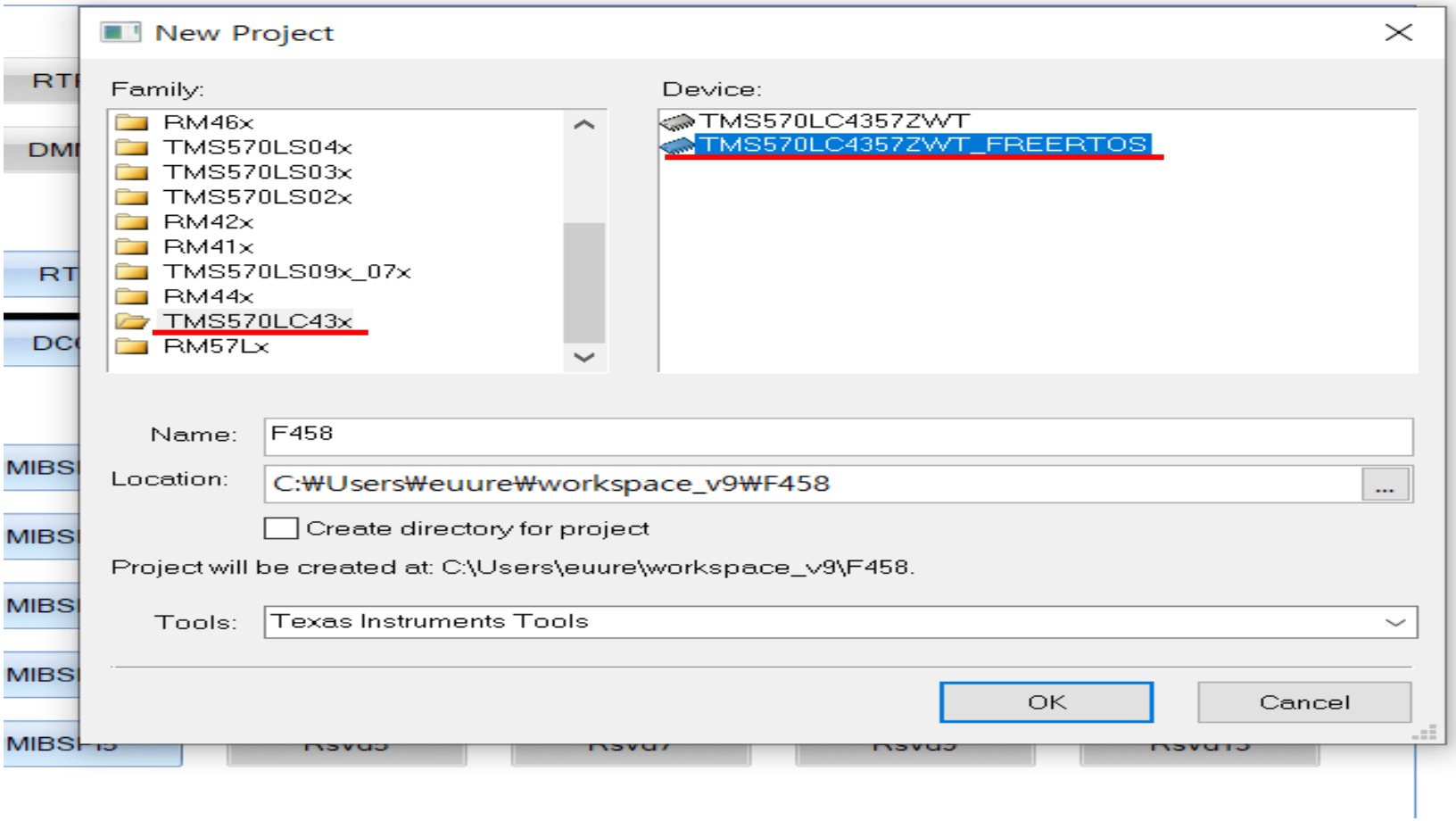
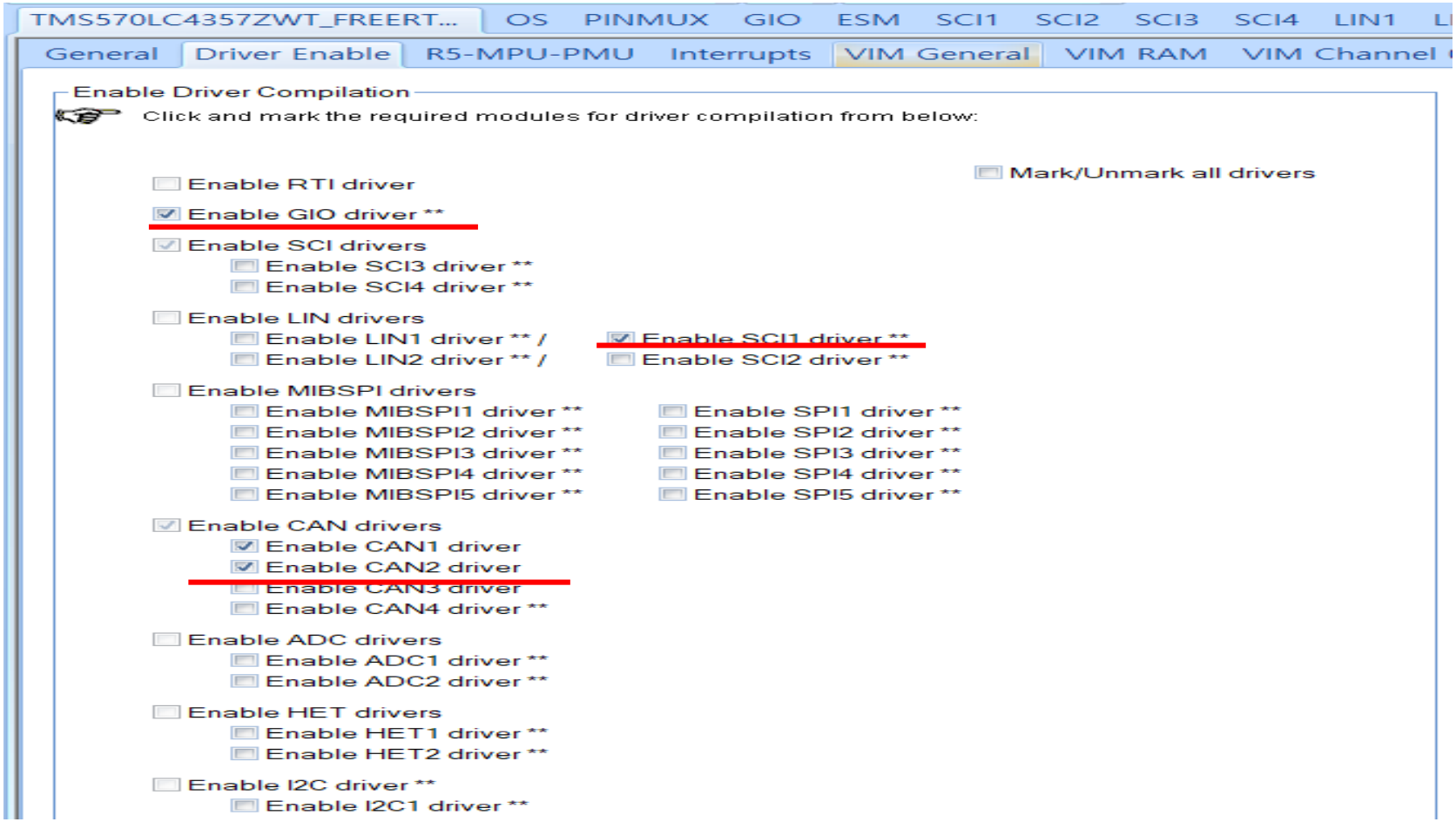
TMDX570LC43 HDK

