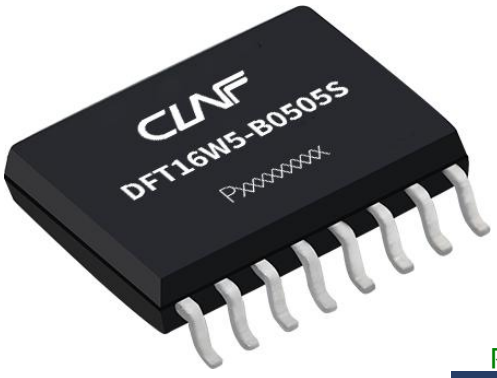
Descriptions

0.5W isolated DC-DC converter



RoHS

3 Years Warranty

Features

- I/O isolation test voltage 5kVAC
- Reinforced insulation
- Operating ambient temperature range: -40℃ to +125℃
- Adjustable output voltage: 3.3V, 3.7V, 5.0V, 5.4V
- High CMTI: ±150kV/us
- SOIC16 package
- Integrated soft-start, over-temperature protection, input under-voltage protection and continuous short-circuit protection

Applications

- Medical collection Isolation
- High voltage collection circuit
- IGBT drive circuits
- Automobile motor control

Selection Guide

Certification	Part No.	Input Voltage(VDC)	Output		Full Load Efficiency(%) Min./Typ.	Capacitive Load(uF)
		Nominal (Range)	Voltage①(VDC)	Current (mA) Max./Min.		
--	DFT16W5-B0505S	3.3 (2.97-3.63)	3.3	91/9	45/49	2200
		5 (4.5-5.5)	3.3	150/15	48/52	
			3.7	135/14	48/52	
			5.0	100/10	54/58	
			5.4	92/9	54/58	

Note:

①DFT16W5-B0505S adjustable output voltage via Trim pin:

1.When Trim is shorted to Vo, the output voltage is 5V;

2.When Trim is shorted to Vo through 100kΩ, the output voltage is 5.4V;

3.When Trim is shorted to 0V, the output voltage is 3.3V;

4.When Trim is shorted to 0V through 100kΩ, the output voltage is 3.7V.

②The product image is for reference only, please refer to the actual product for details.

Specifications

Product Specifications	Item	Operating Conditions		Min.	Typ.	Max.	Unit
Input Specifications	Input Current (full load / no-load)	3.3VDCinput	3.3 VDC output	--	185/5	--/10	mA
		5 VDCinput	3.3 VDC output	--	192/5	--/10	
			3.7 VDC output	--	192/5	--/10	
			5.0 VDC output	--	178/5	--/10	
			5.4 VDC output	--	178/5	--/10	
	Hot Plug			Unavailable			
	Ctrl	Module on		Connect with high level(0.55Vin-Vin)			
		Module off		Connect GND or float or low-level Voltage(0-0.3Vin)			
		Input current when off		--	--	100	uA
	Input Under-voltage Protection	Under-voltage protection threshold during input rising		--	--	2.8	V
		Under-voltage protection threshold during input falling		2.1	--	--	
		Under-voltage protection hysteresis voltage		--	0.7	--	
Output Specifications	Voltage Accuracy	100% load		--	±1	±3	%
	Linear Regulation	Input voltage change: ±10%		--	--	±0.2	
	Load Regulation	10%-100% load		--	±1	±2	%
	Ripple & Noise①	20MHz bandwidth, 100% load		--	55	100	mVp-p
	Transient Response Deviation	Nominal input voltage, 10%-90% load step change		--	--	100	mV
	Transient Recovery Time			--	--	0.5	ms
	Thermal shutdown Temp	Junction Temperature		150	--	170	℃
	Short-circuit Protection			Continuous, self-recovery			
General Specifications	Operating Temperature	See Fig.1		-40	--	125	℃
	Storage Temperature			-65	--	150	
	Storage Humidity	Non-condensing		5	--	95	%RH
	Reflow Soldering Temperature			Peak temp.Tc≤260℃, maximum duration time 60s~150s over 217℃. refer to IPC/JEDEC J-STD-020D.1 standard for actual applications.			
	Moisture Sensitivity Level (MSL)	IPC/JEDEC J-STD-020D.1		MSL 3			
	Switching Frequency			--	40	--	MHz
	MTBF	MIL-HDBK-217F@25℃		36600	--	--	k hours
Isolation Specifications	External Clearance	Measure the shortest space distance from the input to output		8	--	--	mm
	External Creepage	Measure the shortest physical distance from the input to output		8	--	--	
	Maximum working	AC voltage		--	600	--	V_{RMS}

