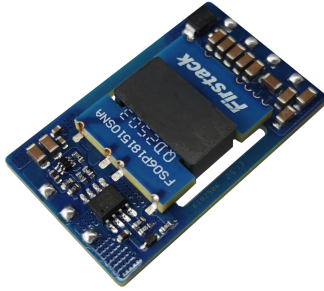


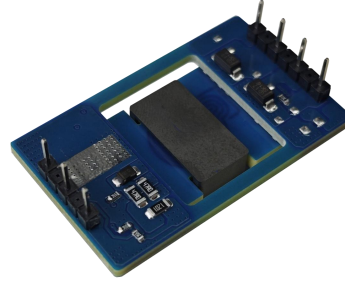


**Package Style**

1.DIP



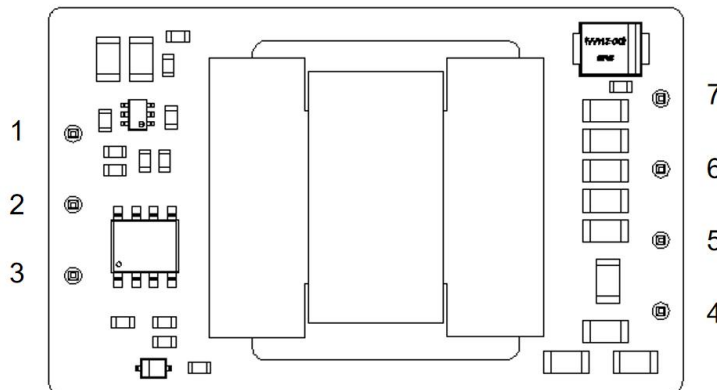
FS06P18GPDNA(front)



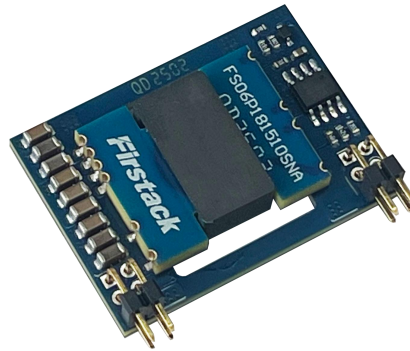
FS06P18GPDNA(back)

**Pin Definition**

Pin	Description	Note
1	V <sub>in+</sub>	Typical Input 12V (9-18V)
2	V <sub>EN</sub>	Vacant enables FS06P, pull low to disable FS06P
3	V <sub>in-</sub>	Ground to Input
4	5V <sub>b_GND</sub>	5V <sub>b-</sub>
5	5V <sub>a_GND</sub> /5V <sub>b</sub>	5V <sub>a</sub> -/5V <sub>b</sub> +
6	15V <sub>o_GND</sub> /5V <sub>a</sub>	15V-/5V <sub>a</sub> +
7	15V <sub>o</sub>	15V+



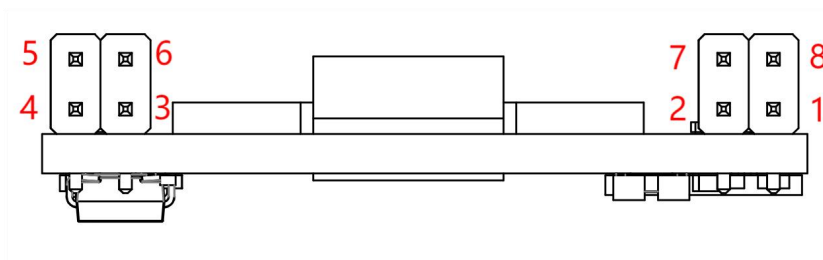
2.SIP



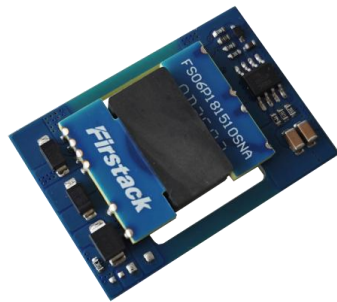
FS06P18GPSNA

Pin Definition

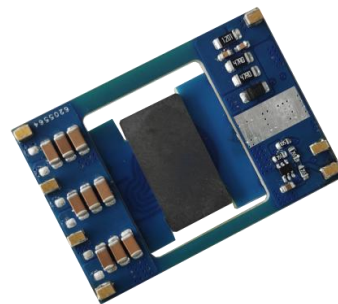
Pin	Description	Note
1	VEN	Vacant enables FS06P, pull low to disable FS06P
2	Vin+	Typical Input 12V (9-18V)
3	15Vo	15V+
4	5Vb_GND	5Vb-
5	5Va_GND/5Vb	5Va-/5Vb+
6	15Vo_GND/5Va	15V-/5Va+
7	Vin-	Ground to Input
8	Vin-	Ground to Input



