2W, DC/DC Power Converter

SDQ02S

Introduction

The SDQ02S series are unregulated SIP7 package DC/DC converters dedicated to IGBT driver applications. The series has unbalanced dual output voltage, in order to minimize the IGBT driver lose. The models also have continuous short circuit protection. The typical applications of these converters are transducers, AC servo drive system, electric welding, and UPS.

Features

- → Input voltage range ±10%
- → Unregulated output
- → High efficiency, up to 80%
- → Isolation 4000VAC
- → Low Isolation capacitance 3.5pF Typ.
- → Operating temperature range: -40 ~ +105°C ambient
- → RoHS compliant
- → Compact SIP7 package
- → Continuous short circuit protection
- → Meet UL/EN/IEC 62368-1
- → 3 year warranty
- → Dedicated to use in IGBT Driver applications

Part numbers

Model Number	Input Voltage Range [VDC] Nominal	Min.	Max.	V_{OUT1}, V_{OUT2} [VDC]	I_{OUT1}, I_{OUT2} [mA] Max.	Efficiency [%] Typ.	Capacitive Load [uF] Max.
SDQ02S1215	12	10.8	13.2	+15, -3.5	+111, -111	80	220
SDQ02S1220	12	10.8	13.2	+20, -4.0	+100, -100	80	220
SDQ02S1220	12	10.8	13.2	+20, -5.0	+100, -100	80	220
SDQ02S1515	15	13.5	16.5	+15, -2.5	+100, -100	80	220
SDQ02S1515	15	13.5	16.5	+15, -4.0	+100, -100	80	220
SDQ02S1515	15	13.5	16.5	+15, -8.0	+120, -120	80	220
SDQ02S1515	15	13.5	16.5	+15, -8.7	+100, -100	80	220
SDQ02S1518	15	13.5	16.5	+18, -3.0	+100, -100	80	220
SDQ02S1520	15	13.5	16.5	+20, -4.0	+100, -100	80	220
SDQ02S1520	15	13.5	16.5	+20, -5.0	+100, -100	80	220
SDQ02S2415	24	21.6	26.4	+15, -4.0	+100, -100	80	220
SDQ02S2420	24	21.6	26.4	+20, -4.0	+100, -100	80	220

Electrical characteristics

Unless otherwise indicated, specifications are measured at T_A=25°C, nominal input voltage, full load after warm up.

Parameter	Condition	Min.	Type	Max.	Unit	Notes
Surge voltage	1 second max	-0.7	-	30	VDC	
Output voltage accuracy	All models	Refer to graphic in “Characteristic Curves” section				
Line regulation **For VIN change of ±1%**		-	±1.2	-	%	
Load regulation **IOUT=10% to 100% of IOUT, rated**	$+V_{OUT}$ $-V_{OUT}$	-	5 10	12 20	%	
Temperature coefficiency	Full load	-	±0.02	±0.03	%/°C	
Output ripple and noise	20MHz bandwidth	-	100	150	mVp-p	
Output short circuit protection		Continuous, automatic recovery				
Input filter		Capacitor				

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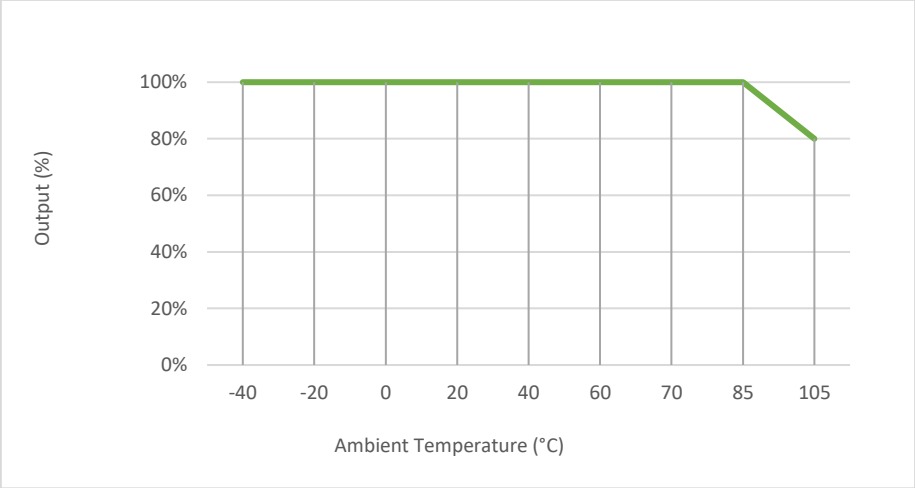
General Specifications