	isolation voltage	DC voltage	--	849	--	VDC
	CMTI	Input(pin1-8) - output(pin9-16), VCM=1200V_{RMS}	±150	--	--	kV/us
	Isolation Capacitance	Input(pin1-8) - output(pin9-16) capacitance at 100kHz/1V	--	3.5	--	pF
	Insulation Resistance	Input(pin1-8) - output(pin9-16) resistance at 500VDC	1000	--	--	MΩ
	isolation Voltage	Input(pin1-8) - output(pin9-16) electric strength test for 1 minute, Leakage current less than 1mA	5000	--	--	VAC
Mechanical Specifications	Case Material	Black epoxy resin; flame-retardant and heat-resistant				
	Dimensions	10.3 x 10.3 x 2.5mm				
	Weight	0.35 g(Typ.)				
	Cooling Method	Free air convection				

Note:
①The "parallel cable" method is used for Ripple and Noise test;

Electromagnetic Compatibility (EMC)

Emissions	CE	CISPR32/EN55032 CLASS B (see Fig. 3 for recommended circuit)
	RE	CISPR32/EN55032 CLASS B (see Fig. 3 for recommended circuit)
Immunity	ESD	IEC/EN61000-4-2 Air ±12kV, Contact ±8kV perf. Criteria B

Characteristic Curve

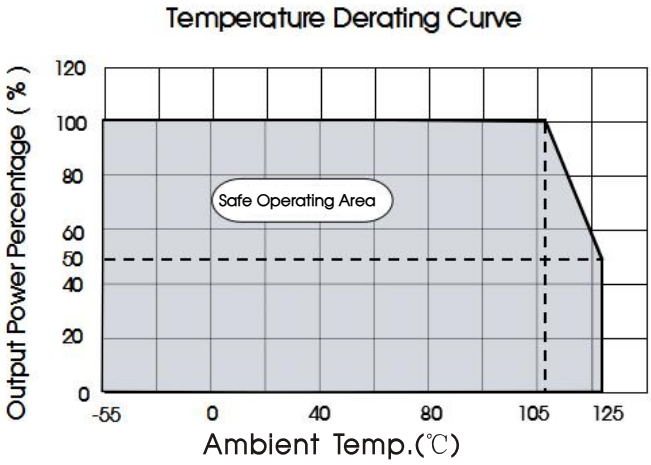


Figure 1

Design Reference

1. Typical application

Typical application shown in Fig. 2, and Input/Output capacitor(necessary) values shown in Table 1.

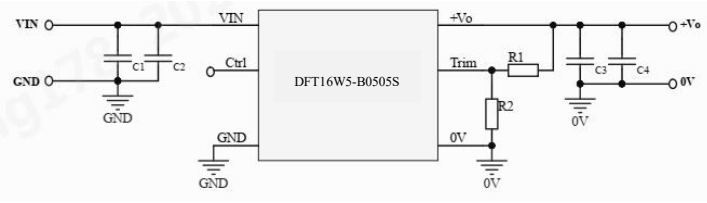


Figure 2

Output Voltage	R1	R2	C1/C4	C2/C3
3.3V	--	0Ω	10uF/16V	0.1uF/16V
3.7V	--	100kΩ		
5.0V	0Ω	--		
5.4V	100kΩ	--		

Table1

Note: ①Trim dangling is not supported.

②If there is a voltage spike in the input Vin,it is recommended that C1 use 1206 packaged ceramic capacitor.

2. EMC compliance circuit

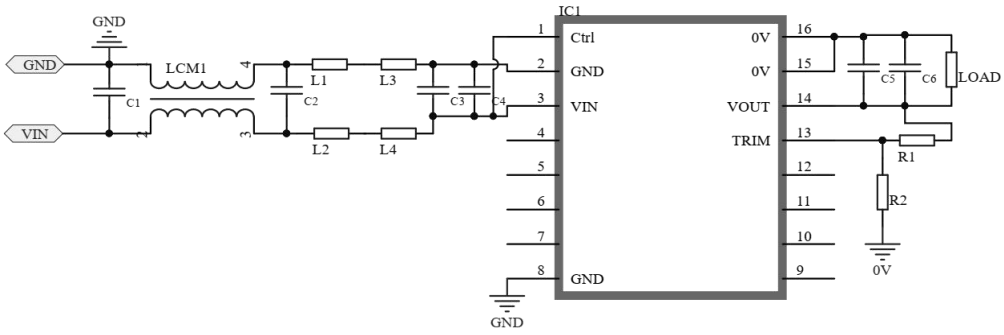
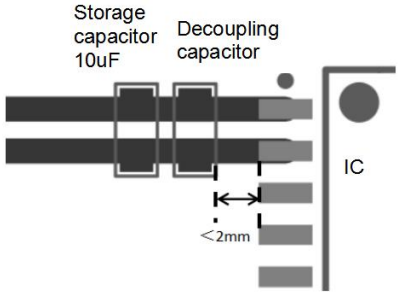