3.Surface Mount



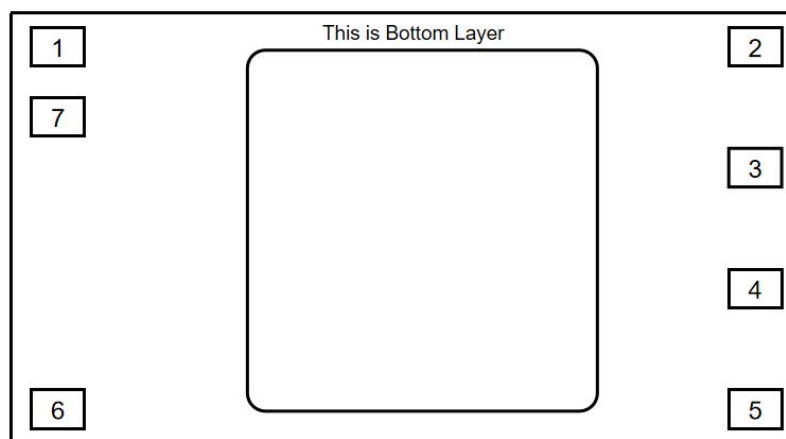
FS06P18GPMNA(TOP)



FS06P18GPMNA(BOT)

Pin Definition

Pin	Description	Note
1	VEN	Vacant enables FS06P, pull low to disable FS06P
2	5Vb_GND	5Vb-
3	5Va_GND/5Vb	5Va-/5Vb+
4	15Vo_GND/5Va	15V-/5Va+
5	15Vo	15V+
6	Vin+	Typical Input 12V (9-18V)
7	Vin-	Ground to Input



**Technical Characteristics**

Part No.	Input	Application	Positive Output			Negative Output						
			Voltage	Current	Power	Voltage	Current	Power				
	V		V	mA	W	V	mA	W				
		IGBT	+15	240	3.6	-10	240	2.4				
		SiC	+20	240	4.8	-5	240	1.2				
		MOSFET	+15	300	4.5	-5	300	1.5				
FS06P	9-18	Performance		Load Regulation <sup>1</sup>	Ripple& Noise <sup>2</sup>		Load Regulation <sup>1</sup>	Ripple&Noise <sup>2</sup>				
				%	mVp-p		%	mVp-p				
				Typ.	Max.	Typ.	Max.	Typ.	Max.	Typ.	Max.	
				IGBT	3	5	110	150	3	5	60	100
				SiC	3	5	110	150	3	5	60	100
		MOSFET	3	5	110	150	3	5	60	100		

Note 1: 50%-100% load regulation;

Note 2: Refer to the ripple test method, bandwidth limited to 20MHz. °

**Input Characteristics**

Parameters	Condition	Min.	Typ.	Max.	Unit
Input Range		9	12	18	V
Input Ripple Current	100% load		170		mA
	V <sub>EN</sub> pull low		0.5		mA
V <sub>EN</sub> <sup>1</sup>	Pull up	2		60	V
	Pull low	-1	0	0.5	V

Note 1: V<sub>EN</sub> is a high impedance TTL input, so care should be taken during the layout to avoid noise effects.

**Output Characteristics**

Parameters	Condition	Min.	Typ.	Max.	Unit
Minimum Load	Without load, 15V <sub>output</sub> and 5V <sub>output</sub> are clamped to 15.5V/6.0V respectively	1			%

Voltage Accuracy	Output Positive	1	%
	Output Negative	4	%
Linear Regulation	9V <sub>in</sub> →18V <sub>in</sub> , 50% load	2	%
Load Regulation	1% load→100% load	5	%
Transient Response	Peak deviation (50%-100% load)	3	%
	Settling Time	0.3	ms

### General Characteristics

Parameters	Condition	Min.	Typ.	Max.	Unit
Switching Freq.	100% load			360	kHz
Voltage Delay	Delay between input and output		3.5		ms

### Isolation Characteristics

Parameters	Condition	Min.	Typ.	Max.	Unit
Test Voltage	1 min. Leakage current <1mA	6500			VDC
Insulation Resistance	1kV <sub>DC</sub>	100			GΩ
Safety Standard	Creepage distance & Clearance distance 8mm				

### Protection Characteristics

Parameters	Condition	Min.	Typ.	Max.	Unit
Input UVLO	Protection threshold		7.5		V
Input OVLO	Protection threshold		21.5		V
Over-current Protection	Protection threshold under 25V		0.3		A
Over-temperature Protection	Protection threshold		160		°C

### Temperature Characteristics

Parameters	Condition	Min.	Typ.	Max.	Unit
Operation Temp.	Refer to derating curve	-40		105	°C
Storage Temp.		-50		125	°C

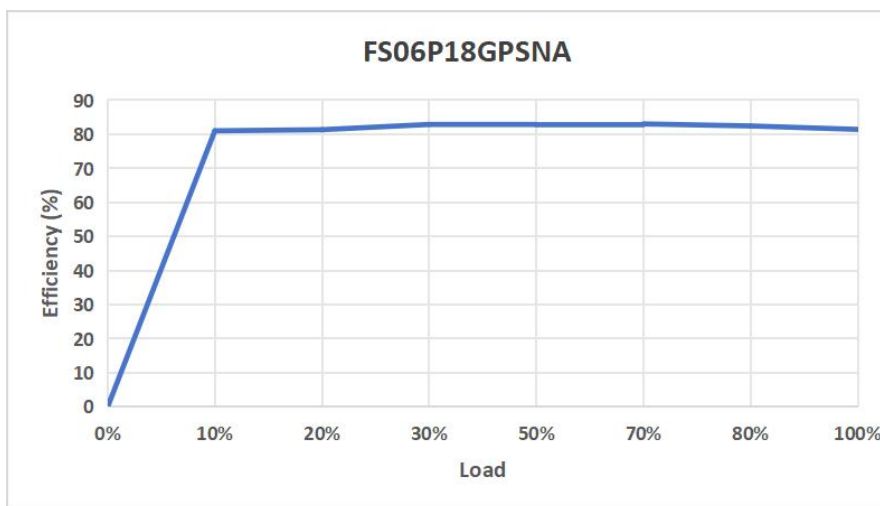
Temp. rise above ambient 12V<sub>IN</sub>, 6W, 25°C, no wind 40 °C

