

Disable OCP function

When implement "Disable OCP" through setting bit 010 for VDS_MODE, which is in register 0xC, DRV device output Highside charge bump undervoltage 2 fault only, instead of previous OCP issue at 3 Lowerside.

Meanwhile, there are all bit 0 in register 0x1 without any fault indication, but we could observe the nFault pin is pulled down to low level already, pls refer to pic 5' on following page.

.VDS_MODE = VdsModeProtectionDisabled,

CompareCheckSPIrAfter[6] 0000 0011 1111 0010

7.6.2.7 VDS Sense Control (Address = 0xC)

Table 20. VDS Sense Control Register Description

BIT	R/W	NAME	DEFAULT	DESCRIPTION			
10:8	R	RSVD	0x0	These bits are reserved for internal use for revision ID.			
7:3	R/W	VDS_LEVEL	0x19	VDS comparator threshold			
				b'00000 - 0.060 V	b'00001 - 0.068 V	b'00010 - 0.076 V	b'00011 - 0.086 V
				b'00100 - 0.097 V	b'00101 - 0.109 V	b'00110 - 0.123 V	b'00111 - 0.138 V
				b'01000 - 0.155 V	b'01001 - 0.175 V	b'01010 - 0.197 V	b'01011 - 0.222 V
				b'01100 - 0.250 V	b'01101 - 0.282 V	b'01110 - 0.317 V	b'01111 - 0.358 V
				b'10000 - 0.403 V	b'10001 - 0.454 V	b'10010 - 0.511 V	b'10011 - 0.576 V
				b'10100 - 0.648 V	b'10101 - 0.730 V	b'10110 - 0.822 V	b'10111 - 0.926 V
				b'11000 - 1.043 V	b'11001 - 1.175 V	b'11010 - 1.324 V	b'11011 - 1.491 V
				b'11100 - 1.679 V	b'11101 - 1.892 V	b'11110 - 2.131 V	b'11111 - 2.131 V
2:0	R/W	VDS_MODE	0x0	VDS mode b'000 - Latched shut down when overcurrent detected b'001 - Report only when overcurrent detected b'010 - VDS protection disabled (no overcurrent sensing or reporting)			