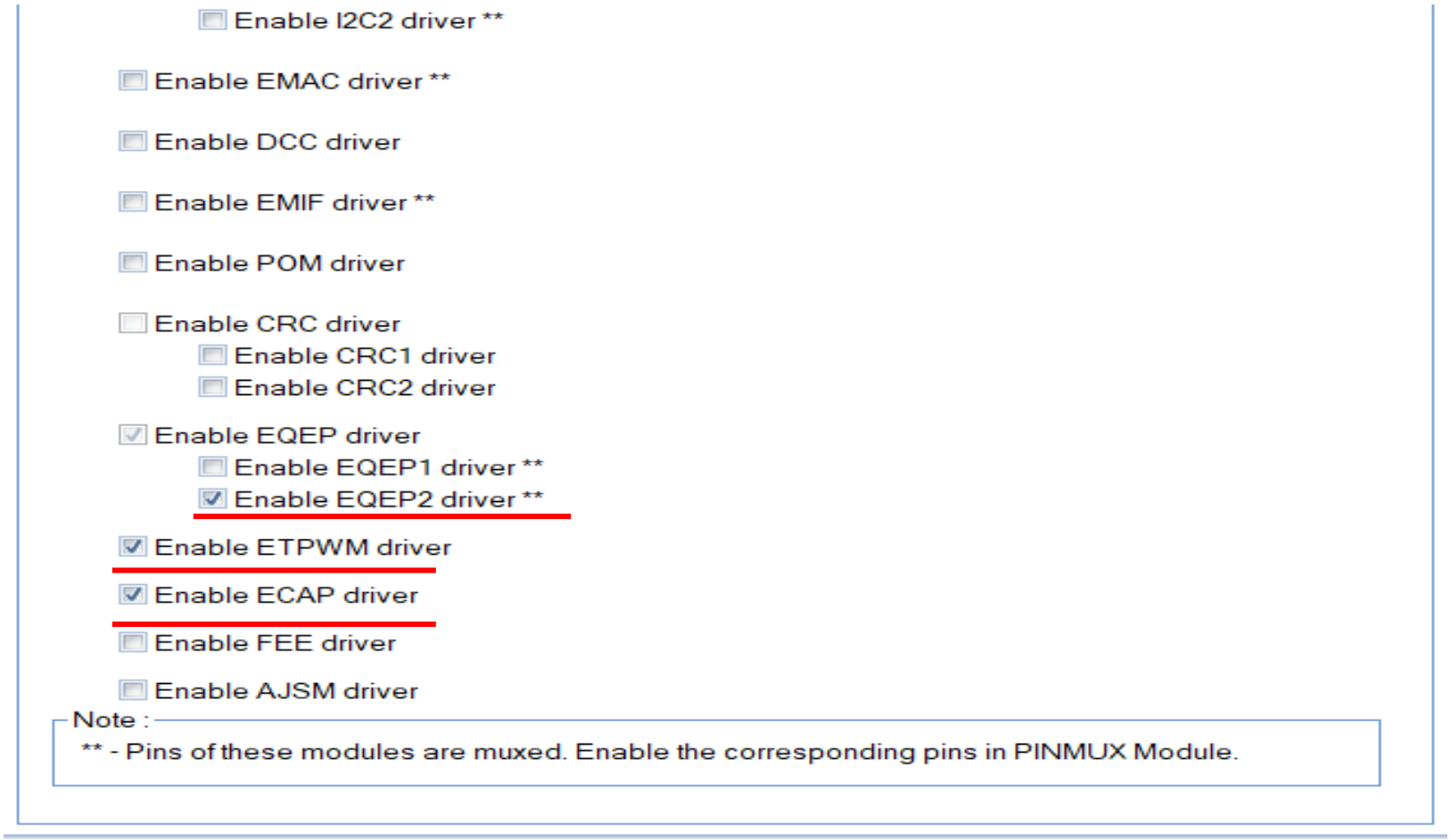
- HALCOGEN 설정 -

- FREERTOS 운영체제를 사용 하기 위한 설정

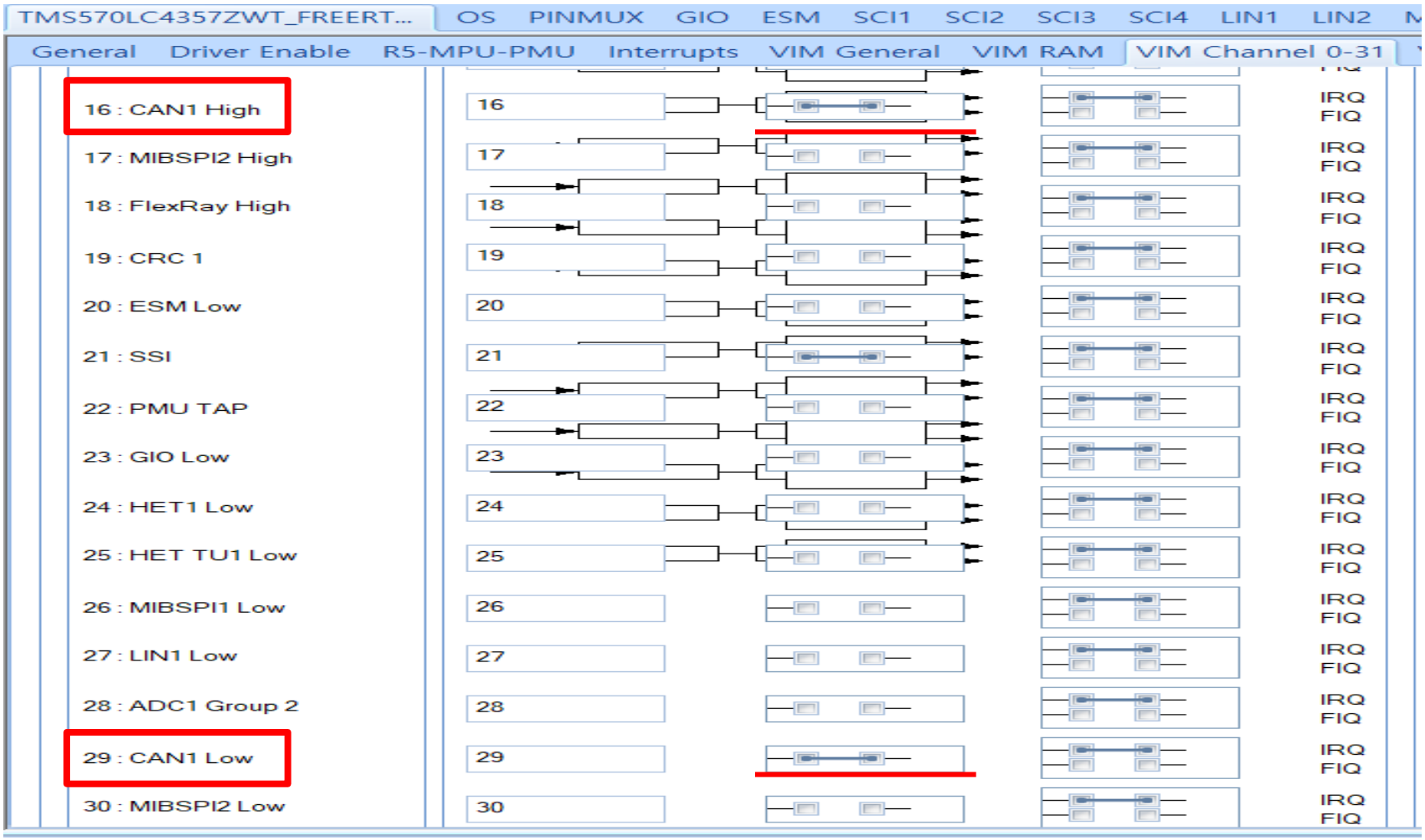


- 시나리오 구현에 필요한 기능 설정

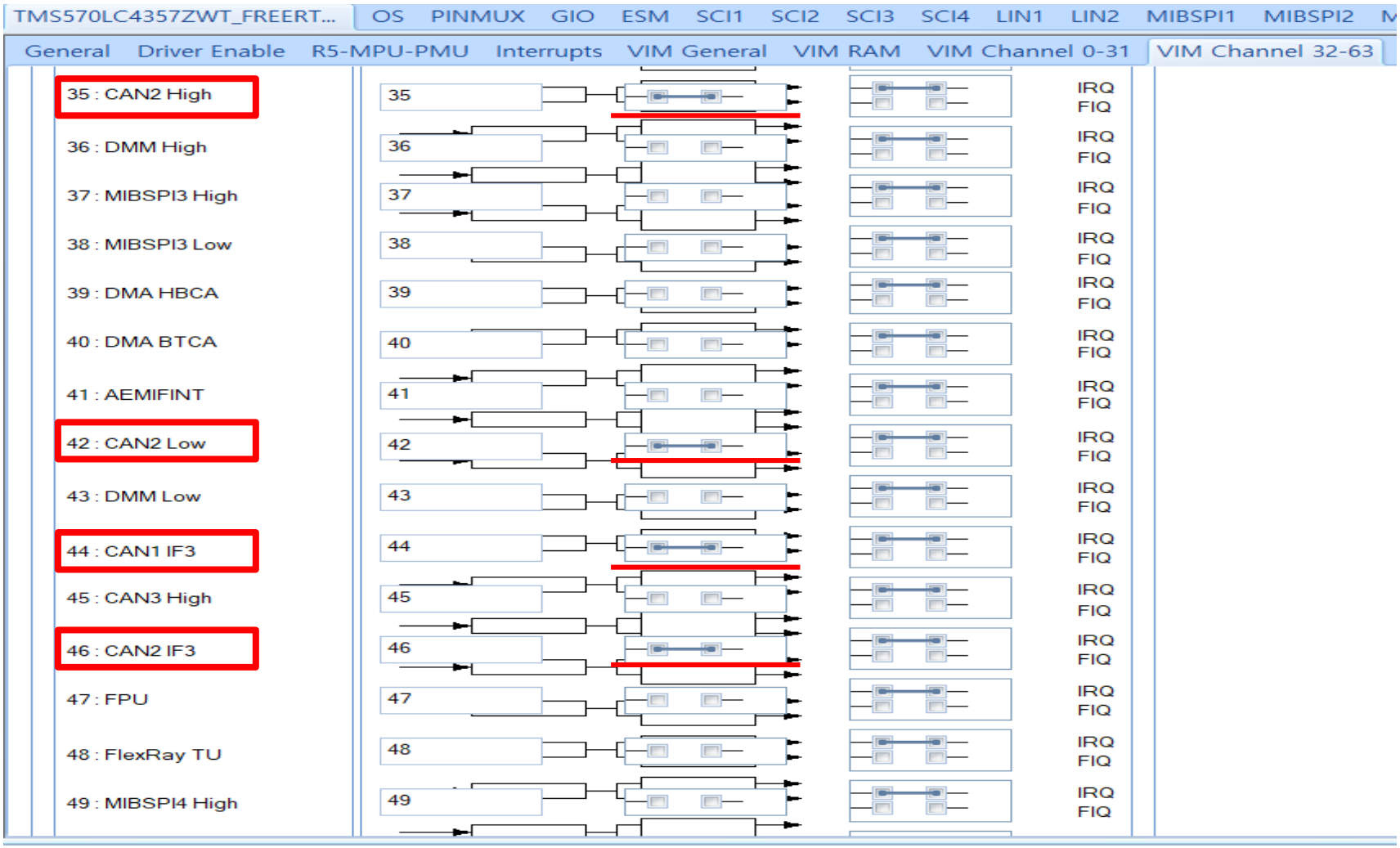



Enable I2C2 driver **
Enable EMAC driver **
Enable DCC driver
Enable EMIF driver **
Enable POM driver
Enable CRC driver
Enable CRC1 driver
Enable CRC2 driver
Enable EQEP driver
Enable EQEP1 driver **
Enable EQEP2 driver **
Enable ETPWM driver
Enable ECAP driver
Enable FEE driver
Enable AJSM driver
Note :
** - Pins of these modules are muxed. Enable the corresponding pins in PINMUX Module.