**Absolute Maximum Ratings**

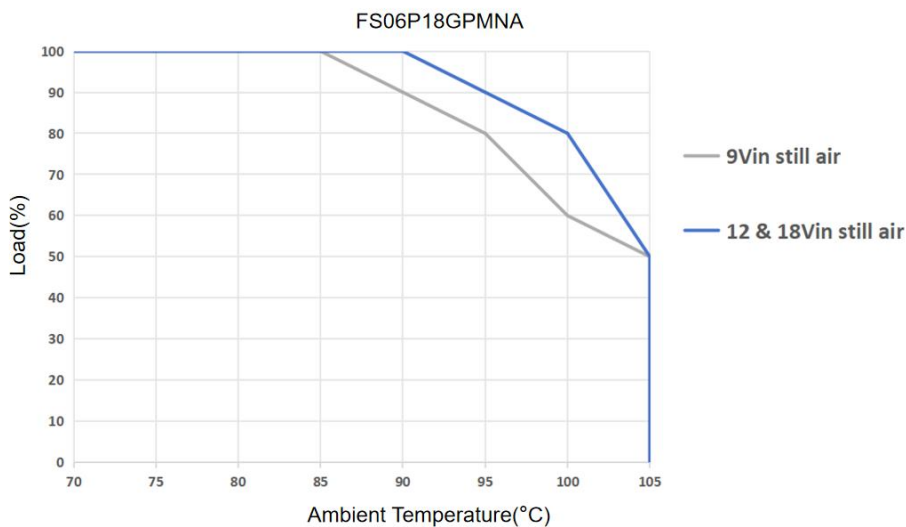
Parameters	Condition	Min.	Typ.	Max.	Unit
Capacitive Load	20V			220	uF
	15V			330	
	-10V			330	
	-5V			490	
Input Voltage	21.5V-35V enables OVLO	-0.3		35	V
Wave Soldering	Wave soldering profile won't exceed the profile recommended in IEC 61760-1				

Note: Unless otherwise specified, the above parameter characteristics are based on 12V input and 25°C ambient temp. test.

**Efficiency VS Load**



**Derating Curve**



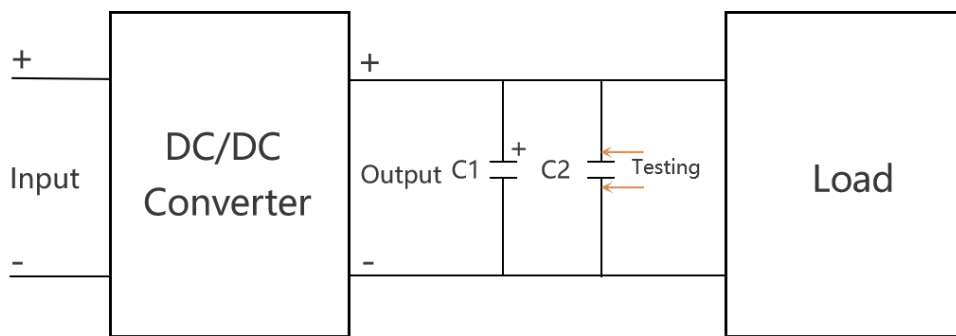
**Environment Validation Test**

<b>Test</b>	<b>Standard</b>	<b>Condition</b>
Temperature cycling	MIL-STD 883	Cycle 10 times between two chambers set to -55°C and +125°C. The dwell time shall not be less than 10 minutes and the load shall reach the specified temperature within 15 minutes.
HAST (Unbiased)	JEDEC JESD22-A118	96 hours +2/-0 hours, 130°C ± 2°C, 85% ± 5% relative humidity.
High Temperature Storage life	JEDEC JESD22-A103	125°C±10°C ≥ 1000h
Vibration	BS EN 61373 BS EN 60068-2-64	5-150HZ。 Level at each axis - vertical, traverse and longitudinal: 5.72m/s2 rms. 5h in each axis. Crest factor: 3σ. Device is fixed via pins.
Shock	BS EN 61373	The duration of the test was 30 ms, with 3 impacts on each of the 3 mutually perpendicular axes (18 impacts in total). Horizontal: vertical, transverse and longitudinal in each axis: 50 m/s2. The device was fixed via pins.
Solderability	IPC/ECA J-STD-002D	Modules are baked at 155°C for 4 hours and dipped in flux for 10 seconds after 72 hours. Then dipped for 5 seconds in a solder pot at 255°C ± 5°C (96SC Sn/Ag/Cu)
Solvent cleaning	/	Solvent-Novec711PA and TopkleanEL-20A. Pulsed ultrasonic immersion 45°C-65°C
Solvent Resistance	MIL-STD 883	Immerse module and bristle section in isopropyl alcohol for at least 1 minute. Brush the module 3 times and after the third time dry the parts and inspect them.
Solder heat	JEDEC JESD22-B106	Place the test sample in a bath of molten solder at 260±5°C for 10+2/-0 seconds (96SC Sn/Ag/Cu). Dip the leads into the solder bath until they are within 1 mm of the body of the device.
Lead Integrity (Adhesion)	MIL-STD 883	Bend the wire 90° until it breaks.
Lead Integrity(Fatigue)	MIL-STD 883	The wires are bent at a 15° angle. Each wire goes through 3 cycles.

