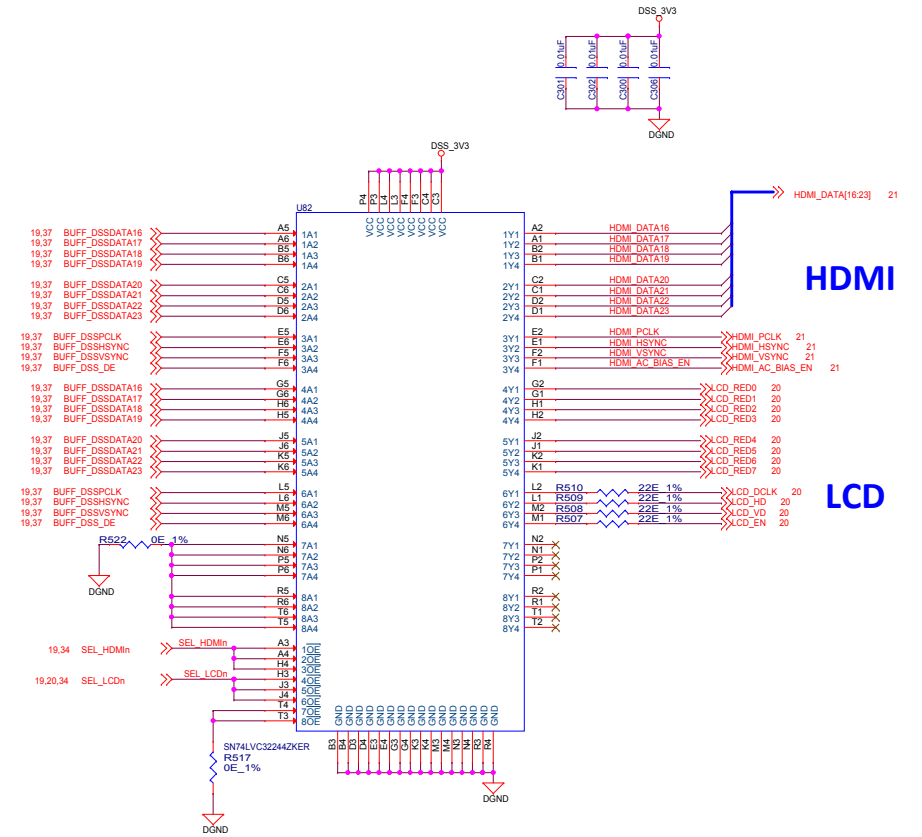
# MICRO SD CARD



## DSS BUFFER 1



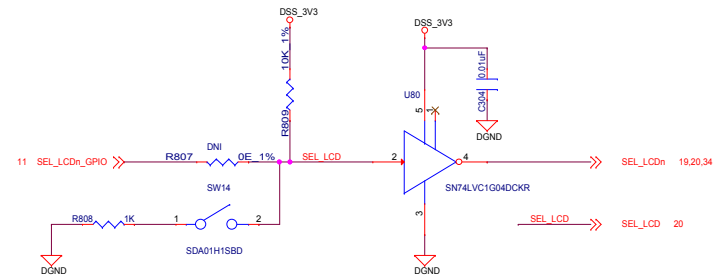
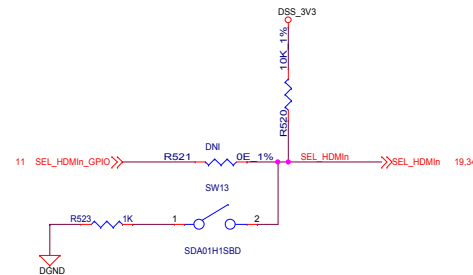
## DSS BUFFER 2



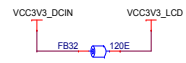
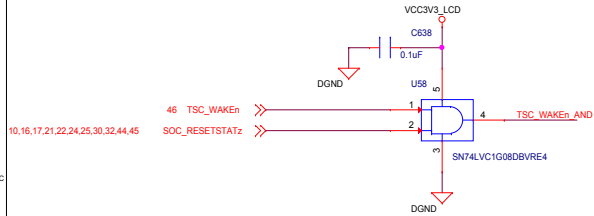
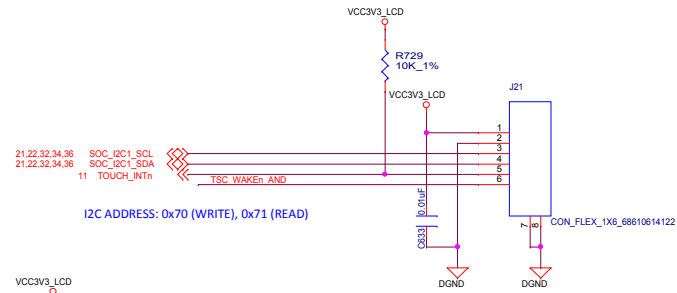
## SELECTION LCD AND HDMI

HDMI/LCD SWITCH SELECTION

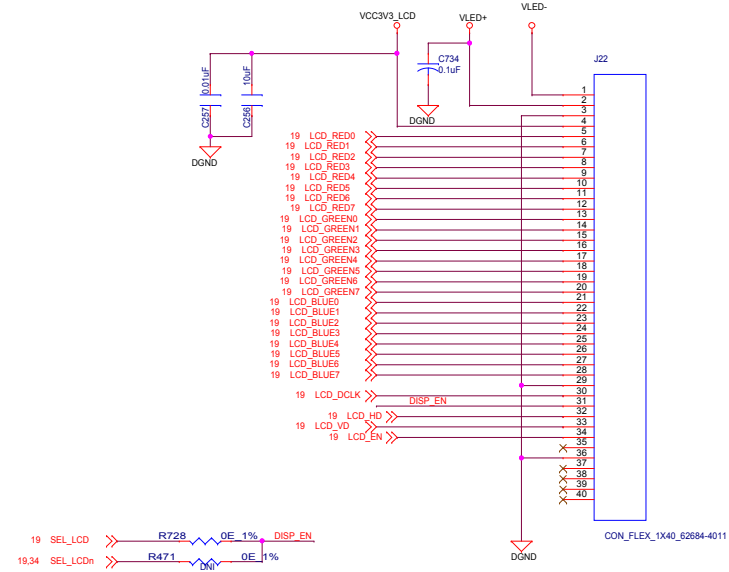
SW14	SW13	DEVICE
ON	ON	HDMI ON
OFF	OFF	LCD ON
OFF	ON	NOT VALID
ON	OFF	NOT VALID



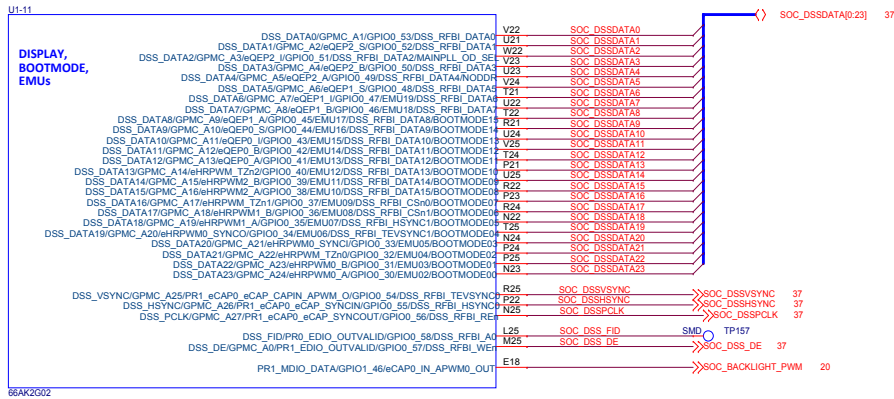
# TOUCH SCREEN CONNECTOR



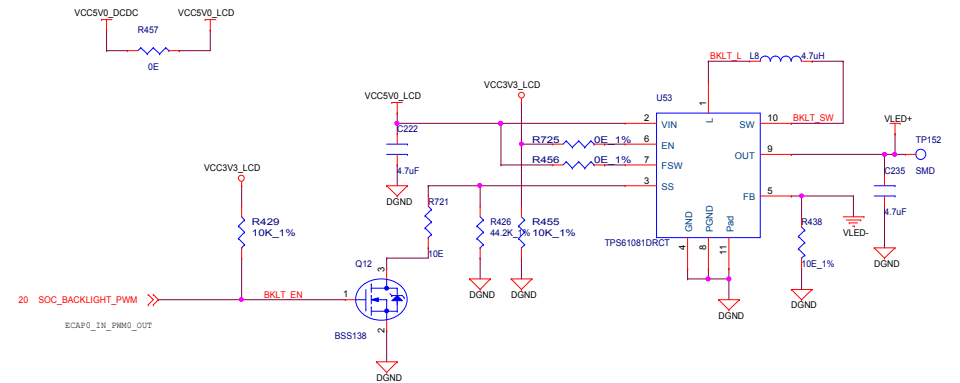
# LCD CONNECTOR



# SOC DSS



# BACKLIGHT POWER

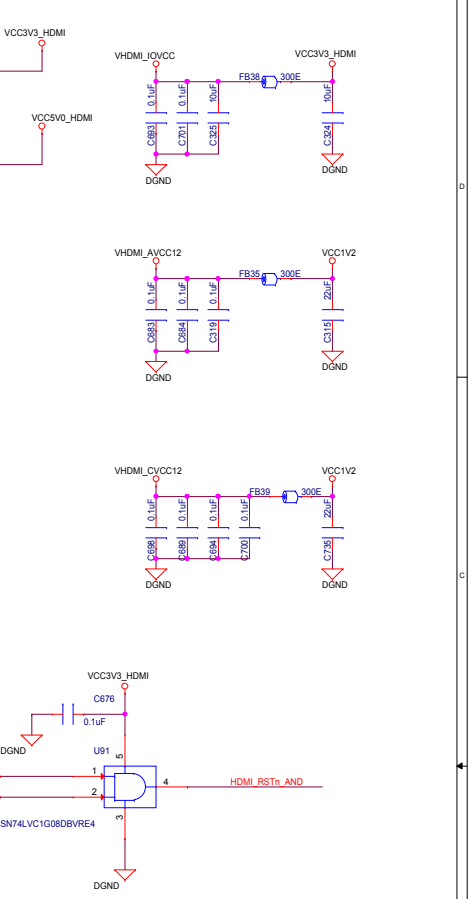
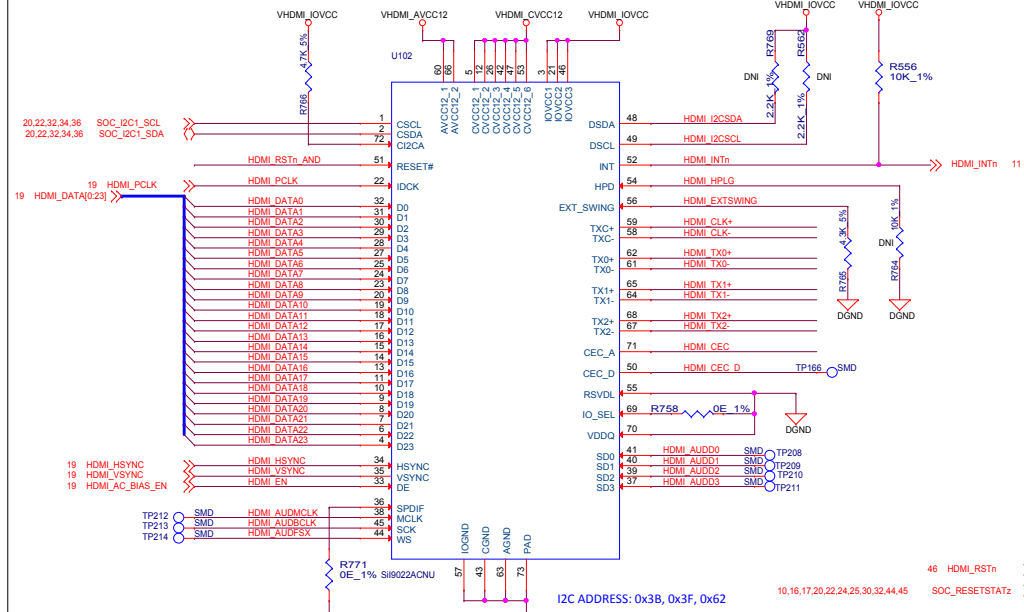
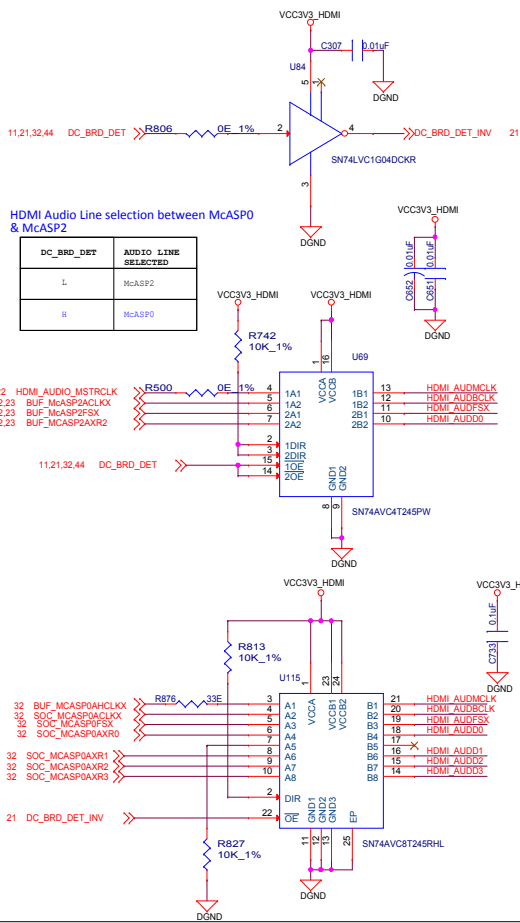


Project :	Designed for TI by Mistral Solutions Pvt Ltd	Title	LCD & TOUCH SCREEN
K2G EVM	 	Size	Document Number
		C	MS_TI_K2GEVM_SCH_REV D
		Date:	Thursday, April 14, 2016
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		Rev	D

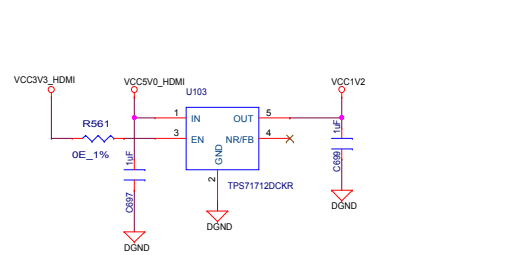
# HDMI TRANSMITTER

## HDMI Audio Line selection between McASP0 & McASP2

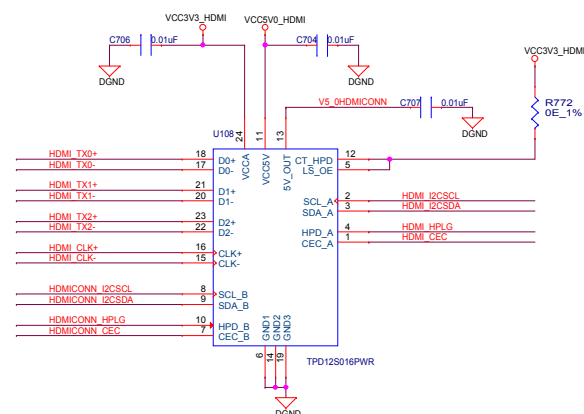
DC_BRD_DET	AUDIO LINE SELECTED
L	McASP2
H	McASP0



# HDMI 1.2V GENERATION

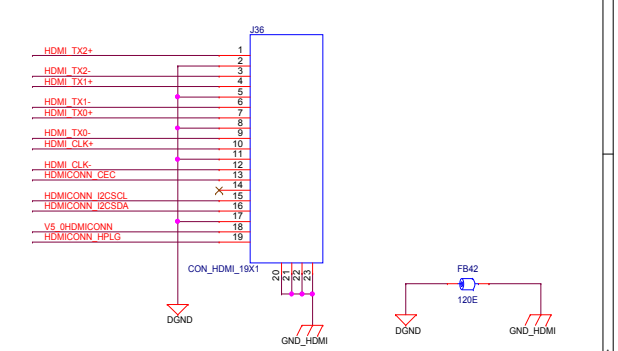


# HDMI ESD DEVICE

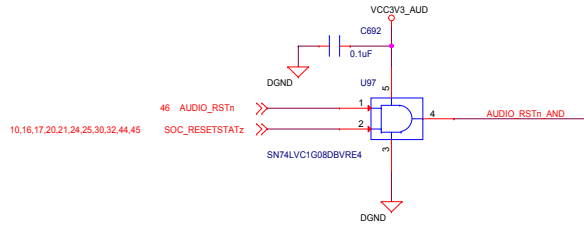


NOTE:  
 TPD12S016PWR has integrated pullup or pulldown resistors on the I2C and HPD lines hence no external pullup or pulldown required.

# HDMI CONNECTOR



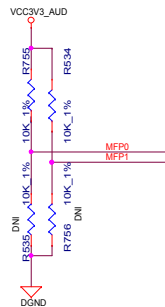
# AUDIO CODEC RESET



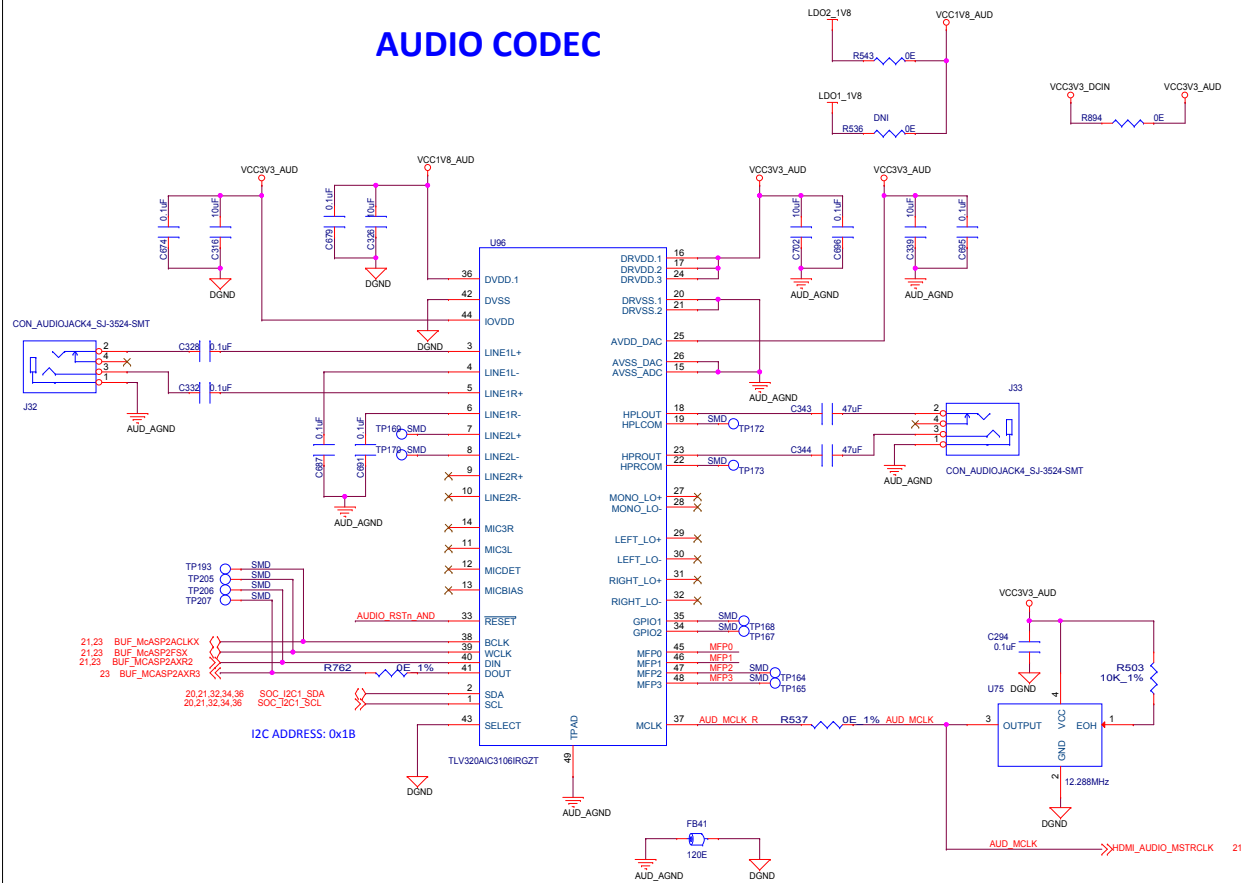
10,16,17,20,21,24,25,30,32,44,45

CODEC I2C ADDRESS SELECTION

MFPO	MFPI	ADDRESS
L	L	1A
L	H	1B
H	L	1C
H	H	1D



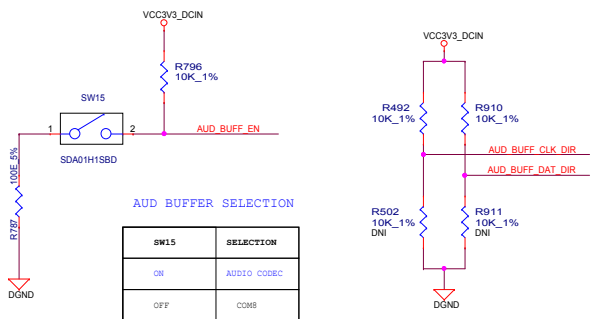
# AUDIO CODEC



21 23 BUF\_MCASP2ACLKX  
21 23 BUF\_MCASP2FSX  
21 23 BUF\_MCASP2AXR2  
23 BUF\_MCASP2AXR3

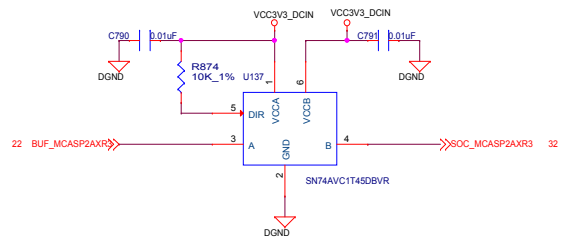
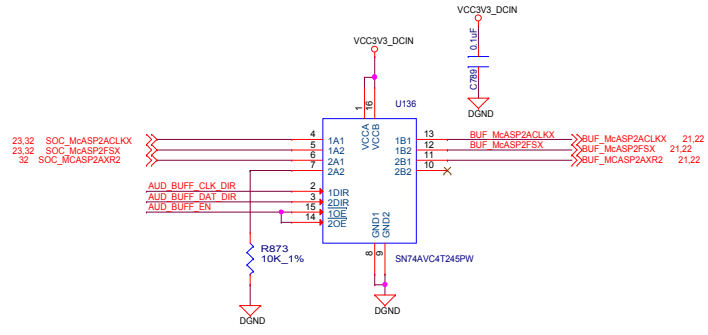
I2C ADDRESS: 0x1B

