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Revisions

Rev	Description	Date	Approved
A	Final Release	30 Mar 20	
A1	1. Update board name and block diagram. 2. Change document classification to Public	14 May 20	

MCSXTE2BK142
MOTOR CONTROL DEVELOPMENT BOARD

Automotive Product Group
6501 William Cannon Drive West
Austin, TX 78735-8598

 Classification: Public

Designer: Raymond Tang	Drawing Title: MCSXTE2BK142		
Drawn by: Raymond Tang	Page Title: TITLE PAGE		
Approved: Jesus Sanchez	Size C	Document Number SCH-47236 PDF: SPF-47236	Rev A1
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1. Unless Otherwise Specified:
   All resistors are in ohms, 5%, 1/10 Watt
   All capacitors are in uF, 20%, 50V
   All voltages are DC
   All polarized capacitors are aluminum electrolytic

2. Interrupted lines coded with the same letter or letter combinations are electrically connected.

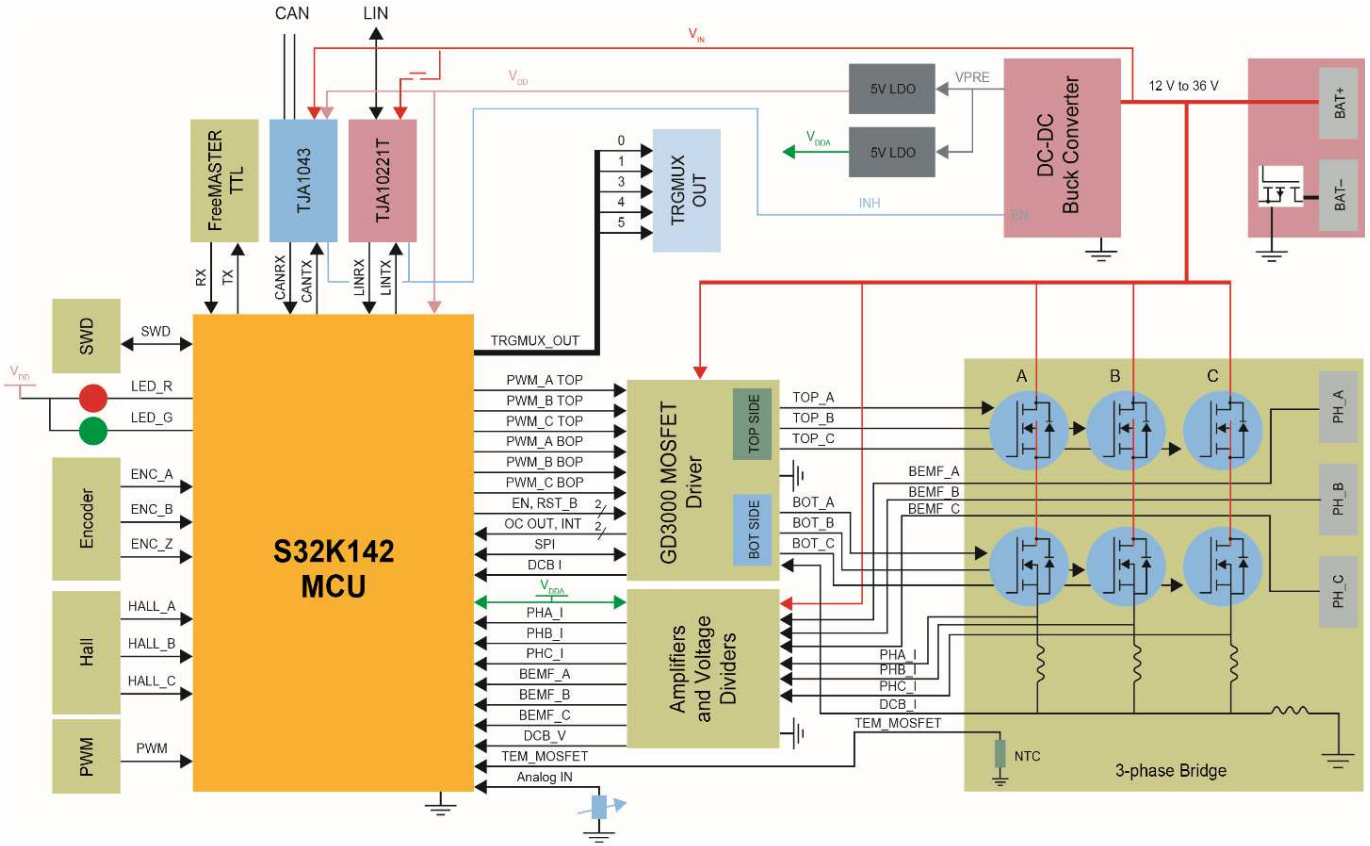
3. Device type number is for reference only. The number varies with the manufacturer.