**Ripple & Noise Characterization Method**

Test	Standard
C1	10uF electrolytic capacitor, Rated voltage at least 1.5 times the output voltage of the module
C2	1uF X7R ceramic capacitor, Rated voltage at least 3 times the output voltage of the module

**Ripple & Noise Test Schematic**



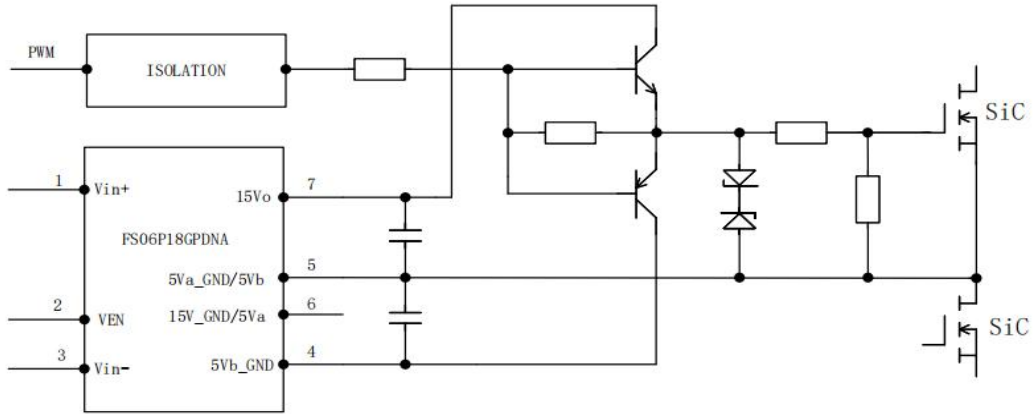
**Output Settings**

**1.DIP**

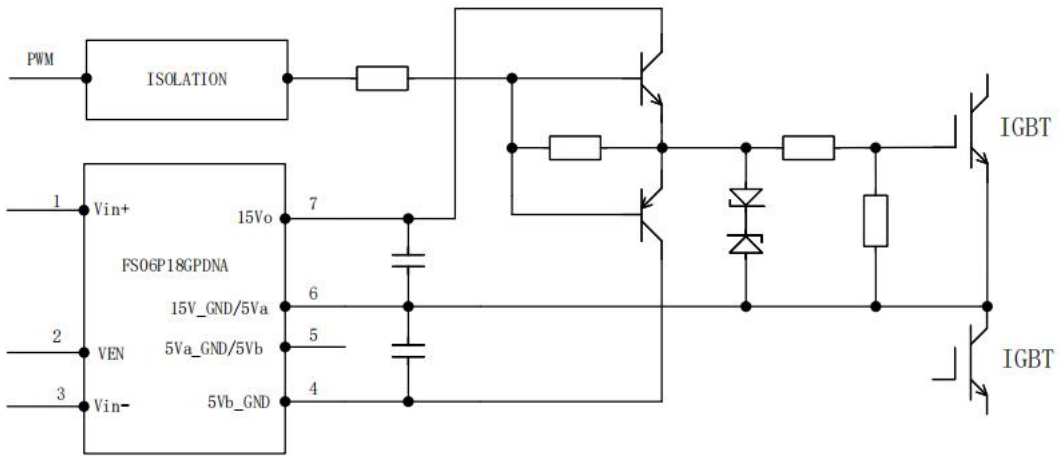
Port	Pin	IGBT	SiC	MOSFET
15Vo	7	+15V 0.24A	+20V 0.24A	+15V 0.3A
15V_GND/5Va	6	0V	NC	0V
5Va_GND/5Vb	5	NC	0V	-5V 0.3A
5Vb_GND	4	-10V 0.24A	-5V 0.24A	NC

**Application Schematic**

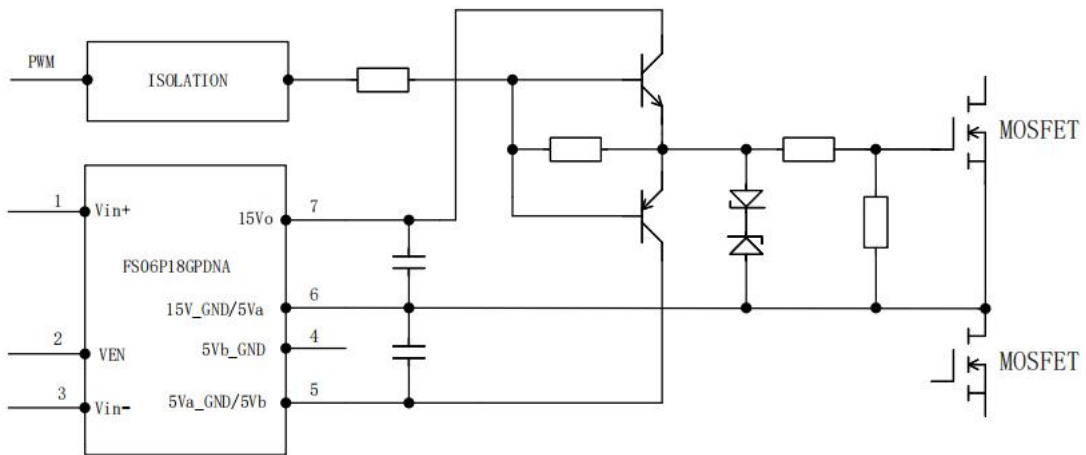
Output for SiC (+20V, -5V)



