



5DABT_D3 Series

4.8W - Dual Output - Wide Input - Isolated & Regulated
IGBT dedicated DC-DC converter

DC-DC Converter

4.8 Watt

- ⊕ Efficiency up to 85%
- ⊕ Temperature range: -40°C~+85°C
- ⊕ Dual Output Voltage
- ⊕ Up to 3000VDC isolation
- ⊕ Short circuit protection (SCP)
- ⊕ Industry standard pinout
- ⊕ Output over-voltage protection
- ⊕ RoHS Compliance
- ⊕ IGBT dedicated regulated DC-DC converter

The 1S4A Series are designed for applications where isolated output is required from a distributed power system.

These products apply to:

- 1) Input voltage range: $\pm 10\%V_{in}$;
- 2) 1.5KVDC input to output isolation;
- 3) Regulated and low ripple noise is not required.

Such as: digital circuits, low frequency analog circuits, and relay drive circuits.



Common specifications	
Short circuit protection:	Continuous, automatic recovery
Temperature rise at full load:	30°C TYP, 40°C MAX (Ta=25°C)
Cooling:	Free air convection
Operation temperature range:	-40°C – +85°C
Storage temperature range:	-55°C – +125°C
Lead temperature	300°C MAX, 1.5mm from case for 10 sec
Storage humidity range:	< 95%
Case material:	Black flame-retardant and heat-resistant plastic [UL94-V0]
MTBF:	>1,000,000 hours
Weight:	14g

Input specifications						
Item	Test condition	Min	Typ	Max	Units	
Input voltage	• 12VDC input	-0.7		25	VDC	
	• 24VDC input	-0.7		50	VDC	
Starting voltage	• 12VDC input			9	VDC	
	• 24VDC input			18	VDC	
Input filter	Capacitor					

Isolation specifications						
Item	Test condition	Min	Typ	Max	Units	
Isolation voltage	Input-Output, tested for 1 minute and leakage current less than 1mA	3000			VDC	
Isolation resistance	Input-Output, test at 500VDC	1000			MΩ	
Isolation capacitance	Input/Output, 100KHz/0.1V		100		pF	

EMC specifications		
EMI	CE	CISPR22/EN55022 CLASS B (External Circuit Refer to EMC recommended circuit)
EMI	RE	CISPR22/EN55022 CLASS B (External Circuit Refer to EMC recommended circuit)
EMS	ESD	IEC/EN61000-4-2 Contact $\pm 8KV$ perf. Criteria B

Output specifications						
Item	Test condition	Min	Typ	Max	Units	
Output power	Main output (+15V output)	0.24		4.8	W	
Output voltage accuracy	<ul style="list-style-type: none"> • Supplement output (-9V output) • Full load, Input voltage from low to high 		± 1	± 2	%	
			± 3	± 5	%	
Line regulation	Input voltage varies by $\pm 1\%$		± 0.2	± 0.5	%	
Load regulation	5% to 100% load		± 0.5	± 1	%	
Transient Recovery Time	25% load step change		0.5	2	μs	
Transient Response Deviation	25% load step change		± 2.5	± 5	%	
Temperature drift coefficient	100% load			± 0.03	%/°C	
Ripple & Noise*	20MHz Bandwidth		100	200	mVp-p	
Switching frequency	Full load, nominal input		300		KHz	
Output over-voltage protection		110	120	140	%Vo	

*Test ripple and noise by "parallel cable" method. See detailed operation instructions at DC-DC application notes.

Model selection:

WCTP_xxyyN##O**

W= Watt; C= Case; T= Type; P= Pinning; **= Voltage Variation (omitted $\pm 10\%$); xx= Vin; yy= Vout; N= Numbers of Output; ##= Isolation (kVDC); O= output regulation

Example:

5DABT_121509D3P

5 = 4.8 Watt; D=DIP24; A=Pinning; BT= IGBT Serie; 12=12Vin; 15= +15Vout; 09= -9Vout; D=Dual Output; 3= 3KVDC; P= Short Circuit Protection (SCP)

5DABT_D3 Series

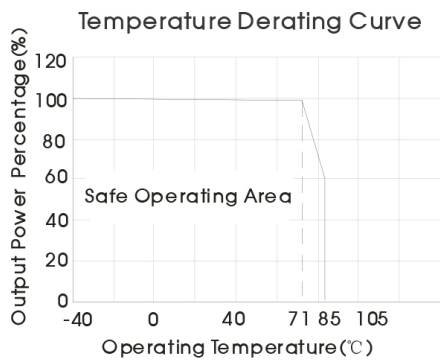
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EMC specifications