# AUDIO BUFFER

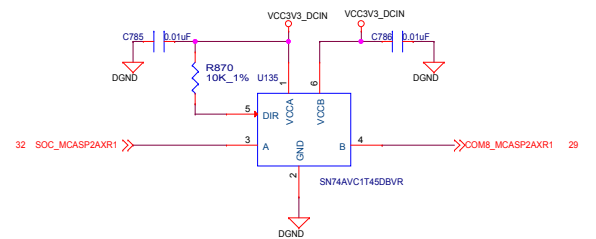


**AUD BUFFER SELECTION**

SW15	SELECTION
ON	AUDIO CODEC
OFF	COM8

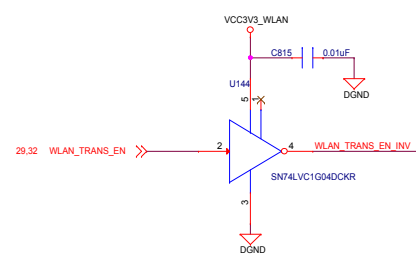
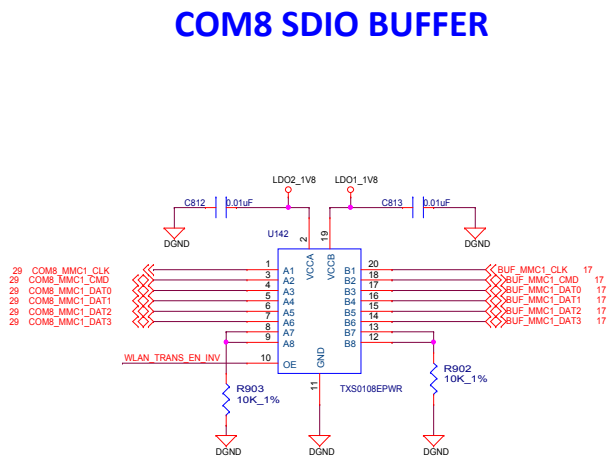
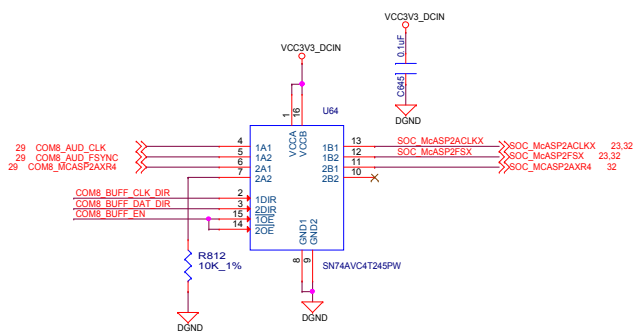


# COM8 BUFFER

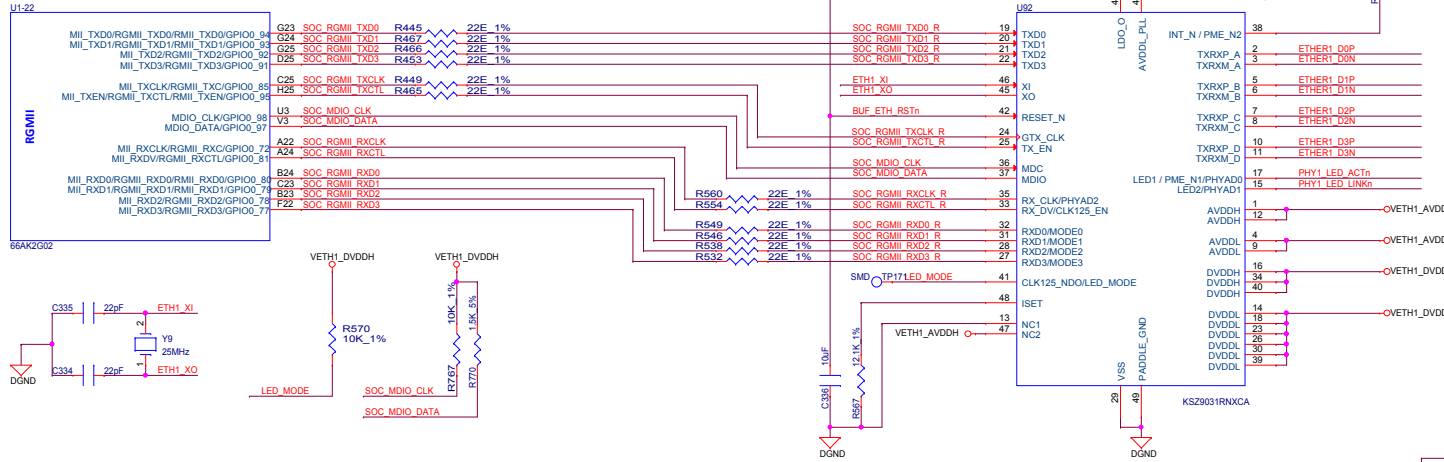


**COM8 BUFFER SELECTION**

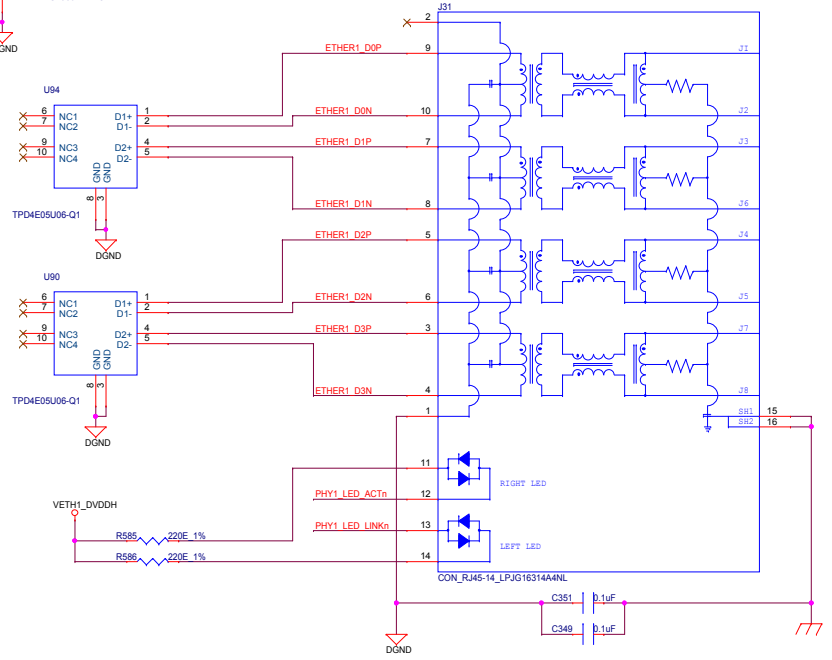
SW11	SELECTION
OFF	AUDIO CODEC
ON	COM8



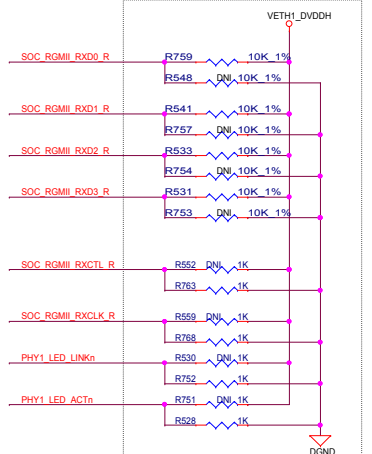
# ETHERNET PHY



# ETHERNET CONNECTOR

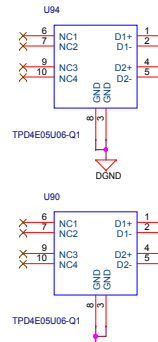


# ETHERNET MODE CONFIGURATION

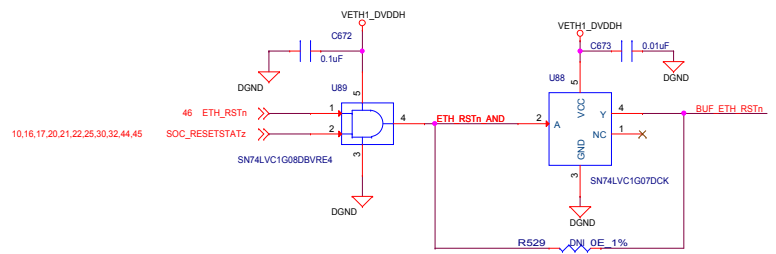


RXD[3:0]	MODE
0100	NAND TREE
0111	CHIP POWER DOWN
1100	RGMII MODE - ADVERTISE 1000 BASE-T FULL DUPLEX ONLY
1101	RGMII MODE - ADVERTISE 1000 BASE-T FULL & HALF DUPLEX ONLY
1110	RGMII MODE - ADVERTISE ALL CAPABILITIES (10/100/1000 SPEED HALF / FULL DUPLEX), EXCEPT 1000 BASE-T HALF DUPLEX
1111	RGMII MODE - ADVERTISE ALL CAPABILITIES (10/100/1000 SPEED HALF / FULL DUPLEX)

# ETHERNET ESD DEVICES

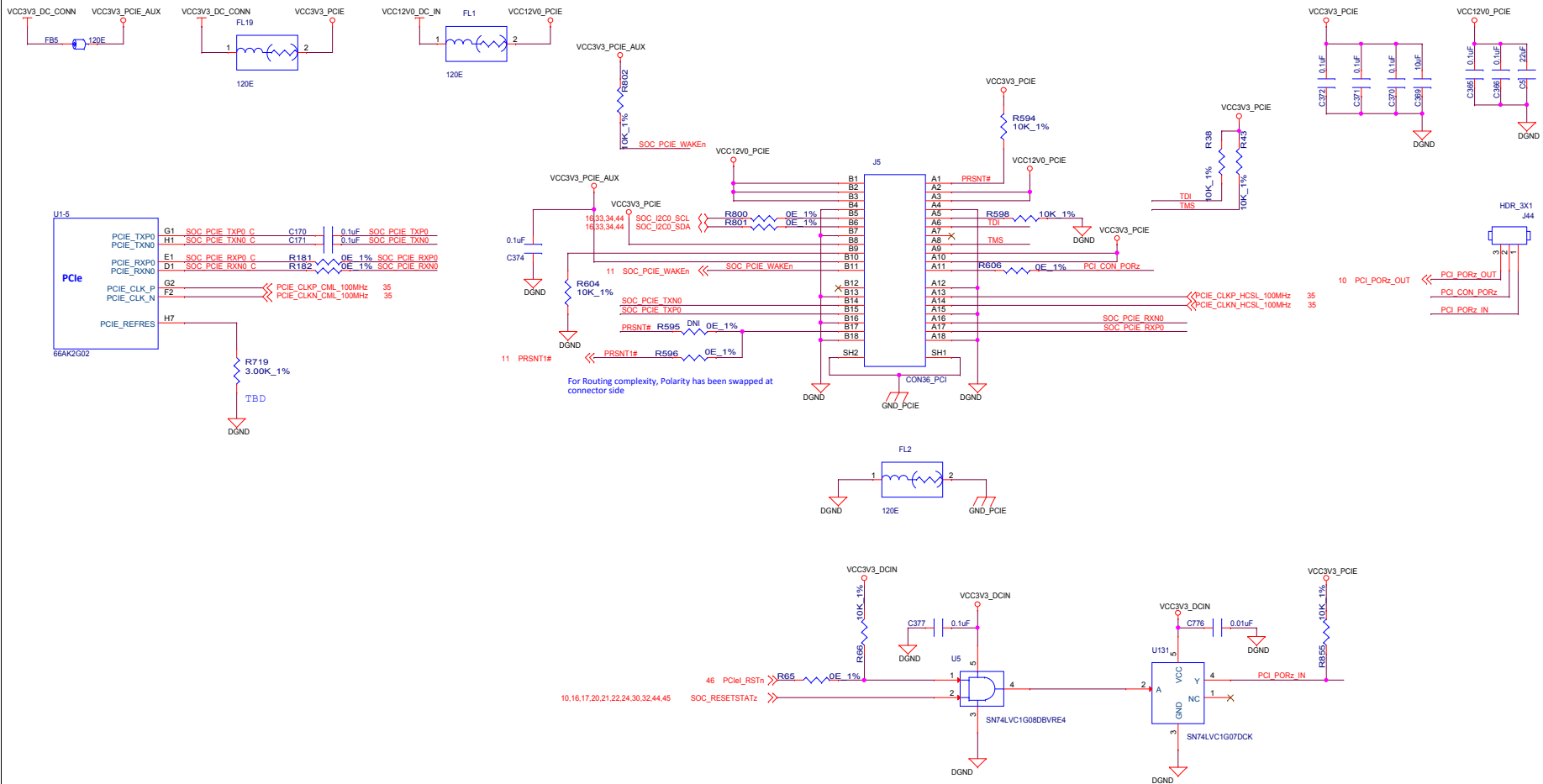


# ETHERNET RESET

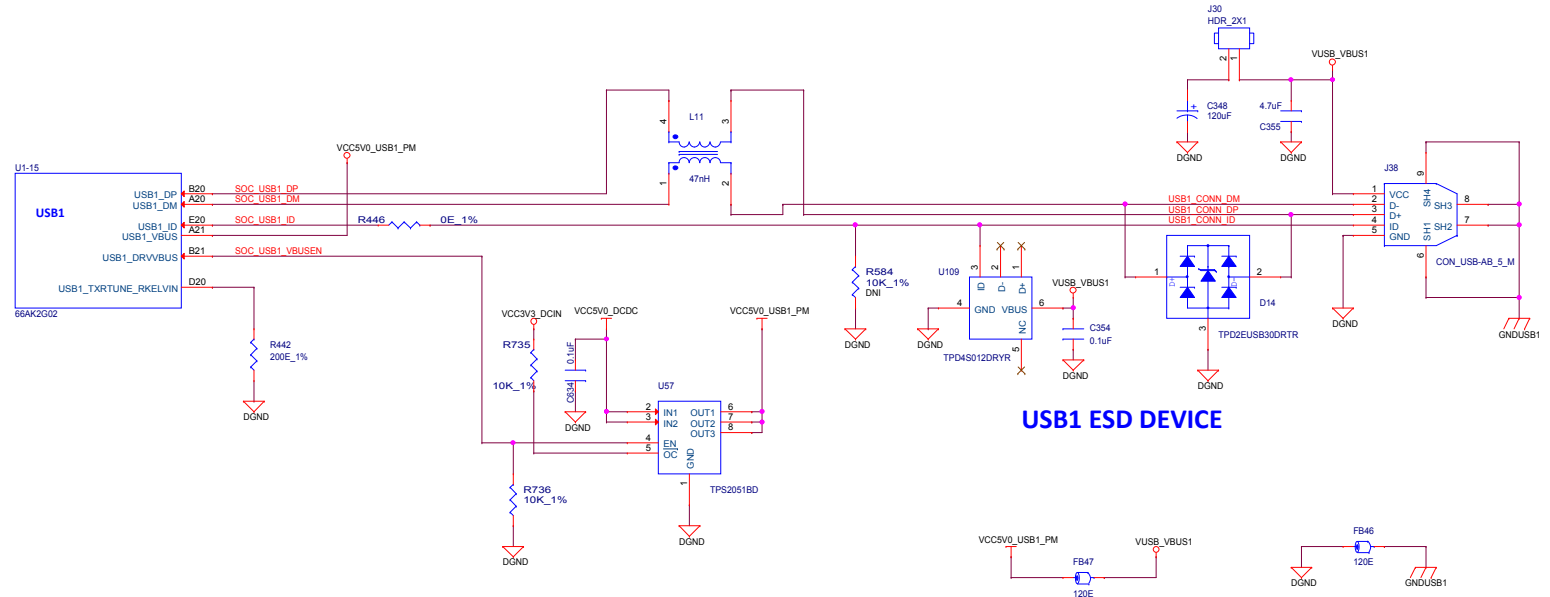




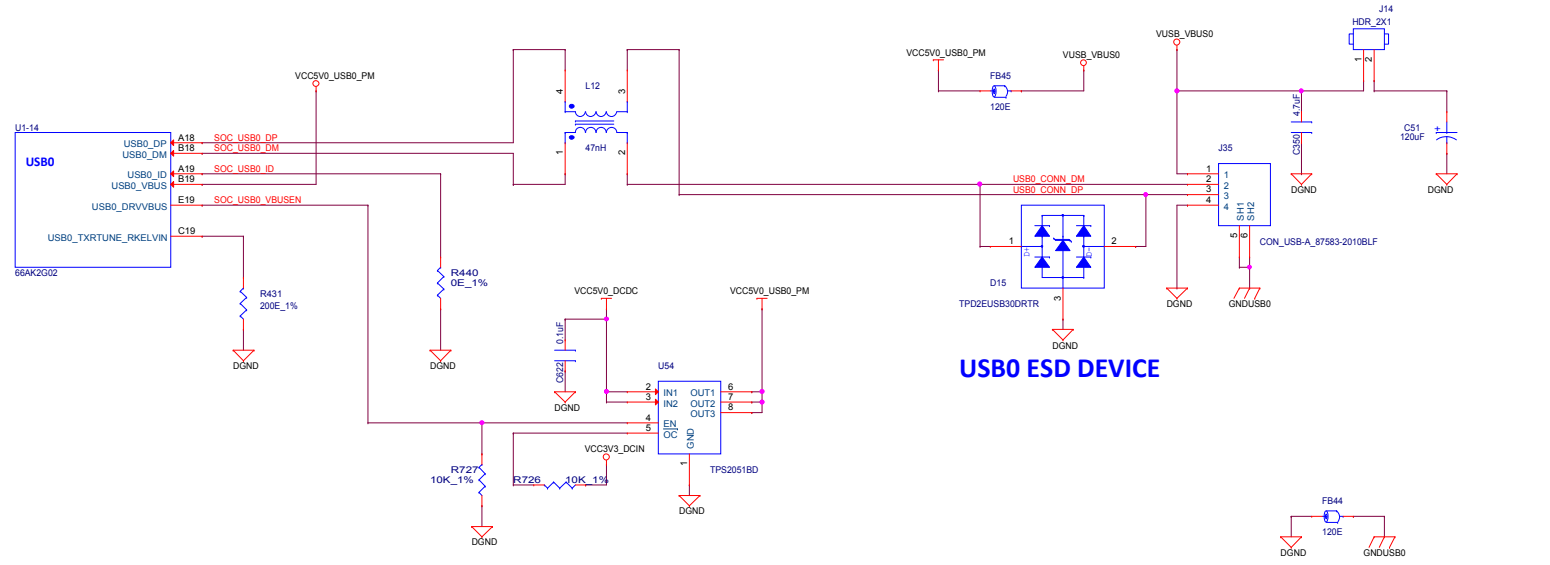
# PCI EXPRESS x1 CONNECTOR



## USB1 DUAL ROLE

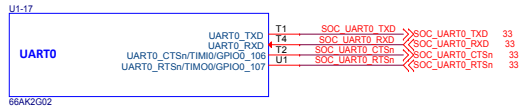


## USB0 HOST

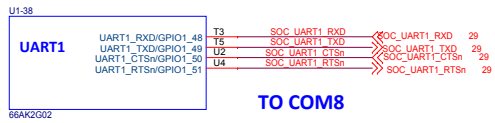


<b>Project :</b>	Designed for TI by Mistral Solutions Pvt Ltd	<b>Title</b> USB DUAL ROLE & HOST
<b>K2G EVM</b>		
<b>Size</b>	<b>Document Number</b>	<b>Rev</b>
C	MS_TI_K2GEVM_SCH_REV D	D
<b>Date:</b>	<b>Thursday, April 14, 2016</b>	<b>Sheet 26 of 50</b>

