



TI's best practice recommendations

System	Pin #	PIN Name	Component Name	Usage is?	Component Function	Typ. Value	Component Details	Layout Suggestions
PRIMARY SIDE								
Analog-to- PWM Channel	16	APWM	R _{ADC}	Optional	LPF converts PWM to analog signal	20kΩ	LPF is NOT used if the controller is taking the duty cycle and converting it to voltage in software X7R type	Place RC filter close to ADC/MCU input
			C _{ADC}	Optional		2200pF		
Bypass Caps		VCC	C _{BYVP(VCC)1}	Required	High Value Decoupling Cap	100nF-1μF	X7R recommended	Place on same side ≤2mm away from the pin.
			C _{BYVP(VCC)2}	Required	Low value Decoupling Cap	1nF-100nF		Prioritize the placement of the smaller cap closer to the driver.
Fault Reset	14	RST/EN	R _{RST}	Recommended	Input RC filter	100Ω	X7R recommended	Place capacitor on the same side ≤2mm away from the pin
			C _{RST}	Recommended		100pF		
Fault Signal	13	FLT	R _{FLT}	Required	Pullup Resistor	5.1k	X7R recommended	Place capacitor on the same side ≤2mm away from the pin
			C _{FLT}	Recommended	Filter cap	100pF		
Power-Good Signal	12	RDY	R _{RDY}	Required	Pullup Resistor	5.1k	X7R recommended	Place capacitor on the same side ≤2mm away from the pin
			C _{RDY}	Recommended	Filter cap	100pF		
PWM Input	11, 10	IN+, IN-	R _{IN+}	Recommended	Input RC Filter	100Ω	IN- is usually grounded unless differential signalling or interlock is used	Place capacitor on the same side ≤2mm away from the pin
			C _{IN+}	Recommended		100pF		

IGBT/FET	n/a	Gate	R _L	Optional	Gate pull down resistor	10kΩ		Place as close to gate as possible. It's recommended to have placeholders for this component in a high power, fast switching application during a prototype build to enable testing if necessary
			C _L	Optional	Capacitor to slow down gate dV/dt	1nF-100nF	50V rated, X7R recommended	
			Ferrite Bead	Recommended	Reduce gate ringing	Low resistance value during normal operation	Example Part number: MPZ1608S101A	
Bypass Caps	8	VDD	C _{BYP(VDD)1}	Required	High Value VDD-COM Decoupling Cap	1μF-10μF	50V rated, X7R recommended	Place capacitor on the same side ≤2mm away from the pin. Prioritize the placement of the smaller value caps (.2) closest to the driver. It's recommended to have placeholders for these components in a high power, fast switching application during a prototype build to enable testing if necessary.
			C _{BYP(VDD)2}	Required	Low Value VDD-COM Decoupling Cap	100nF-220nF		
	5	VEE	C _{BYP(VEE)1}	Required	High Value VEE-COM Decoupling Cap	1μF-10μF	50V rated, X7R recommended	
			C _{BYP(VEE)2}	Required	Low Value VEE-COM Decoupling Cap	100nF-220nF		
			C _{BYP1}	Recommended	High Value VDD-VEE Decoupling Cap	1μF-10μF	50V rated, X7R recommended	
		C _{BYP2}	Recommended	Low Value VDD-VEE Decoupling Cap	100nF-220nF			
Miller Clamp	7	CLMPI	NA	Required				Keep the connection trace shorter between CLMPI pin to GATE
Gate Drive	6	OUTL	R _{G(OFF)}	Required	Gate pull-down resistance	2Ω-10Ω	Can be several parallel resistors	Highest priority layout (along with decoupling caps), Gate resistor should be placed close to gate as possible.
			D _{CLMPL}	Optional	Driver Output clamp	Schottky		Clamp diode close to driver pin.
	4	OUTH	R _{G(ON)}	Required	Gate pull-up resistance	2Ω-10Ω	Can be several parallel resistors	It's recommended to have placeholders for these components in a high power, fast switching application during a prototype build to enable testing if necessary.
			D _{CLMPH}	Optional	Driver Output clamp	Schottky		
Short-circuit detection	2	DESAT	R _{LIM}	REQUIRED	Current limiting	1kΩ	See UCC217xx XL Calculator	Routed with HV Blockers
			C _{BLK}	REQUIRED		220pF	For design values	Close to Device
			D _{HV1,2}	REQUIRED	HV Block Diodes	Value selected based on Peak collector current		Sensitive signal routing
			D _{D1}	RECOMMENDED	OV Protection	~12V		Close to Device pin
			D _{D2}	RECOMMENDED	Negative Transient Protection	Schottky Recommended,		Close to Device pin
APWM Input Conditioning	1	AIN	C _{AIN}		Filtering Cap	100pF-10nF	X7R recommended	Place close to device pins
			R _{AIN}	Optional	I-V conversion	5kΩ		
			D _{AIN}	Optional	OV protection		~5V Zener	