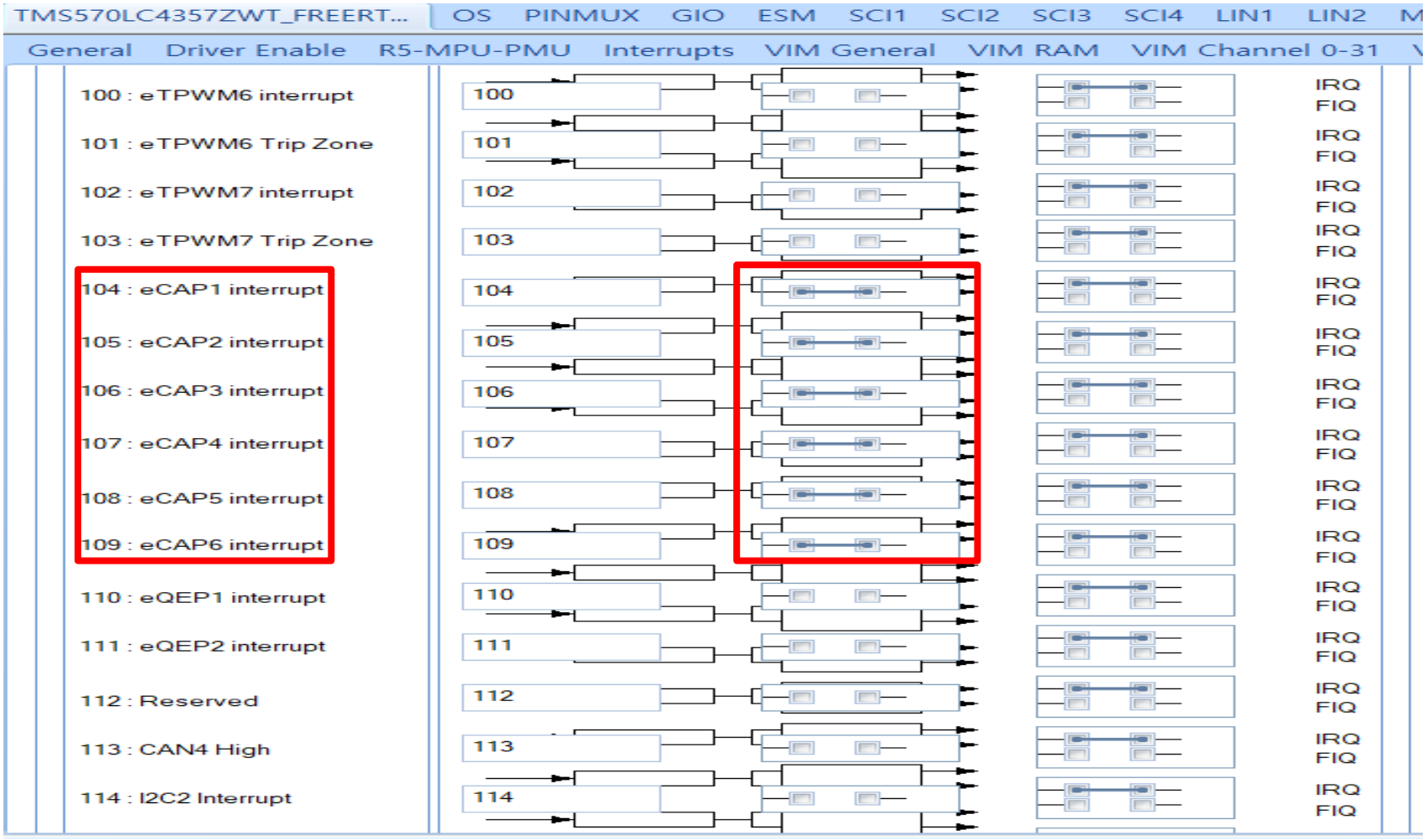
- CAN 인터럽트를 사용하기 위한 설정(2ch)



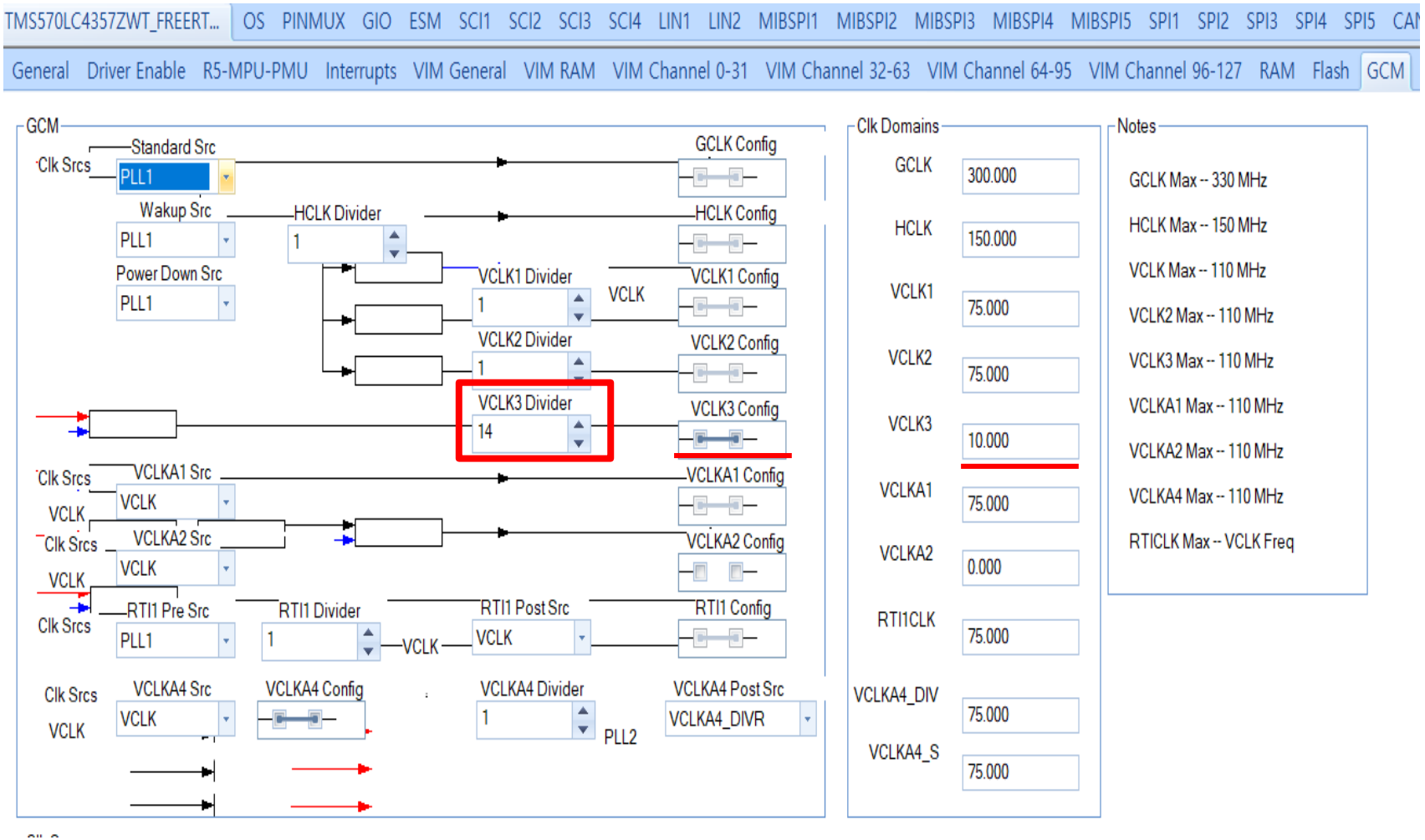
- CAN 인터럽트를 사용하기 위한 설정(2ch)



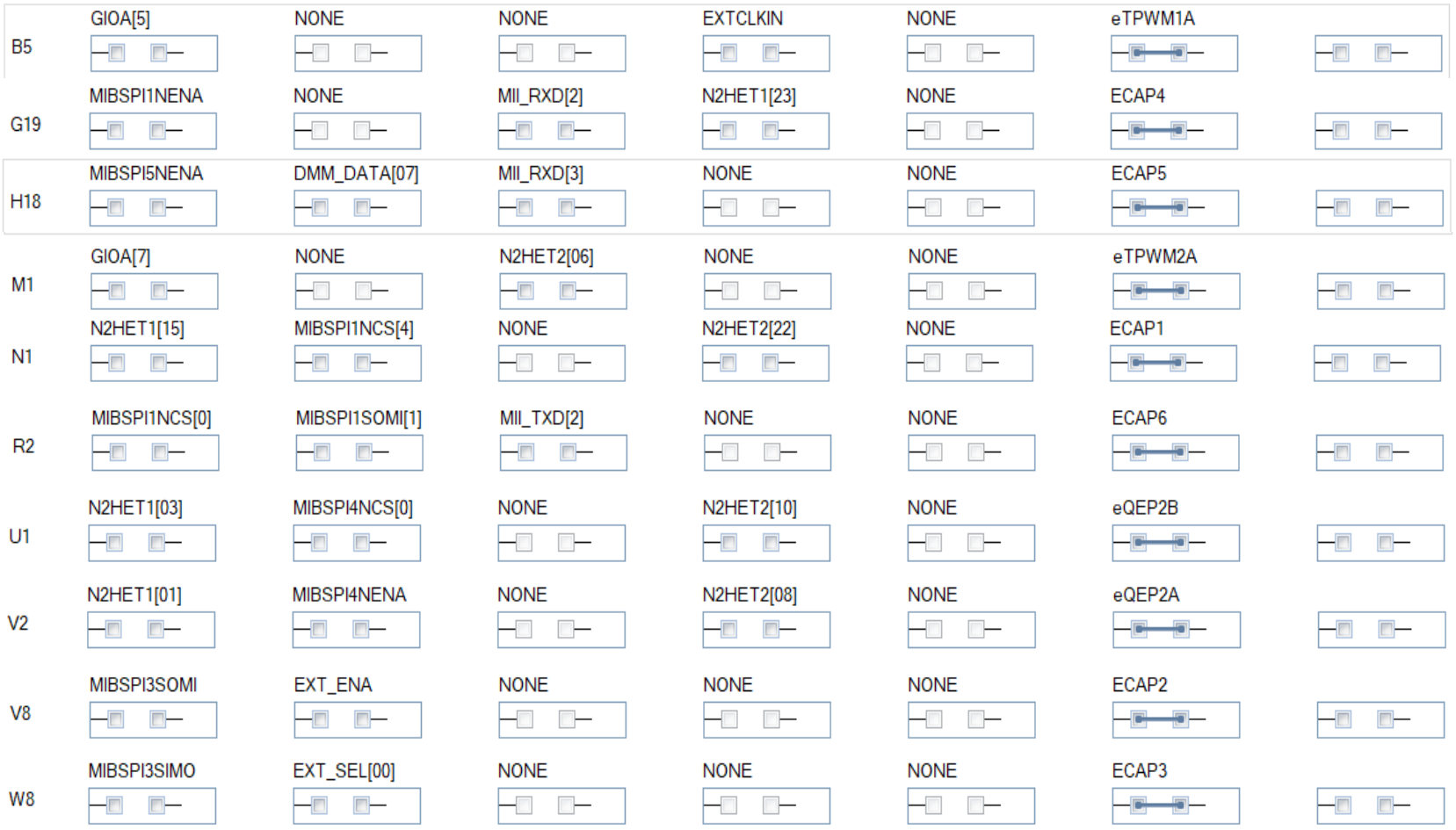
- eCAP 인터럽트를 사용하기 위한 설정(6ch)