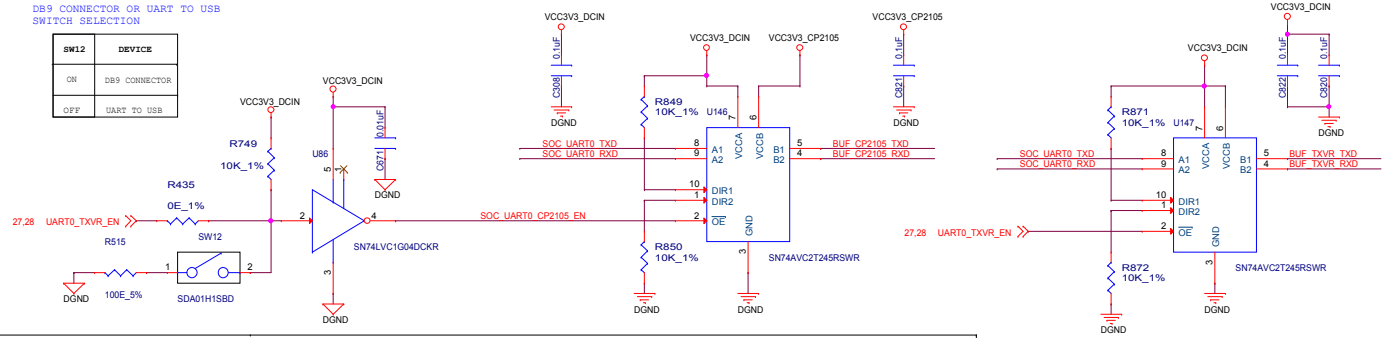
### SoC UART0



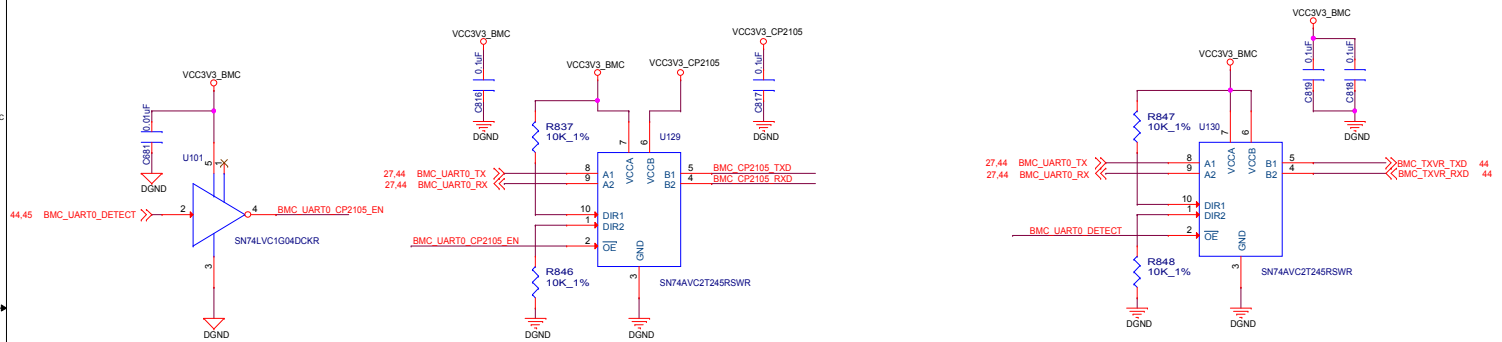
### SoC UART1



### SoC\_UART0 MUX: CP2105 or DB9



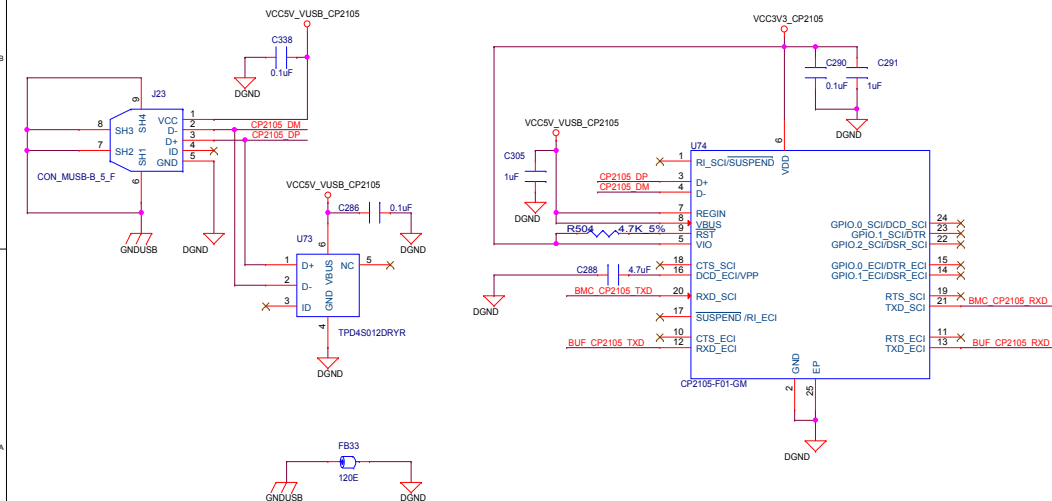
### MUX BETWEEN BMC UART0 TO USB & 4 PIN HDR



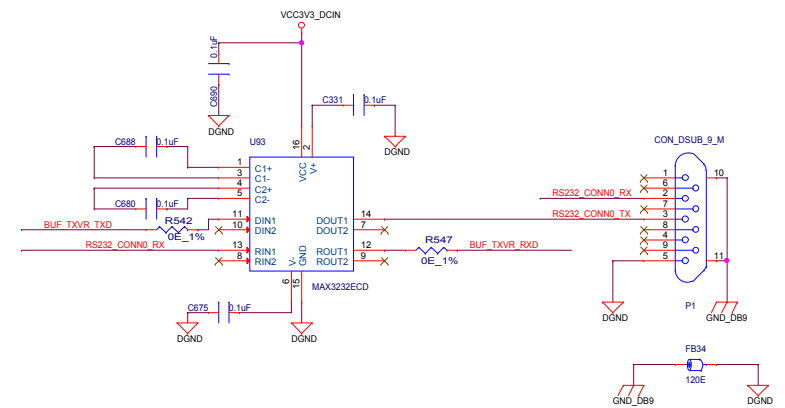
### SoC\_UART0 MUX SELECTION

SOC_UART0_CP2105_EN	SoC_UART0 Connected to
L	CP2105 (USB-to-UART)
H	UART TRANSCEIVER DB9 CONNECTOR

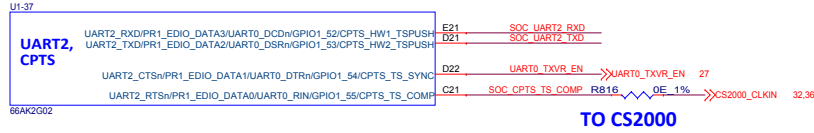
### SoC UART0 & BMC CONSOLE OVER USB



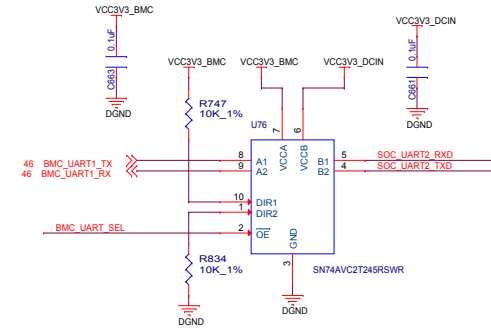
### UART0 DB9 CON



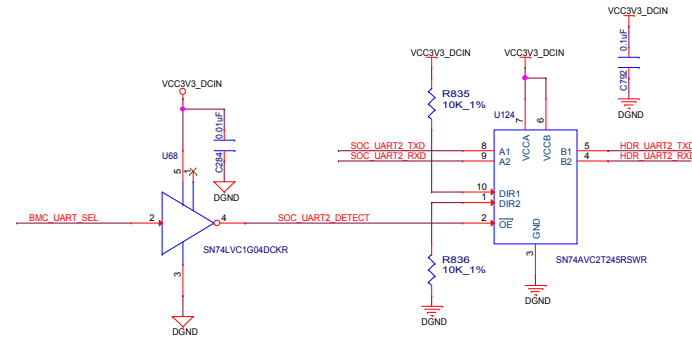
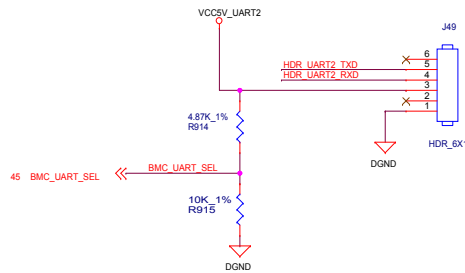
# SoC UART2



# SoC UART2 MUX - BMC or UART2 Header



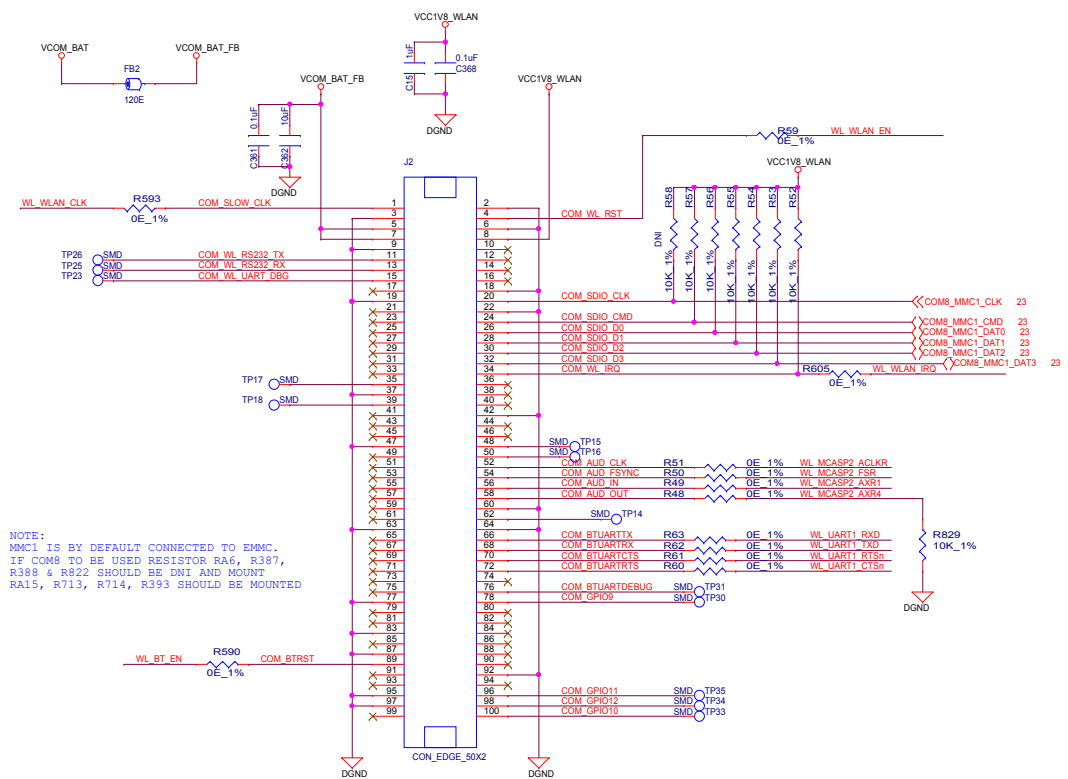
# UART2 HEADER



## SoC\_UART2 MUX SELECTION

BMC_UART_SEL	SoC_UART2 Connected to
L	BMC
H	UART2 HEADER (J49)

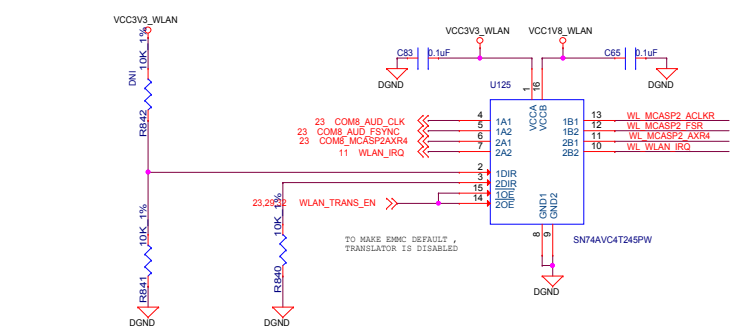
# COM8 CONNECTOR



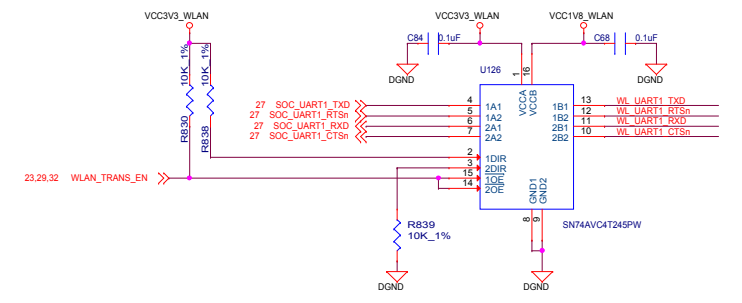
NOTE:  
MMC1 IS BY DEFAULT CONNECTED TO EMCC.  
IF COM8 TO BE USED RESISTOR RA6, R387,  
R388 & R822 SHOULD BE DNI AND MOUNT  
RA15, R713, R714, R393 SHOULD BE MOUNTED

CONNECTION ON COM8 IS FOLLOWED AS PER  
AM437x GP BOM. THESE ARE GP108 AND NOT USED  
IN AM437x GP EVM, SO WE PROVIDED AS TEST POINTS

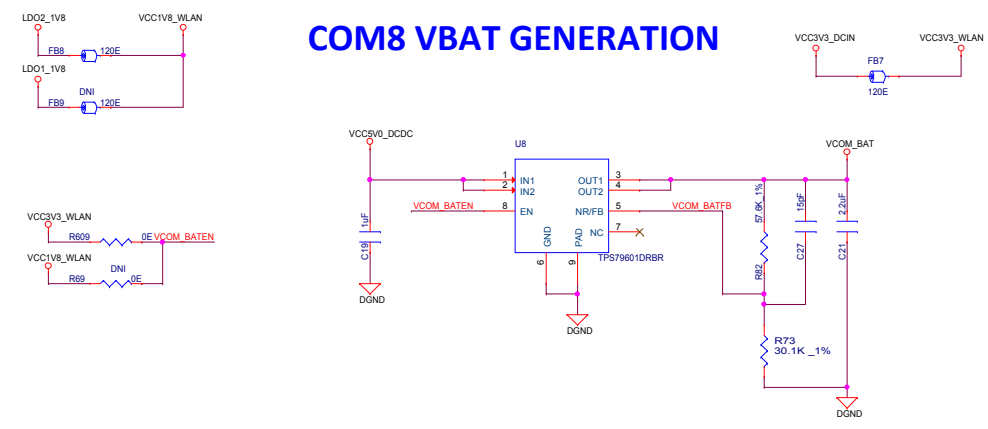
# COM8 LEVEL TRANSLATOR1



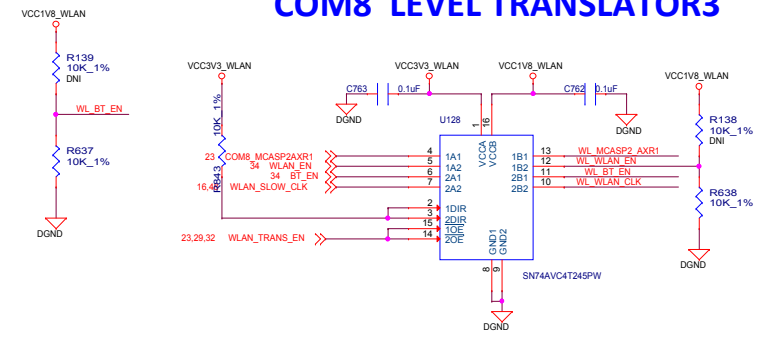
# COM8 LEVEL TRANSLATOR2



# COM8 VBAT GENERATION

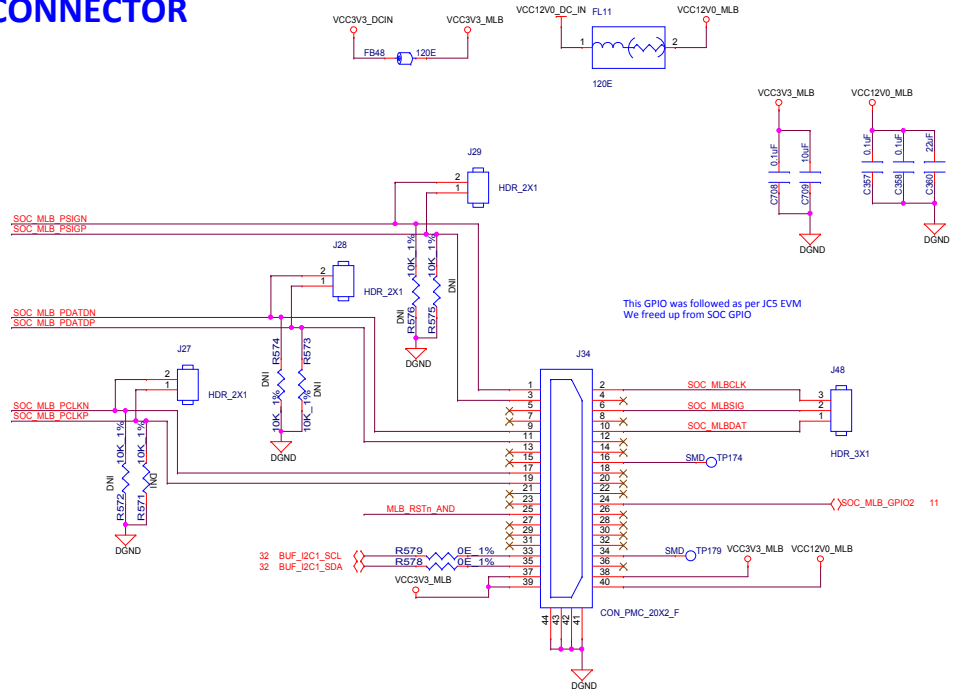
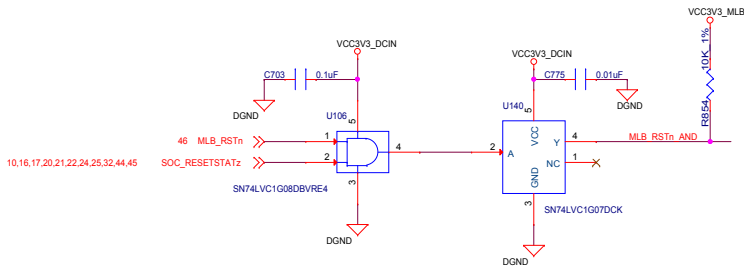
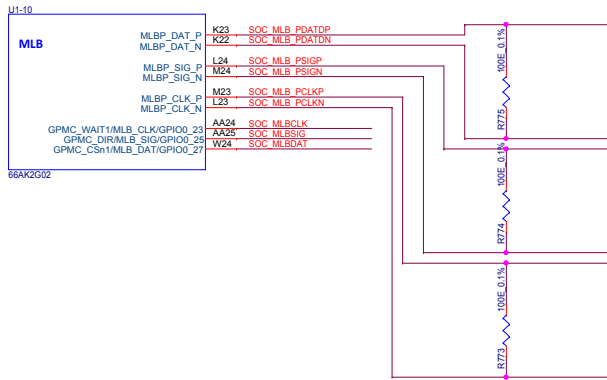


# COM8 LEVEL TRANSLATOR3

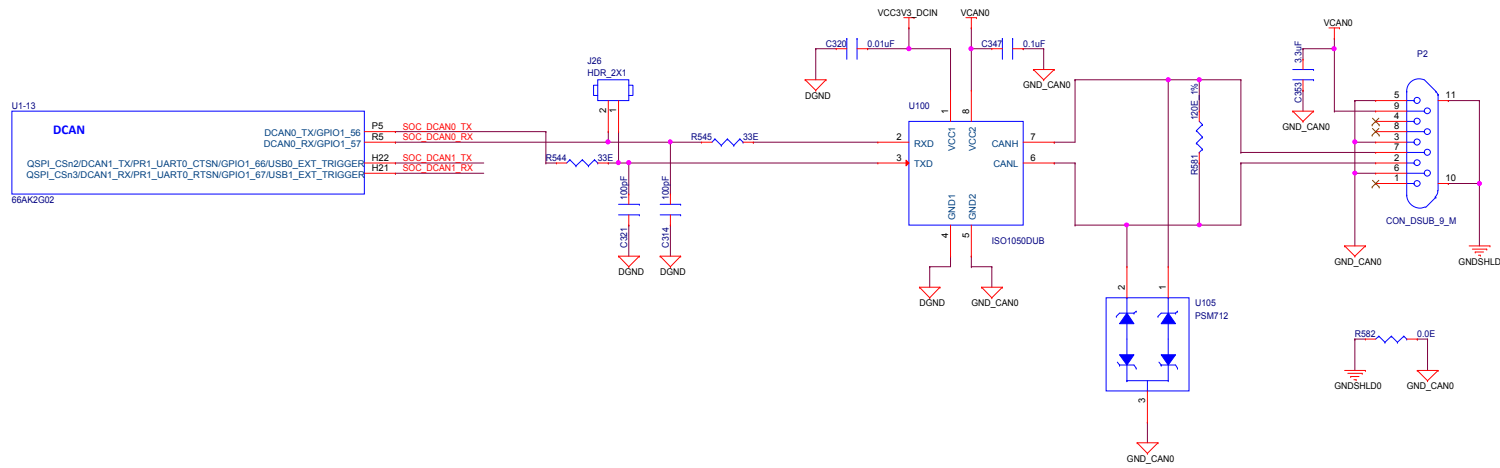


Project :	Designed for TI by Mistral Solutions Pvt Ltd	Title	COM8 CONNECTOR	
K2G EVM		Size	Document Number	Rev
		C	MS_TI_K2GEVM_SCH_REV D	D
		Date:	Wednesday, April 13, 2016	Sheet 29 of 50

