ePWM Module Overview

C2000 Enhanced Pulse Width Modulator (ePWM) Series

TEXAS INSTRUMENTS

ePWM Block Diagram

Time-Base (TB)
- Configure the PWM time base counter frequency & period
- Set the mode for the time-base counter
- Configure the phase & synchronization

Counter Compare (CC)
- Specify the duty cycle of EPWMA/B outputs
- Specify the time switching events occur

Action Qualifier (AQ)
- Specify the type of action taken when a time base, CC, TZ, or comparator event occurs
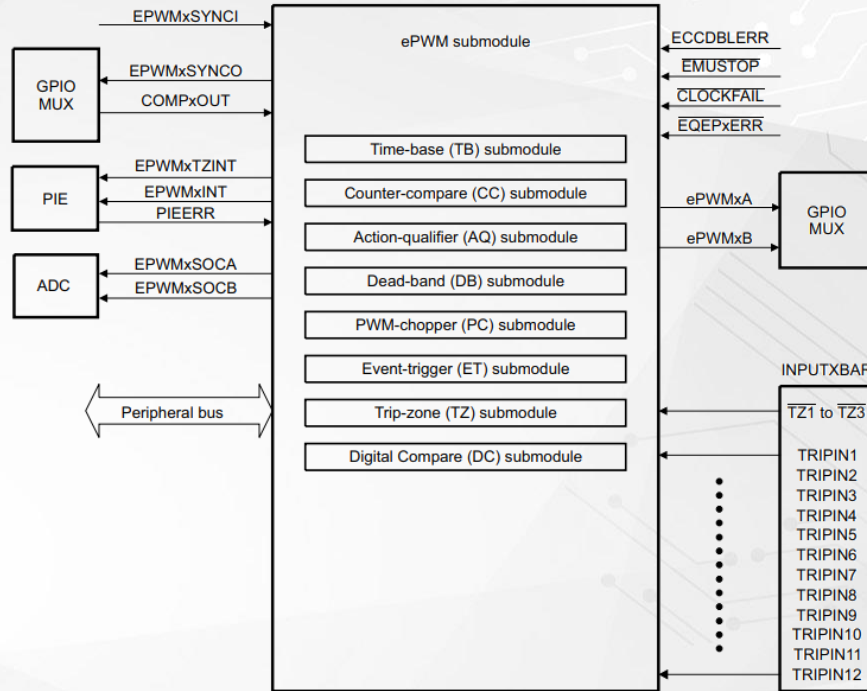
Dead-band (DB)
- Control of traditional complementary dead-band relationship between upper and lower switches

PWM-chopper (PC)
- Create a chopping (carrier) frequency

Event-trigger (ET)
- Enable ePWM events that will trigger an interrupt or an ADC SOC

Trip-zone (TZ)
- Configure how the ePWM outputs will react to trip signals

Digital Compare (DC)
- Enables comparator (COMP) module outputs and trip zone signals

ePWM submodule

EPWMxSYNCI
EPWMxSYNCO
COMPxOUT

GPIO MUX

EPWMxTZINT
EPWMxINT
PIEERR

PIE

EPWMxSOCA
EPWMxSOCB

ADC

Peripheral bus

ECCDBLERR
EMUSTOP
CLOCKFAIL
EQEPxERR

Time-base (TB) submodule
Counter-compare (CC) submodule
Action-qualifier (AQ) submodule
Dead-band (DB) submodule
PWM-chopper (PC) submodule
Event-trigger (ET) submodule
Trip-zone (TZ) submodule
Digital Compare (DC) submodule

ePWMxA
ePWMxB

GPIO MUX

INPUTXBAR

TZ1 to TZ3

TRIPIN1
TRIPIN2
TRIPIN3
TRIPIN4
TRIPIN5
TRIPIN6
TRIPIN7
TRIPIN8
TRIPIN9
TRIPIN10
TRIPIN11
TRIPIN12

TEXAS INSTRUMENTS

ePWM SysConfig

Additional ePWM Resources

- [C2000 Academy](#) with Hands-on Labs

- [TI Precision Labs: PWM Basics Overview](#)

- [TI Precision Labs: Motor Interfaces and PWM Frequencies](#)

- ePWM Application Reports
  - [Flexible PWMs Enable Multi-Axis Drives, Multi-Level Inverters](#)
  - [Using PWM Output as a Digital-to-Analog Converter](#)
  - [Using the ePWM Module for 0% - 100% Duty Cycle Control](#)
  - [Leverage New Type ePWM Features for Multiple Phase Control](#)

Check Video Description for Additional Resources

TEXAS INSTRUMENTS