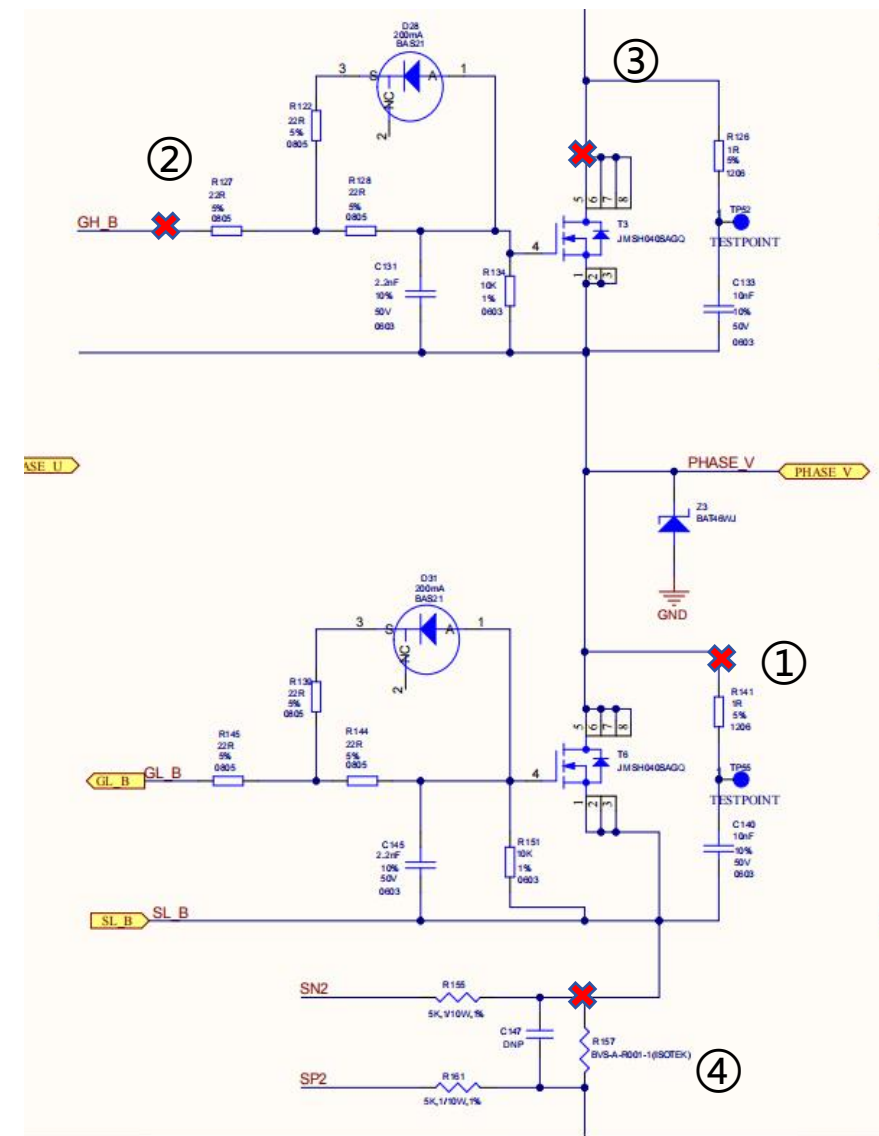
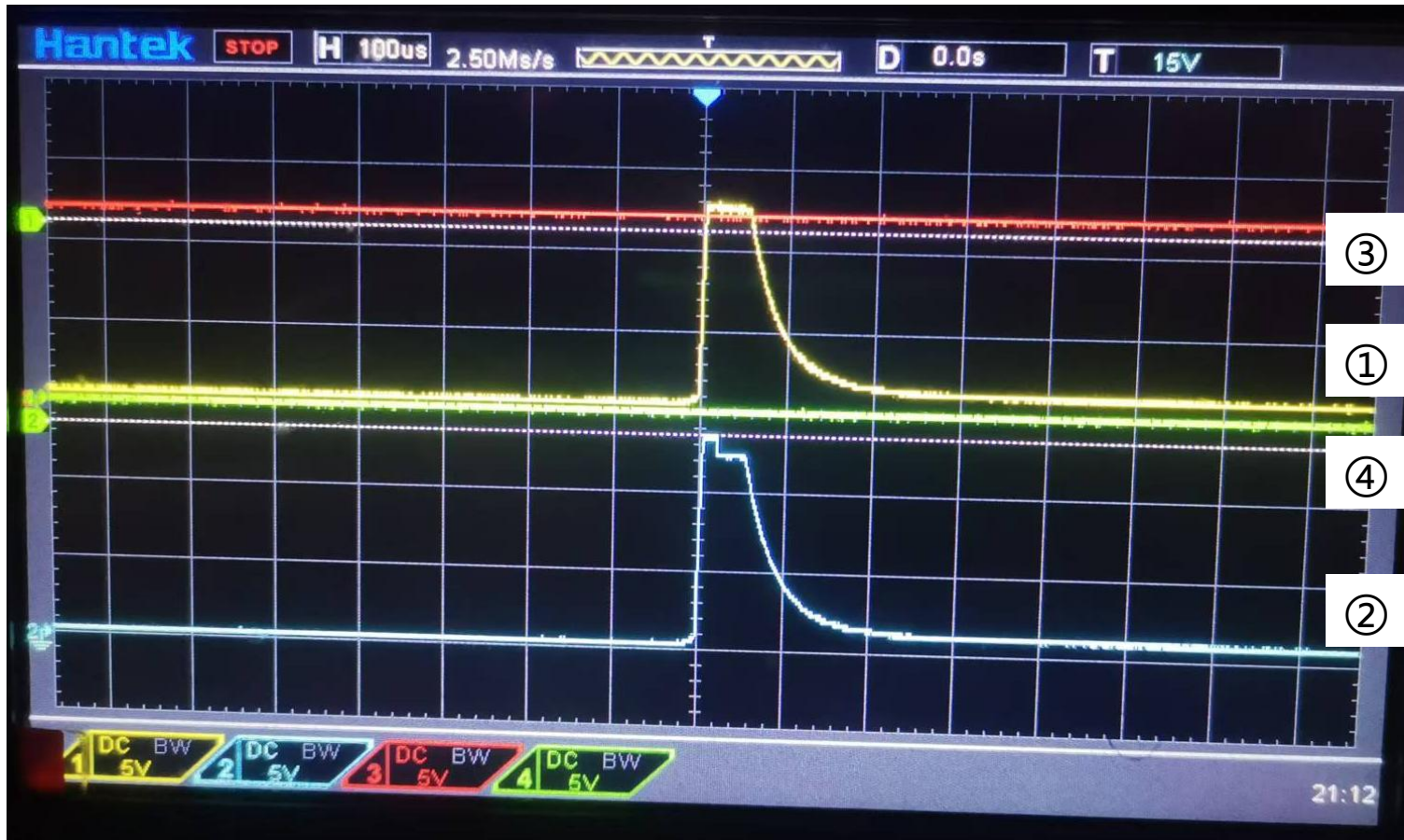
ReadOnlyRegisterbeforePWM[0]	0000 0000 0000 0000
ReadOnlyRegisterbeforePWM[1]	0000 0000 0000 0000
ReadOnlyRegisterbeforePWM[2]	0000 0000 0000 0100
ReadOnlyRegisterbeforePWM[3]	0

