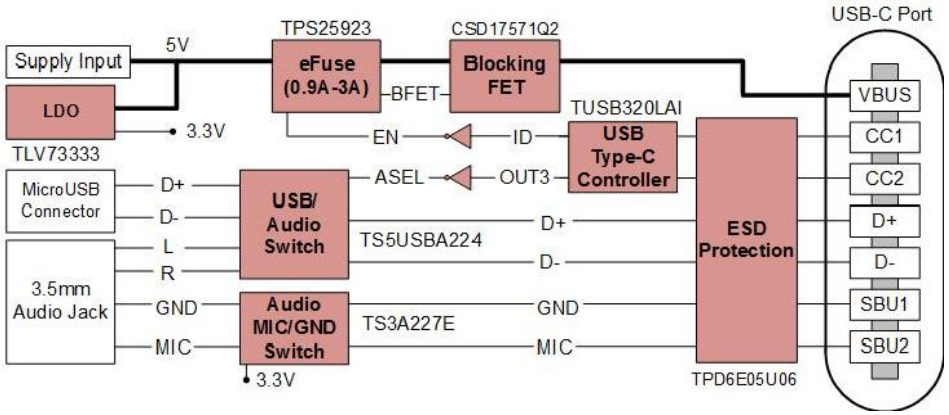
Cover Sheet

Revision History				
Rev	ECN #	Approved Date	Approved by	Notes
N/A	N/A	N/A	N/A	N/A

Functional Block Diagram



Design Summary

The concept of this design was generated from the fact that non-compliant or malfunctioning adapters have the capability to immediately output a high voltage and hot-plug onto a USB-C port. Our reference design's central feature set involves overvoltage protection (OVP), reverse current blocking (RCB), and current limiting, using the TPS25923x eFuse which integrates a gate driver for an external 30V.

The TUSB320LAI ID output enables our eFuse when a UFP is attached. The TUSB320LAI OUT3 indicates when an audio accessory has been detected, and the TS5USBA224 will MUX out Analog Audio. The TS3A226AE will MUX out the MIC/GND, as seen in the functional block diagram. Since both the eFuse and the Audio Switches have active high enables, ID and OUT3 are inverted.

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Number: TIDA-03030 Rev: A	Sheet Title:Cover Sheet	
SVN Rev: Version control disabled	Assembly Variant:001	Sheet:1 of 5
Drawn By:	File: TIDA03030_CoverSheet.SchDoc	Size: B
Engineer: Daniel Foncannon	Contact: http://www.ti.com/support	