Parameters	Condition	Min.	Typ.	Max.	Unit
Isolation voltage 1 minute, leakage current 1mA Max	I/P to O/P	4000	-	-	VAC
Isolation resistance 500VDC	I/P to O/P	1000	-	-	M ohm
Isolation capacitance 100KHz, 0.1V	I/P to O/P	-	3.5	-	pF
Operating temperature	See “Derating Curve”	-40	-	+105	°C
Storage temperature		-55	-	+125	°C
Temperature rise at case	Full load	-	25	-	°C
Storage humidity	Non-condensing	5	-	95	%RH
Switching frequency	Full load	-	100	-	KHz
Pin soldering resistance 1.5mm away from case for 10 sec		-	-	300	°C
Vibration		10-150Hz, 5G, 0.75mm along X, Y and Z			
Case material		Black plastic UL94-V0			
Cooling method		Free air convection			
Design based on standards		UL/EN/IEC 62368-1			
EMC		CISPR32, EN55032 Class B* with external circuit			
MTBF	MIL-HDBK-217F	>35,000,000 Hours, T_A=25°C			
Size & Weight		19.50 x 9.80 x 12.50 mm, 4.2g Typ.			

Characteristics Curves

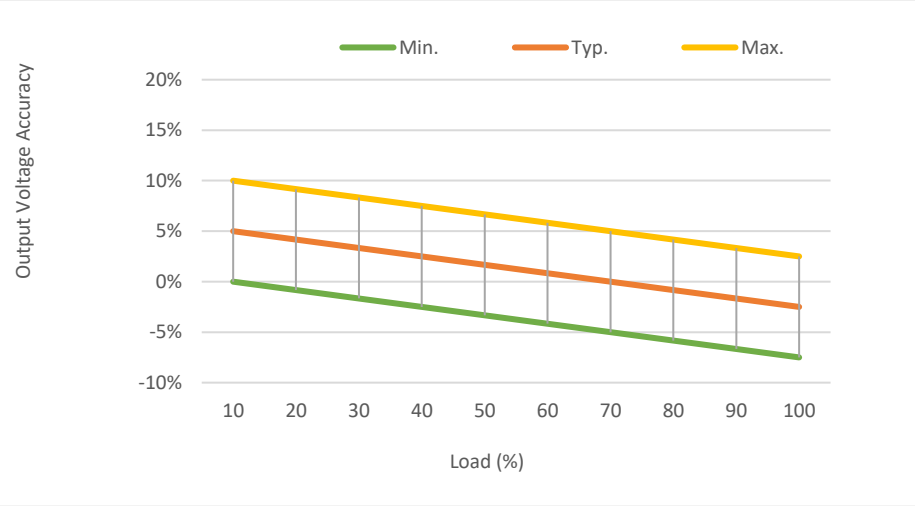
Derating Curve

Output vs Ambient Temperature

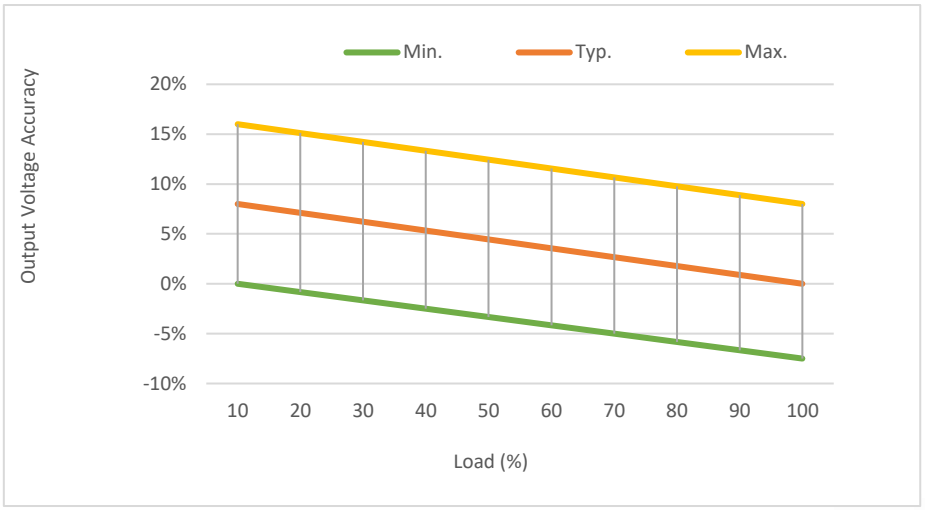


Output Voltage Accurancy

Output Voltage Accuracy vs Load



$+V_{OUT}$ with nominal input voltage



-V_{OUT} with nominal input voltage

Recommended External Circuit

Typical Application Circuit

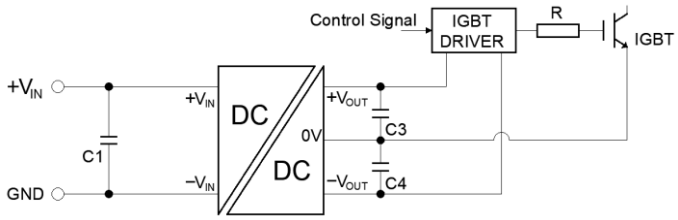