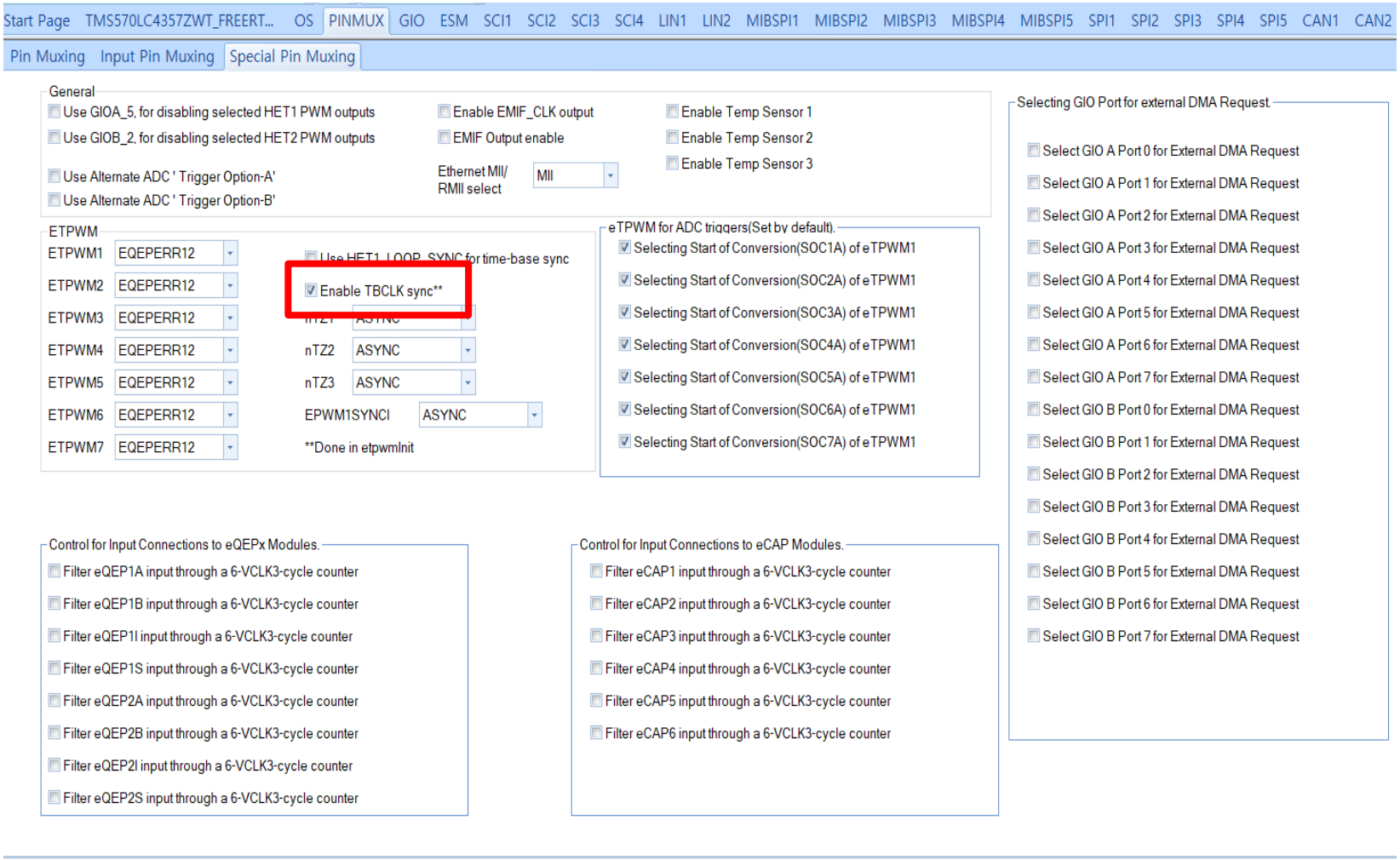
- PWM 주기 설정에 사용하기 위한 VCLK3 값 설정



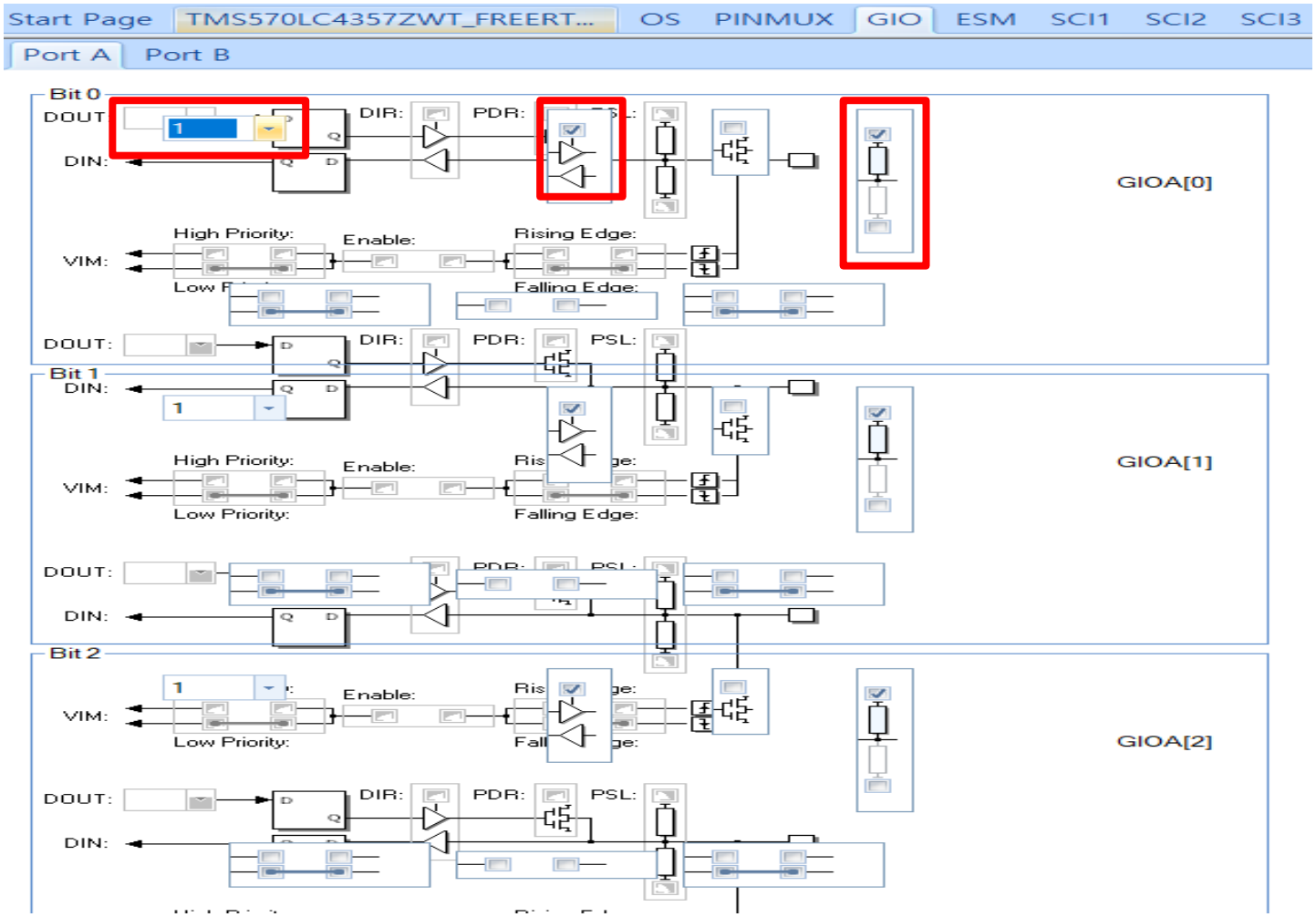
- PINMUX 설정


B5
GIOA[5]
NONE
NONE
EXTCLKIN
NONE
eTPWM1A
G19
MIBSPI1NENA
NONE
MII_RXD[2]
N2HET1[23]
NONE
ECAP4
H18
MIBSPI5NENA
DMM_DATA[07]
MII_RXD[3]
NONE
NONE
ECAP5
M1
GIOA[7]
NONE
N2HET2[06]
NONE
NONE
eTPWM2A
N1
N2HET1[15]
MIBSPI1NCS[4]
NONE
N2HET2[22]
NONE
ECAP1
R2
MIBSPI1NCS[0]
MIBSPI1SOMI[1]
MII_TXD[2]
NONE
NONE
ECAP6
U1
N2HET1[03]
MIBSPI4NCS[0]
NONE
N2HET2[10]
NONE
eQEP2B
V2
N2HET1[01]
MIBSPI4NENA
NONE
N2HET2[08]
NONE
eQEP2A
V8
MIBSPI3SOMI
EXT_ENA
NONE
NONE
NONE
ECAP2
W8
MIBSPI3SIMO
EXT_SEL[00]
NONE
NONE
NONE
ECAP3