7.6.1.3 IC Faults (Address = 0x3)

Table 12. IC Faults Register Description

BIT	R/W	NAME	DEFAULT	DESCRIPTION
10	R	PVDD_UVLO2	0x0	PVDD undervoltage 2 fault
9	R	WD_FAULT	0x0	Watchdog fault
8	R	OTSD	0x0	Overtemperature fault
7	R	RSVD	0x0	-
6	R	VREG_UV	0x0	VREG undervoltage fault
5	R	AVDD_UVLO	0x0	AVDD undervoltage fault
4	R	VCP_LSD_UVLO2	0x0	Low-side gate supply fault
3	R	RSVD	0x0	-
2	R	VCPH_UVLO2	0x0	High-side charge pump undervoltage 2 fault
1	R	VCPH_OVLO	0x0	High-side charge pump overvoltage fault
0	R	VCPH_OVLO_ABS	0x0	High-side charge pump overvoltage ABS fault

(1') SHx/GHxS/ LBx/V_D @ Disable OCP



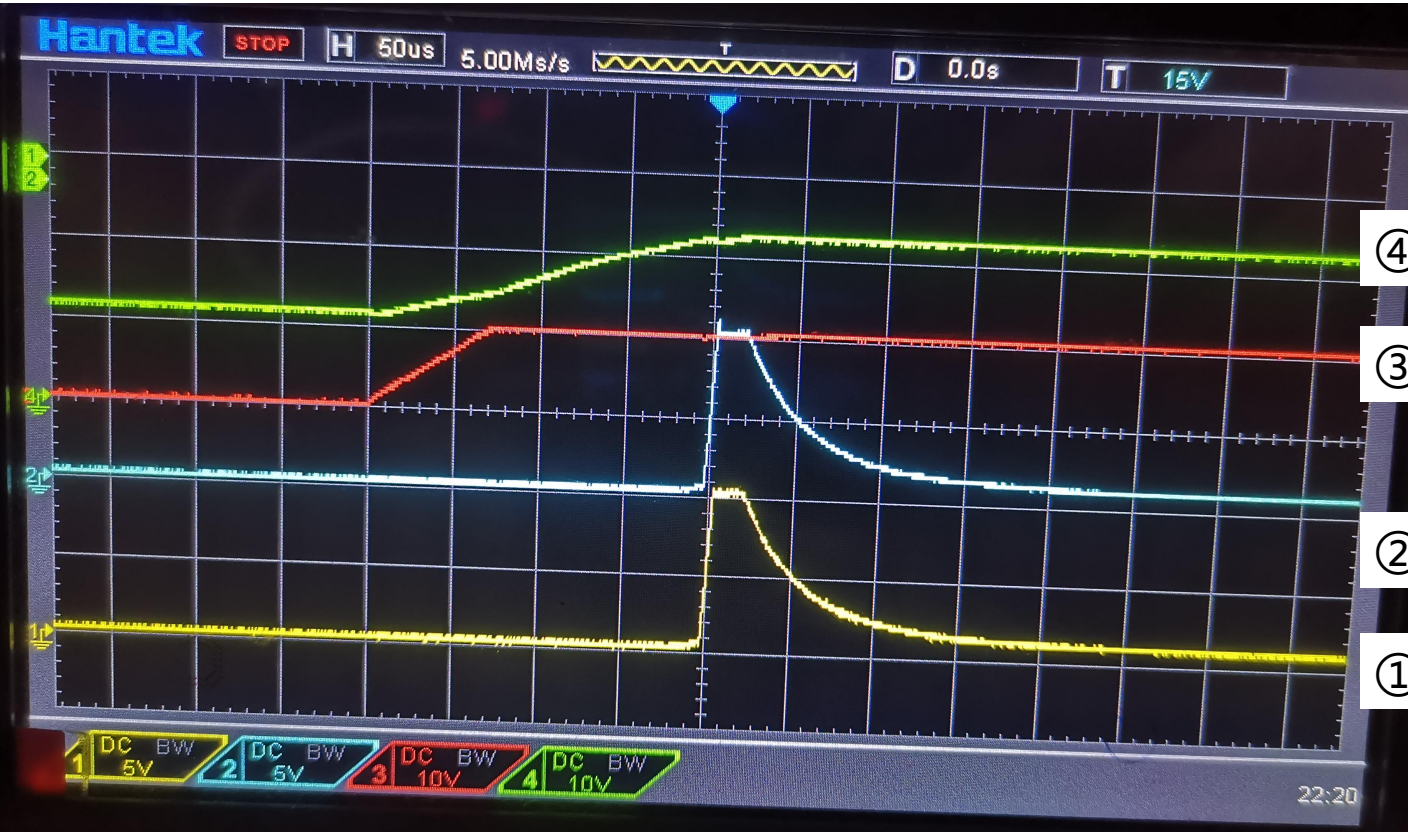
①CH1_Yellow SHx (@R141)
<0V - 12V>

③CH3_Red SLBx (@R157)
<0V>

②CH2_Blue GHx (@R127)
<0V - 12V>

④CH4_Green V_D=PVDD (@MOS_D)
<12V>

(2') SHx/GHxS/VCP_LSD/VCPH @ Disable OCP

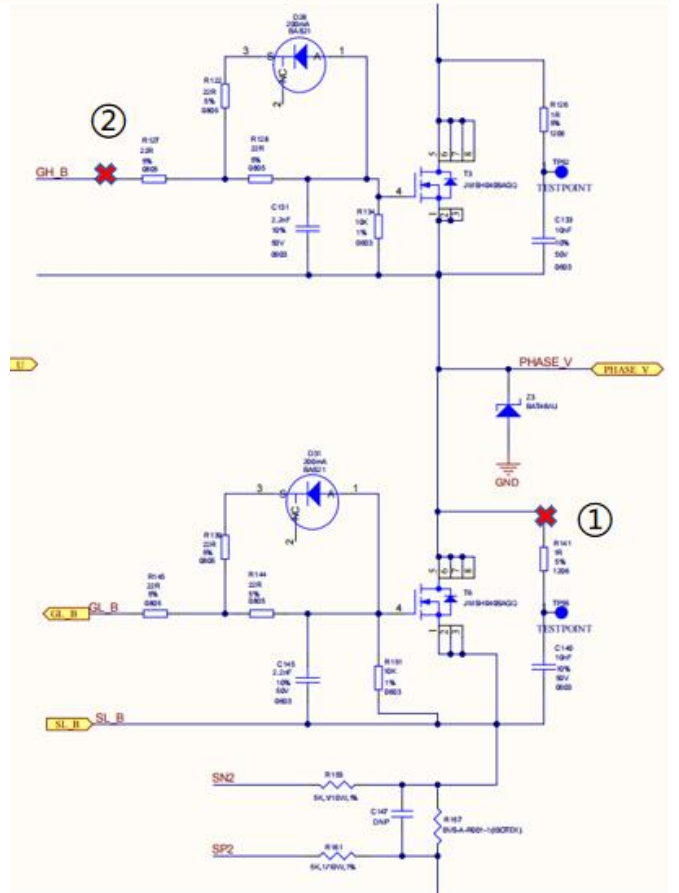
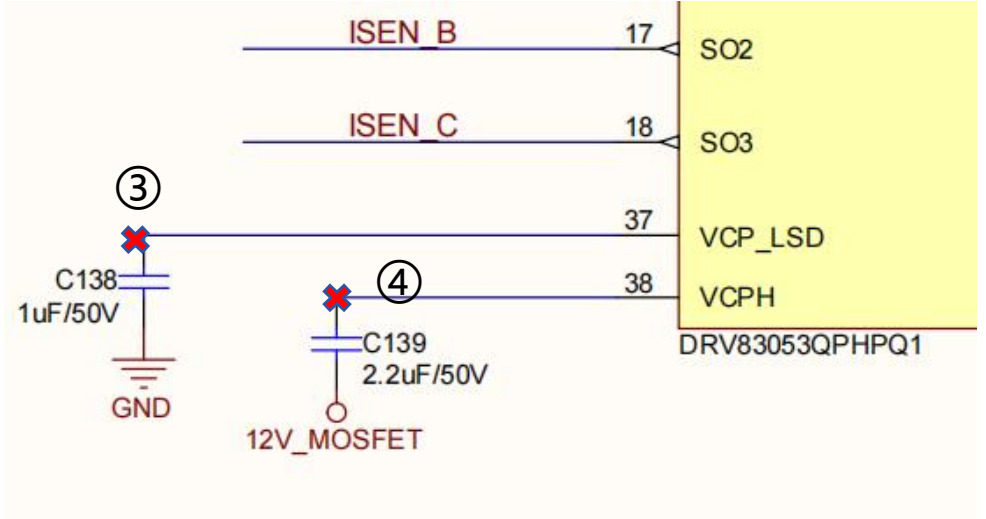