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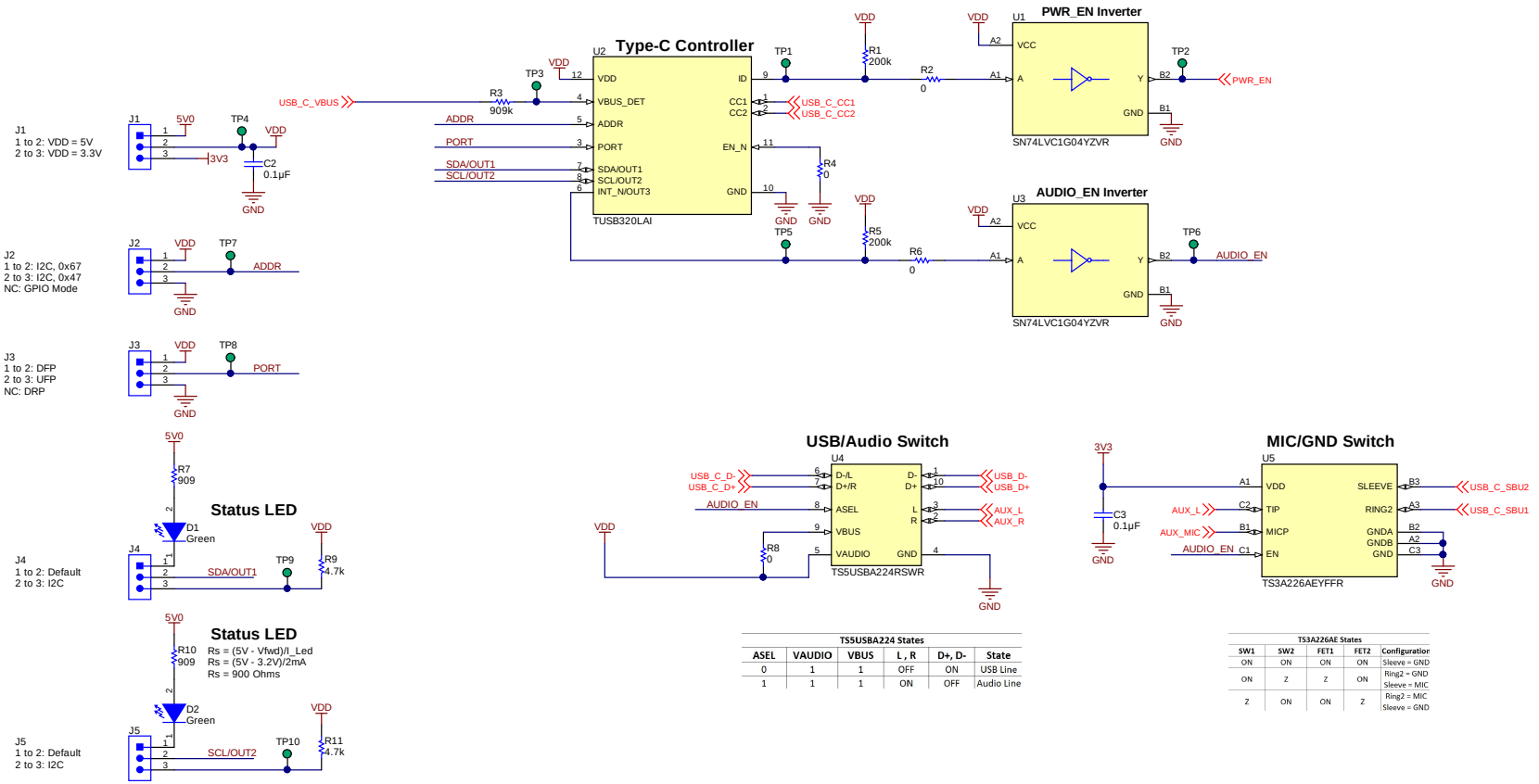
USB Type-C(TM) Controller and Switches



TS5USBA224 States					
ASEL	VAUDIO	VBUS	L , R	D+, D-	State
0	1	1	OFF	ON	USB Line
1	1	1	ON	OFF	Audio Line

TS3A226AE States				
SW1	SW2	FET1	FET2	Configuration
ON	ON	ON	ON	Sleeve = GND
ON	Z	Z	ON	Ring2 = GND Sleeve = MIC
Z	ON	ON	Z	Ring2 = MIC Sleeve = GND

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SVN Rev: Version control disabled	Assembly Variant:001	Sheet:2 of 5
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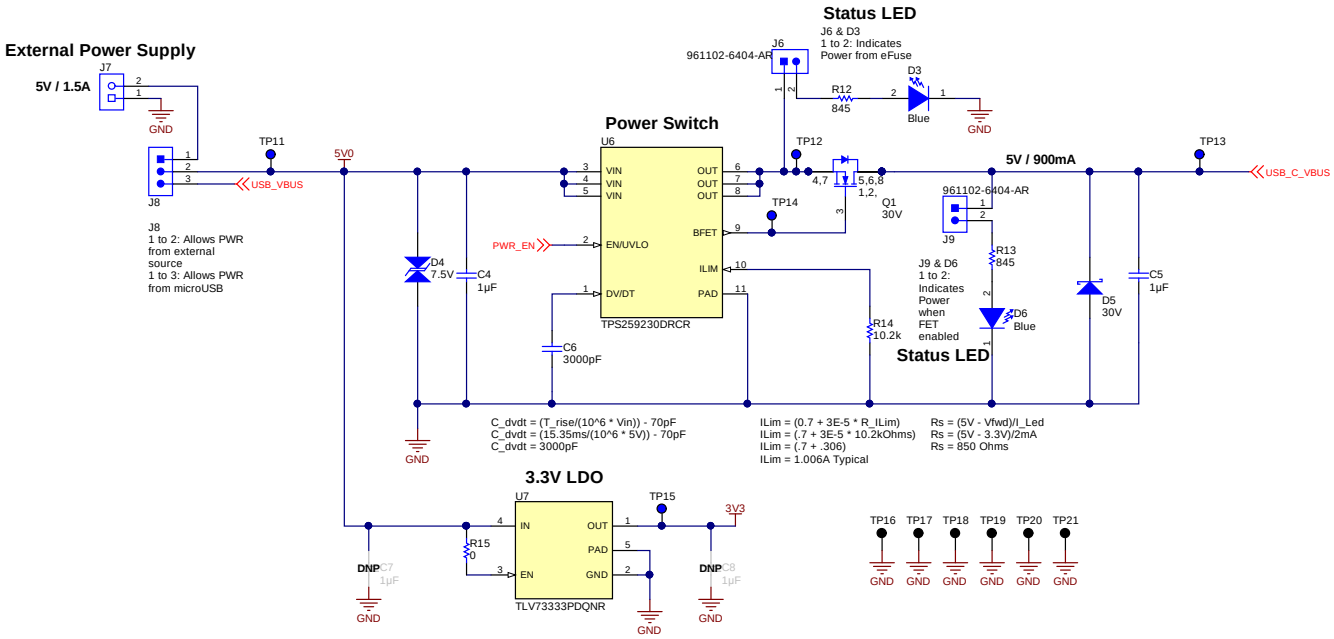
Power