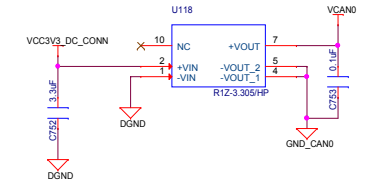
# MLB CONNECTOR



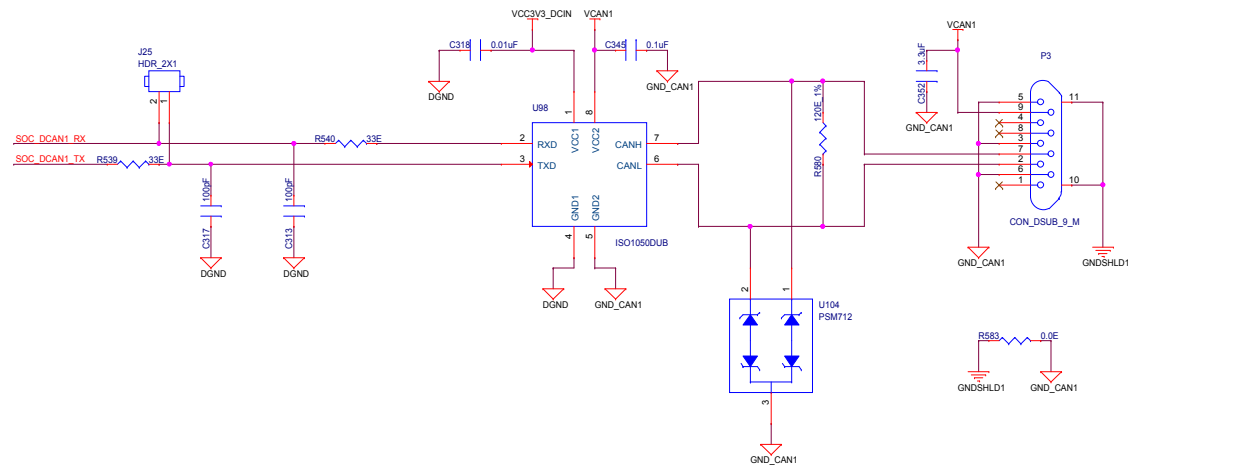
## DCAN0



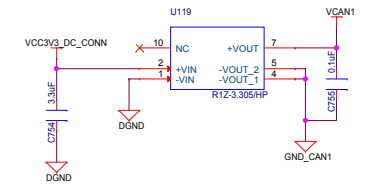
## DCAN0 POWER



## DCAN1

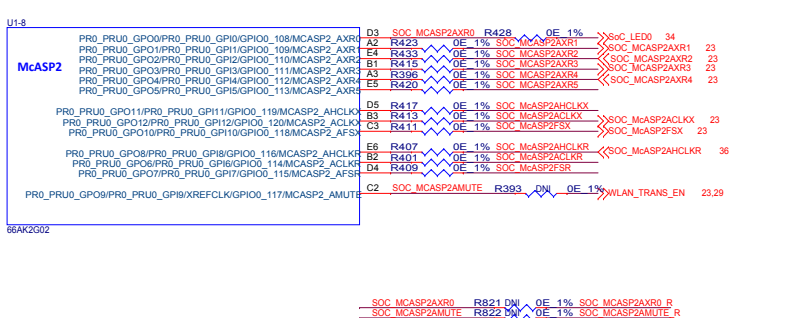
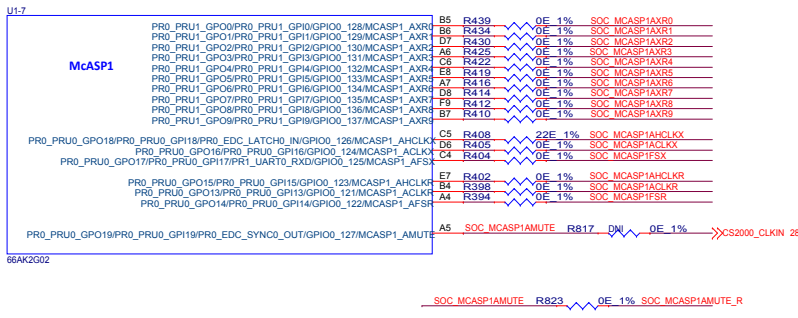
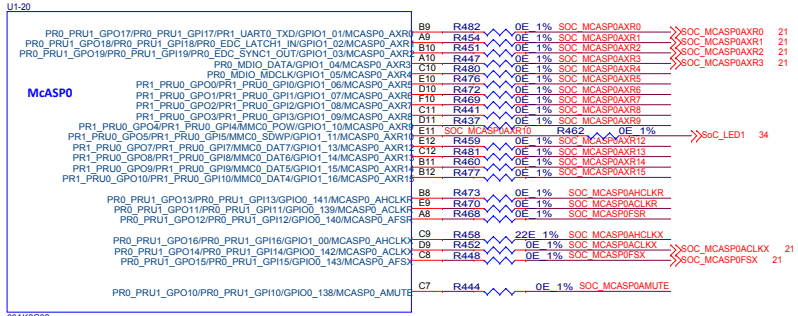


## DCAN1 POWER

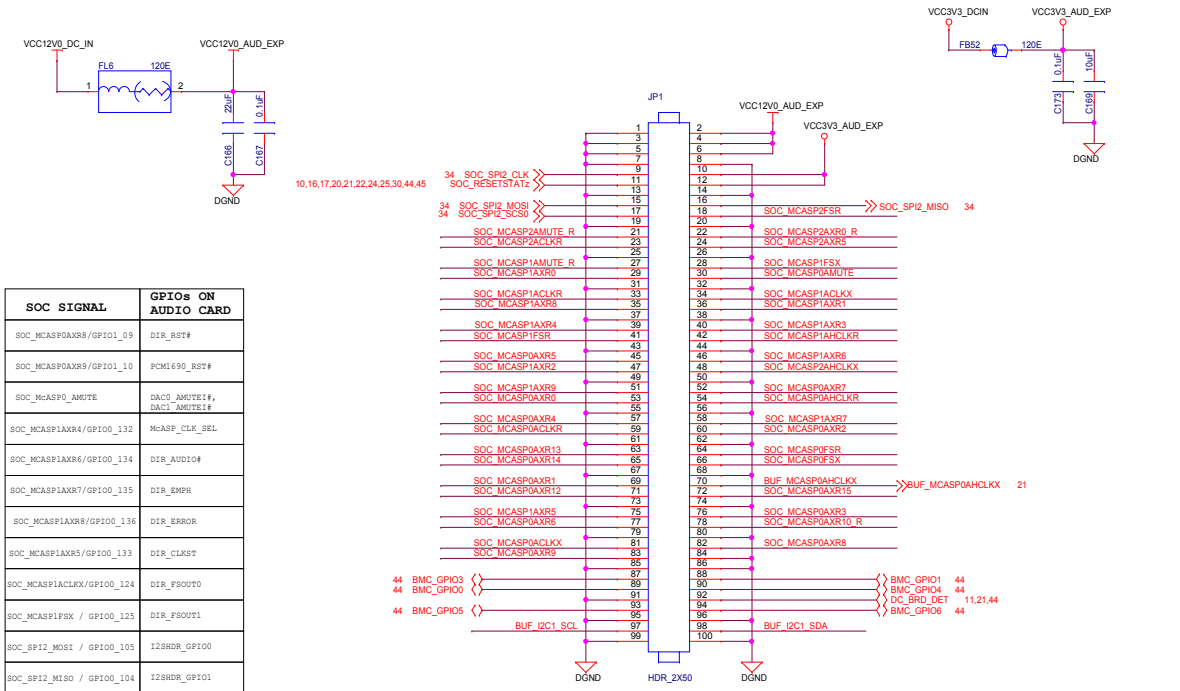


Project :	Designed for TI by Mistral Solutions Pvt Ltd	Title	DCAN CONNECTOR	
K2G EVM	 	Size	Document Number	Rev
		C	MS_TI_K2GEVM_SCH_REVD	D
		Date:	Thursday, April 14, 2016	Sheet 31 of 50

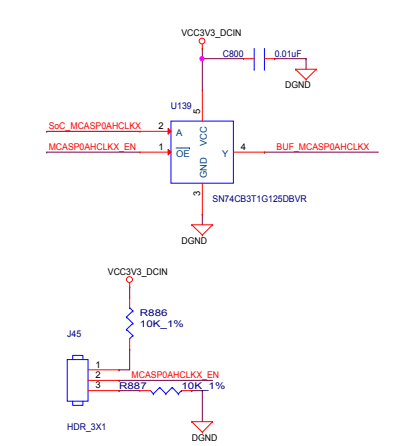
# SOC MCASP



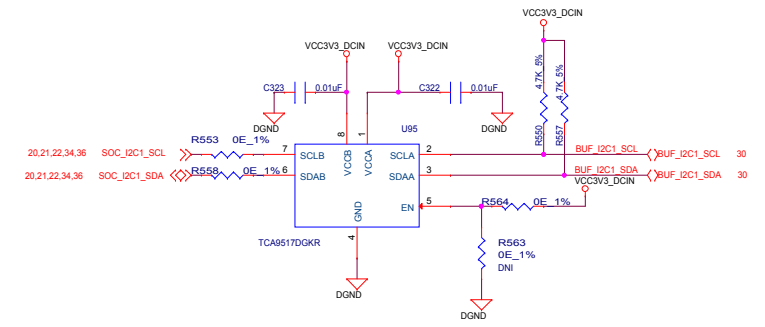
# AUDIO EXP CONNECTOR



# McASP0AHCLKX\_BUFFER

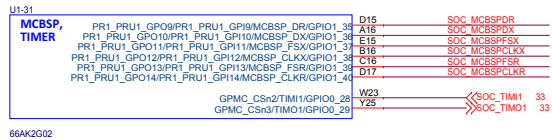


# I2C BUFFER





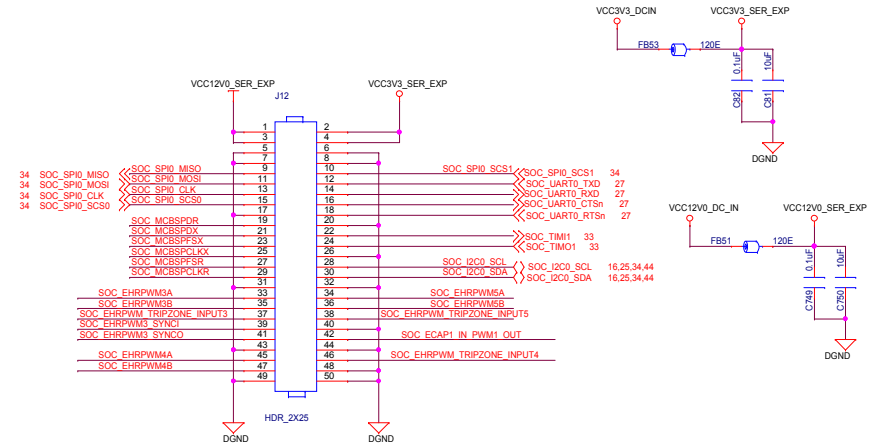
## SoC McBSP



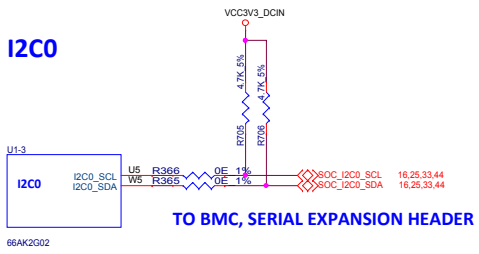
## SoC PWM



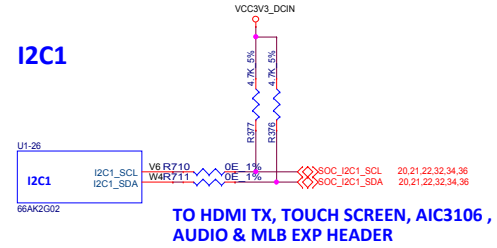
## SERIAL EXPANSION CONNECTOR



### I2C0

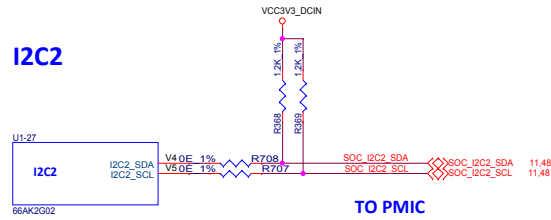


### I2C1

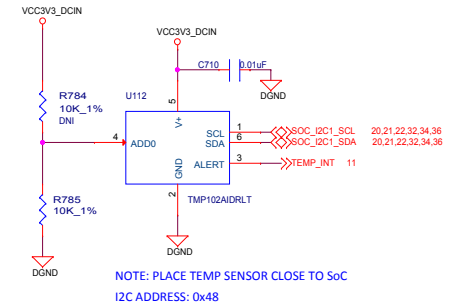


### SoC I2C

#### I2C2

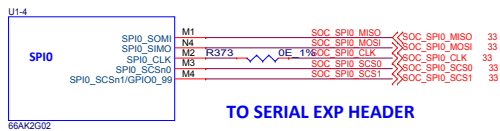


### TEMPERATURE SENSOR

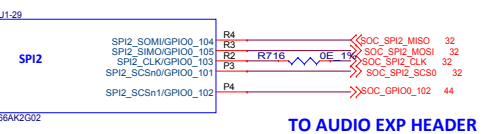


### SoC SPI

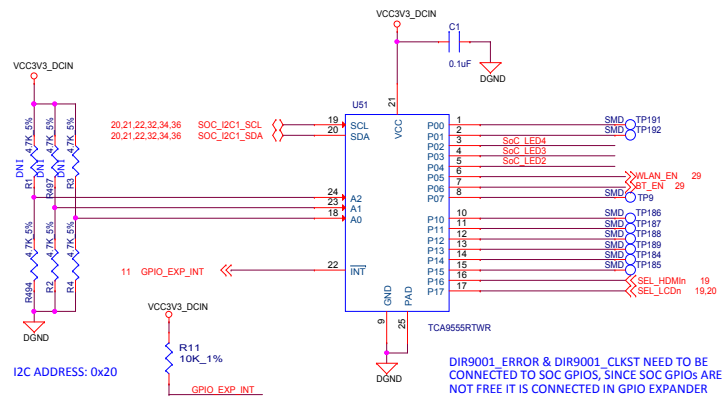
#### SPI0



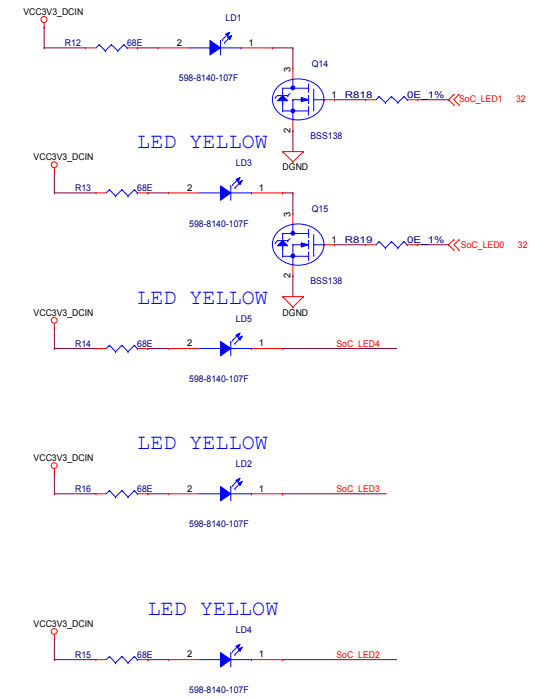
#### SPI2



### GPIO EXPANDER & LEDs

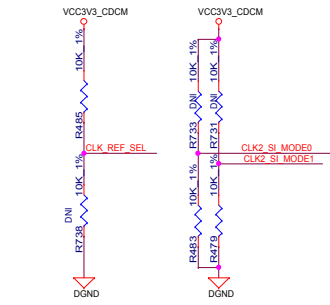


#### LED YELLOW



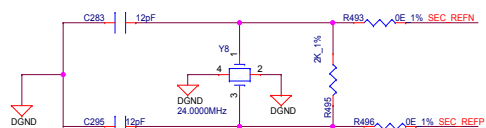
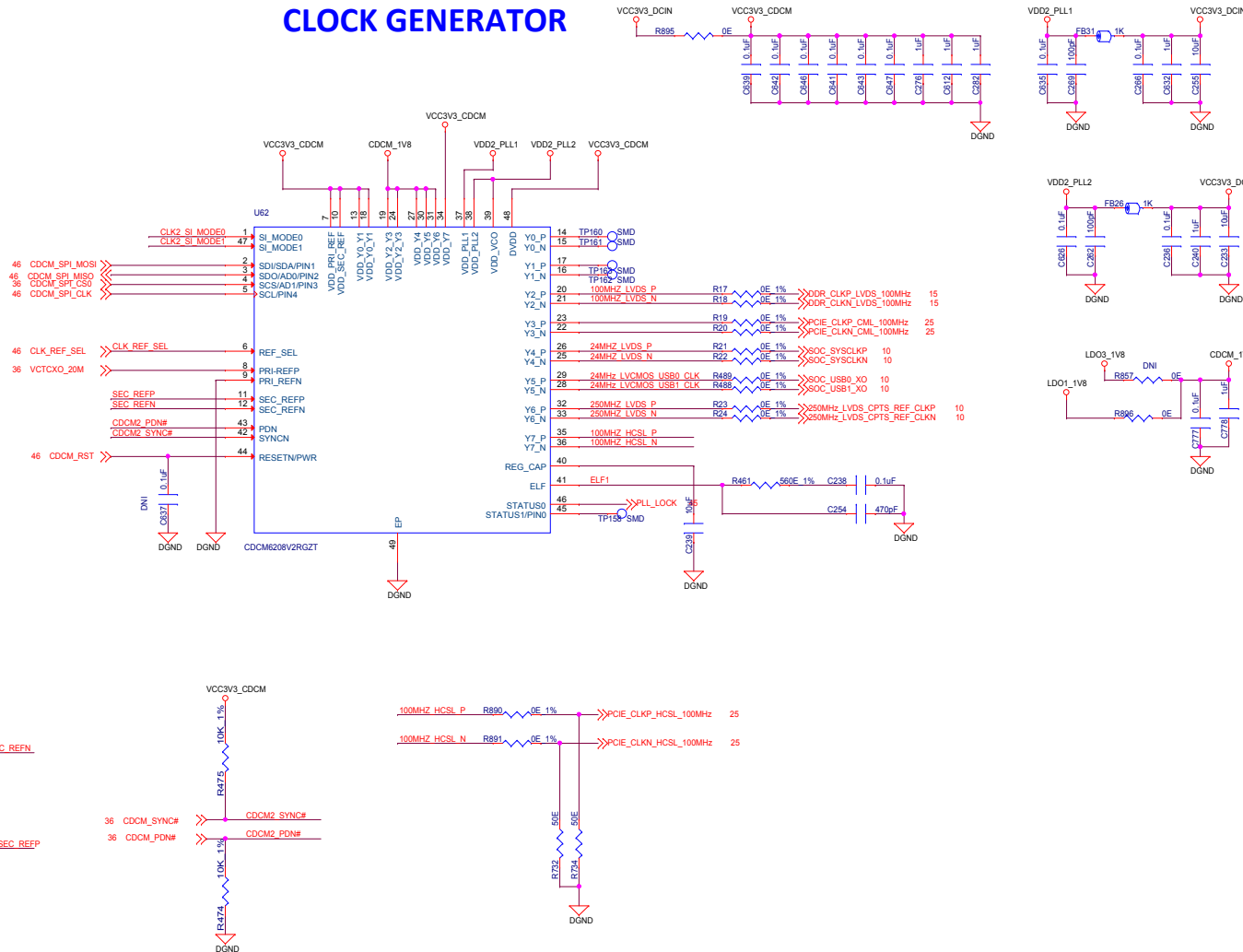
Project :	Designed for TI by Mistral Solutions Pvt Ltd	Title	SERIAL CONTROL INTERFACE
K2G EVM	 	Size	Document Number
		C	MS_TI_K2GEVM_SCH_REV D
		Date:	Thursday, April 14, 2016
		Sheet	34 of 50