①CH1_Yellow SHx (@R141)
<0V - 12V>

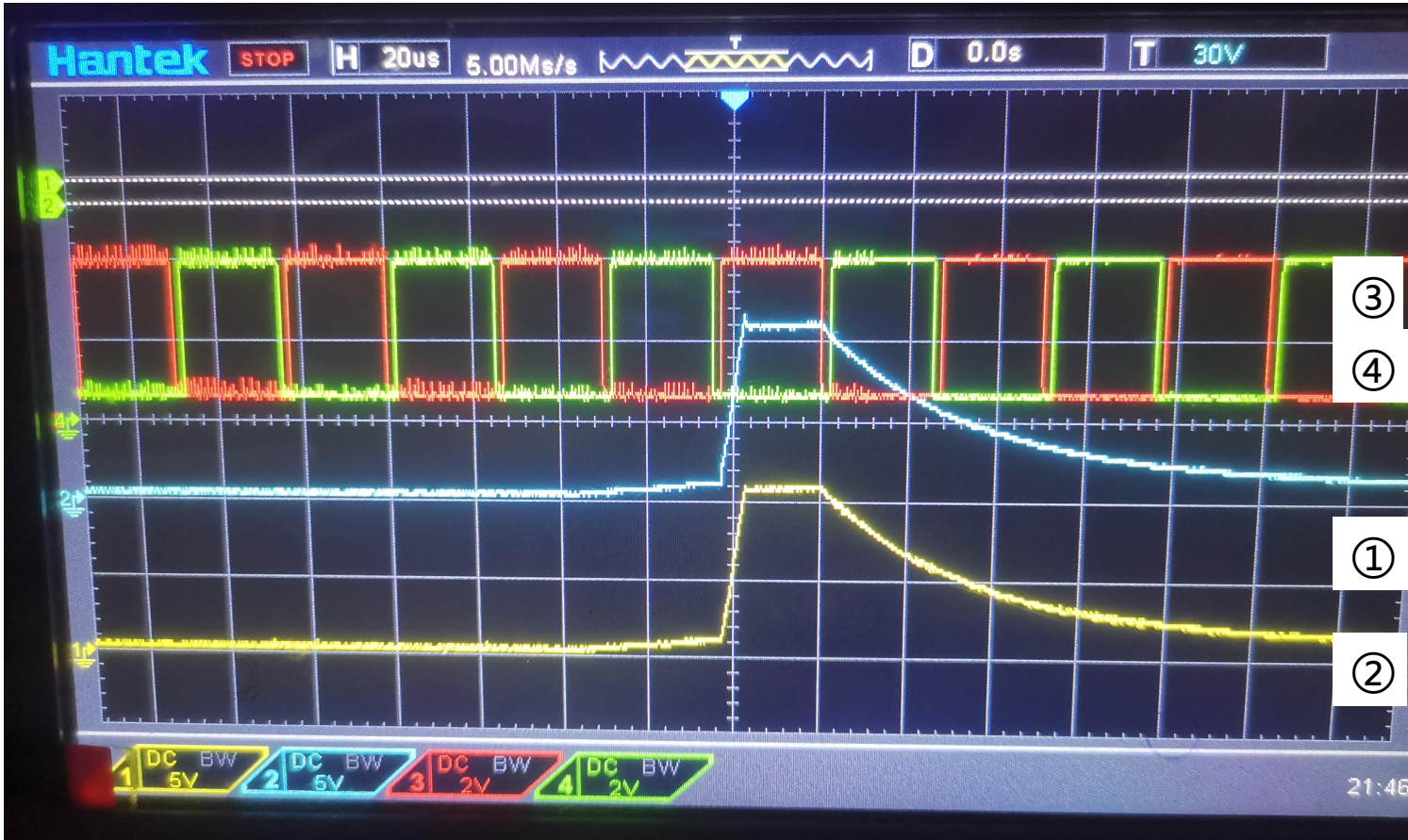
②CH2_Blue GHx (@R127)
<0V - 12V>

③CH3_Red VCP_LSD (@C138)
<0V-12V>

④CH4_Green VCPH (@C139)
<12V-23V>



(3') SHx/GHxS/INHx/INLx @ Disable OCP



Item	value	unit
MCU Freq.	100	MHZ
MCU period	10	ns
PWM Freq.	20000	Hz
PWM Period	0.05	ms
PWM count	5000	ticks
PWM duty	50%	2500
PWM rise/fall	central align	
PWM dead time	1000	ns

- 6PWM input
- invert in pairs
- continuous fixed vduy value
- without FOC
- without motor

①CH1_Yellow SHx (R141)

③CH3_Red INHx PWM input

②CH2_Blue GHx上管栅极(R127)

