

2S7SIC_D5.2UP series

2W - Dual Output - Wide Input - Isolated & Unregulated
SiC dedicated DC-DC converter

DC-DC Converter 2 Watt

- ⊕ Efficiency up to 80%
- ⊕ Temperature range: -40°C~+105°C
- ⊕ Dual Output Voltage
- ⊕ 5200VDC Isolation voltage
- ⊕ Short circuit protection (SCP)
- ⊕ Ultra low isolation capacitance
- ⊕ Ultra Compact SIP package
- ⊕ Good temperature characteristic
- ⊕ RoHS Compliance
- ⊕ SiC dedicated unregulated DC-DC converter
- ⊕ No-load operation allowed

The 2S7SIC_D5.2UP series are DC-DC converters for SiC MOSFETs. Their ultra low isolation capacitance can improve the capability of anti-interference. The built-in common-ground mode of the unique asymmetric voltage output mode reduces the driver loss of SiC MOSFETs. They feature short-circuit protection and auto-recovery, and can be widely used in:

- General inverter
- AC servo drive system
- Electric welding machine
- Uninterruptible power supply (UPS)



Common specifications	
Short circuit protection:	Continuous, automatic recovery
Temperature rise at full load:	25°C TYP
Cooling:	Free air convection
Operation temperature range:	-40°C – +105°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:	>3,500,000 hours
Weight:	4.3g

Input specifications					
Item	Test condition	Min	Typ	Max	Units
Input voltage range	• 15V input	13.5	15	16.5	VDC
	• 12 input	10.8	12	13.2	VDC
Hot plug	Unavailable				
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	5200			VDC
Isolation resistance	Input-Output, test at 500VDC	1000			MΩ
Isolation capacitance	Input/Output, 100KHz/0.1V		6.6		pF

Example:
2S7SIC_121503D5.2UP
 2 = 2 Watt; S7 =SIP7; SIC = SiC serie; 12 = 12Vin;
 15 = +15Vout; 03 = -3Vout; D = Dual Output; 5.2 = 5.2kVDC;
 U = Unregulated; P = Short Circuit Protection (SCP)

Output specifications						
Item	Test condition	Min	Typ	Max	Units	
Output voltage	• +Vo: Vin=15VDC/12VDC, Pin6 & Pin7 +Io=+80mA	14.25	15	15.75	VDC	
	• -Vo: Vin=15VDC/12VDC, Pin5 & Pin6 -Io=-40mA	-8	-8.7	-9.4	VDC	
	• +Vo: Vin=12VDC, Pin6 & Pin7 +Io=+93mA	14.25	15	15.75	VDC	
	• -Vo: Vin=12VDC, Pin5 & Pin6 -Io=-185mA	-2.76	-3	-3.24	VDC	
Output voltage accuracy	See tolerance envelope curve					
Line regulation	Input voltage range		±1.2	±1.5	%	
Load regulation	10% to 100% load, positive output		8	15	%	
	10% to 100% load, negative output		10	15	%	
Temperature drift coefficient	100% load			±0.03	%/°C	
Ripple & Noise*	20MHz Bandwidth		100	200	mVp-p	
Switching frequency	Full load, nominal input		100	300	KHz	

*Test ripple and noise by "parallel cable" method.

Note:

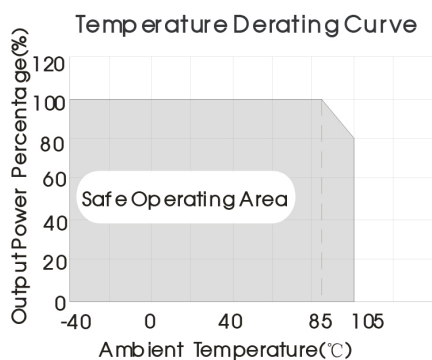
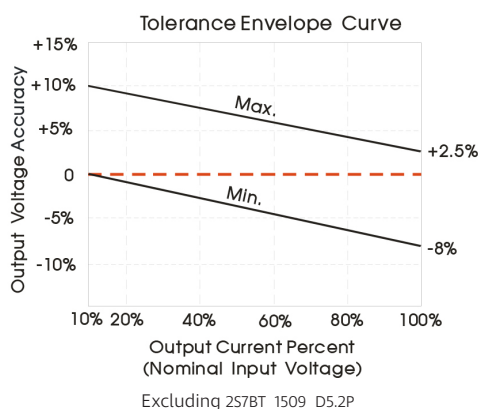
1. The lead connecting the power supply module and SiC MOSFETs should be as short as possible during use;
2. The output filtering capacitor should be as close as possible to the power supply module and SiC driver;
3. The peak of the SiC MOSFETs gate drive current is high, so low internal resistance electrolytic 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 Ta = 25°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.

