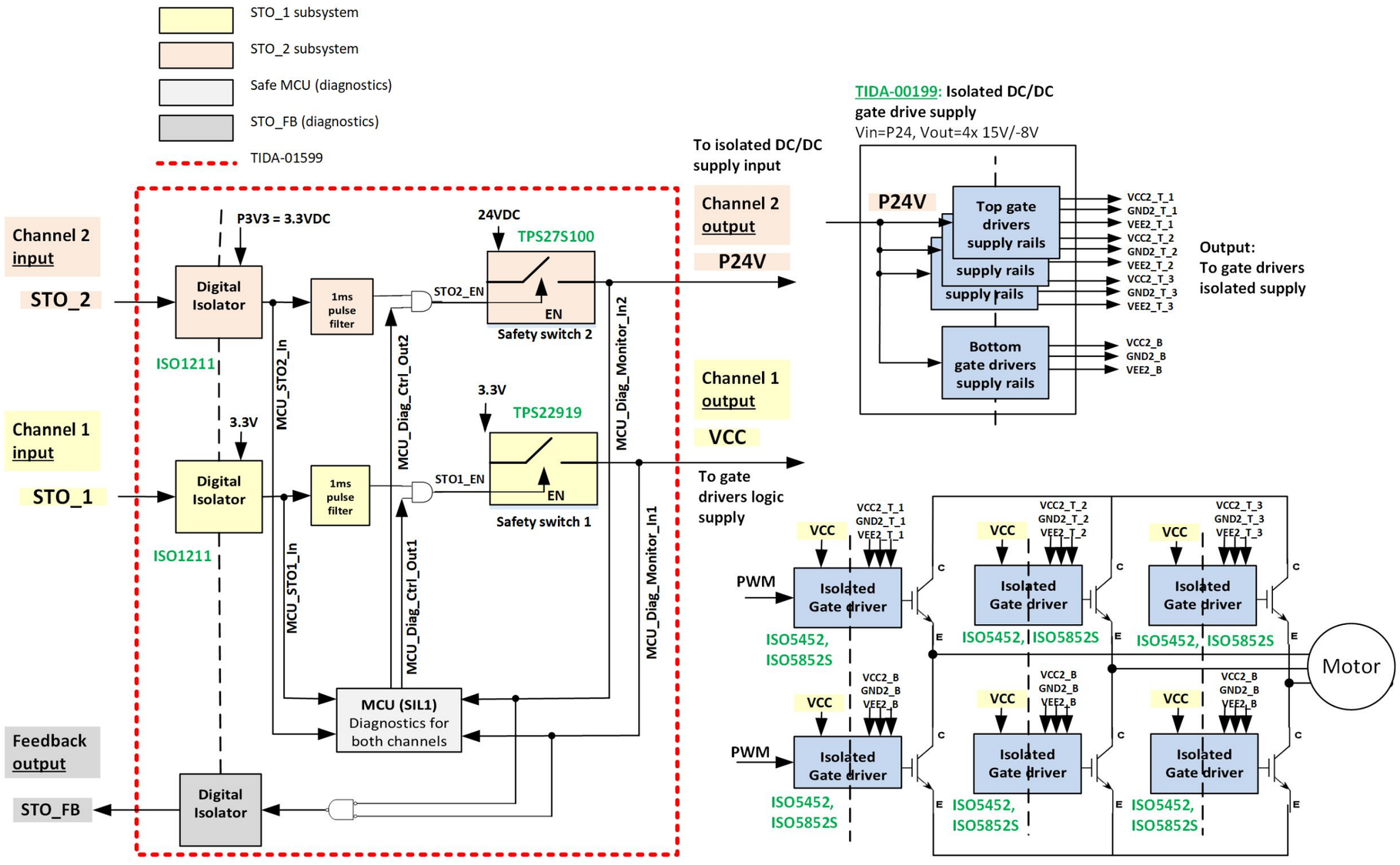
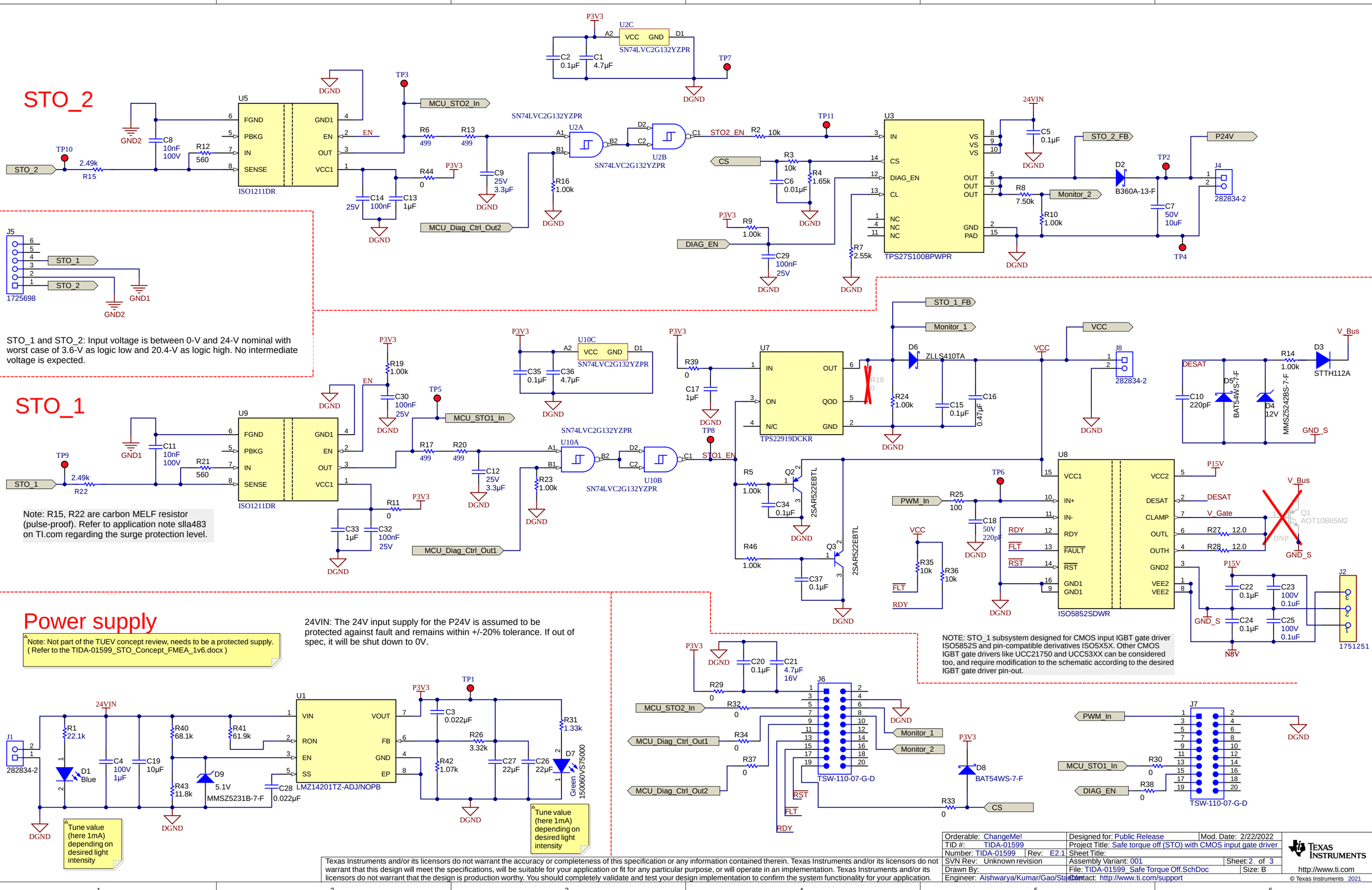
Revision History				
Rev	ECN #	Approved Date	Approved by	Notes
N/A	N/A	N/A	N/A	N/A