Figure 1: Typical Application circuit

Recommended component spec

Item	C1	C3, C4
C_{IN}	100uF, 35V	100uF, 35V

*Connect a ceramic capacitor (1~10uF) in parallel with C3 and C4 can reduce ripple and noise.

EMC Enhancement for EN55032 Class B

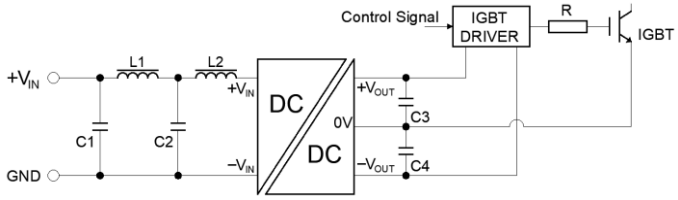


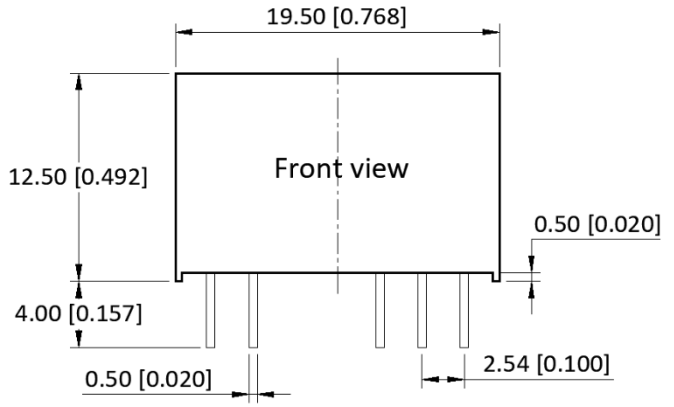
Figure 2: Circuit for EMC Enhancement

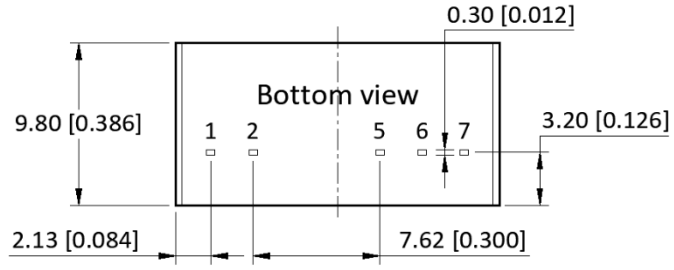
Recommended component spec

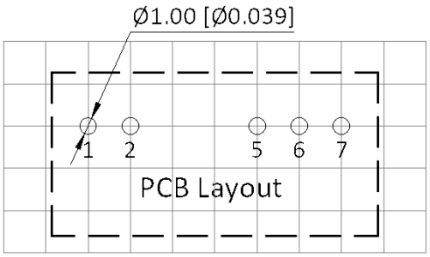
Item	C1, C2	L1	L2
C_{IN}	4.7uF, 50V	12uH	47uH

*Refer to Table 1 for output circuits

Mechanical Specifications







Pin Definition

Pin #	Dual Out	
1	V_{IN}	
2	GND	
5	$-V_{OUT}$	
6	0V	
7	$+V_{OUT}$	

*** Unless otherwise specified unit: mm [inch]**

*** General tolerance: ±0.50 [±0.020]**

*** Pin thickness: ±0.10 [±0.004]**

*** Footprint grid 2.54 x 2.54 mm**

Ordering information

Ordering can be done via www.summit-electronics.com or via info@summit-electronics.com. Please contact us for more information. Customisation of the product is available on request.

Technical support

For all product questions please contact us via info@summit-electronics.com

Document revision

Rev	Date	Changes
2025v0.1	22-08-2025	First issue of document