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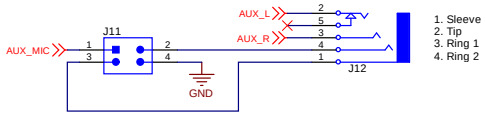
Connectors and ESD Protection

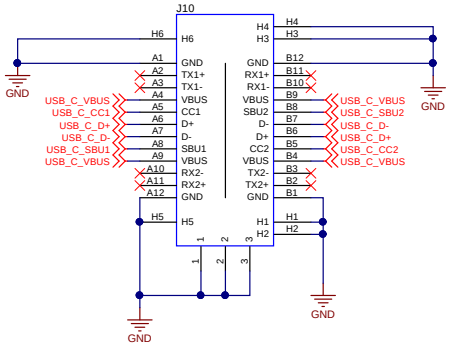
3.5mm Audio Jack Input



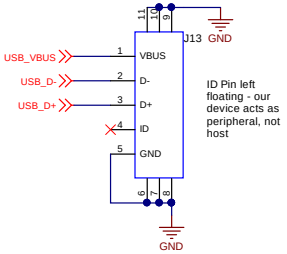
J11
1 to 2, 3 to 4: MIC / GND Config 1 (DEFAULT)
1 to 3, 2 to 4: MIC / GND Config 2

Allows user to switch MIC/GND

USB-C Connector

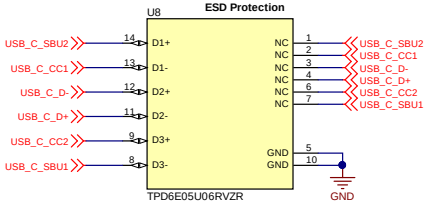


microUSB Connector



ID Pin left floating - our device acts as peripheral, not host

ESD Protection



D Lines pass through to NC Lines

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Board Hardware

H1 NY PMS 440 0025 PH
H2 NY PMS 440 0025 PH
H3 NY PMS 440 0025 PH
H4 NY PMS 440 0025 PH

H5 1902C
H6 1902C
H7 1902C
H8 1902C

H9 SJ-5303 (CLEAR)
H10 SJ-5303 (CLEAR)
H11 SJ-5303 (CLEAR)
H12 SJ-5303 (CLEAR)

DNP FID1
DNP FID2
DNP FID3

SH-J1 SH-J2 SH-J3 SH-J4 SH-J5 SH-J6 SH-J7
SH-J8 SH-J9 SH-J10

PCB Number: TIDA-03030
PCB Rev: A

PCB LOGO
Pb-Free Symbol

PCB LOGO
FCC disclaimer

Variant/Label Table	
Variant	Label Text
001	Rev1.0
002	ChangeMe!

ZZ2
Assembly Note
These assemblies are ESD sensitive, ESD precautions shall be observed.

ZZ3
Assembly Note
These assemblies must be clean and free from flux and all contaminants. Use of no clean flux is not acceptable.

ZZ4
Assembly Note
These assemblies must comply with workmanship standards IPC-A-610 Class 2, unless otherwise specified.

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