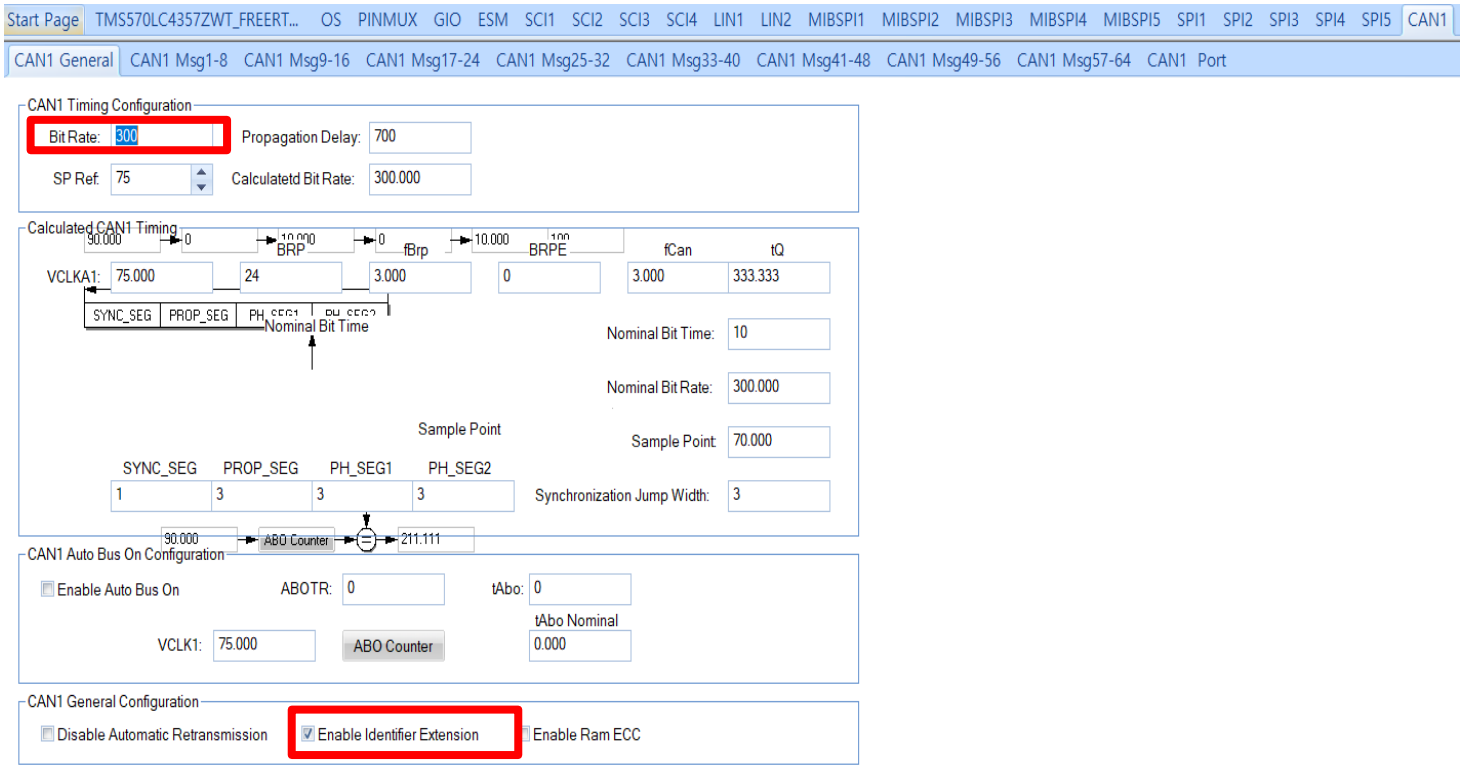
- PWM 사용시 TBCLK 로 사용

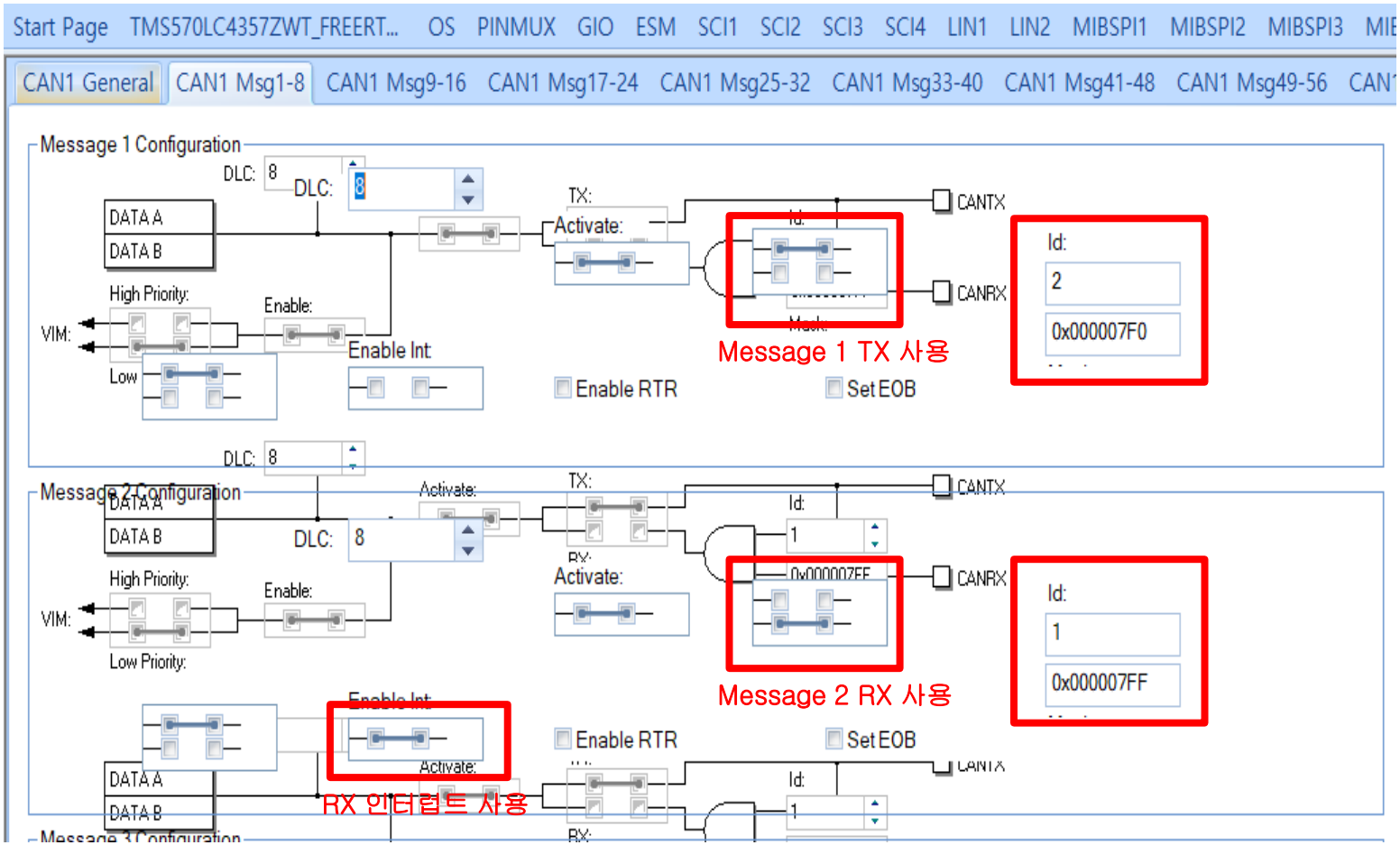


- GIOA 4개핀 사용(출력핀으로 사용)