Output for IGBT (+15V, -10V)



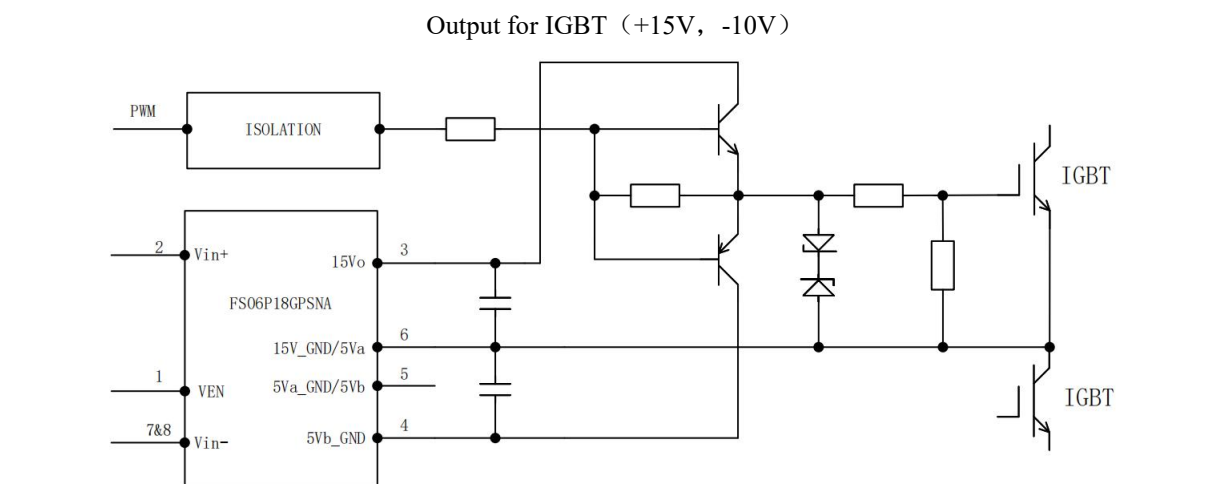
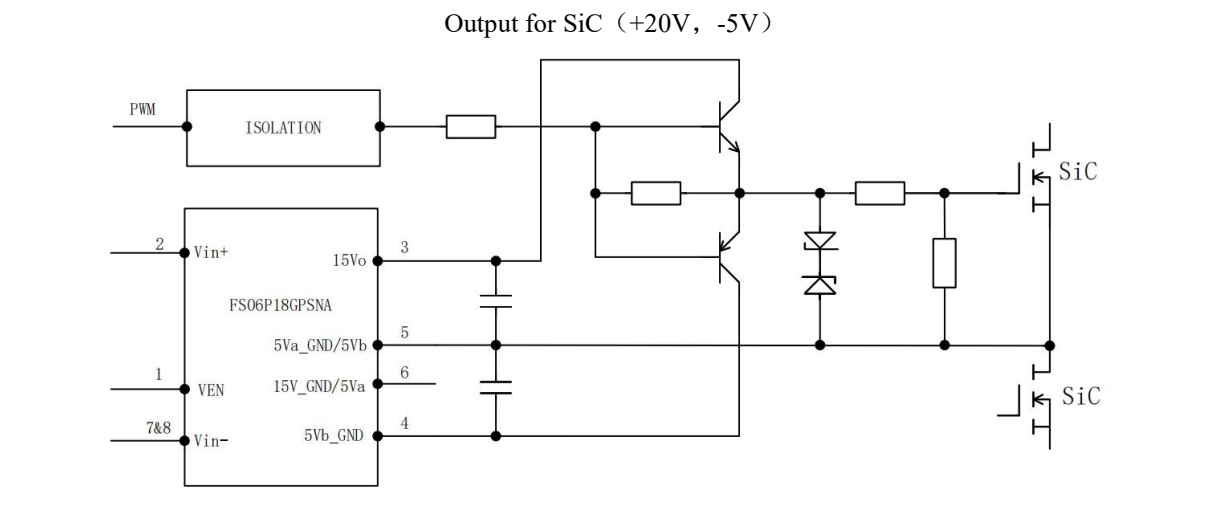
Output for MOSFET (+15V, -5V)