# CLOCK GENERATOR

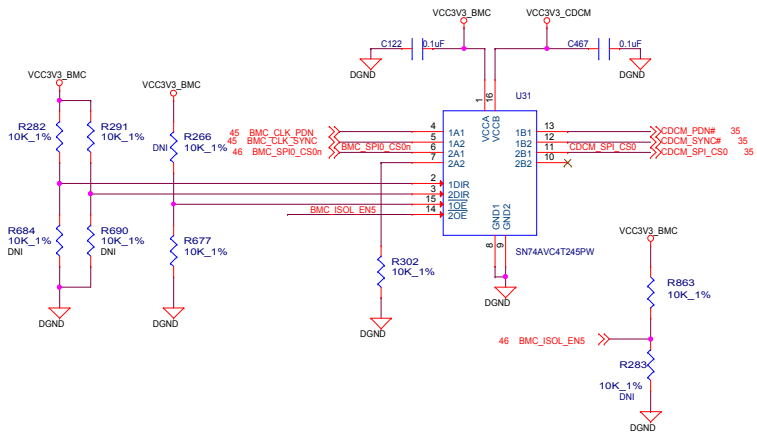


MODE SELECTION FOR CDCM DEVICE

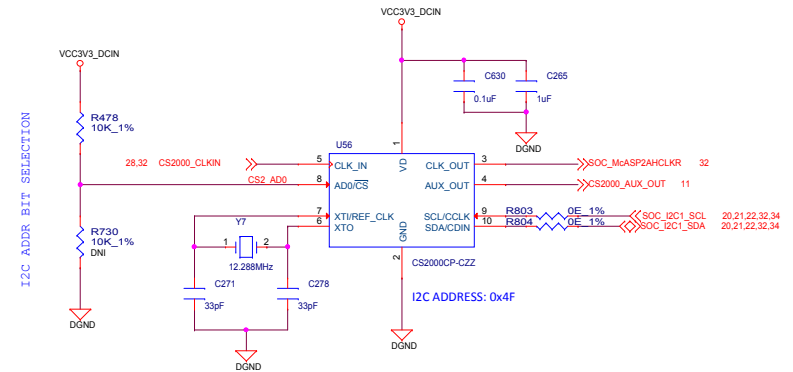
SI_MODE1	SI_MODE0	MODE SELECTED
0	0	SPI MODE
0	1	I2C MODE
1	0	PIN MODE (NO SERIAL PROGRAMMING)
1	1	RESERVED



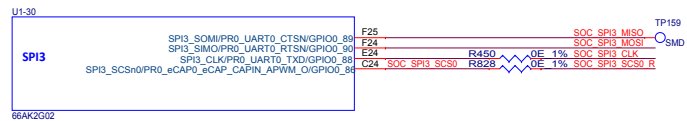
## BMC ISOLATOR 5



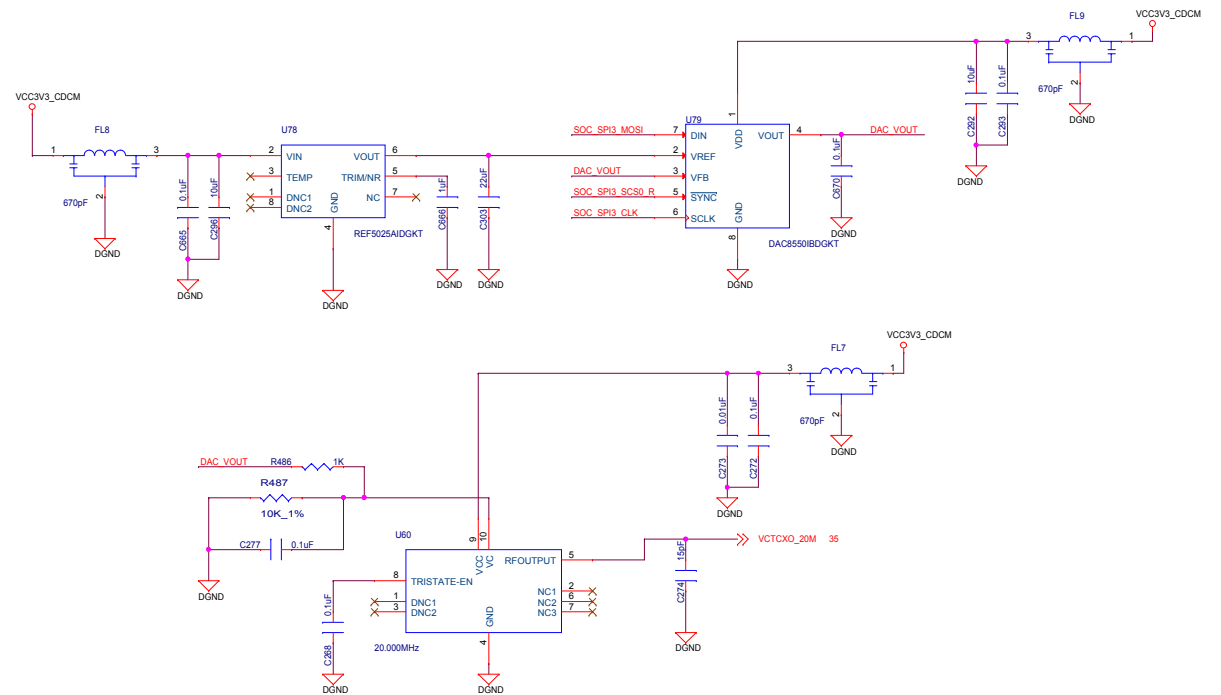
## GENERATOR - AUDIO CLOCK DOMAIN



## SoC SPI3

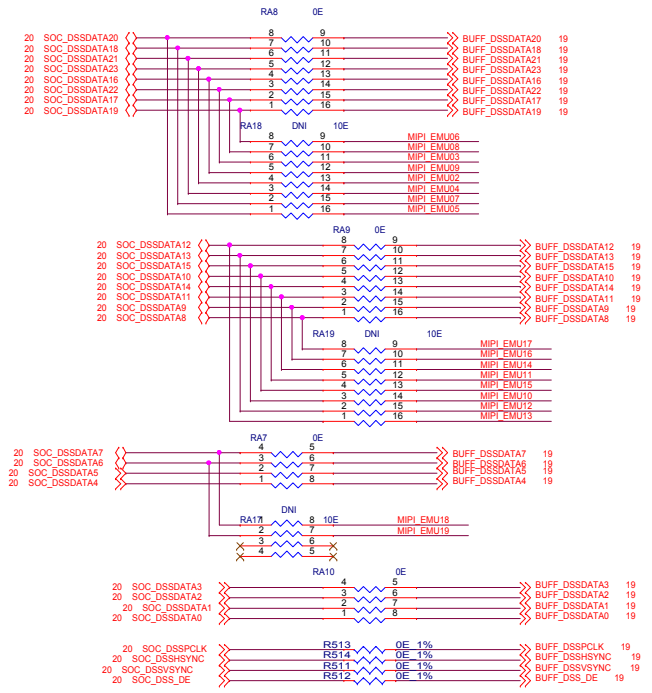
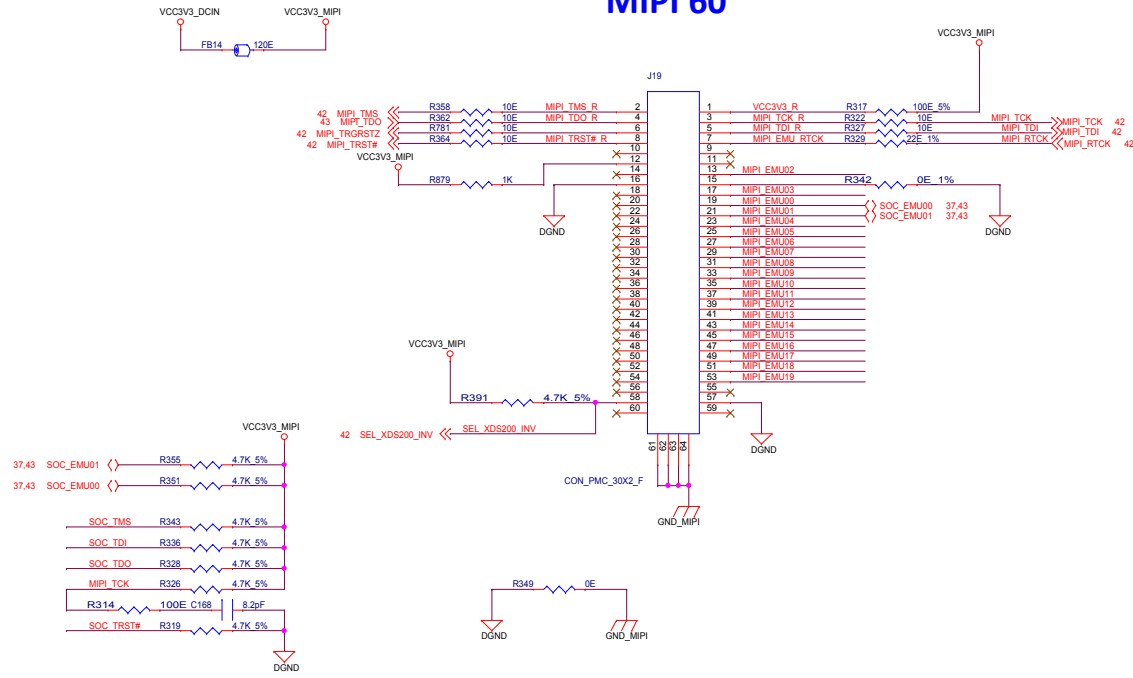


## AVB CLOCK GENERATOR- 1588 CLOCK DOMAIN



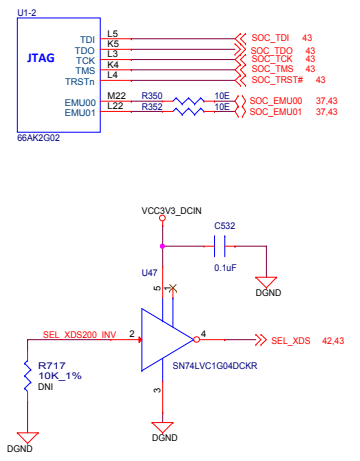
Project :	Designed for TI by Mistral Solutions Pvt Ltd	Title	CLOCK DISTRIBUTION 2
K2G EVM	 	Size	Document Number
		C	MS_TI_K2GEVM_SCH_REV D
		Date:	Thursday, April 14, 2016
		Sheet	36 of 50

# MIPI 60

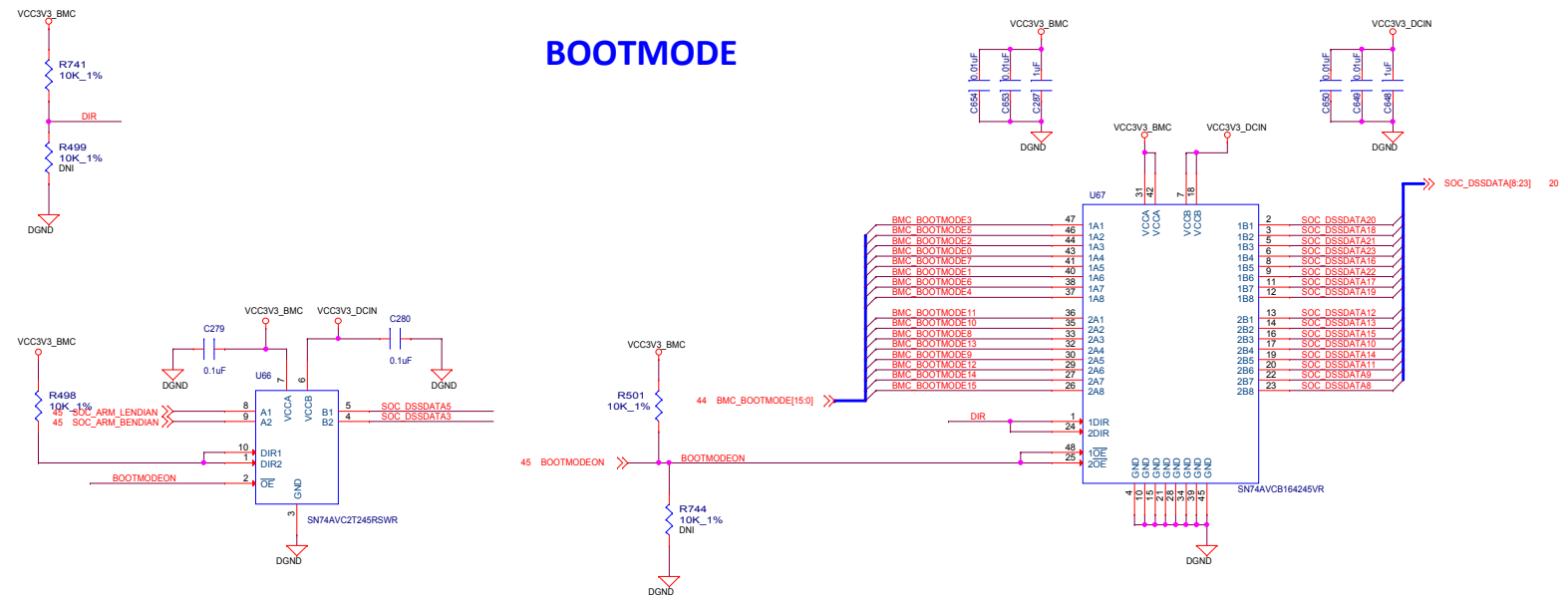


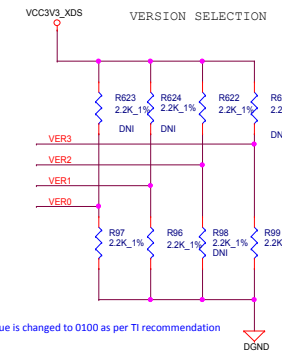
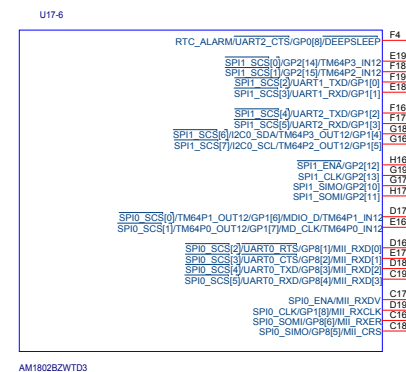
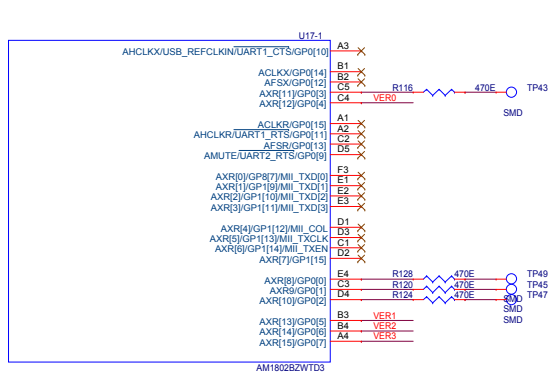
Res MUX between Display and JTAG TRACE Functionality  
 -For display, install RA7, RA8 & RA9 . DNI RA17,RA18 & RA19  
 -For TRACE, install RA17, RA18 & RA19. DNI RA7, RA8 & RA9

# SoC JTAG



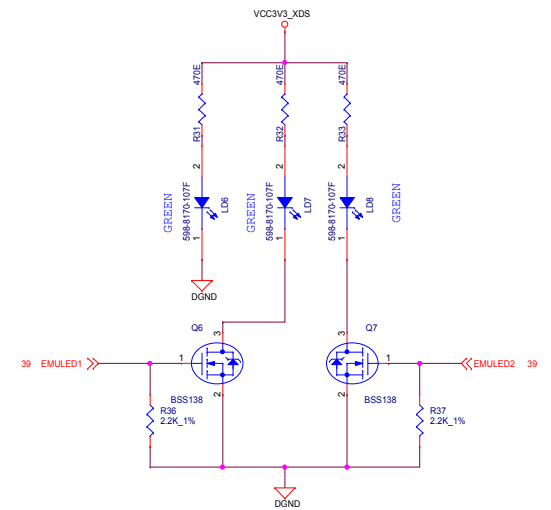
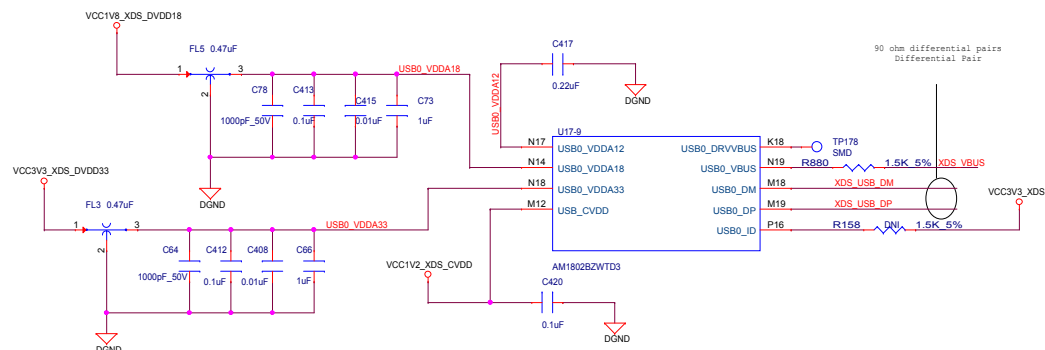
# BOOTMODE



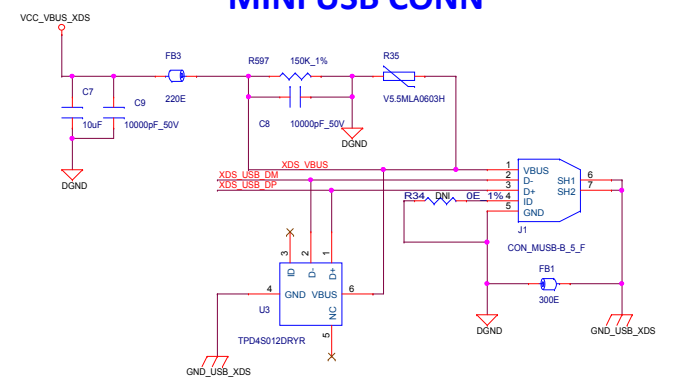
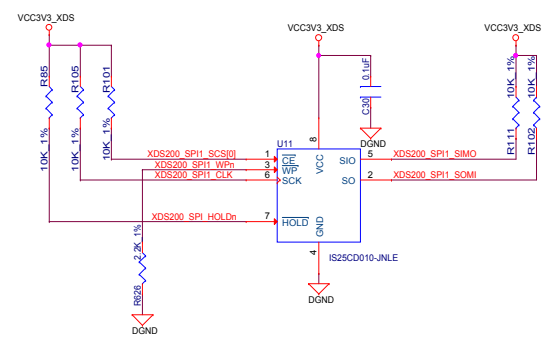


Note: Version Code default value is changed to 0100 as per TI recommendation

# XDS200

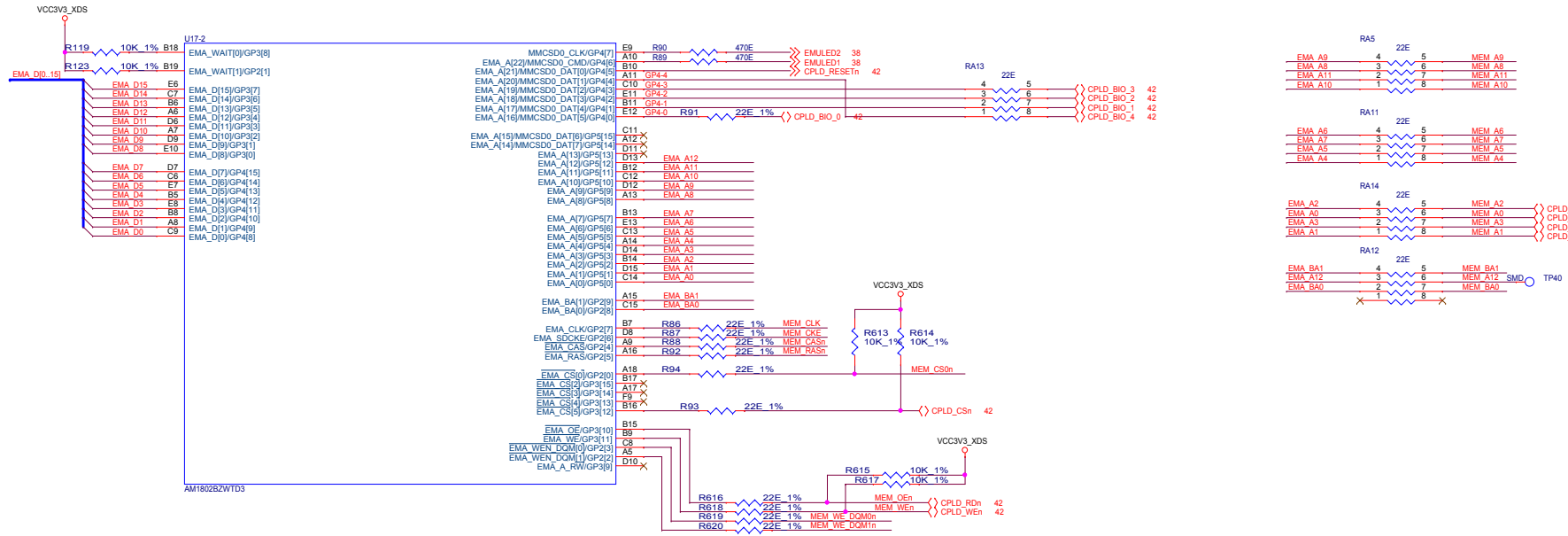


# MINI USB CONN

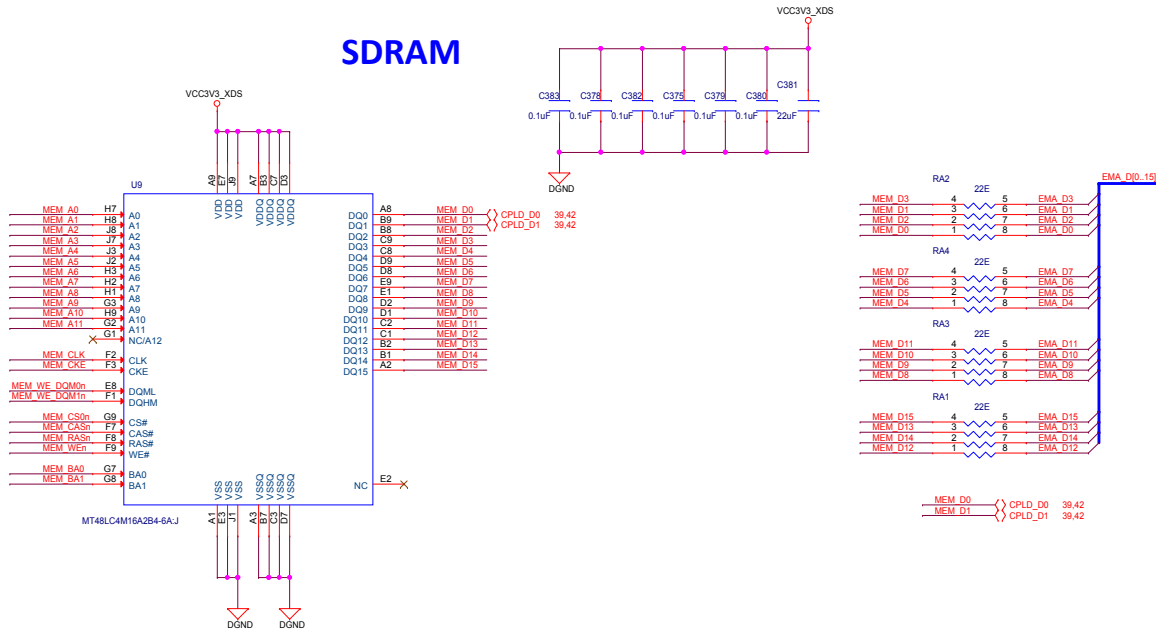


Project :		Designed for TI by Mistral Solutions Pvt Ltd		Title XDS200		
K2G EVM						
Size	Document Number				Rev	
C	MS_TI_K2GEVM_SCH_REV D				D	
Date:	Wednesday, April 13, 2016				Sheet	38 of 50