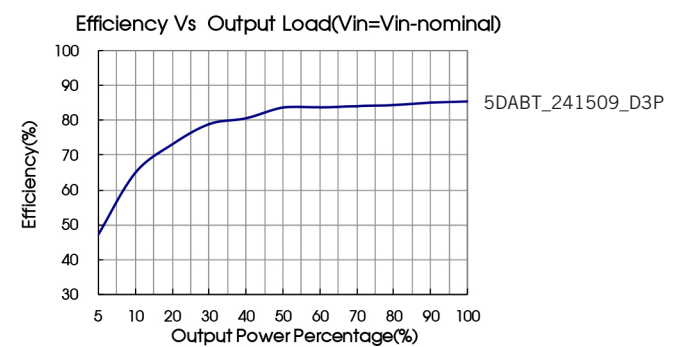
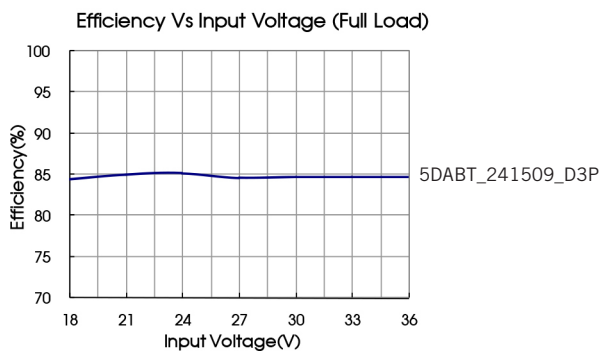
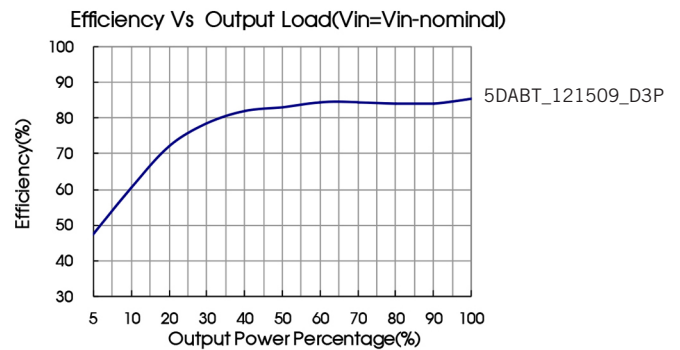
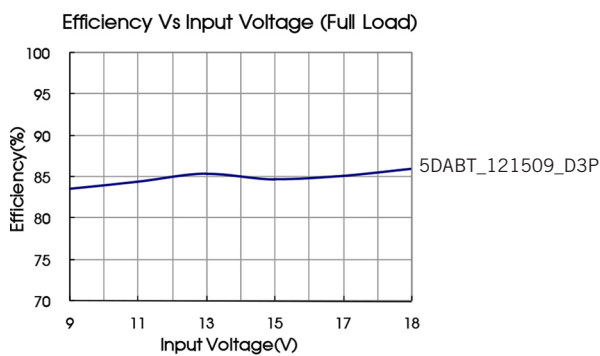
EMI	CE	CISPR22/EN55022	CLASS A	(see EMC recommended circuit, ②)
EMI	RE	CISPR22/EN55022	CLASS A	(see EMC recommended circuit, ②)
EMS	ESD	IEC/EN61000-4-2	Contact ±4KV	perf. Criteria B
EMS	RS	IEC/EN61000-4-3	10V/m	perf. Criteria A
EMS	EFT	IEC/EN61000-4-4 (see EMC recommended circuit, ①)	±2KV	perf. Criteria B
EMS	Surge	IEC/EN61000-4-5 (see EMC recommended circuit, ①)	±2KV	perf. Criteria B
EMS	CS	IEC/EN61000-4-6	3 Vr.m.s	perf. Criteria A
EMS	Voltage dips, short and interruptions immunity	IEC/EN61000-4-29	0%-70%	perf. Criteria B

Part Number	Input Voltage [V]	Input current full load/ no load [mA, typ]	Output Voltage [VDC, +Vo/-Vo]	Output current [mA, +Vo/-Vo]	Max. capacitive load [μF]	Efficiency [%, typ]
5DABT_121509_D3P	12	471/16	+15/-9	±200/±10	1000	85
5DABT_241509_D3P	24	235/8	+15/-9	±200/±10	1000	85

Typical characteristics



Efficiency



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Recommended circuit

All the IGBT driver of this series are tested according to the recommended circuit (see Fig. 1) before delivery.

If it is required to further reduce input and output ripple, properly increase the input & output of additional capacitors C_{in} and C_{out} or select capacitors of low equivalent impedance provided that the capacitance is no larger than the max. capacitive load of the product.



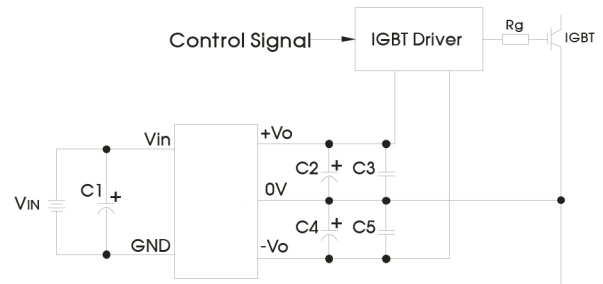
Figure 1

Vin	12V/24V
Cin	100µF
Cout	100µF

Typical application

Application Notes

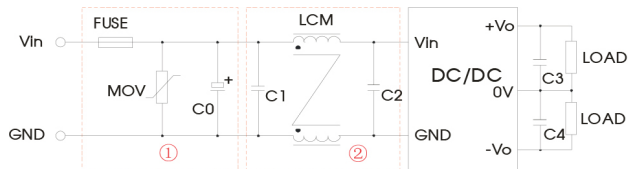
1. The wire between the converter and IGBT driver must as short as possible.
2. External filter capacitors should be connected as close as possible to the IGBT driver.
3. To ensure the high peak gate current, the filter capacitors should be electrolytic capacitor and ceramic capacitor collocation.
4. The output average power of the IGBT driver should be less than the output power of DC-DC module.



