THE DATASHEET OF

SF05S2403A

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SF05S/D Sries

5W DC/DC CONVERTER, SMD-Package , Wide 2:1 Input Ranage

FEATURES

- Efficiency up to 85%
- SMD Package with Industry Standard Pinout
- 2:1 Wide Input Range
- Isolation Volage 1500VDC
- Remote on/off Control
- Short Circuit Protection
- Complies with EN55022 Class A
- > 1MHours MTBF
- Moisture sensitivity level (MSL) 2
- Lead free, RoHs Compliant
- 3 Years Product Warranty

The SF05S/D series are miniature, SMD Package, isolated 5W DC/DC converters with 1,500VDC isolation. The SF05S/D series features fully regulated output and ultra wide 2:1 input voltage ranges. It offers short circuit protection and allows a wide operating temperature range of –40°C to +71°C. These isolated DC/DC converters are the latest offering from a world leader in power systems technology and manufacturing — Delta Electronics, Inc. With creative design technology and optimization of component placement, these converters possess outstanding electrical and thermal performance, as well as extremely high reliability under highly stressful operating conditions.

Model List

Model Number	Input Voltage (Range)	Output Voltage	Output Current		Input Current		Reflected Ripple Current	Max. capacitive Load	Efficiency (typ.)
			Max.	Min.	@Max. Load	@No Load			@Max. Load
	VDC	VDC	mA	mA	mA(typ.)	mA(typ.)	mA(typ.)	uF	%
SF05S1203A	12 (9 ~ 18)	3.3	1200	120	434	45	25	680	76
SF05S1205A		5	1000	100	521				80
SF05S1212A		12	417	41.7	502				83
SF05S1215A		15	333	33.3	502				83
SF05D1205A		±5	±500	±500	521			100*	80
SF05D1212A		±12	±208	±20.8	501				83
SF05D1215A		±15	±167	±16.7	503				83
SF05S2403A	24 (18 ~ 36)	3.3	1200	120	212	15	15	680	78
SF05S2405A		5	1000	100	254				82
SF05S2412A		12	417	41.7	245				85
SF05S2415A		15	333	33.3	245				85
SF05D2405A		±5	±500	±500	254			100*	82
SF05D2412A		±12	±208	±20.8	245				85
SF05D2415A		±15	±167	±16.7	246				85
SF05S4803A	48 (36 ~ 75)	3.3	1200	120	106	6	10	680	78
SF05S4805A		5	1000	100	127				82
SF05S4812A		12	417	41.7	123				85
SF05S4815A		15	333	33.3	122				85
SF05D4805A		±5	±500	±500	127			100*	82
SF05D4812A		±12	±208	±20.8	122				85
SF05D4815A		±15	±167	±16.7	123				85

* For each output

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Input Characteristics

Parameter	Model	Min.	Typ.	Max.	Unit
Input Surge Voltage (1 sec. max.)	12V Input Models	-0.7	---	25	VDC
	24V Input Models	-0.7	---	50	
	48V Input Models	-0.7	---	100	
Start-Up Voltage	12V Input Models	7.5	8	9	
	24V Input Models	14	16	18	
	48V Input Models	30	33	36	
Under Voltage Shutdown	12V Input Models	6.5	7	8	
	24V Input Models	13	15	17	
	48V Input Models	28	31	34	
Reverse Polarity Input Current	All Models	---	---	1	A
Short Circuit Input Power		---	1000	3000	mW
Internal Power Dissipation		---	---	2500	mW
Conducted EMI		Compliance to EN 55022,class A and FCC part 15,class A			

Output Characteristics

Parameter	Conditions	Min.	Typ.	Max.	Unit
Output Voltage Accuracy		---	±0.5	±1.0	%
Output Voltage Balance	Dual Output, Balanced Loads	---	±0.5	±2.0	%
Line Regulation	Vin=Min. to Max.	---	±0.1	±0.3	%
Load Regulation	Io=20% to 100%	---	±0.3	±1.0	%
Ripple & Noise (20MHz)		---	50	85	mV $_{P-P}$
Ripple & Noise (20MHz)	Over Line, Load & Temp.	---	---	100	mV $_{P-P}$
Ripple & Noise (20MHz)		---	---	15	mV rms
Transient Recovery Time	25% Load Step Change	---	250	500	uS
Transient Response Deviation		---	±2	±6	%
Temperature Coefficient		---	±0.01	±0.02	%/℃
Over Load Protection	Foldback	115	140	165	%
Short Circuit Protection		Continuous			

General Characteristics

Parameter	Conditions	Min.	Typ.	Max.	Unit
I/O Isolation Voltage (rated)	60 Seconds	1500	---	---	VDC
I/O Isolation Resistance	500 VDC	1000	---	---	MΩ
I/O Isolation Capacitance	100KHz, 1V	---	650	750	pF
Switching Frequency		200	260	350	KHz
MTBF (calculated)	MIL-HDBK-217F@25℃, Ground Benign	1,000,000	---	---	Hours
Moisture Sensitivity Level (MSL)	IPC/JEDEC J-STD-020D	Level 2			

Recommended Input Fuse

12V Input Models	24V Input Models	48V Input Models
1500mA Slow-Blow Type	700mA Slow-Blow Type	350mA Slow-Blow Type