4. Special signal usage:

   _B Denotes - Active-Low Signal

   <> or [] Denotes - Vectored Signals

5. Interpret diagram in accordance with American National Standards Institute specifications, current revision, with the exception of logic block symbology.



Classification:	Public
Drawing Title:	MCSXTE2BK142
Page Title:	NOTES/ BLOCK DIAGRAM
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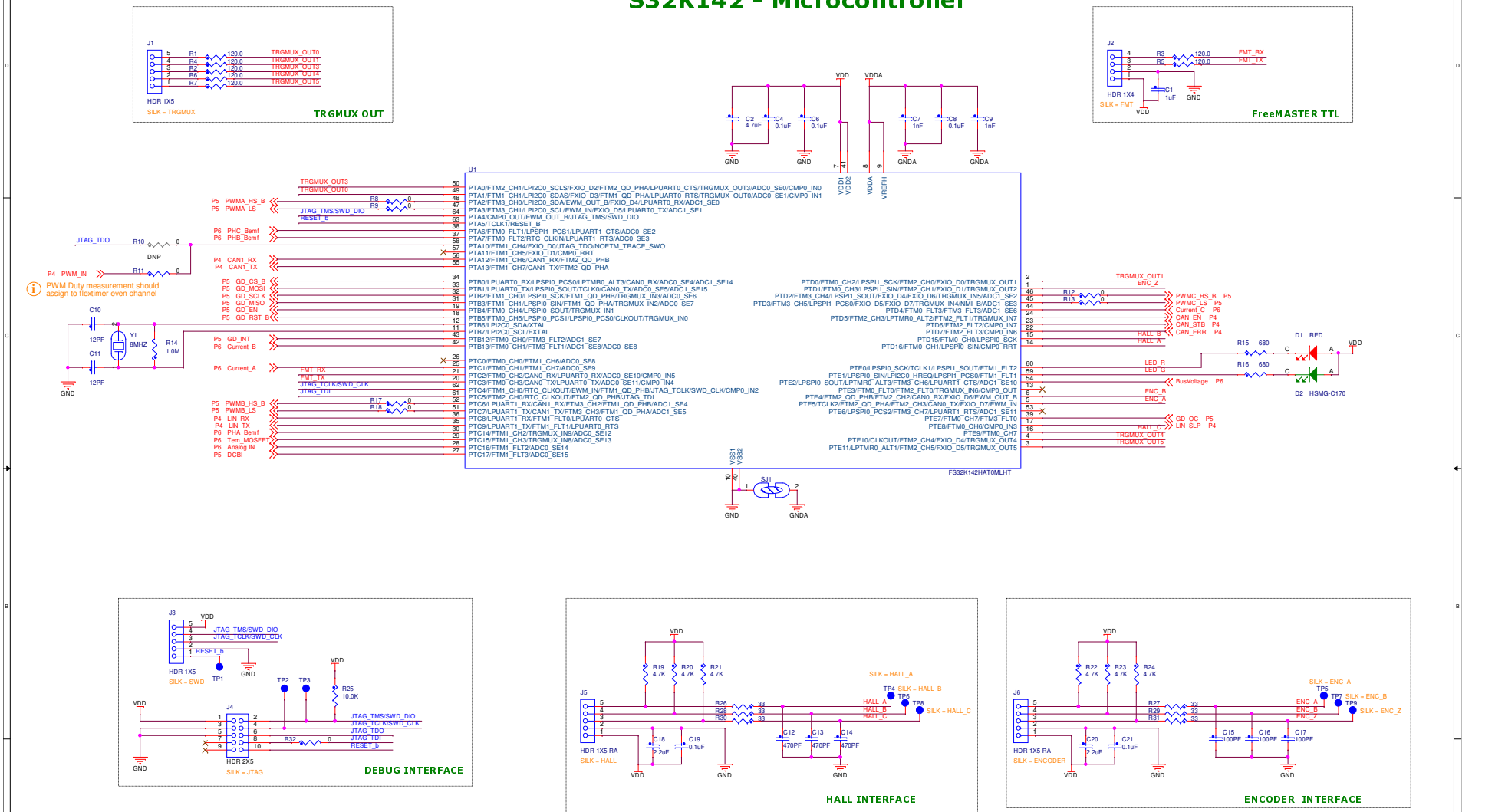
S32K142 - Microcontroller