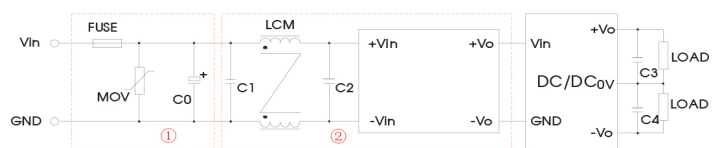
C1	100uF/63V(Electrolytic capacitor)
C2/C4	100uF/35V(Electrolytic capacitor)
C3/C5	10uF/25V(Ceramic capacitor)

EMC solution-recommended circuit

5DABT_121509_D3P



5DABT_241509_D3P



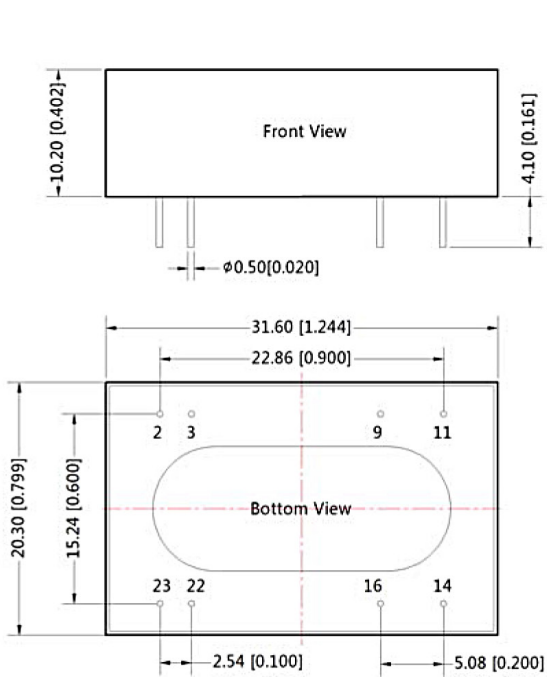
Parameters	5DABT_121509_D3P	5DABT_241509_D3P
FUSE	Choose according to practical input current	
MOV	S14K25	S14K35
C0	680µF/25V	330µF/50V
C1, C2	4.7µF/50V	
C3, C4	Refer to the Cout in recommended circuit	
LCM	1mH	3.3mH
Module	--	FT-AX1D

The product does not support output in parallel with power per liter or hot-swappable use.

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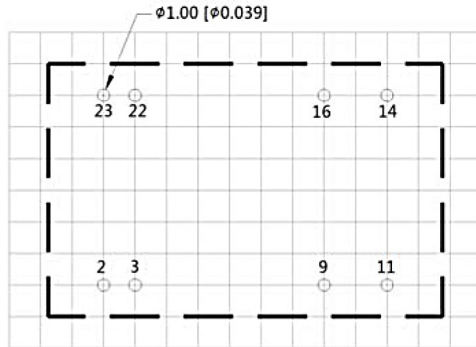
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Mechanical dimensions



Note:
Unit: mm [inch]
Pin diameter tolerances: $\pm 0.10\text{mm}$ [$\pm 0.004\text{inch}$]
General tolerances: $\pm 0.5\text{mm}$ [$\pm 0.020\text{inch}$]

THIRD ANGLE PROJECTION



Note: Grid 2.54*2.54mm

Pin-Out	
Pin	Function
2,3	GND
9	0V
11	-Vo
14	+Vo
16	0V
22,23	Vin

Note:

1. The lead connecting the power supply module and IGBT driver should be as short as possible during use;
2. The output filtering capacitor should be as close as possible to the power supply module and IGBT driver;
3. The peak of the IGBT driver gate drive current is high, so low internal resistance electrolytic capacitor is recommended to be used for the power supply module output filter capacitor;
4. The average output power of the driver must be lower than that of the power supply module;
5. Consider fixing with glue near the module if being used in vibration occasion;
6. The max. capacitive load should be tested within the input voltage range and under full load conditions;
7. Unless otherwise noted, all specifications are measured at $T_a = 25^\circ\text{C}$, humidity $< 75\%$, nominal input voltage and rated output load.
8. In this datasheet, all test methods are based on our corporate standards.
9. All characteristics are for listed models, and non-standard models may perform differently. Please contact our technical support for more detail.
10. Please contact our technical support for any specific requirement.
11. Specifications of this product are subject to changes without prior notice.