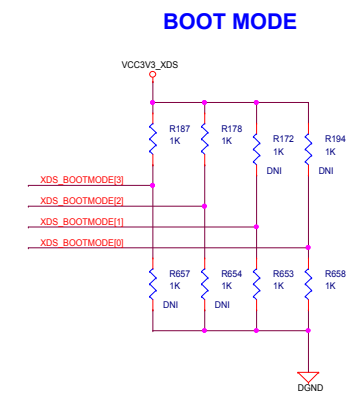
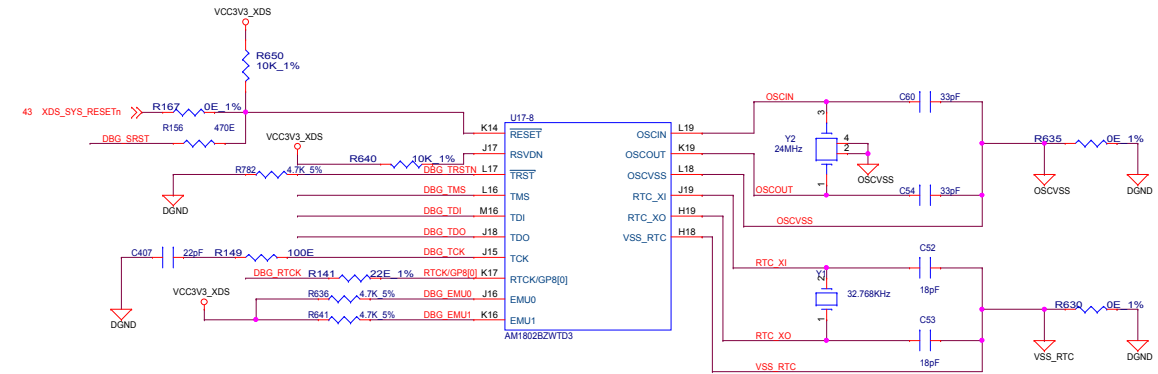
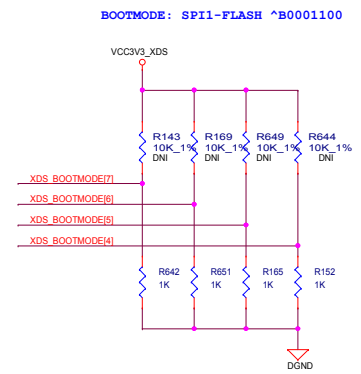
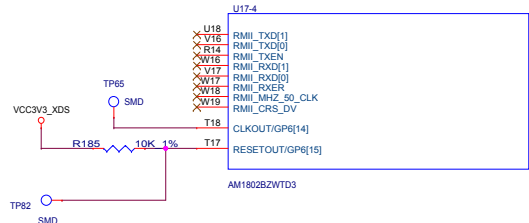
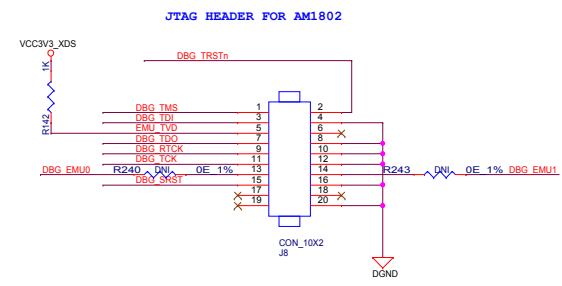
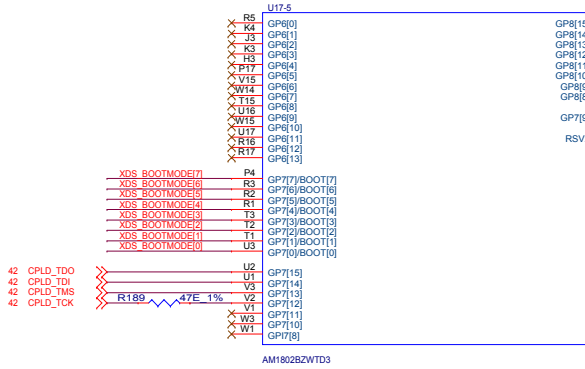
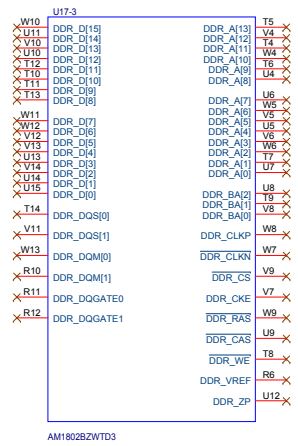
# XDS200



# SDRAM

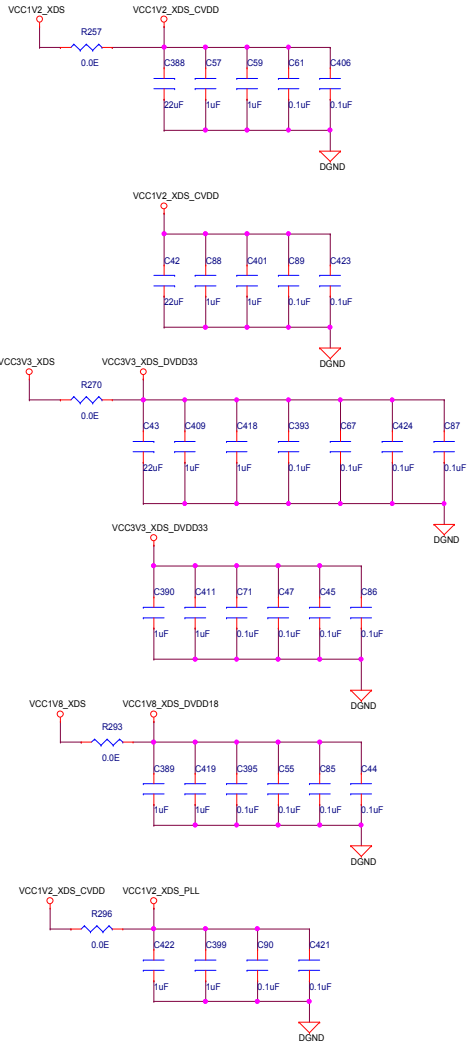


# XDS200

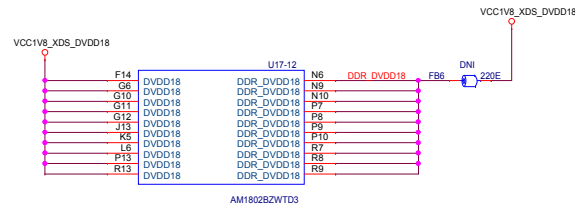
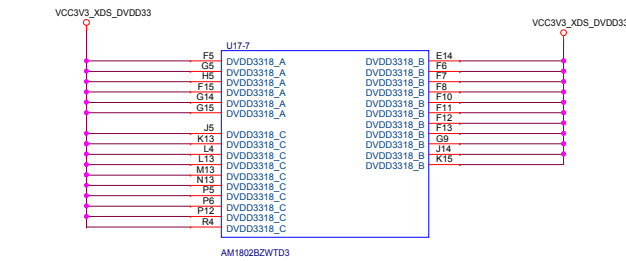
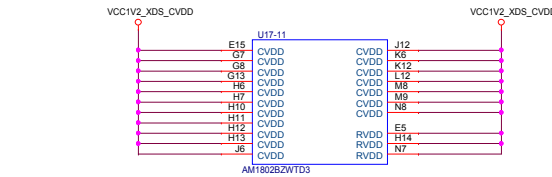




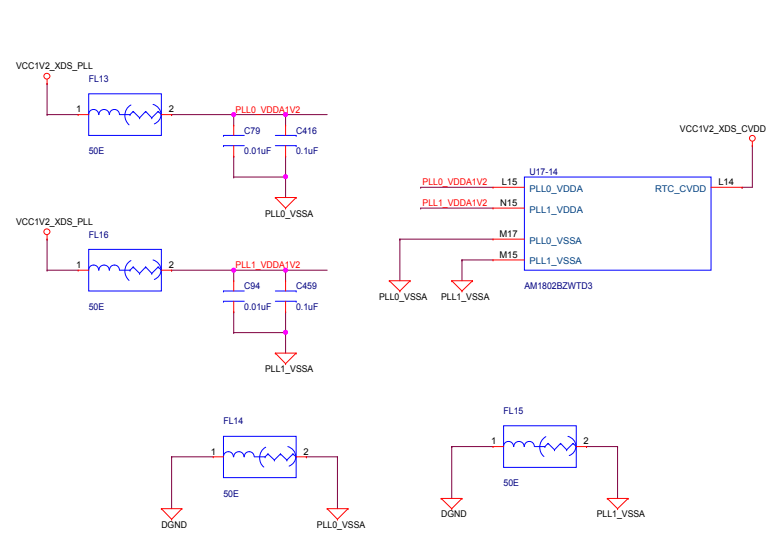
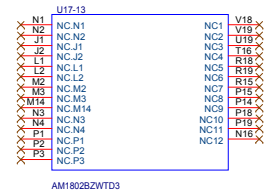
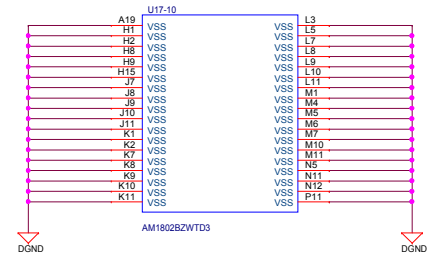
# XDS200 DECAPS



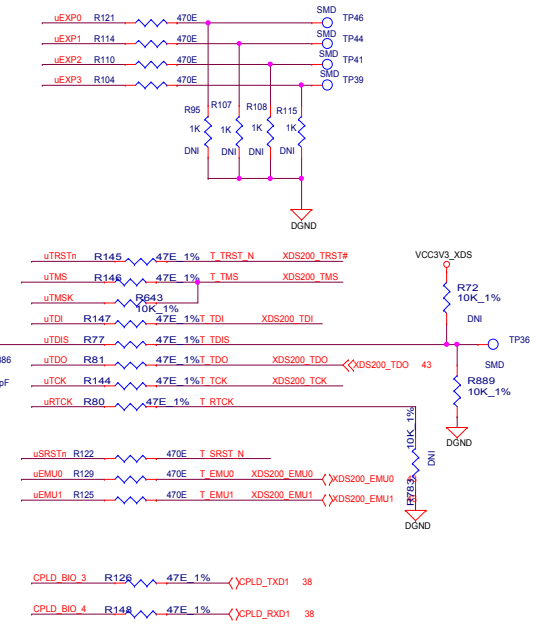
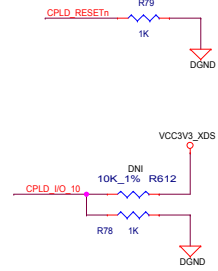
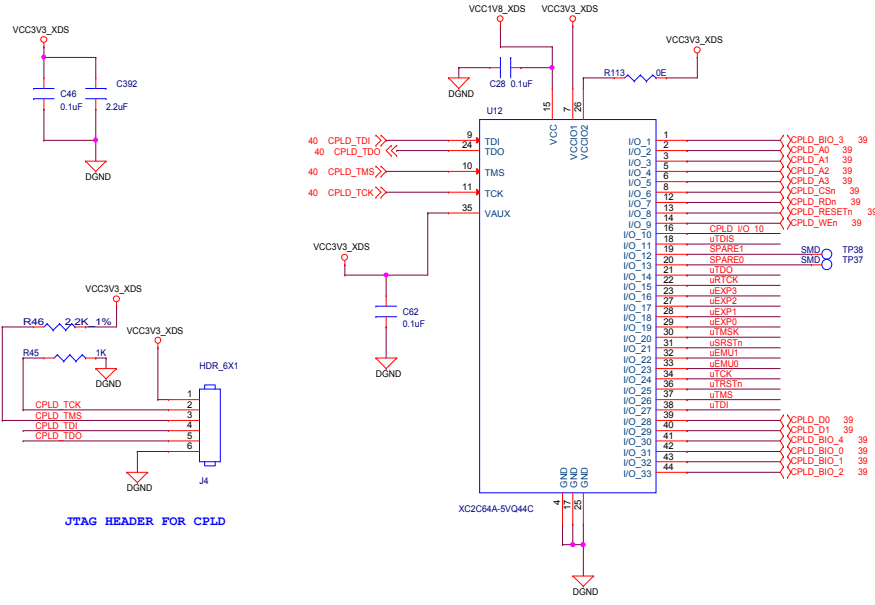
# XDS200



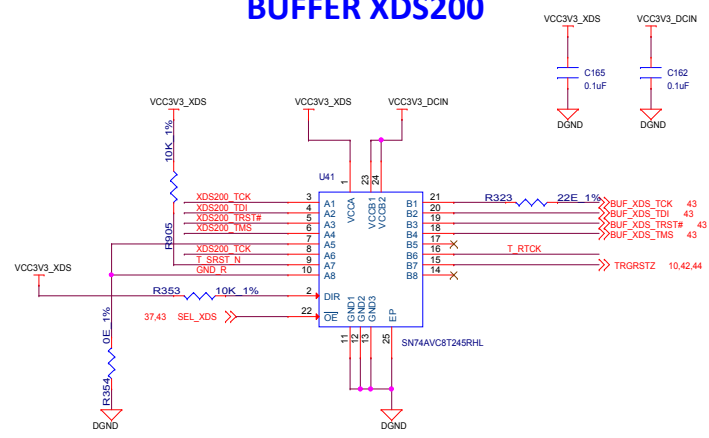
DDR PHY DOES NOT REQUIRE POWER IF NOT USED, PER DATA SHEET, BUT NOT A TYPICAL USE CASE.