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Drawing Title:	MCSXTE2BK142
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Size	C
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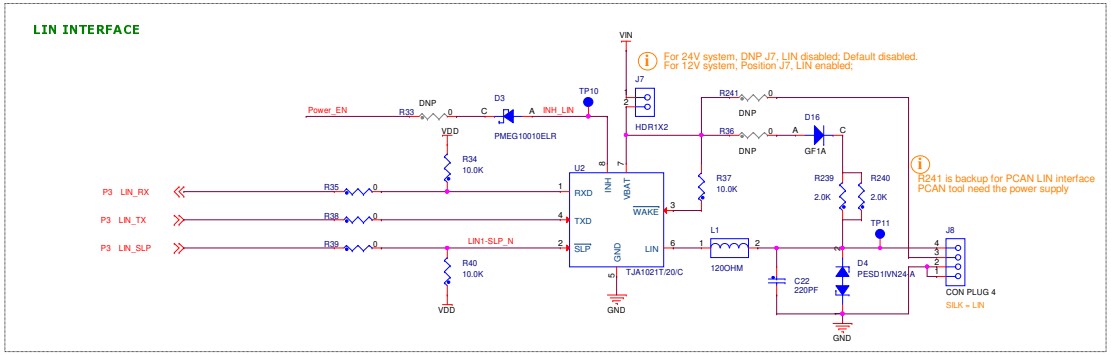
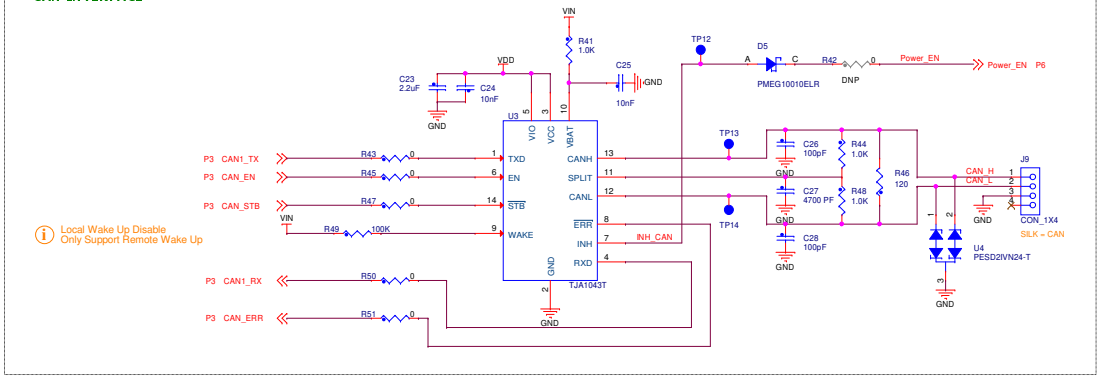
Communication