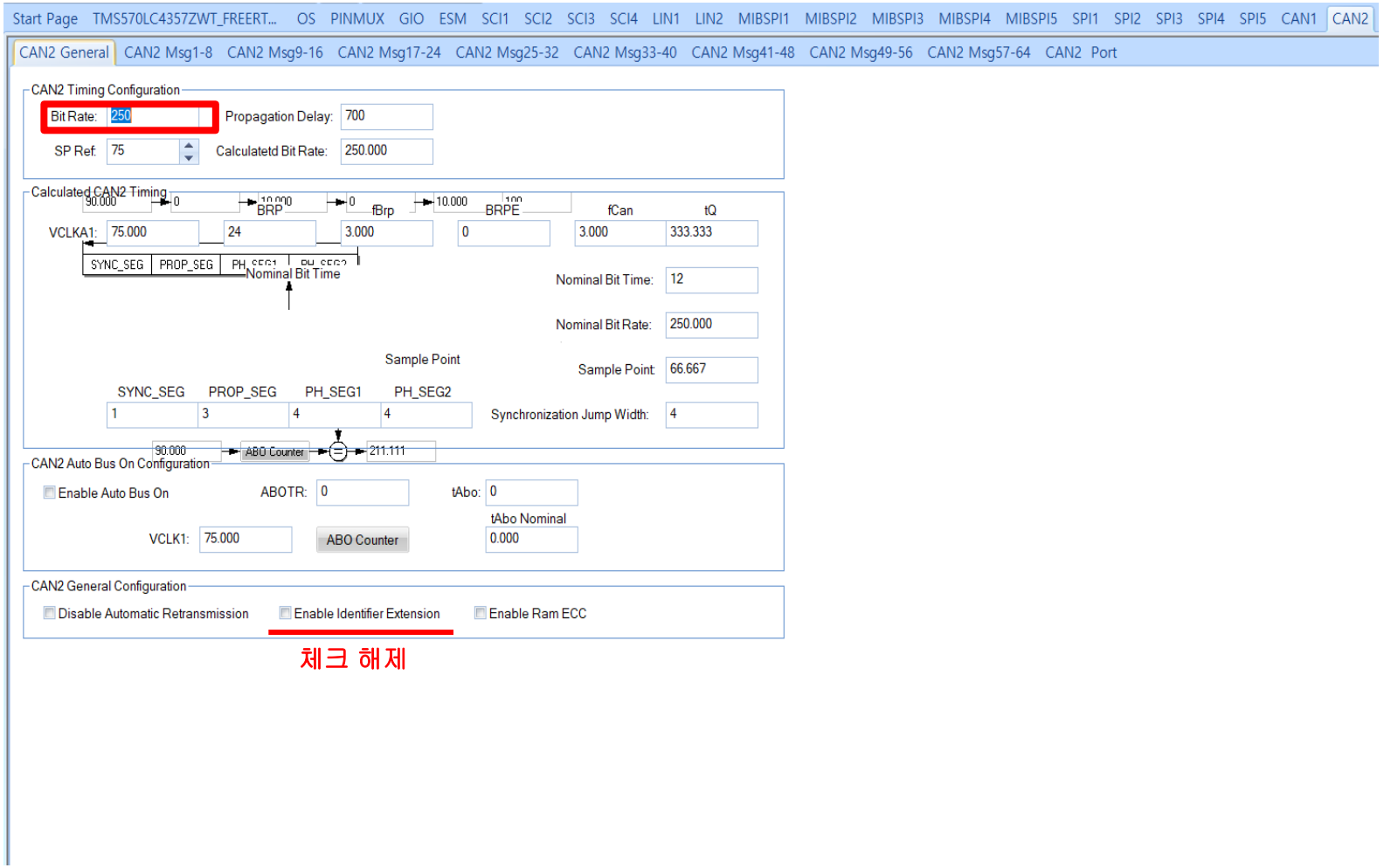


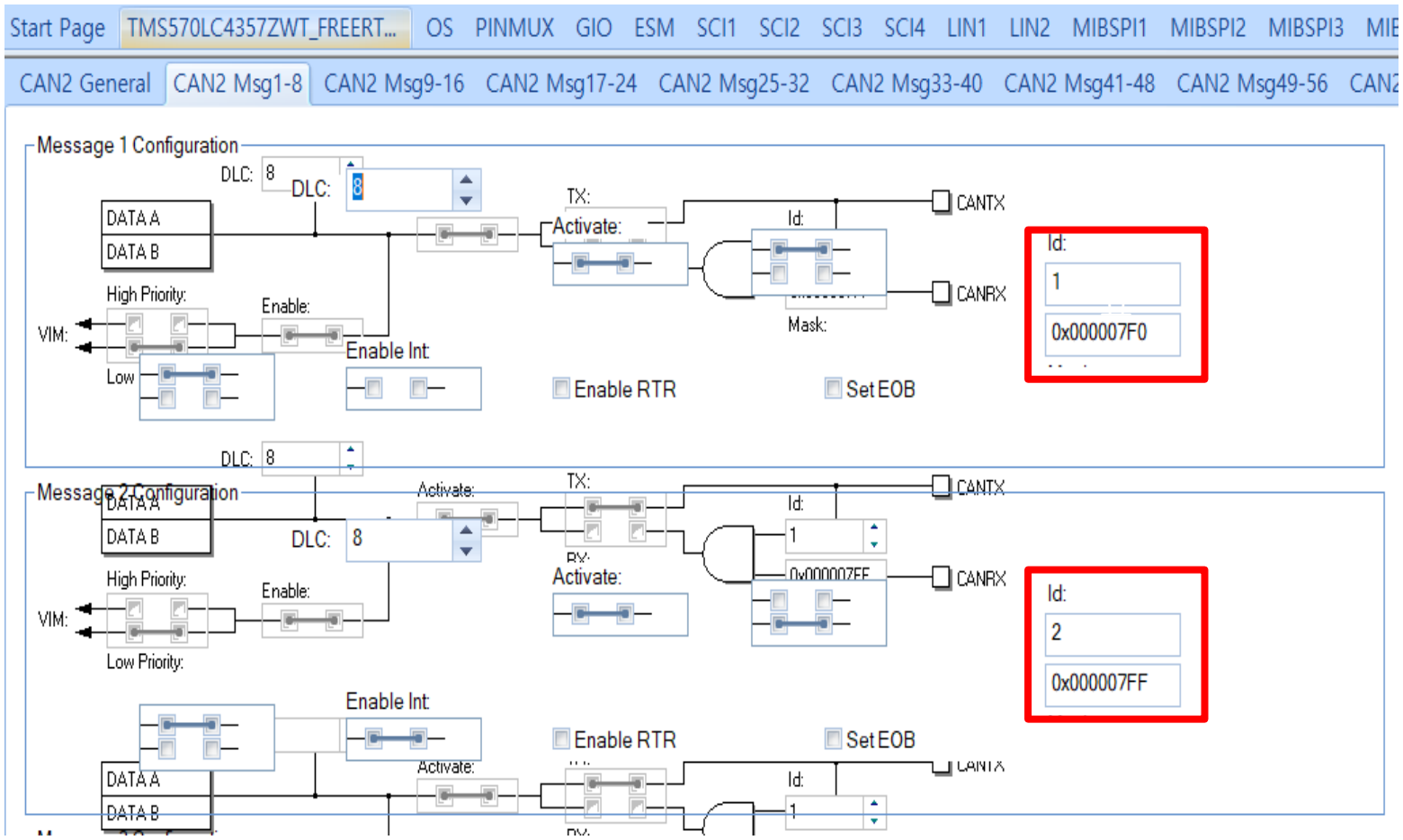
- CAN 통신 설정 (DSP↔ MCU)



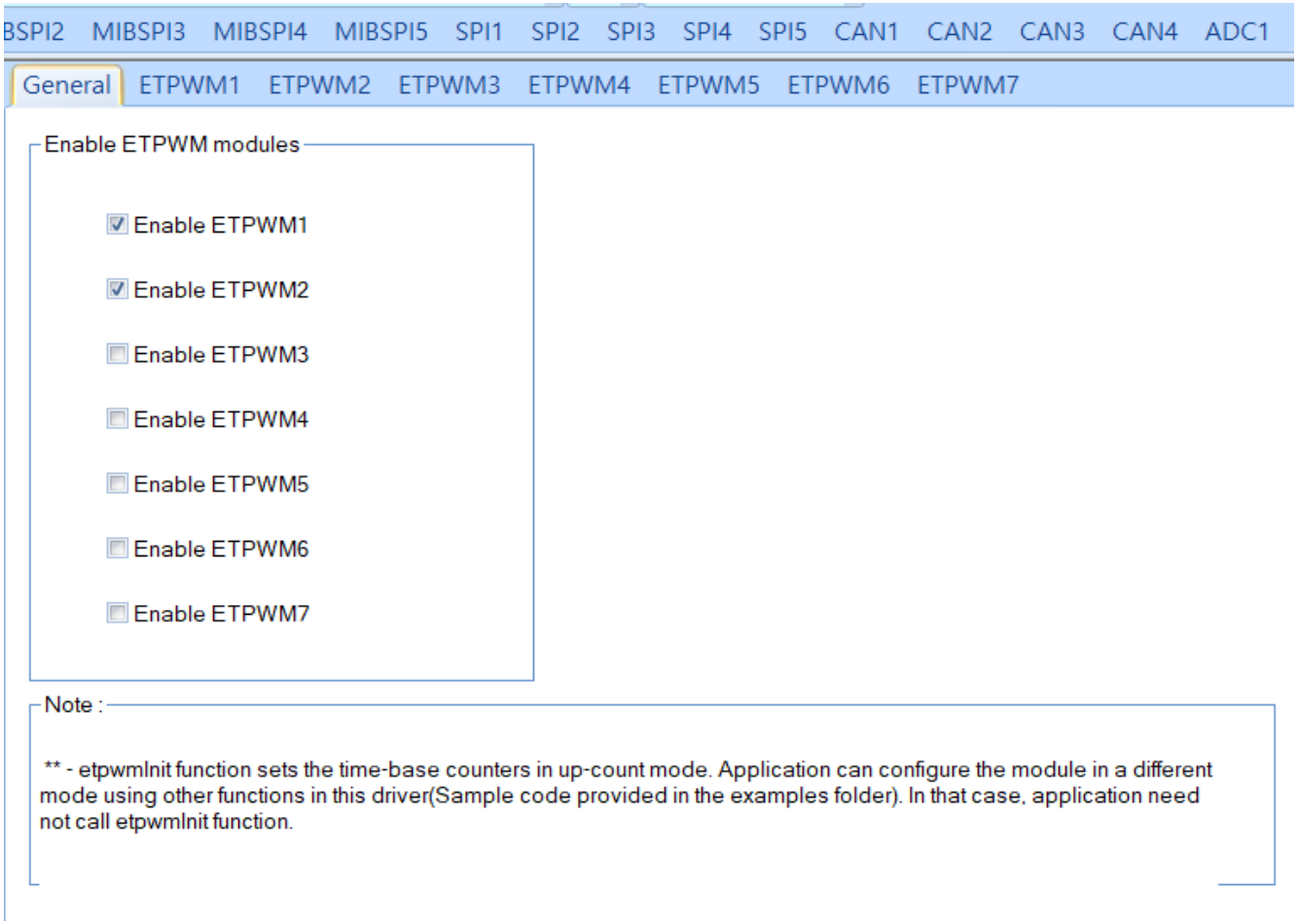

Start Page
TMS570LC4357ZWT_FREERT...
OS
PINMUX
GIO
ESM
SCI1
SCI2
SCI3
SCI4
LIN1
LIN2
MIBSPI1
MIBSPI2
MIBSPI3
CAN1 General
CAN1 Msg1-8
CAN1 Msg9-16
CAN1 Msg17-24
CAN1 Msg25-32
CAN1 Msg33-40
CAN1 Msg41-48
CAN1 Msg49-56
Message 1 Configuration
DLC: 8
DATA A
DATA B
High Priority:
VIM:
Low
Enable:
Enable Int:
TX:
Activate:
CANTX
CANRX
Id:
2
0x000007F0
Enable RTR
Set EOB
Message 1 TX 사용
Message 2 Configuration
DLC: 8
Low Priority:
1
0x000007FF
Message 2 RX 사용
RX 인터럽트 사용