Figure 3 EMI Recommended circuit

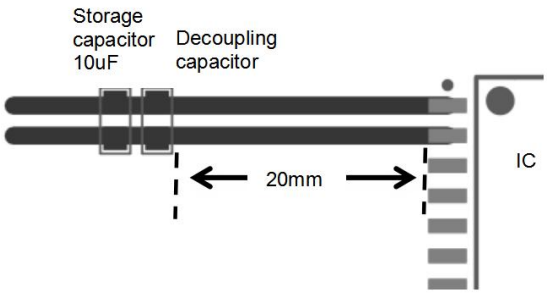
C1/C2/C3/C6	LCM1	C4/C5	L1/L2/L3/L4 (Surface Mount Ferrite Bead)
10uF/16V	EFL2D-0.5-080	0.1uF/16V	2kΩ@100MHz,500mA (GZ2012D202TF)

3. PCB Design Instructions:

3.1 The decoupling capacitors and energy storage capacitors of VIN and GND, VO and 0V should be placed as close to the chip pins as possible to reduce the loop area and the parasitic inductance of PCB traces. Generally, it should be controlled within 2mm. Placing the decoupling capacitor more closer to the chip, as shown below.



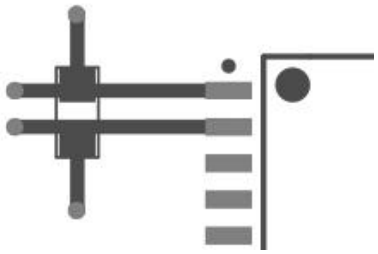
Recommended



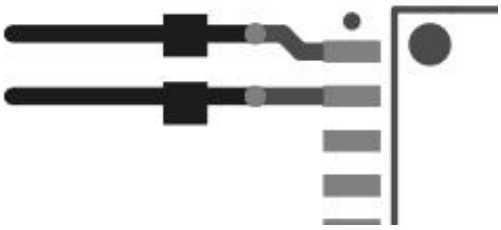
Not recommended

3.2 The power line width should be designed at least 0.5mm when wiring.

3.3 When it is required to place vias in the power supply line and the ground line, the position of the via should be on the outside of the capacitor relative to the chip pins, rather than between the capacitor and the chip, as shown in the figure below, to reduce the parasitic inductance of the via Impact.