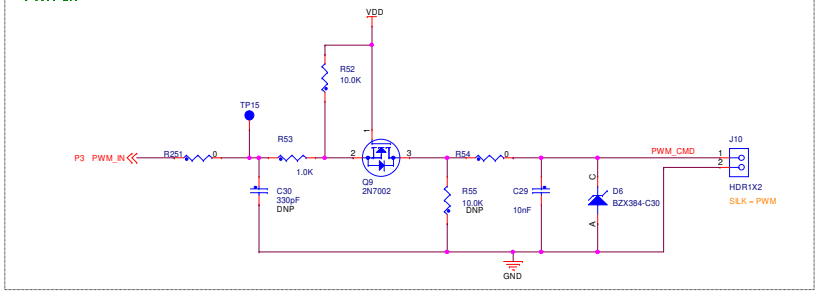
LIN INTERFACE



CAN INTERFACE



PWM IN



Classification:	Public
Drawing Title:	MCSXTE2BK142
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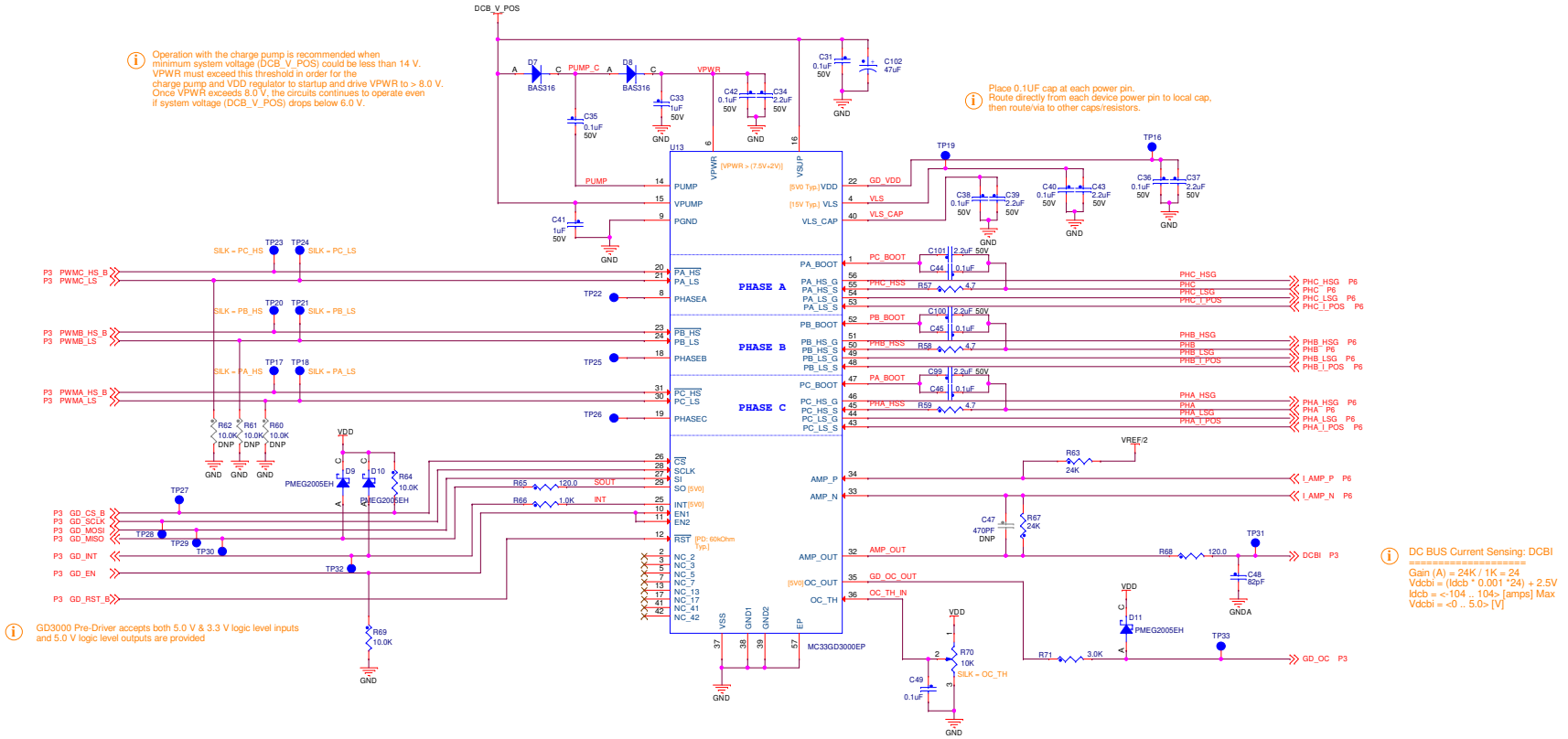
GD3000 - THREE PHASE FET PRE-DRIVER