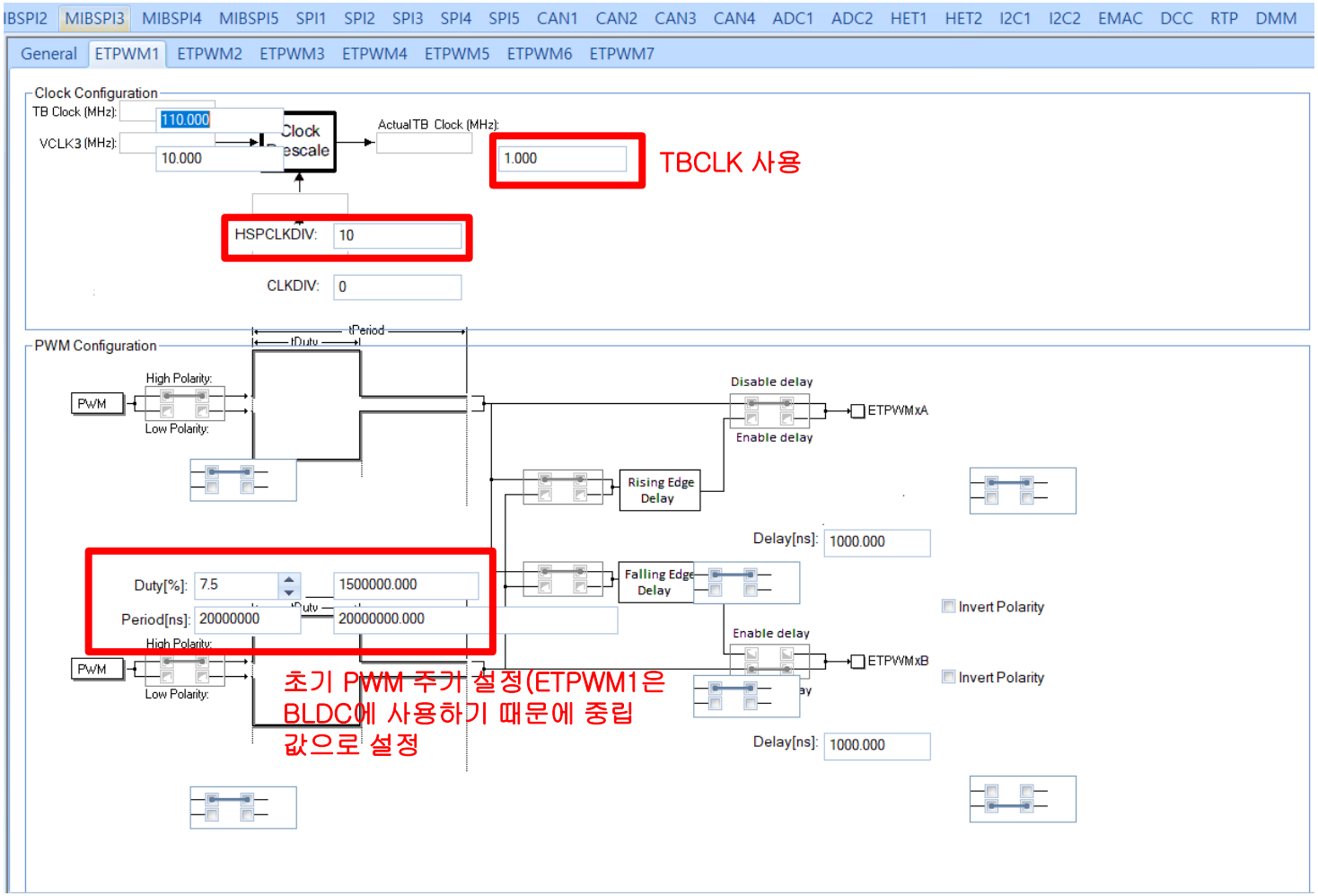
- CAN 통신 설정 (FPGA↔ MCU)

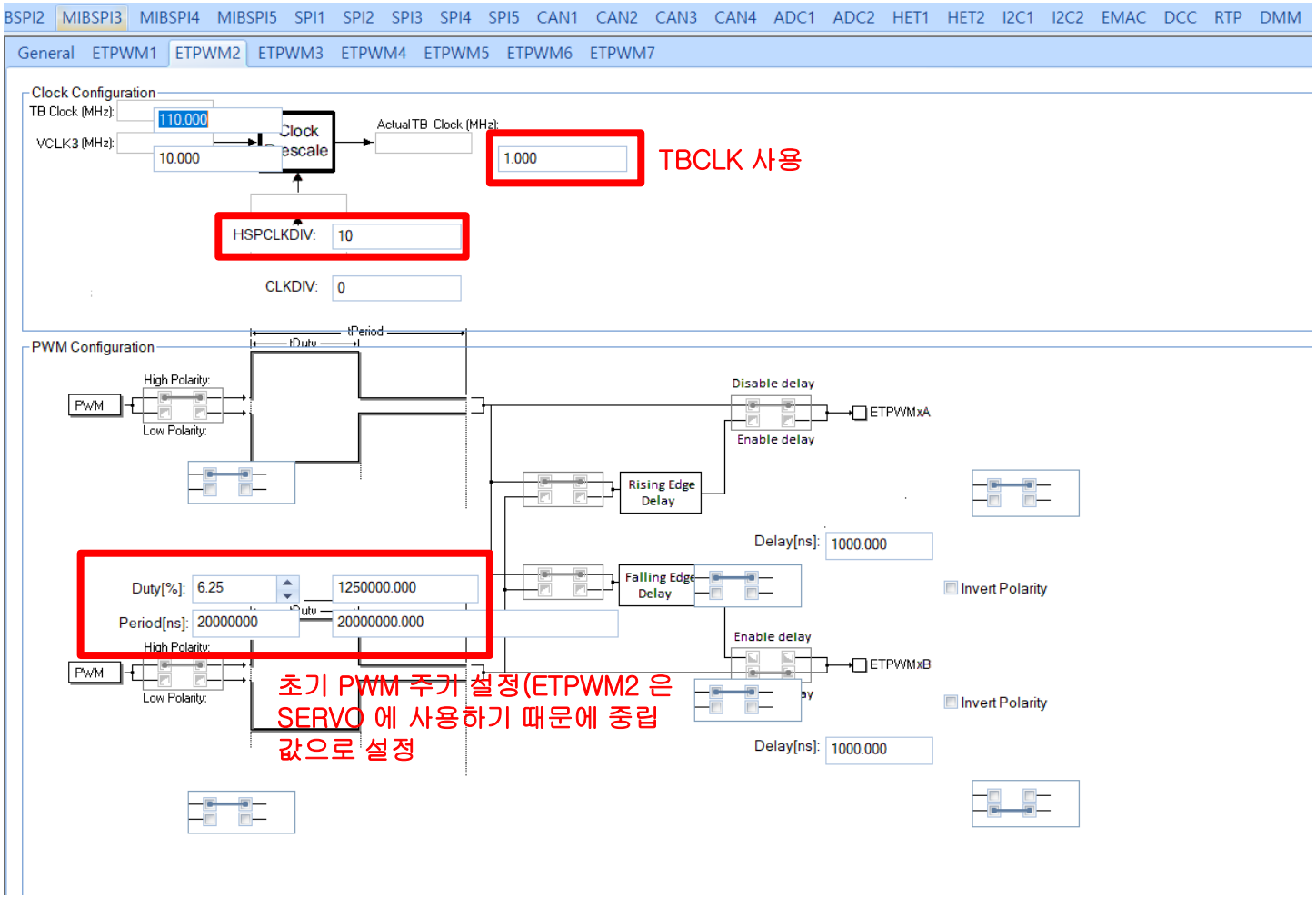



Start Page
TMS570LC4357ZWT_FREERT...
OS
PINMUX
GIO
ESM
SCI1
SCI2
SCI3
SCI4
LIN1
LIN2
MIBSPI1
MIBSPI2
MIBSPI3
CAN2 General
CAN2 Msg1-8
CAN2 Msg9-16
CAN2 Msg17-24
CAN2 Msg25-32
CAN2 Msg33-40
CAN2 Msg41-48
CAN2 Msg49-56
Message 1 Configuration
DLC: 8
DATA A
DATA B
High Priority:
VIM:
Low
Enable:
Enable Int:
TX:
Activate:
Id:
CANTX
CANRX
Mask:
Enable RTR
Set EOB
Id:
1
0x000007F0
Message 2 Configuration
DLC: 8
DATA A
DATA B
High Priority:
VIM:
Low Priority:
Enable:
Enable Int:
TX:
Activate:
Id:
1
CANTX
CANRX
Enable RTR
Set EOB
Id:
2
0x000007FF

- PWM 설정(2ch)

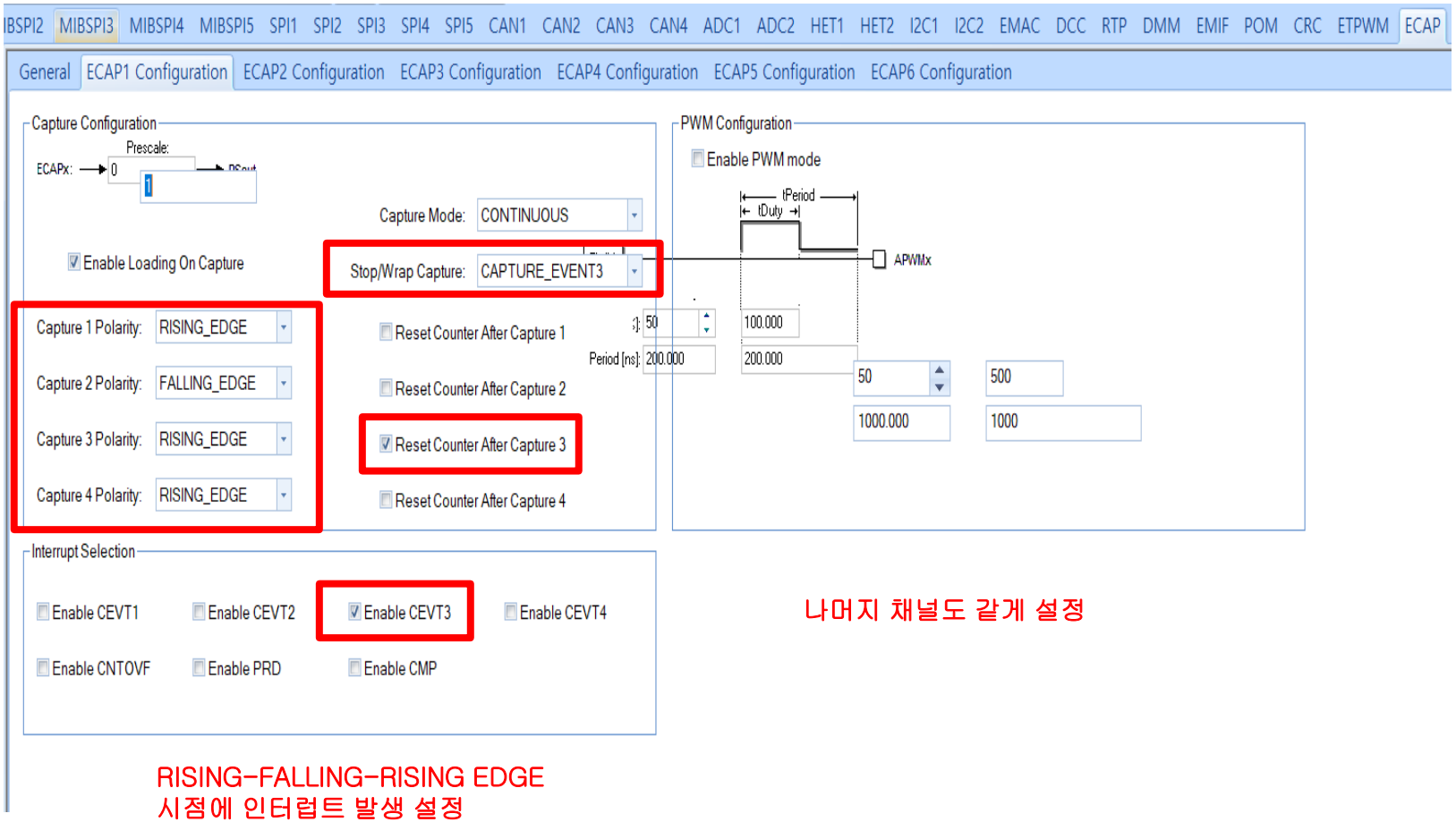

BSPI2 MIBSPI3 MIBSPI4 MIBSPI5 SPI1 SPI2 SPI3 SPI4 SPI5 CAN1 CAN2 CAN3 CAN4 ADC1
General ETPWM1 ETPWM2 ETPWM3 ETPWM4 ETPWM5 ETPWM6 ETPWM7
Enable ETPWM modules
Enable ETPWM1
Enable ETPWM2
Enable ETPWM3
Enable ETPWM4
Enable ETPWM5
Enable ETPWM6
Enable ETPWM7
Note :
** - etpwmInit function sets the time-base counters in up-count mode. Application can configure the module in a different mode using other functions in this driver(Sample code provided in the examples folder). In that case, application need not call etpwmInit function.