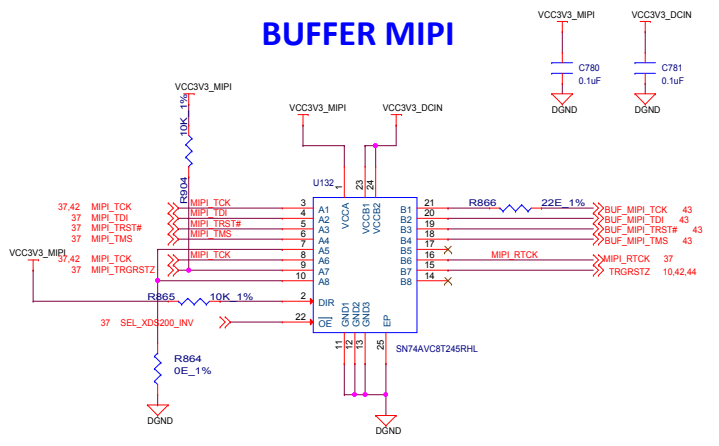
# XDS200 CPLD



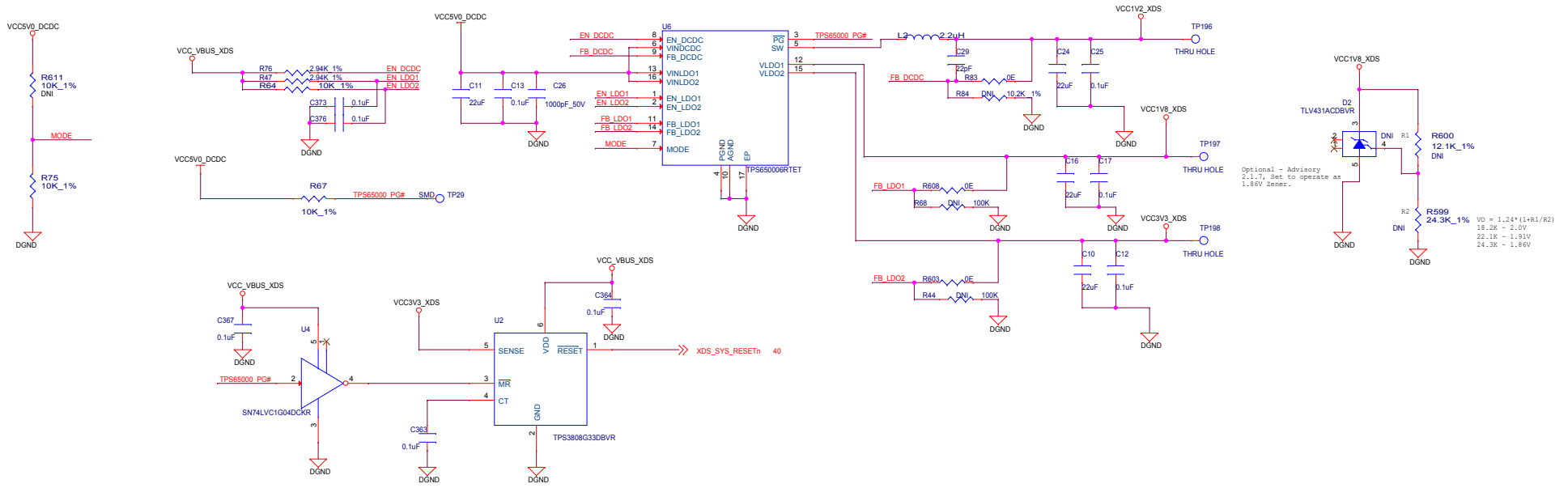
## BUFFER XDS200



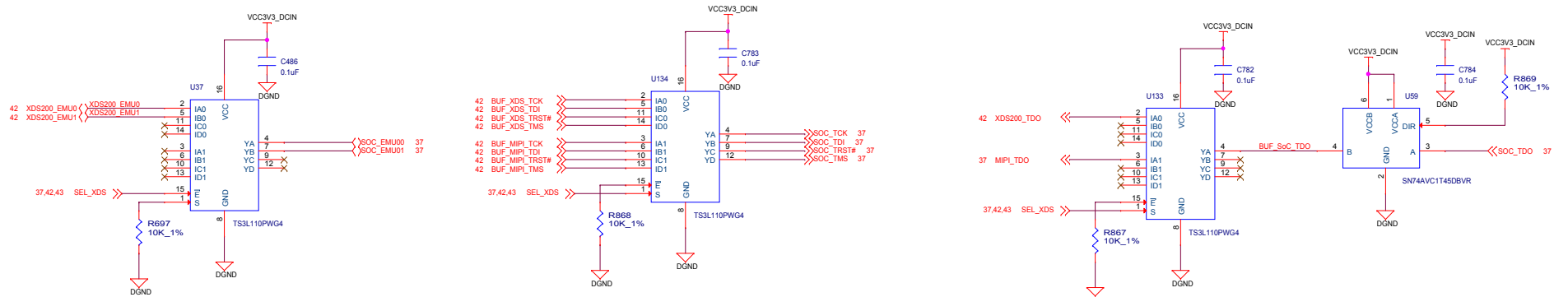
## BUFFER MIPI



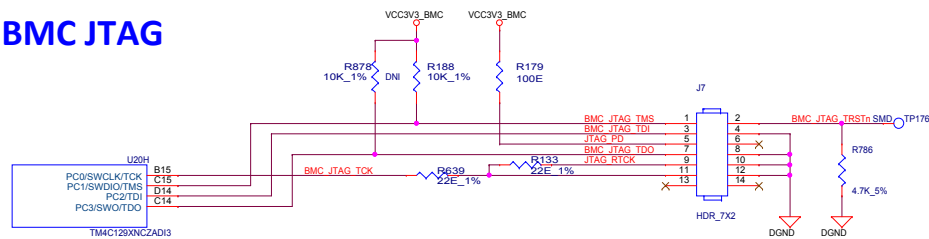
# XDS200 POWER



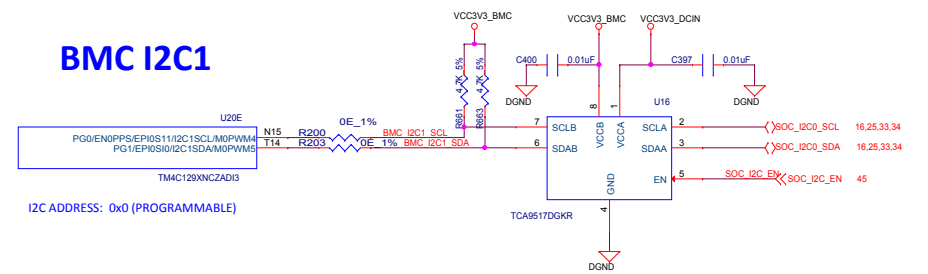
# JTAG FET SWITCH



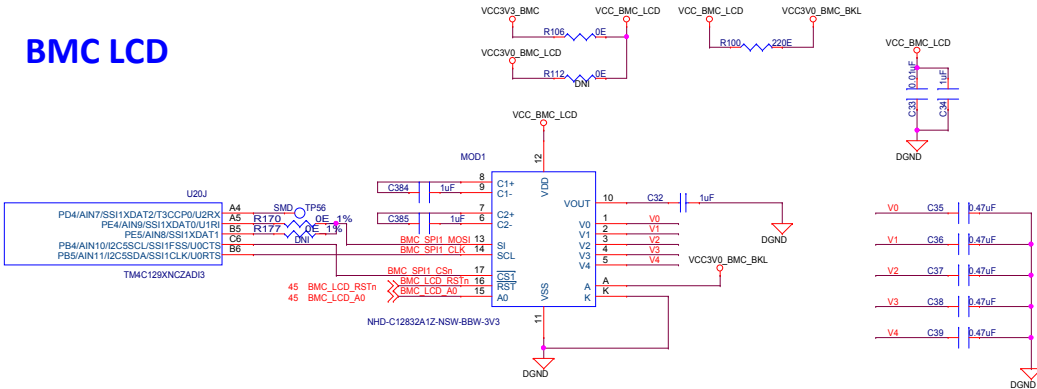
## BMC JTAG



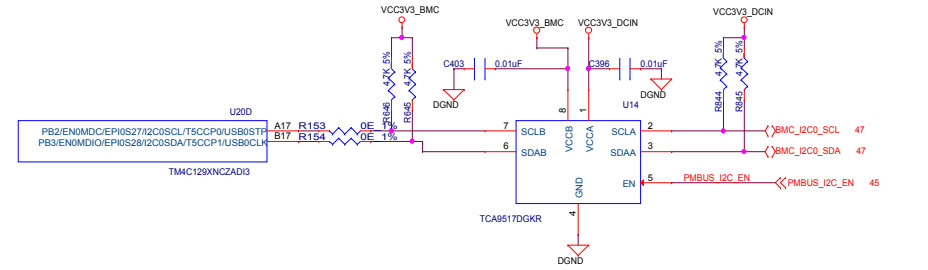
## BMC I2C1



## BMC LCD



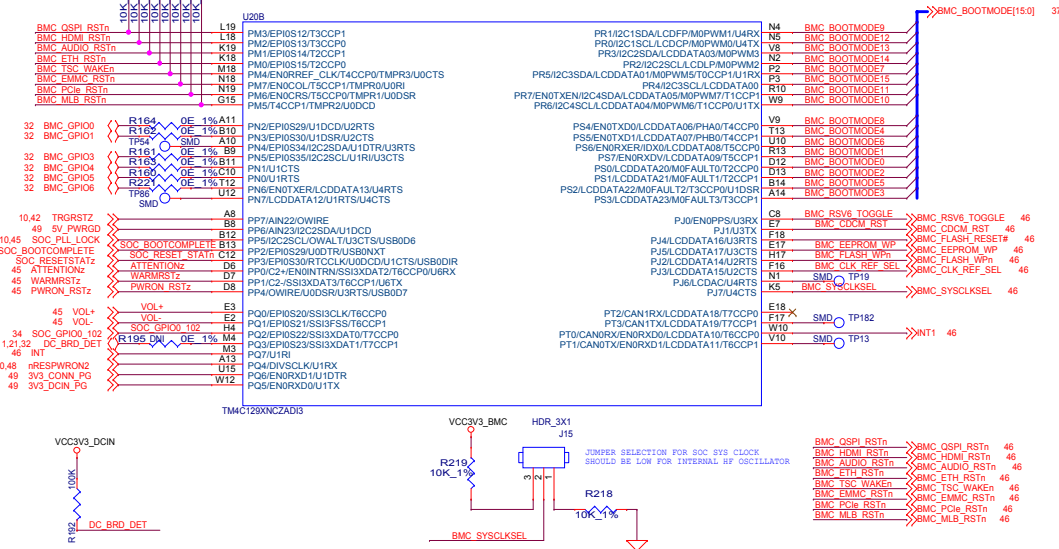
## BMC I2C0



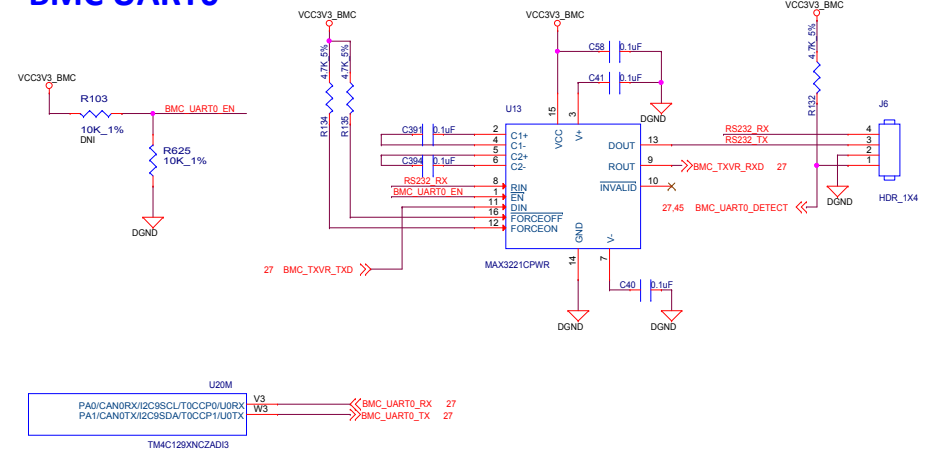
## BMC TEST POINTS



## BMC

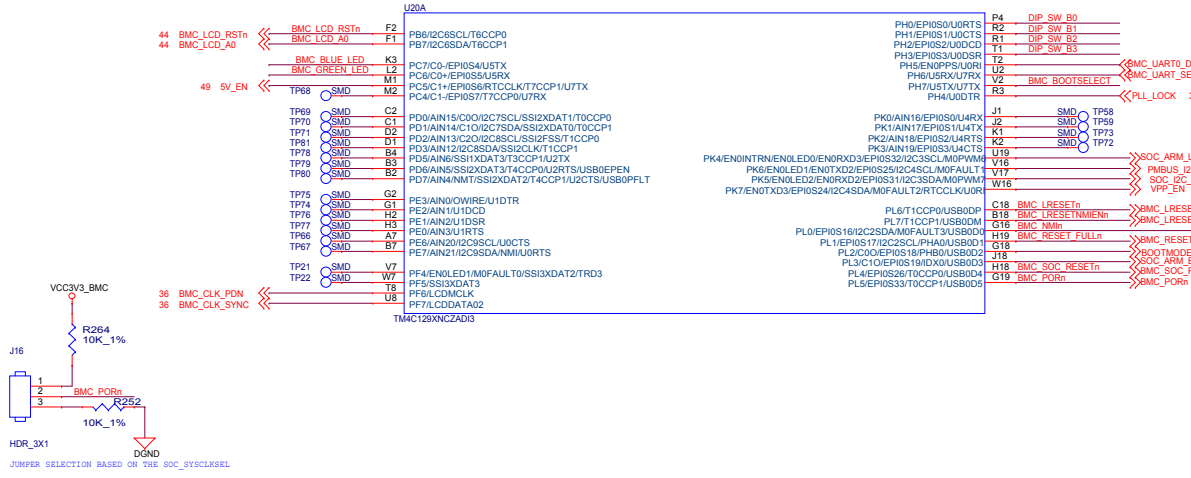


## BMC UART0

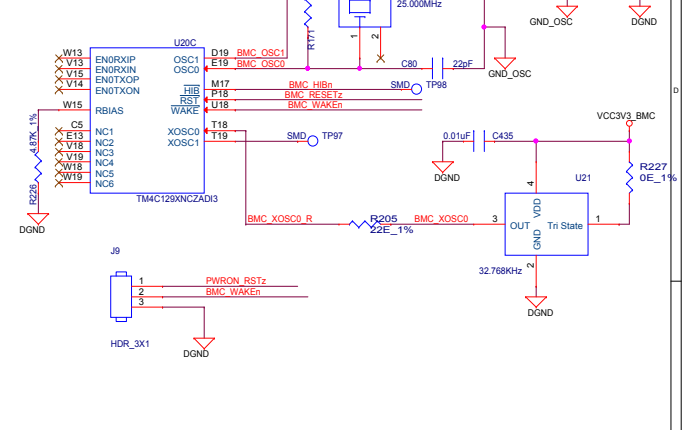


Project :	Designed for TI by Mistral Solutions Pvt Ltd	Title	BOARD MANAGEMENT CONTROL_1	
K2G EVM			Size	Document Number
			C	MS_TI_K2GEVM_SCH_REV D
			Date:	Wednesday, April 13, 2016
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			Rev	D

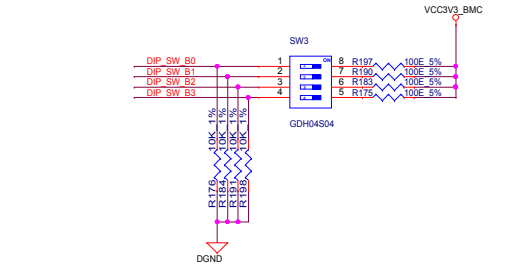
# BMC



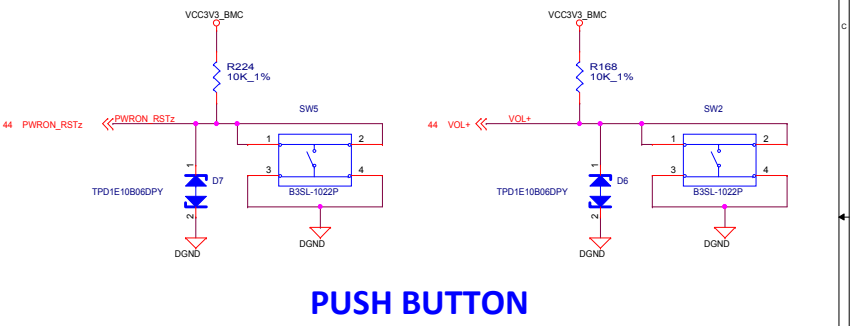
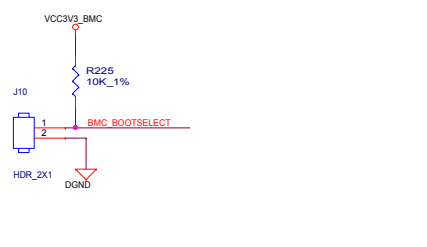
# BMC CLOCK



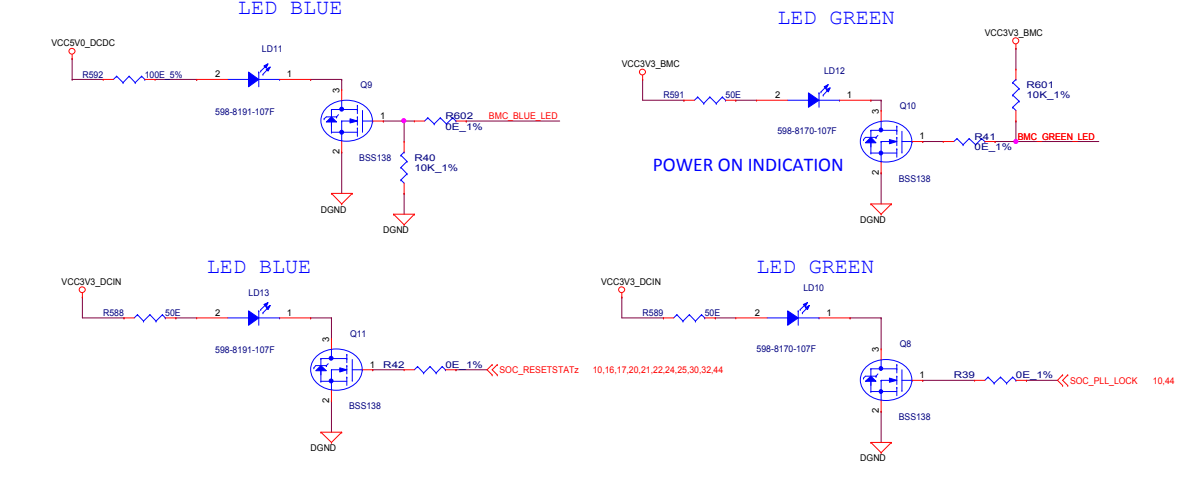
# DIP SWITCH



# BMC BOOT SELECT

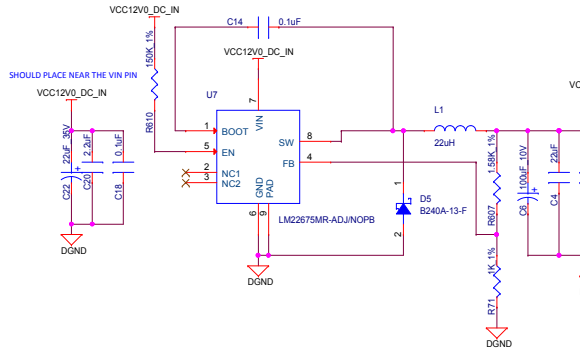


# LEDS

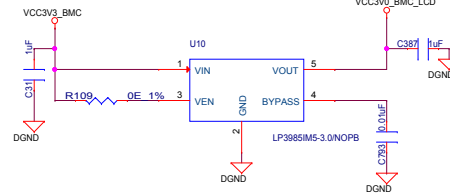


Project :	Designed for TI by Mistral Solutions Pvt Ltd	Title	BOARD MANAGEMENT CONTROL_2
K2G EVM		Size	Document Number
		C	MS_TI_K2GEVM_SCH_REV D
		Date:	Wednesday, April 13, 2016
		Sheet	45 of 50
		Rev	D

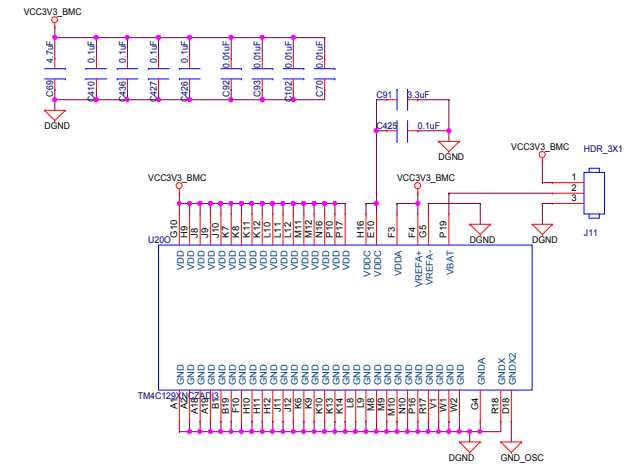
### BMC 3.3V GENERATOR



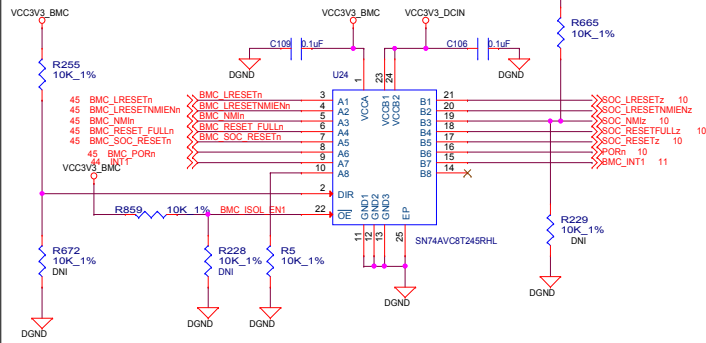
### BMC LCD 3V GENERATOR



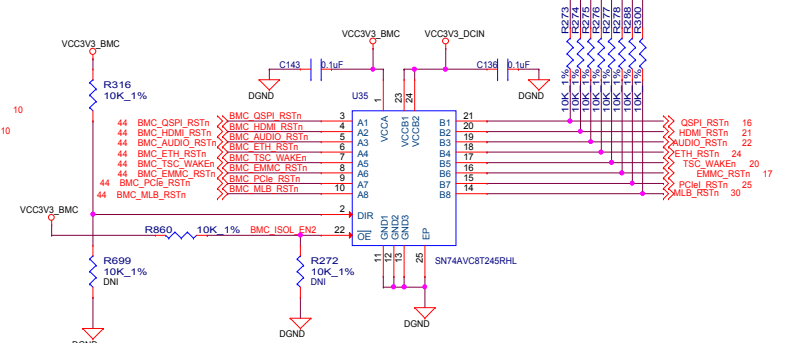
### BMC POWER



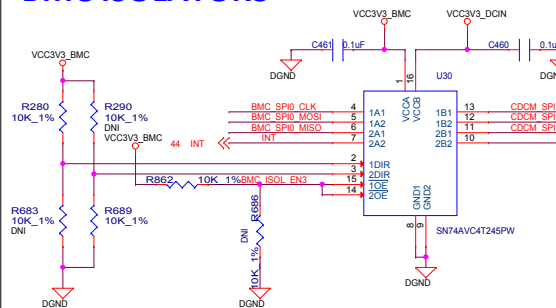
### BMC ISOLATOR1



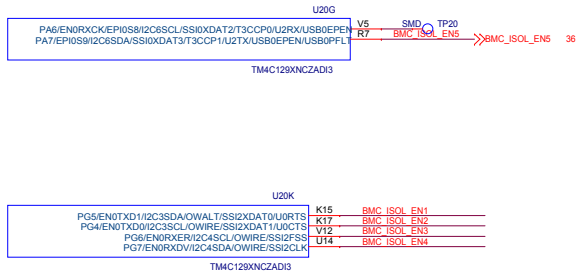
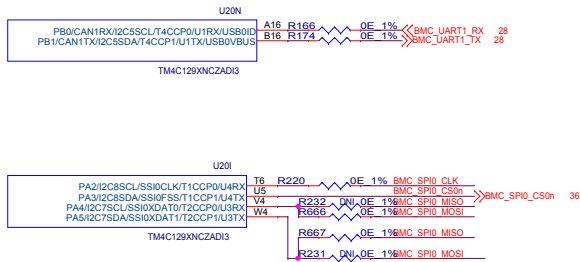
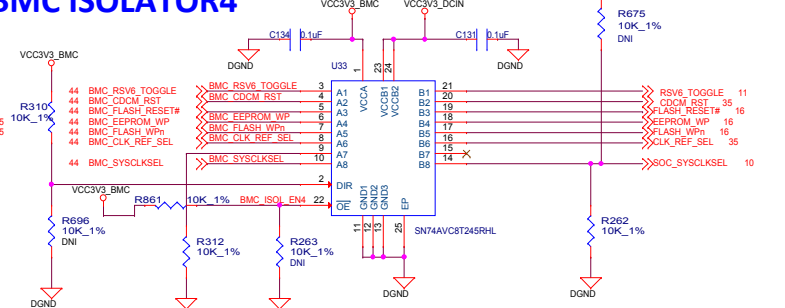
### BMC ISOLATOR2