④CH4_Green INLx PWM input

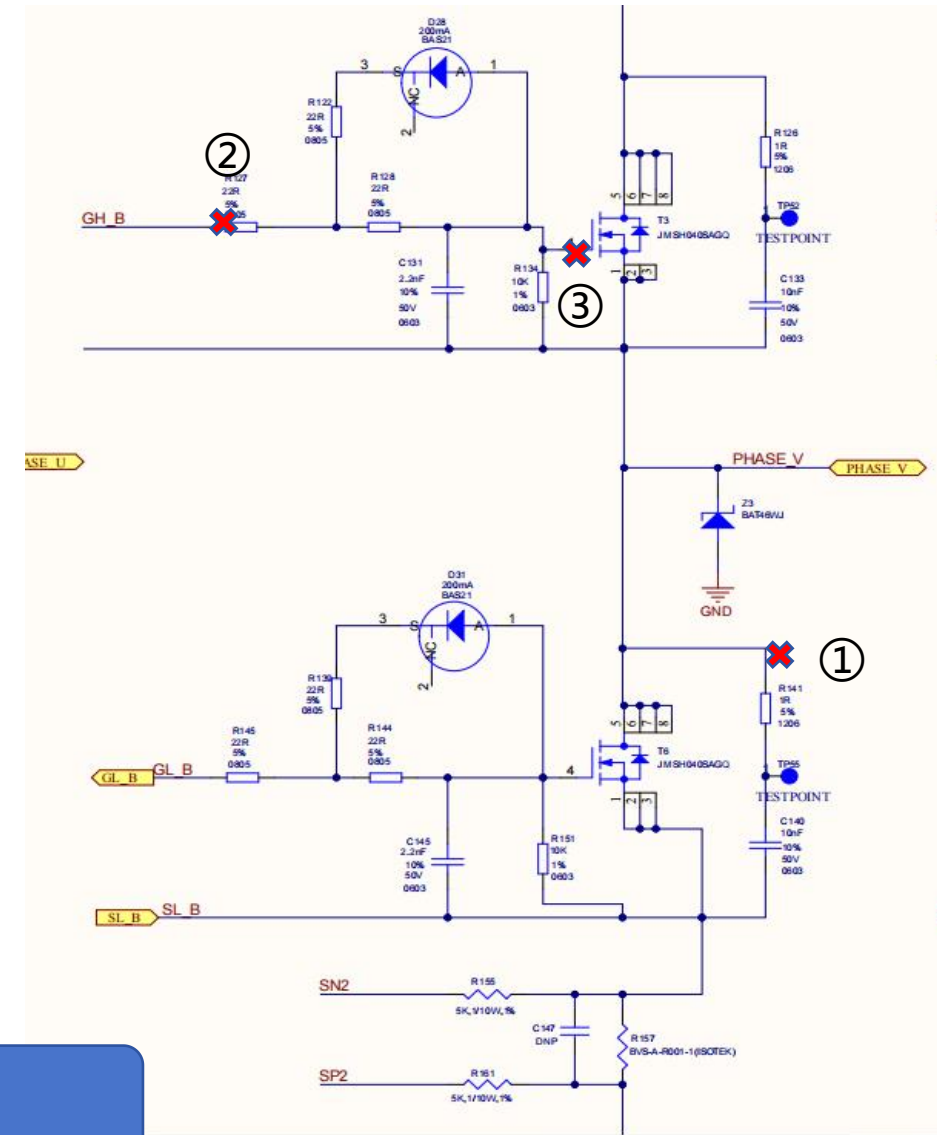
(4') SHx/GHxS/Vg @ Disable OCP



①CH1_Yellow SHx (@R141)
<0V - 12V>

②CH2_Blue GHx (@R127)
<0V - 12V>

③CH3_Red SLBx (@R157)
<0-9V> ? ?



(5') SHx/GHxS/nFault/PWRGD @ Disable OCP



①CH1_Yellow SHx (@R141)
<0V - 12V>

③CH3_Red PWRGD (@R120)
<1.7V-4V>

②CH2_Blue GHx (@R127)
<0V - 12V>

④CH4_Green nFault (@R136)
<0.6V-4V>