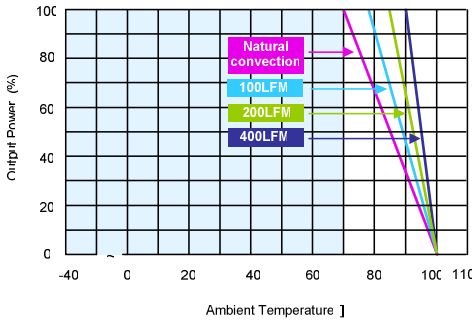
Remote On / Off Control

Parameter	Conditions	Min.	Typ.	Max.	Unit
Converter On	2.5V ~ 5.5V or Open Circuit				
Converter Off	-0.7V ~ 0.8V				
Control Input Current (on)	Vctrl = Min. to Max.	---	---	-200	uA
Control Input Current (off)	Vctrl = Min. to Max.	---	---	-300	uA
Control Common	Referenced to Negative Input				
Standby Input Current		---	---	10	mA

Environmental Specifications

Parameter	Conditions	Min.	Max.	Unit
Operating Temperature Range (with Derating)	Ambient	-40	+85	℃
Case Temperature		---	+90	℃
Storage Temperature Range		-50	+125	℃
Humidity (non condensing)		---	95	% rel. H
Cooling	Free-Air convection			
Lead Temperature (1.5mm from case for 10Sec.)		---	260	℃

Power Derating Curve

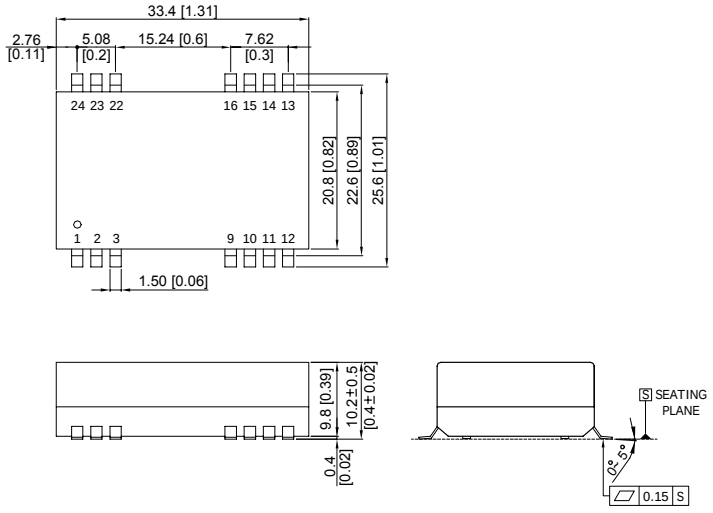


Notes

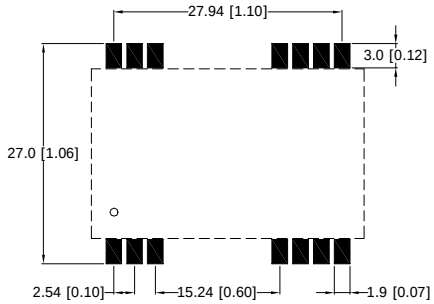
1 Specifications typical at Ta=+25℃, resistive load, nominal input voltage and rated output current unless otherwise noted.
2 Transient recovery time is measured to within 1% error band for a step change in output load of 75% to 100%
3 Ripple & Noise measurement bandwidth is 0-20MHz.
4 These power converters require a minimum output loading to maintain specified regulation, operation under no-load conditions will not damage these modules; however they may not meet all specifications listed.
5 All DC/DC converters should be externally fused at the front end for protection.
6 Specifications subject to change without notice.

Mechanical Drawing

Mechanical Dimensions



Connecting Pin Patterns



- All dimensions in mm (inches)
- Tolerance: X.X±0.25 (X.XX±0.01)
  X.XX±0.13 (X.XXX±0.005)
- Pins ±0.05 (±0.002)

E-mail: DCDC@delta.com.tw
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Pin Connections		
Pin	Single Output	Dual Output
1	Remote On/Off	Remote On/Off
2	-Vin	-Vin
3	-Vin	-Vin
9	NC	Common
10	NC	NC
11	NC	-Vout
12	NC	NC
13	NC	NC
14	+Vout	+Vout
15	NC	NC
16	-Vout	Common
22	+Vin	+Vin
23	+Vin	+Vin
24	NC	NC

NC : No Connection

Physical Characteristics		
Case Size	:	33.4x20.8x10.2mm (1.31x0.82x0.4 Inches)
Case Material	:	Non-Conductive Black Plastic (flammability to UL 94V-0 rated)
Weight	:	14g

Part Numbering System

S	F	05	S	12	05	A
Form factor	Family series	Watt	Number of Outputs	Input Voltage	Output Voltage	Option Code
D-DIP	A~Z	01:1W	S - Single	03:3.3V	03:3.3V	A - Std. Functions
P-SIP		02:2W	D- Dual	05: 5V	05: 5V	
S-SMD		03:3W		12:12V	12:12V	
		04:4W		24: 24V	15: 15V	
		06:6W		48:48V	24: 24V	

WARRANTY

Delta offers a three(3) years limited warranty. Complete warranty information is listed on our web site or is available upon request from Delta.

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