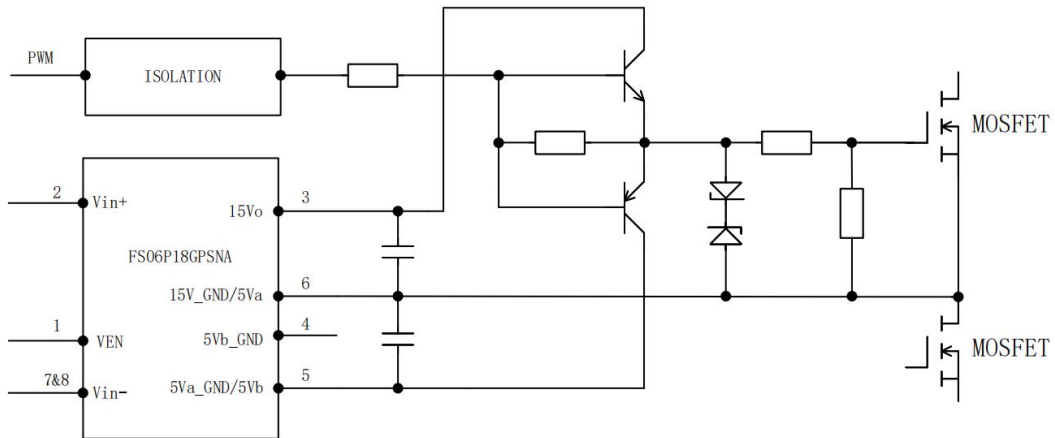
2. SIP

Port	Pin	IGBT	SiC	MOSFET
15Vo	3	+15V 0.24A	+20V 0.24A	+15V 0.3A
15V_GND/5Va	6	0V	NC	0V
5Va_GND/5Vb	5	NC	0V	-5V 0.3A
5Vb_GND	4	-10V 0.24A	-5V 0.24A	NC

Application Schematic



Output for MOSFET (+15V, -5V)

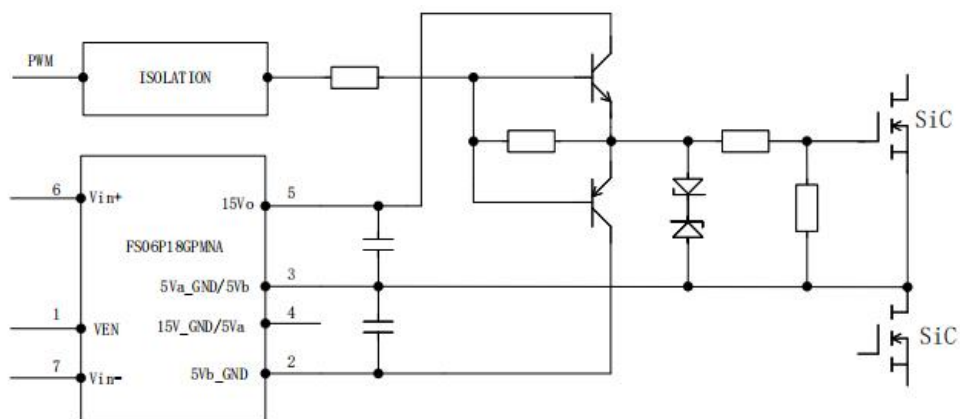


### 3. Surface Mount

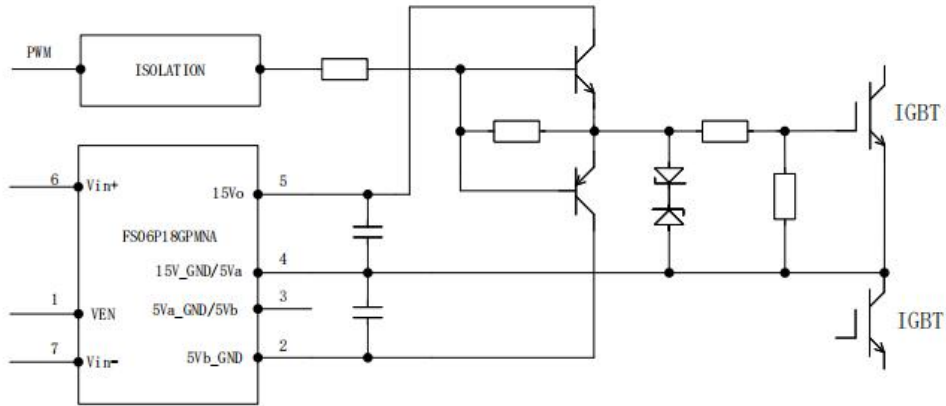
Port	Pin	IGBT	SiC	MOSFET
15Vo	5	+15V 0.24A	+20V 0.24A	+15V 0.3A
15V_GND/5Va	4	0V	NC	0V
5Va_GND/5Vb	3	NC	0V	-5V 0.3A
5Vb_GND	2	-10V 0.24A	-5V 0.24A	NC

### Application Schematic

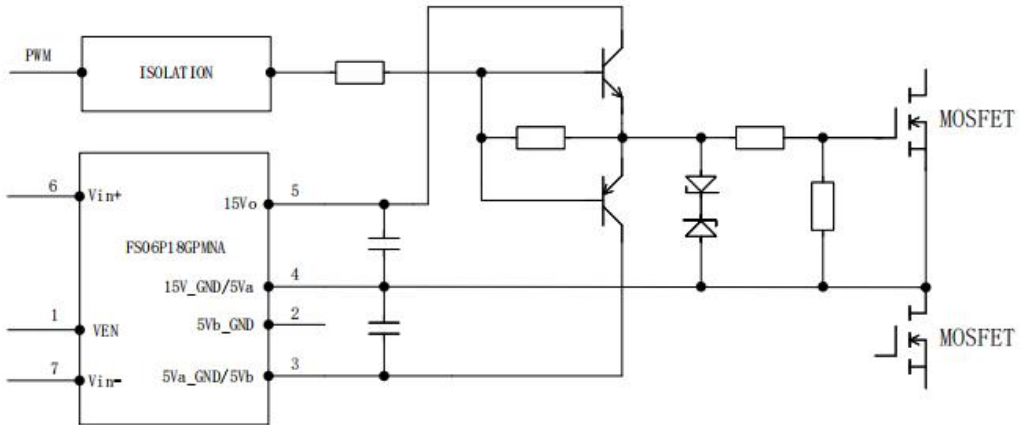
Output for SiC (+20V, -5V)