+----------+
| NOTES |
+----------+
a) The MCU (diagnostics) is not part of this schematics. An interface is provided for the corresponding diagnostic and monitoring signals. The interface is compatible to the C2000 LaunchPad.
b) The STO_1 subsystem is designed for CMOS input IGBT gate drivers ISO5852S and ISO5452 and pin-compatible derivative ISO5X5X. Other CMOS IGBT gate drivers like UCC21750 and UCC53xx family as well as 5V CMOS input signals can be considered too, and require modification to the schematic according to the desired IGBT gate driver.



Orderable: ChangeMe!	Designed for: Public Release	Mod. Date: 2/1/2022
TID #: TIDA-01599	Project Title: Safe torque off (STO) with CMOS input gate driver	
Number: TIDA-01599 Rev: E2.1	Sheet Title:	
SVN Rev: Unknown revision	Assembly Variant: 001	Sheet: 1 of 3
Drawn By:	File: TIDA-01599_Safe Torque Off_CoverSheet.SchDoc	Size: B
Engineer: Aishwarya/Kumar/Gao/Stacy	Contact: http://www.ti.com/support	

Texas Instruments
http://www.ti.com

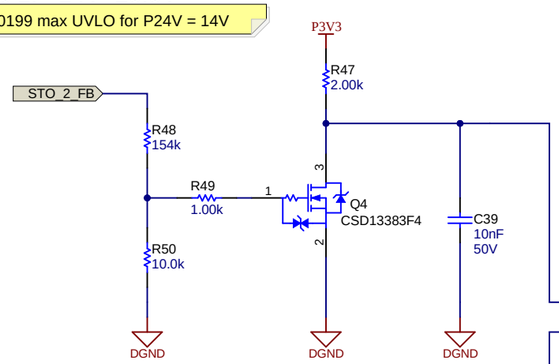


Orderable: ChangeMe!	Designed for: Public Release	Mod. Date: 2/22/2022
TID #: TIDA-01599	Project Title: Safe torque off (STO) with CMOS input gate driver	
Number: TIDA-01599 Rev: E2.1	Sheet Title:	
SVN Rev: Unknown revision	Assembly Variant: 001	Sheet: 2 of 3
Drawn By:	File: TIDA-01599_Safe Torque Off.SchDoc	Size: B
Engineer: Aishwarya/Kumar/Gao/Stacy	Contact: http://www.ti.com/support	

Texas Instruments
http://www.ti.com

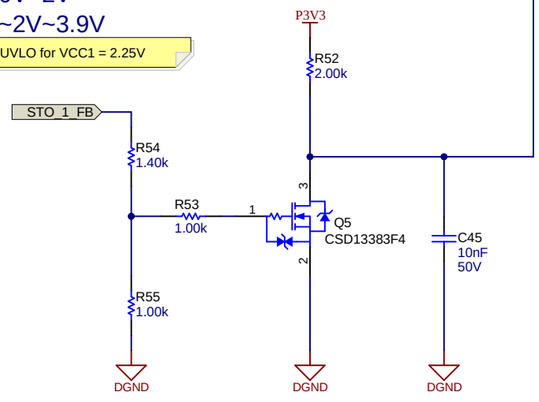
STO_2_FB threshold:
Logic 0: 0V~14V
Logic 1: ~14V~28.8V