Classification: Public		
Drawing Title:	MCSXTE2BK142	
Page Title:	GD3000 - THREE PHASE FET PRE-DRIVER	
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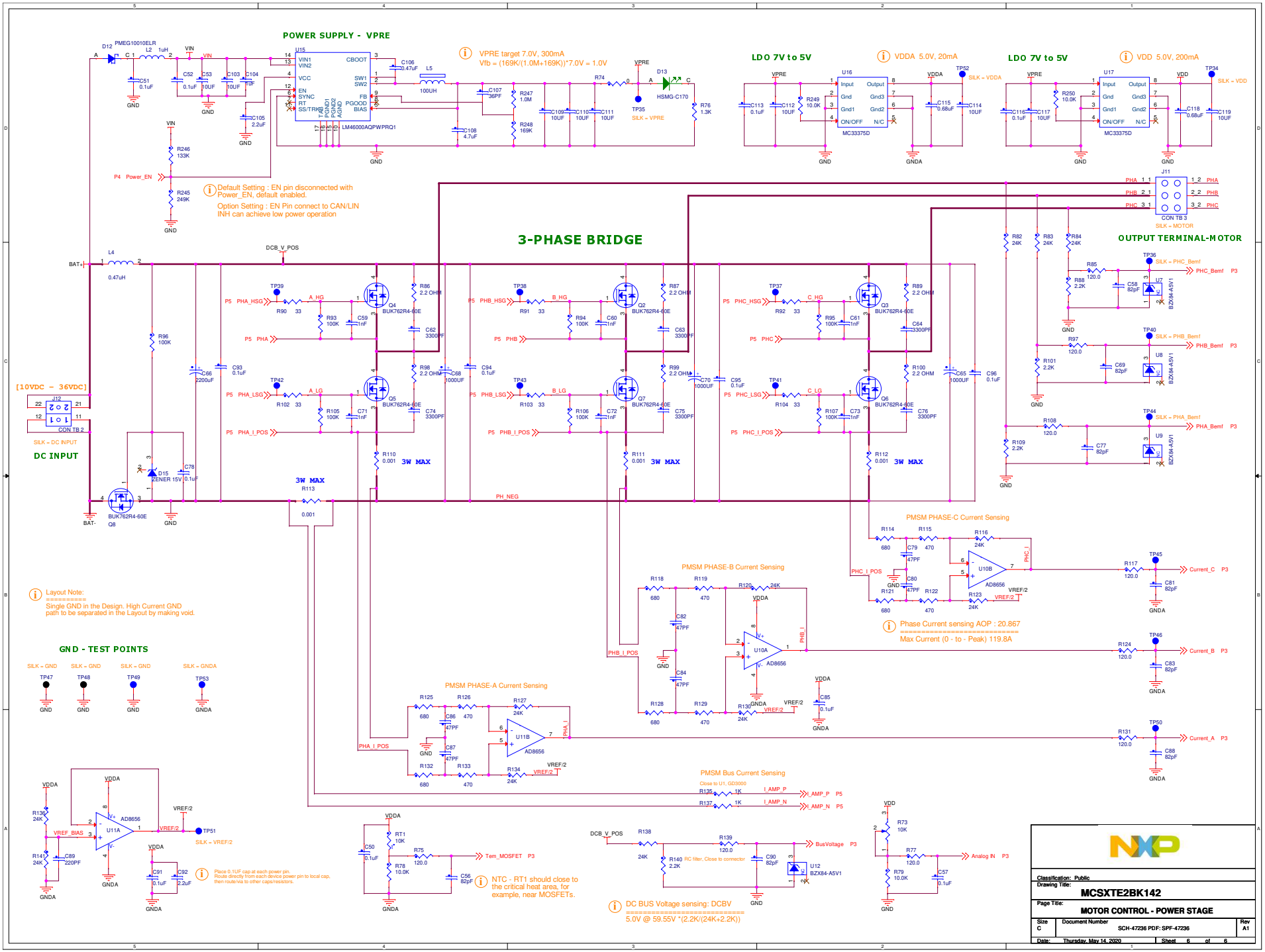
POWER SUPPLY - VPRE
VPRE target 7.0V, 300mA
Vfb = (169K/(1.0M+169K))*7.0V = 1.0V
LDO 7V to 5V
VDDA 5.0V, 20mA
LDO 7V to 5V
VDD 5.0V, 200mA
LM46000AQPWPRQ1
MC33375D
MC33375D
Default Setting : EN pin disconnected with Power_EN, default enabled.
Option Setting : EN Pin connect to CAN/LIN INH can achieve low power operation
3-PHASE BRIDGE
OUTPUT TERMINAL-MOTOR
CON TB 3
SILK = MOTOR
[10VDC – 36VDC]
CON TB 2
SILK = DC INPUT
DC INPUT
3W MAX
3W MAX
3W MAX
PH_NEG
PMSM PHASE-C Current Sensing
PMSM PHASE-B Current Sensing
PMSM PHASE-A Current Sensing
PMSM Bus Current Sensing
Phase Current sensing AOP : 20.867
Max Current (0 - to - Peak) 119.8A
Layout Note:
Single GND in the Design. High Current GND path to be separated in the Layout by making void.
GND - TEST POINTS
Place 0.1UF cap at each power pin. Route directly from each device power pin to local cap, then route/via to other caps/resistors.
NTC - RT1 should close to the critical heat area, for example, near MOSFETs.
DC BUS Voltage sensing: DCBV
5.0V @ 59.55V *(2.2K/(24K+2.2K))
Classification: Public
Drawing Title:
MCSXTE2BK142
Page Title:
MOTOR CONTROL - POWER STAGE
Size C
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Rev A1
Date: Thursday, May 14, 2020
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