IBSPI2 MIBSPI3 MIBSPI4 MIBSPI5 SPI1 SPI2 SPI3 SPI4 SPI5 CAN1 CAN2 CAN3 CAN4 ADC1 ADC2 HET1 HET2 I2C1 I2C2 EMAC DCC RTP DMM
General ETPWM1 ETPWM2 ETPWM3 ETPWM4 ETPWM5 ETPWM6 ETPWM7
Clock Configuration
TB Clock (MHz): 110.000
VCLK3 (MHz): 10.000
Clock Prescale
Actual TB Clock (MHz): 1.000
TBCLK 사용
HSPCLKDIV: 10
CLKDIV: 0
PWM Configuration
tPeriod
tDuty
High Polarity:
PWM
Low Polarity:
Disable delay
ETPWMxA
Enable delay
Rising Edge Delay
Delay[ns]: 1000.000
Duty[%]: 7.5
1500000.000
Period[ns]: 20000000
20000000.000
Falling Edge Delay
Invert Polarity
Enable delay
ETPWMxB
Invert Polarity
Delay[ns]: 1000.000
초기 PWM 주기 설정(ETPWM1은 BLDC에 사용하기 때문에 중립 값으로 설정


BSPI2 MIBSPI3 MIBSPI4 MIBSPI5 SPI1 SPI2 SPI3 SPI4 SPI5 CAN1 CAN2 CAN3 CAN4 ADC1 ADC2 HET1 HET2 I2C1 I2C2 EMAC DCC RTP DMM
General ETPWM1 ETPWM2 ETPWM3 ETPWM4 ETPWM5 ETPWM6 ETPWM7
Clock Configuration
TB Clock (MHz):
110.000
VCLK3 (MHz):
10.000
Clock escale
Actual TB Clock (MHz):
1.000
TBCLK 사용
HSPCLKDIV:
10
CLKDIV:
0
PWM Configuration
tPeriod
tDuty
High Polarity:
PWM
Low Polarity:
Disable delay
ETPWMxA
Enable delay
Rising Edge Delay
Delay[ns]:
1000.000
Duty[%]:
6.25
1250000.000
Falling Edge Delay
Invert Polarity
Period[ns]:
20000000
20000000.000
Enable delay
ETPWMxB
초기 PWM 주기 설정(ETPWM2 은 SERVO 에 사용하기 때문에 중립 값으로 설정
Invert Polarity
Delay[ns]:
1000.000

- eCAP 설정(6ch)

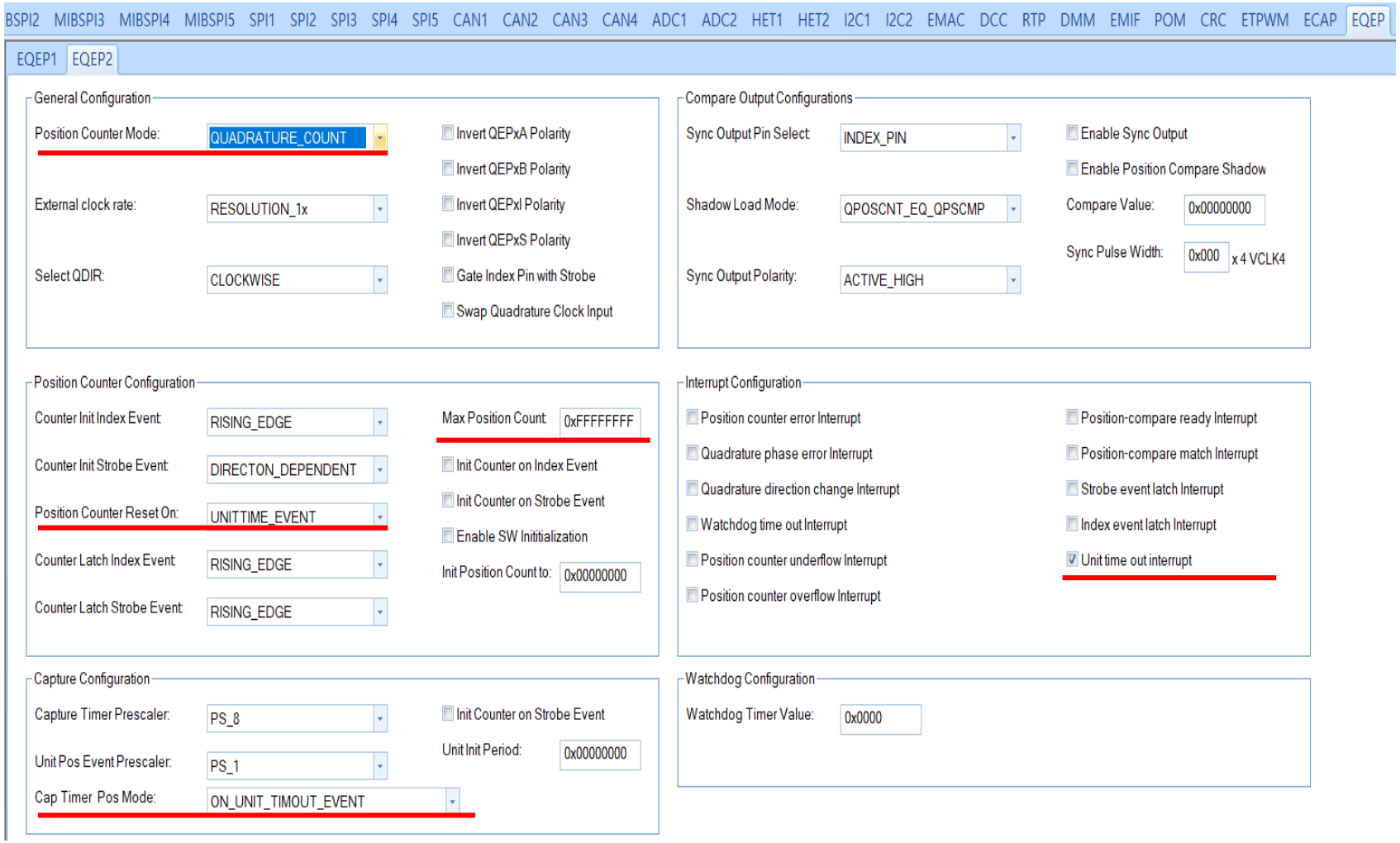

BSPI2 MIBSPI3 MIBSPI4 MIBSPI5 SPI1 SPI2 SPI3 SPI4 SPI5 CAN1 CAN2 CAN3 CAN4 ADC1 ADC2 HET1 HET2 I2C1 I2C2 EMAC DCC RTP DMM EMIF POM CRC ETPWM ECAP
General ECAP1 Configuration ECAP2 Configuration ECAP3 Configuration ECAP4 Configuration ECAP5 Configuration ECAP6 Configuration
Enable ECAP modules
Enable ECAP1
Enable ECAP2
Enable ECAP3
Enable ECAP4
Enable ECAP5
Enable ECAP6



나머지 채널도 같게 설정

RISING-FALLING-RISING EDGE
시점에 인터럽트 발생 설정

- eQEP 설정


BSPI2 MIBSPI3 MIBSPI4 MIBSPI5 SPI1 SPI2 SPI3 SPI4 SPI5 CAN1 CAN2 CAN3 CAN4 ADC1 ADC2 HET1 HET2 I2C1 I2C2 EMAC DCC RTP DMM EMIF POM CRC ETPWM ECAP EQEP
EQEP1 EQEP2
General Configuration
Position Counter Mode: QUADRATURE_COUNT
External clock rate: RESOLUTION_1x
Select QDIR: CLOCKWISE
Invert QEPxA Polarity
Invert QEPxB Polarity
Invert QEPxI Polarity
Invert QEPxS Polarity
Gate Index Pin with Strobe
Swap Quadrature Clock Input
Compare Output Configurations
Sync Output Pin Select: INDEX_PIN
Shadow Load Mode: QPOSCNT_EQ_QPSCMP
Sync Output Polarity: ACTIVE_HIGH
Enable Sync Output
Enable Position Compare Shadow
Compare Value: 0x00000000
Sync Pulse Width: 0x000 x 4 VCLK4
Position Counter Configuration
Counter Init Index Event: RISING_EDGE
Counter Init Strobe Event: DIRECTON_DEPENDENT
Position Counter Reset On: UNITTIME_EVENT
Counter Latch Index Event: RISING_EDGE
Counter Latch Strobe Event: RISING_EDGE
Max Position Count: 0xFFFFFFFF
Init Counter on Index Event
Init Counter on Strobe Event
Enable SW Initialization
Init Position Count to: 0x00000000
Interrupt Configuration
Position counter error Interrupt
Quadrature phase error Interrupt
Quadrature direction change Interrupt
Watchdog time out Interrupt
Position counter underflow Interrupt
Position counter overflow Interrupt
Position-compare ready Interrupt
Position-compare match Interrupt
Strobe event latch Interrupt
Index event latch Interrupt
Unit time out interrupt
Capture Configuration
Capture Timer Prescaler: PS_8
Unit Pos Event Prescaler: PS_1
Cap Timer Pos Mode: ON_UNIT_TIMOUT_EVENT
Init Counter on Strobe Event
Unit Init Period: 0x00000000
Watchdog Configuration
Watchdog Timer Value: 0x0000