Output for IGBT (+15V, -10V)

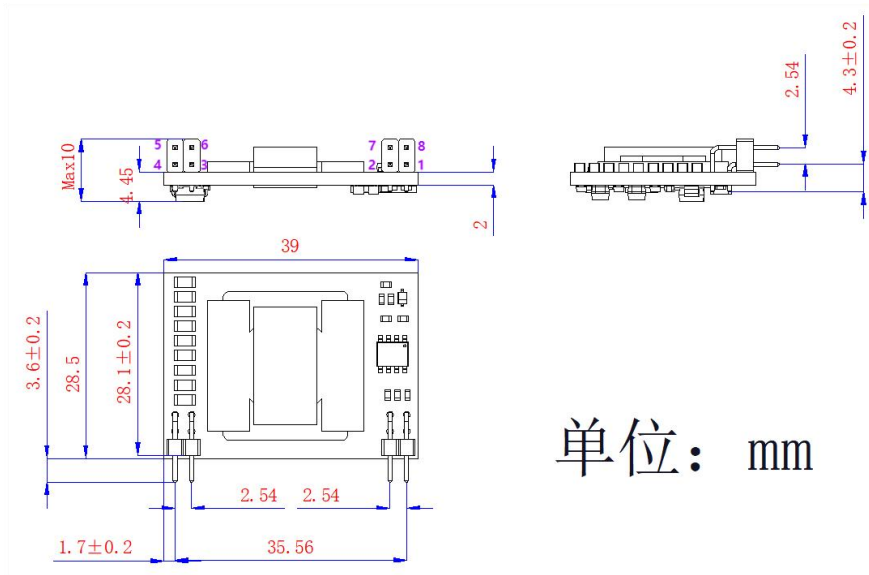
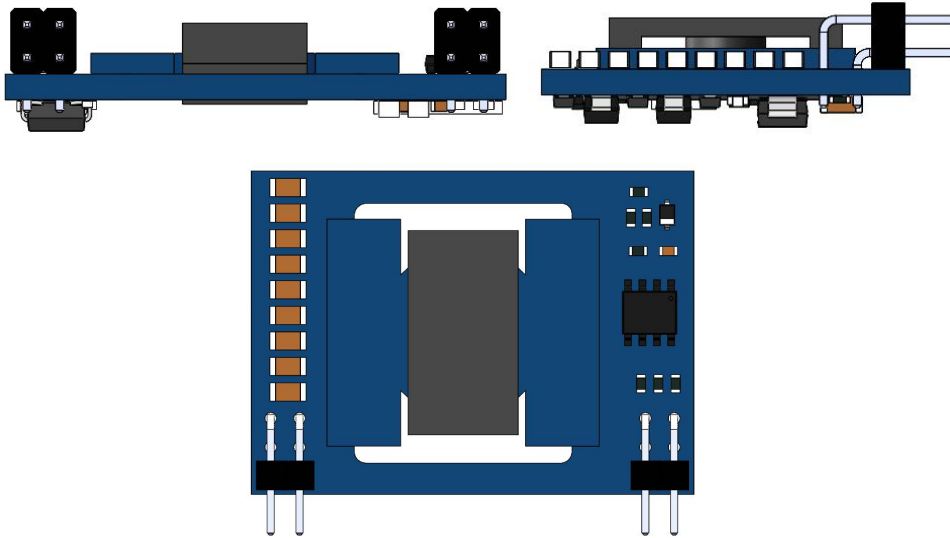


Output for MOSFET (+15V, -5V)