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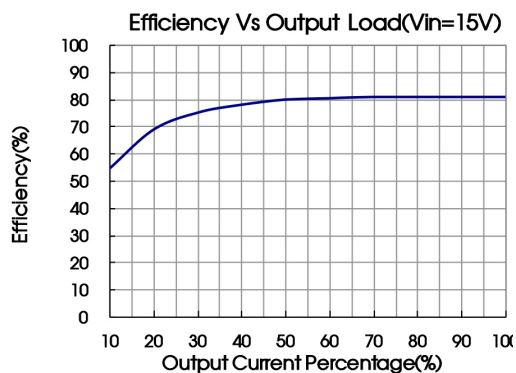
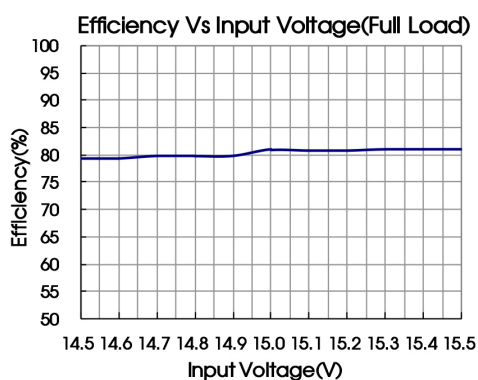
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SIC dedicated DC-DC converter

Part Number	Input Voltage [V]	Input current [mA, min/max]	Output Voltage [VDC, +Vo/-Vo]	Output current [mA, +Vo/-Vo]	Max. capacitive load [μ F]	Efficiency [%, min]
1.4S7SIC_121505_D5.2UP	12	20/160	+15/-5.0	+80/-40	220	75-80
1.8S7SIC_241503D5.2UP	24	20/140	+15/-3.0	+111/+111	220	75-80
2S7SIC_121503_D5.2UP	12	20/160	+15/-3.0	+93/-185	220	75-80
2S7SIC_241503_D5.2UP	24	20/140	+15/-3.0	+66/-333	220	75-80
2S7SIC_122005_D5.2UP	12	20/160	+20/-5.0	+50/-200	220	75-80
2S7SIC_152005_D5.2UP	15	20/130	+20/-5.0	+50/-200	220	75-80
2S7SIC_242005_D5.2UP	24	30/140	+20/-5.0	+50/-200	220	75-80

Typical characteristics



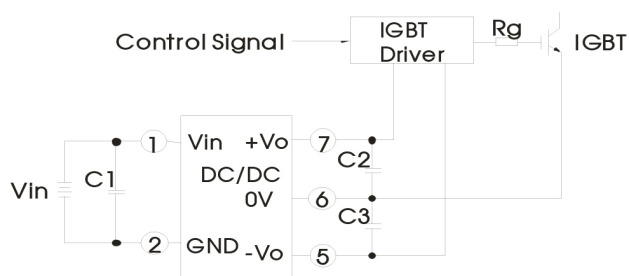
Efficiency



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Typical application

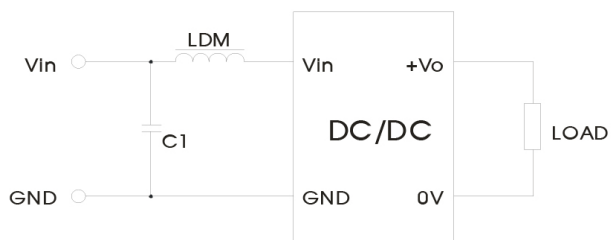


C1/ C2 /C3
100uF/35V (Low internal resistance capacitance)

Note: On both ends of capacitance C2 and C3 shunt respectively a capacitance value in 1uF -10uF ceramic capacitors.

EMC solution-recommended circuit

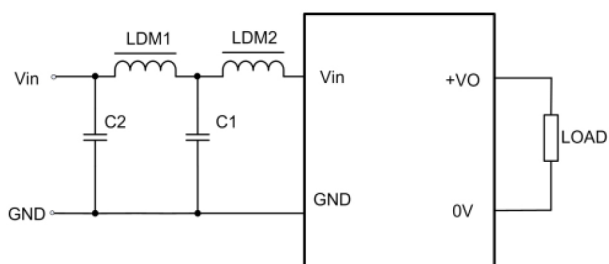
Recommended circuit 1



Input voltage (VDC)	12/15
EMI / C1	4.7uF/50V
EMI / LDM	12uH

It is not allowed to connect modules output in parallel to enlarge the power.

Recommended circuit 2



Input voltage (VDC)	12/15
EMI / C1, C2	4.7uF/50V
EMI / LDM1	12uH
EMI / LDM2	47uH