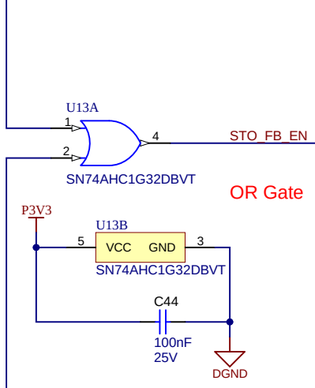
TIDA-00199 max UVLO for P24V = 14V

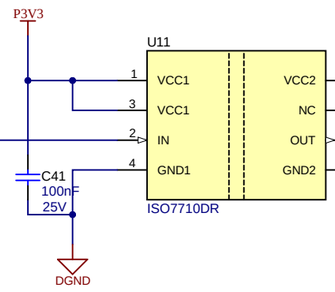


STO_1_FB threshold:
Logic 0: 0V~2V
Logic 1: ~2V~3.9V

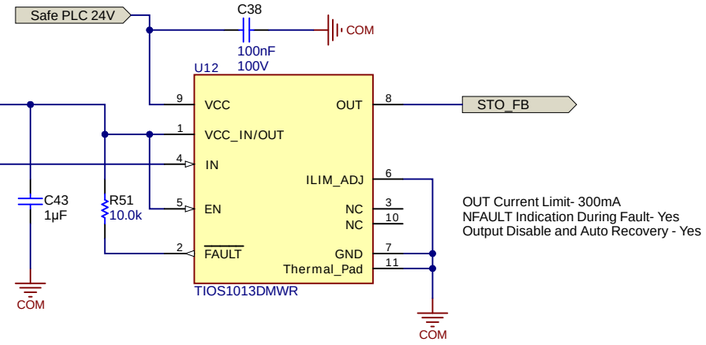
ISO5x5x max UVLO for VCC1 = 2.25V



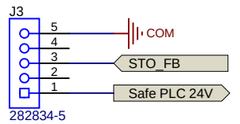




STO_FB is assumed to be between 0-V and 24-V nominal with worst case of 3.6-V as logic low and 20.4-V as logic high. The external supply voltage (Safe PLC 24V) to the 24V STO-FB is assumed to be protected against over-voltage and is required to remain within 24V +/-20% tolerance.



OUT Current Limit- 300mA
NFAULT Indication During Fault- Yes
Output Disable and Auto Recovery - Yes



Orderable: ChangeMe!	Designed for: Public Release	Mod. Date: 2/1/2022
TID #: TIDA-01599	Project Title: Safe torque off (STO) with CMOS input gate driver	
Number: TIDA-01599 Rev: E2.1	Sheet Title:	
SVN Rev: Unknown revision	Assembly Variant: 001	Sheet: 3 of 3
Drawn By:	File: TIDA-01599_Safe Torque Off_Feedback.SchDoc	Size: B
Engineer: Aishwarya/Kumar/Gao/Stacy	Contact: http://www.ti.com/support	

TEXAS INSTRUMENTS
http://www.ti.com

PCB
LOGO
WEEE logo

PCB
LOGO
Pb-Free Symbol

PCB
LOGO
FCC disclaimer

Variant/Label Table	
Variant	Label Text
001	Production

ZZ1
Label Assembly Note
This Assembly Note is for PCB labels only

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.

Orderable: ChangeMe!	Designed for: Public Release	Mod. Date: 2/22/2022
TID #: TIDA-01599	Project Title: Safe torque off (STO) with CMOS input gate driver	
Number: TIDA-01599 Rev: E2.1	Sheet Title:	
SVN Rev: Unknown revision	Assembly Variant: 001	Sheet: 4 of 3
Drawn By:	File: TIDA-01599_Safe Torque Off_EVM_Hardware_Size3	Size: B
Engineer: Aishwarya/Kumar/Gao/Stanton	Contact: http://www.ti.com/support	

TEXAS INSTRUMENTS
http://www.ti.com

IMPORTANT NOTICE AND DISCLAIMER

TI PROVIDES TECHNICAL AND RELIABILITY DATA (INCLUDING DATA SHEETS), DESIGN RESOURCES (INCLUDING REFERENCE DESIGNS), APPLICATION OR OTHER DESIGN ADVICE, WEB TOOLS, SAFETY INFORMATION, AND OTHER RESOURCES “AS IS” AND WITH ALL FAULTS, AND DISCLAIMS ALL WARRANTIES, EXPRESS AND IMPLIED, INCLUDING WITHOUT LIMITATION ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT OF THIRD PARTY INTELLECTUAL PROPERTY RIGHTS.

These resources are intended for skilled developers designing with TI products. You are solely responsible for (1) selecting the appropriate TI products for your application, (2) designing, validating and testing your application, and (3) ensuring your application meets applicable standards, and any other safety, security, regulatory or other requirements.

These resources are subject to change without notice. TI grants you permission to use these resources only for development of an application that uses the TI products described in the resource. Other reproduction and display of these resources is prohibited. No license is granted to any other TI intellectual property right or to any third party intellectual property right. TI disclaims responsibility for, and you will fully indemnify TI and its representatives against, any claims, damages, costs, losses, and liabilities arising out of your use of these resources.

TI’s products are provided subject to TI’s Terms of Sale or other applicable terms available either on ti.com or provided in conjunction with such TI products. TI’s provision of these resources does not expand or otherwise alter TI’s applicable warranties or warranty disclaimers for TI products.

TI objects to and rejects any additional or different terms you may have proposed.

Mailing Address: Texas Instruments, Post Office Box 655303, Dallas, Texas 75265