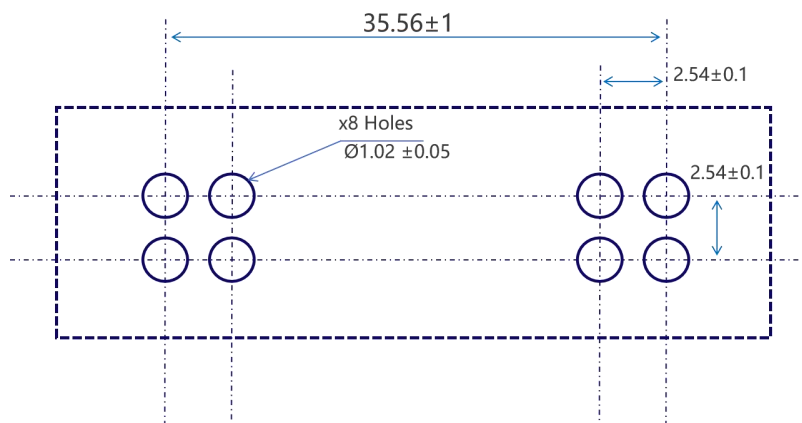




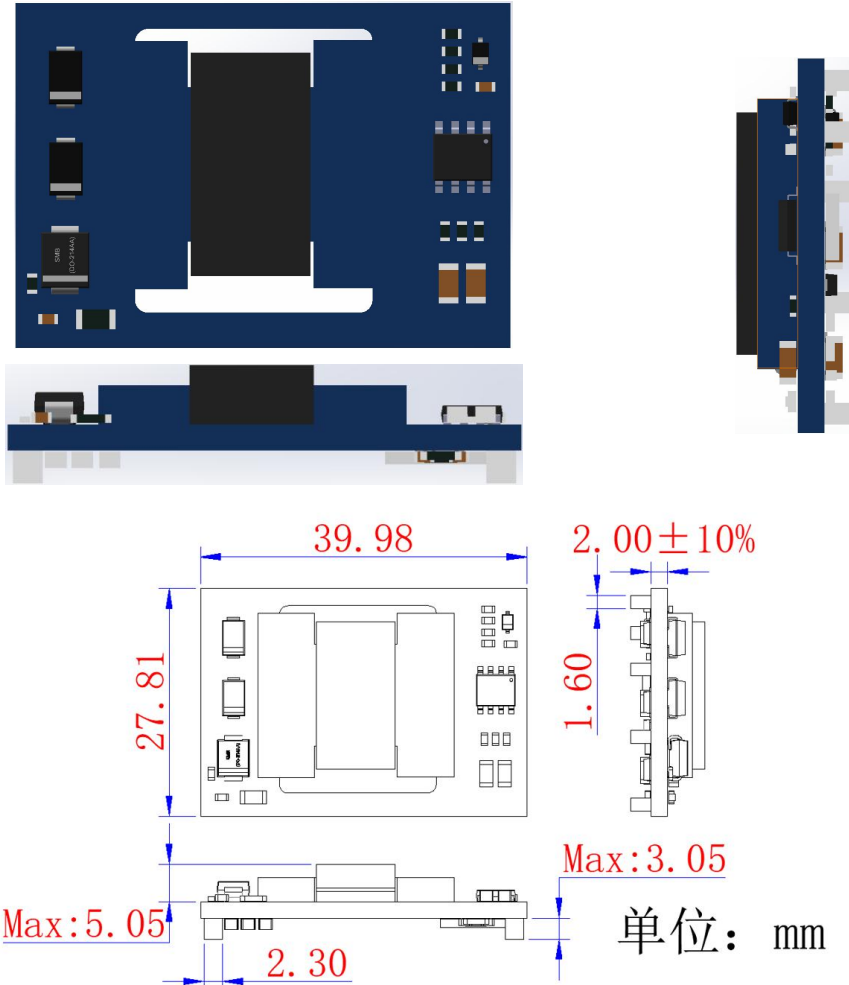
2. SIP



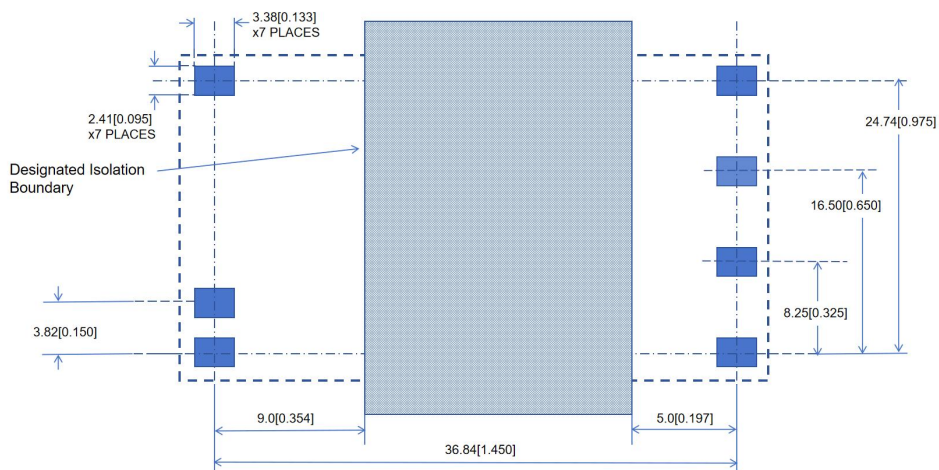
Recommended PCB Layout



3. Surface Mount



Recommended PCB Layout



All dims in mm (in). Controlling unit: mm.

Note: 1. The thickness tolerance of the board is ±10%;

2. Other dimensional tolerances refer to GB/T1804-m.

## Update Information

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<b>Date</b>	<b>Description</b>	<b>Version</b>
2025.06.06	Official Version	V1.0

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## Ordering Information

The FS06P series are SiC MOSFET, Si-MOSFET, and IGBT compact drive power products that can support a variety of drive voltage configurations. If you have a purchase request, please contact our staff and we will provide the power supply module that best meets your needs.

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<b>Part Number</b>	<b>Package Style</b>
FS06P18GPDNA	DIP
FS06P18GPMNA	Surface Mount
FS06P18GPSNA	SIP

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## Technical Support

Firstack's professional team will provide you with business consultation, technical support, product selection, price, lead time and other related information, and guarantee to answer your questions within 48 hours.

## Legal Disclaimer

The instruction manual provides a detailed description of the product but does not commit to providing specific parameters regarding the delivery, performance, or applicability of the product. This document does not offer any express or implied warranties or guarantees.

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