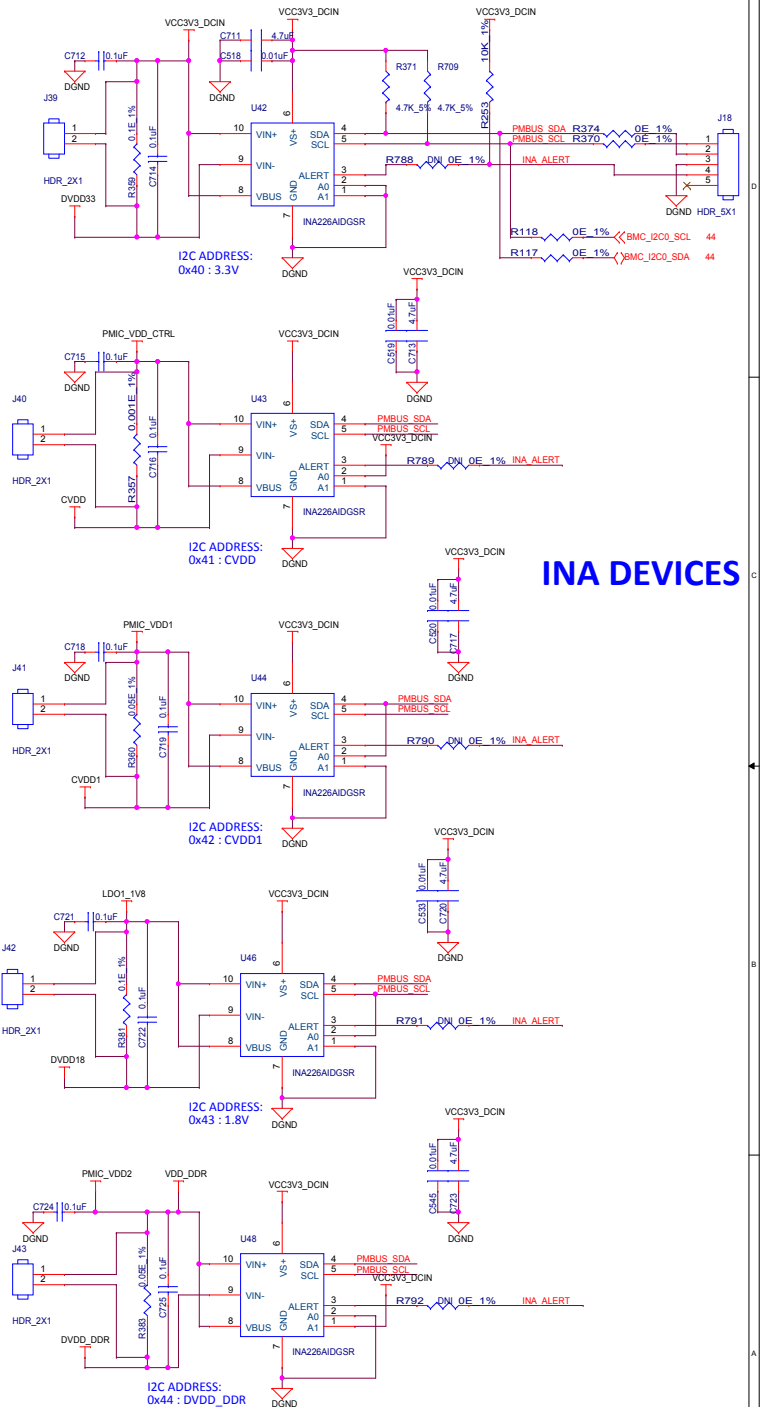
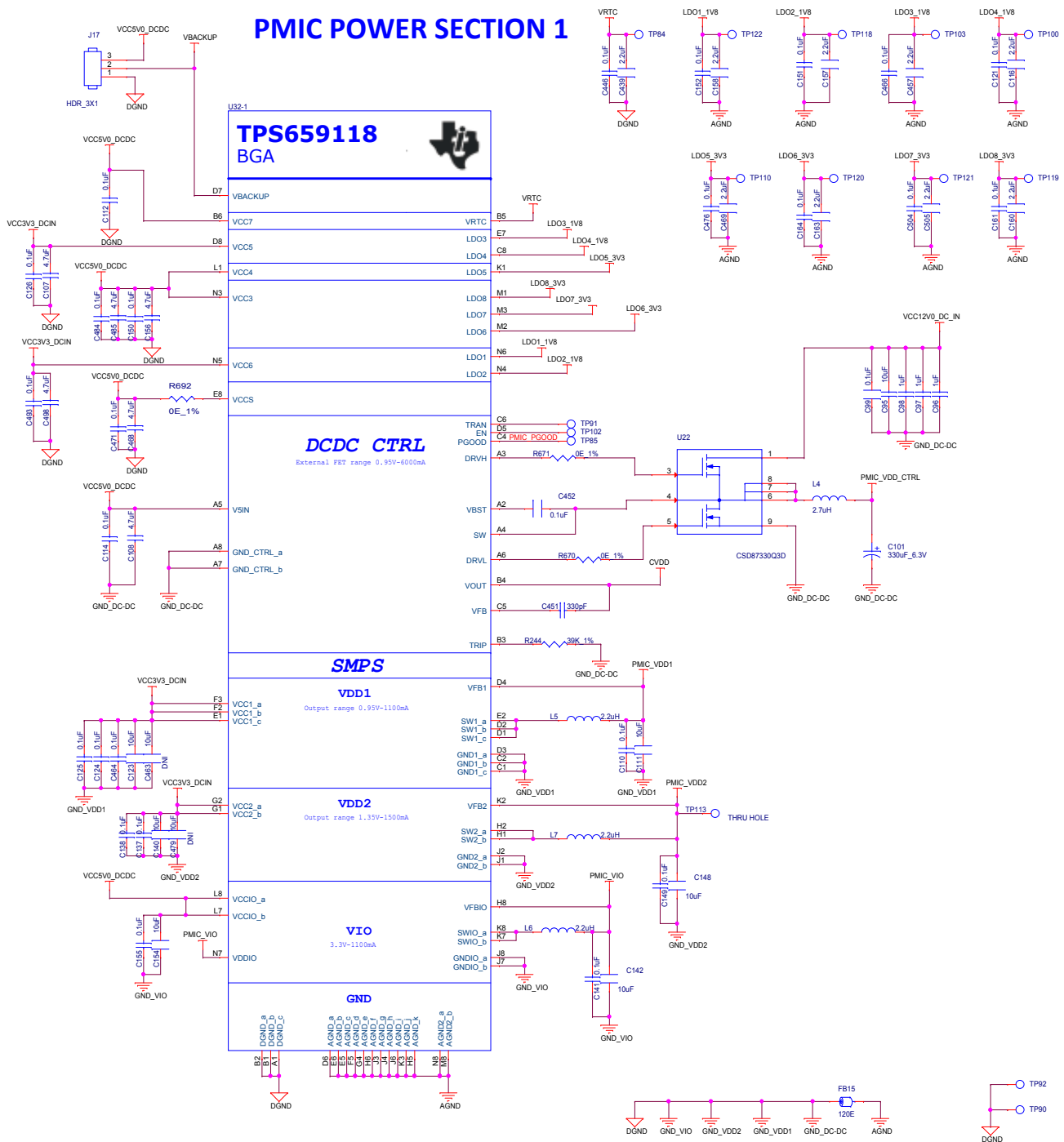
### BMC ISOLATOR3



### BMC ISOLATOR4

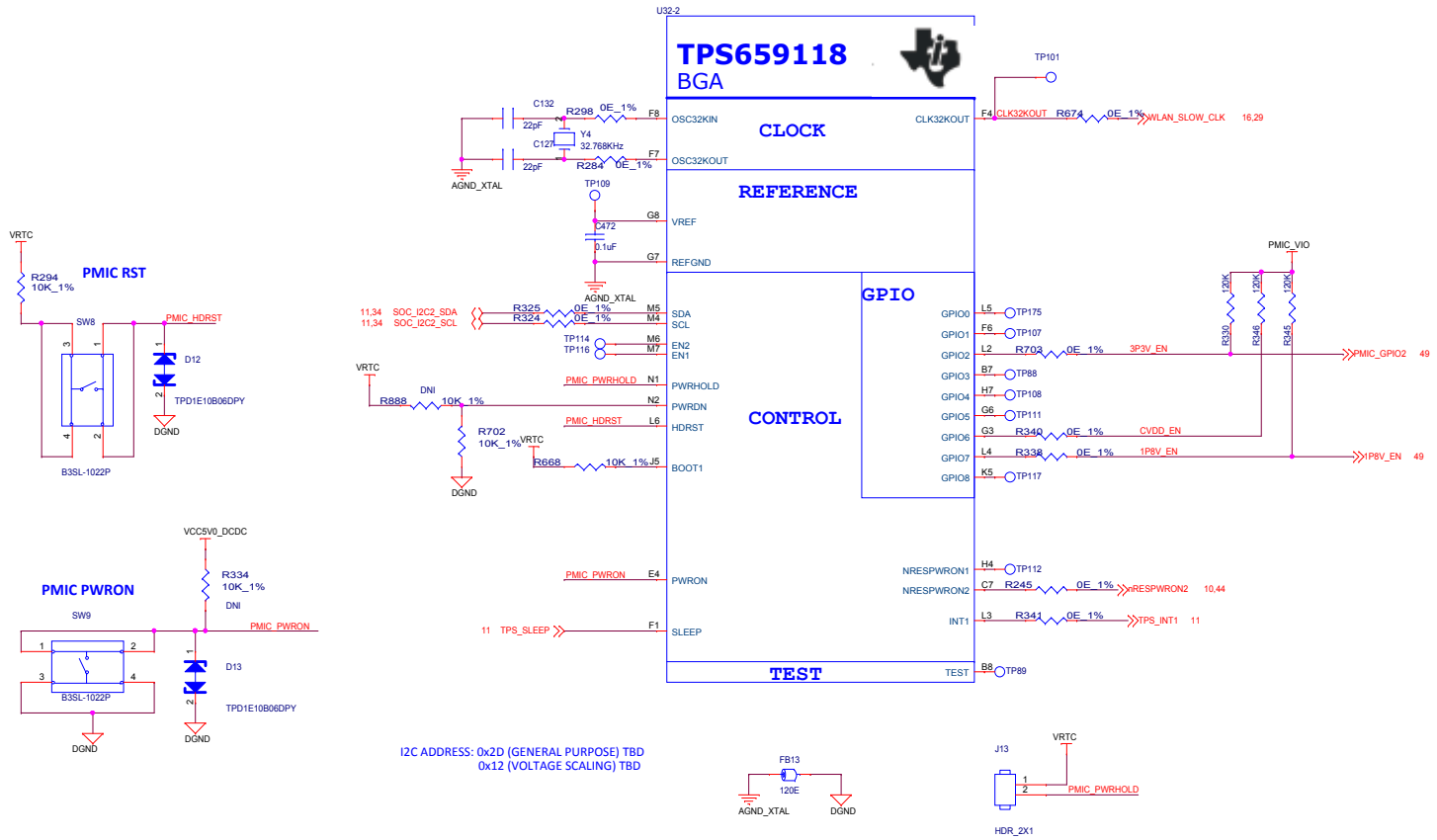


# PMIC POWER SECTION 1



Project : K2G EVM		Designed for TI by Mistral Solutions Pvt Ltd		Title : PMIC POWER CIRCUIT 1	
Size	Document Number	MS_TI_K2GEVM_SCH_REV D		Rev	
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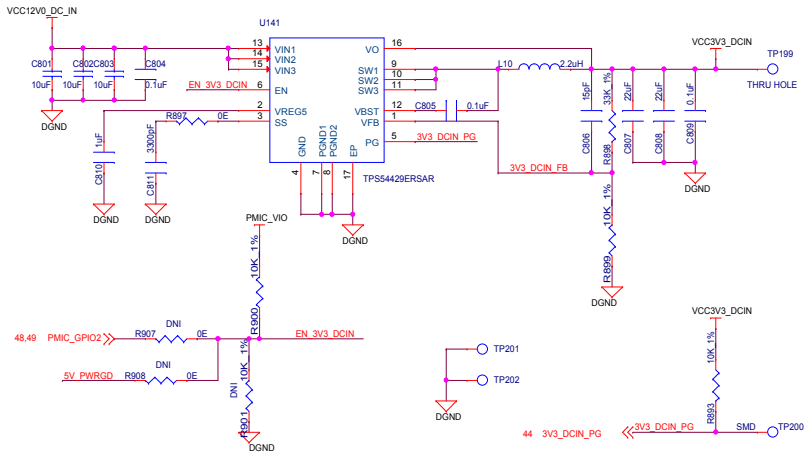
# PMIC POWER SECTION 2



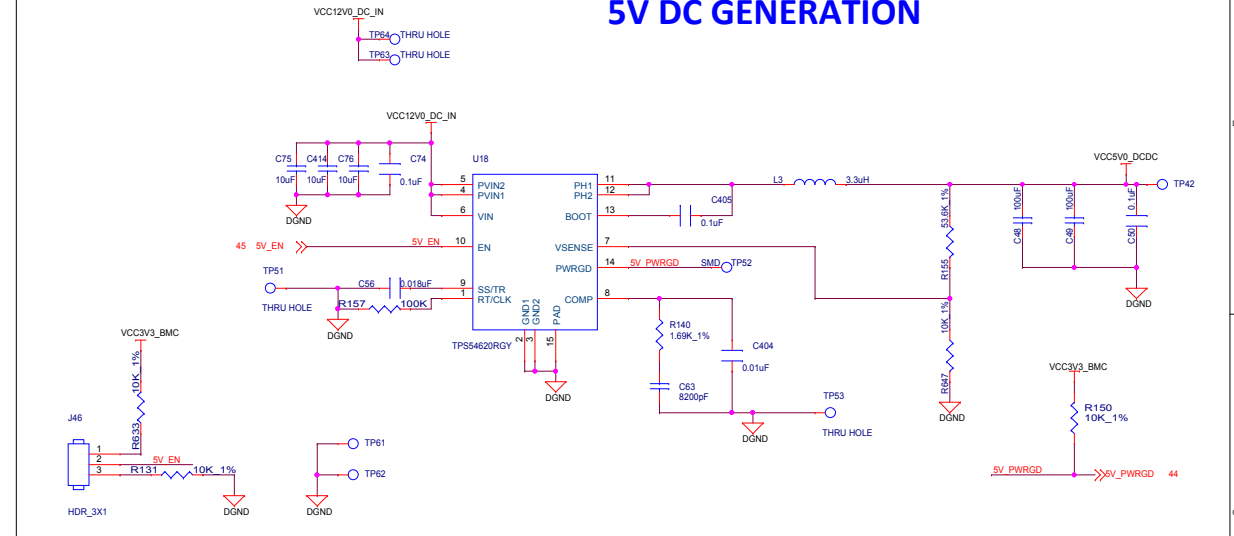
Project : <b>K2G EVM</b>		Designed for TI by Mistral Solutions Pvt Ltd		Title <b>PMIC POWER CIRCUIT 2</b>	
Size	Document Number	Rev			
C	MS_TI_K2GEVM_SCH_REV D	D			
Date:	Wednesday, April 13, 2016	Sheet	48	of	50



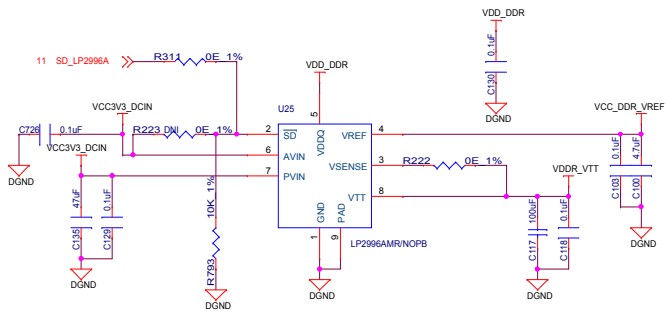
### 3.3V DC



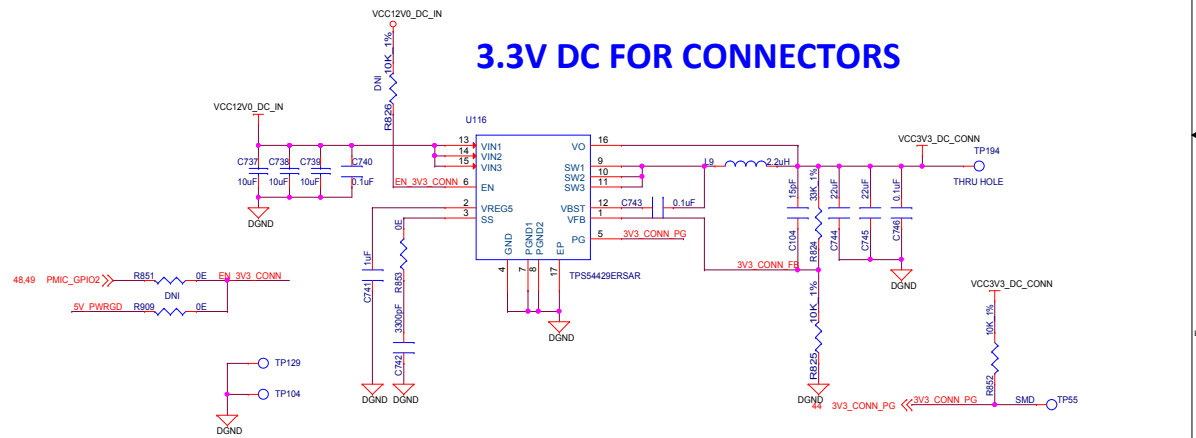
### 5V DC GENERATION



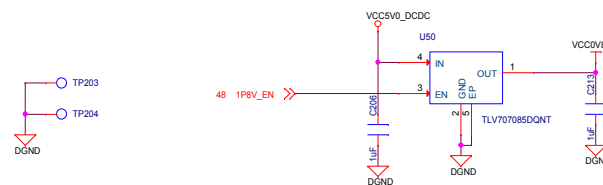
### DDR VTT & VREF GENERATION



### 3.3V DC FOR CONNECTORS

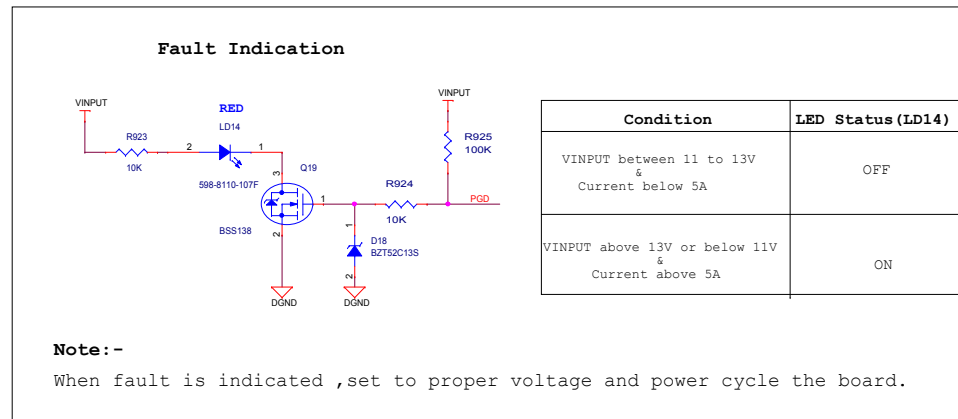
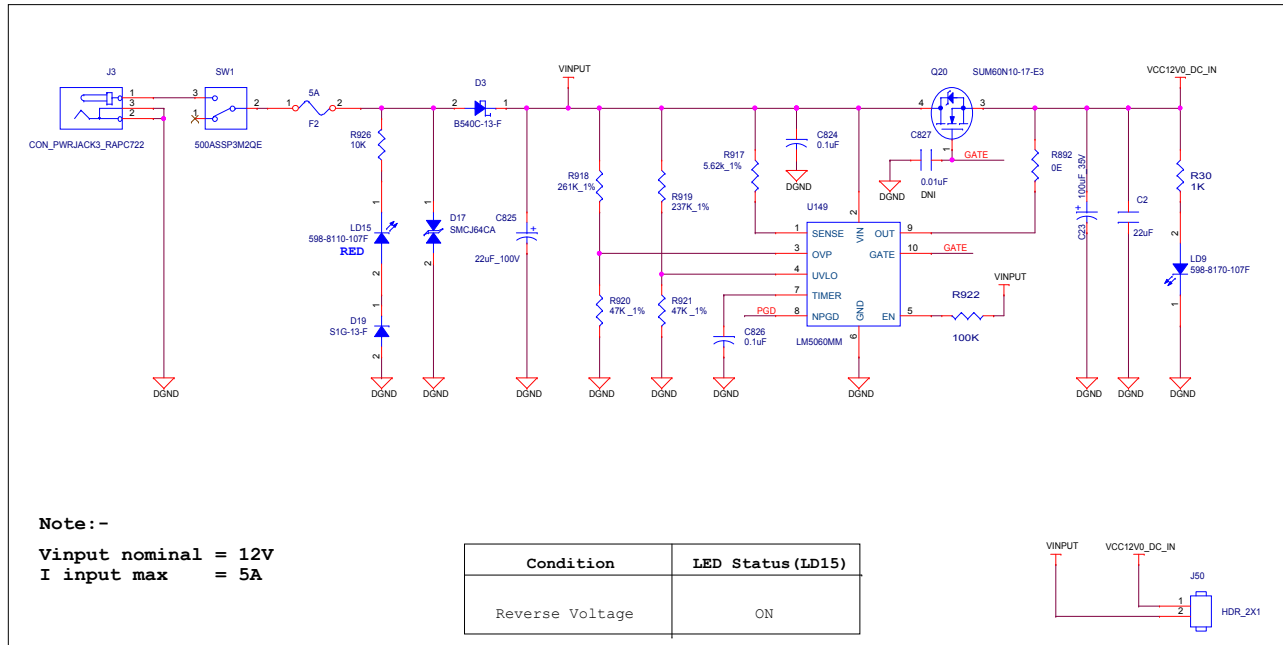


### 0.85V OPTIONAL LDO FOR PCIE & USB MODULES



Project :	Designed for TI by Mistral Solutions Pvt Ltd	Title	DDR3L POWER
K2G EVM	 	Size	Document Number
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		Date:	Wednesday, April 13, 2016
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# OVER VOLTAGE PROTECTION CIRCUIT



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