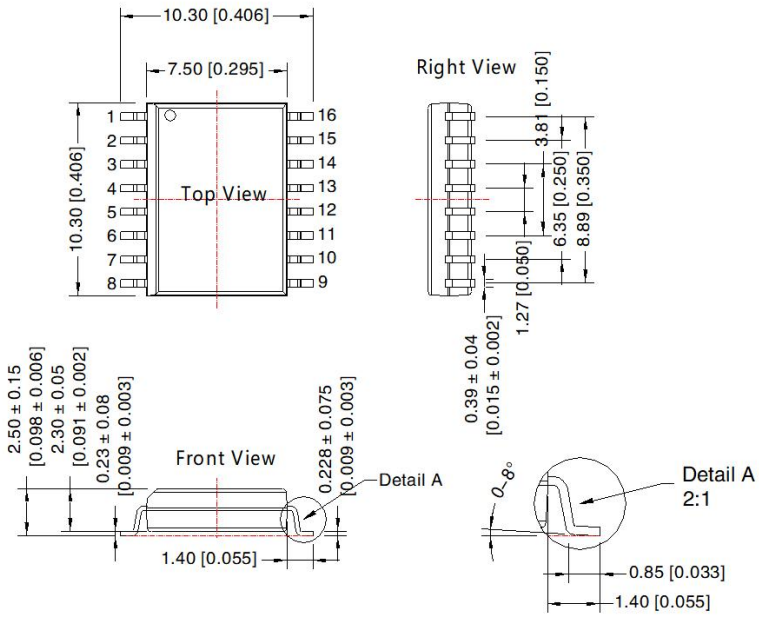
Recommended

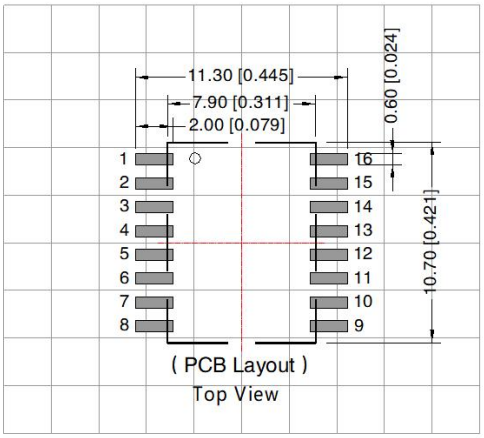


Not recommended

Dimensions and Recommended Layout

THIRD ANGLE PROJECTION



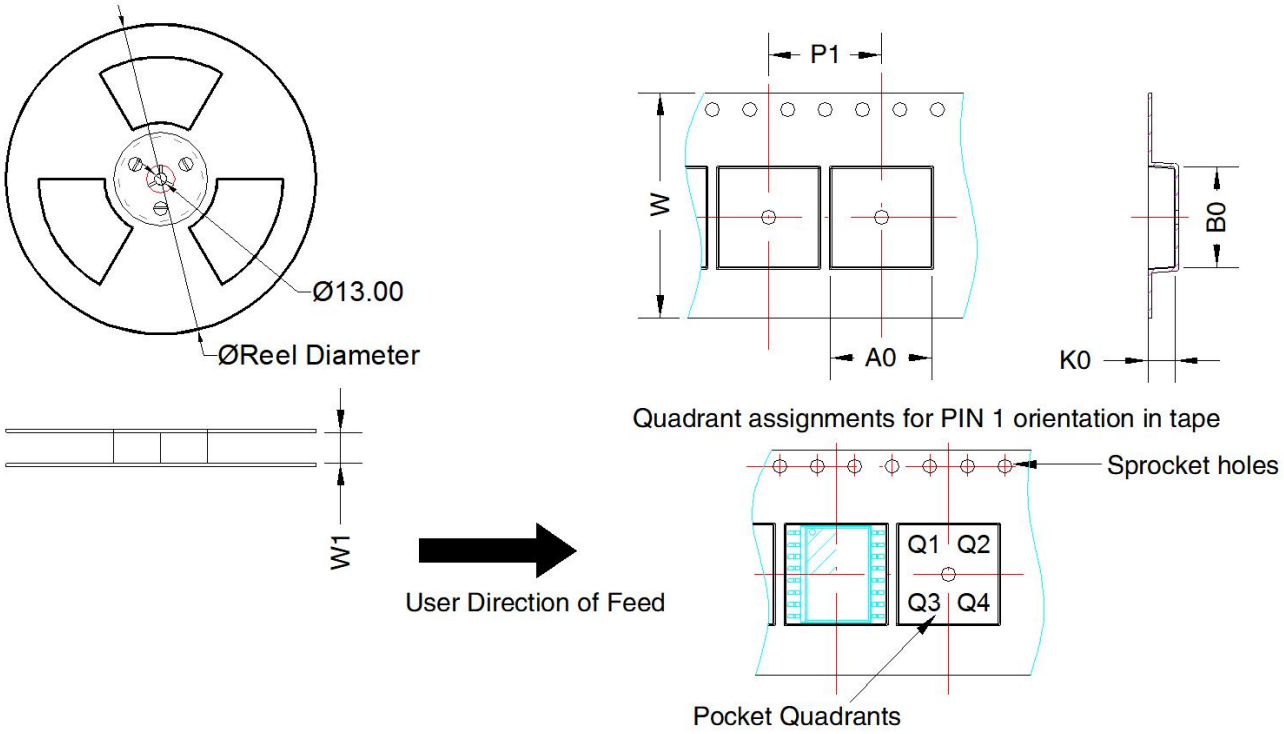


Note: Grid 2.54*2.54mm

Note:
Unit: mm[inch]
General tolerances: ±0.20[±0.008

Pin-Out			
Pin	Mark	Pin	Mark
1	Ctrl	16	0V
2	GND	15	0V
3	Vin	14	Vo
4	NC	13	Trim
5	NC	12	NC
6	NC	11	NC
7	NC	10	NC
8	NC	9	0V

Tape/Reel packaging



Device	Package Type	Pin	MPQ	Reel Diameter (mm)	Reel Width W1 (mm)	A0 (mm)	B0 (mm)	K0 (mm)	P1 (mm)	W (mm)	Pin1 Quadrant
DFT16W5–B 0505S	SOIC	16	340	330.0	24.4	10.8	10.7	2.9	12	24.0	Q1

Notes:

1. If the product is not operated within the required load range, the product performance cannot be guaranteed to comply with all parameters in the datasheet;
2. The maximum capacitive load offered were tested at input voltage range and full load;
3. Unless otherwise specified, parameters in this datasheet were measured under the conditions of Ta=25℃, humidity<75%RH with nominal input voltage and rated output load;
4. All index testing methods in this datasheet are based on our company corporate standards;
5. Products are related to laws and regulations: see "Features" and "EMC";
6. Our products shall be classified according to ISO14001 and related environmental laws and regulations, and shall be handled by qualified units.