DC/DC Power Module 1W

- Operating temperature range: -40℃ to 85℃
- Insulation Voltage: 1500VDC
- Maximum Efficiency: up to 87%
- sustainable short circuit protection
- Complies with the RoHS Directive

Selection Table

Model	Input voltage (VDC)	Output			Full load efficiency (%, Min,Typ)	Maximum capacitive load (μF)
	Nominal value Range	Output voltage (VDC)	Minimum current (mA)	Maximum current (mA)		
KS1-03S03	3.3 (2.97-3.63)	3.3	31	303	70/75	2400
KS1-03S05		5	20	200	78/84	2400
KS1-03S09		9	12	111	81/84	1000
KS1-03S12		12	9	84	82/85	560
KS1-03S15		15	7	67	85/87	560
KS1-03S24		24	4.2	42	86/87	220
KS1-05S03	5 (4.5-5.5)	3.3	31	303	70/75	2400
KS1-05S05		5	20	200	84/85	2400
KS1-05S09		9	12	111	84/85	1000
KS1-05S12		12	9	84	85/87	560
KS1-05S15		15	7	67	85/87	560
KS1-05S24		24	4.2	42	86/87	220
KS1-12S03	12 (10.8-13.2)	3.3	31	303	70/75	2400
KS1-12S05		5	20	200	82/86	2400
KS1-12S09		9	12	111	84/86	1000
KS1-12S12		12	9	84	84/86	560
KS1-12S15		15	7	67	84/86	560
KS1-12S24		24	4.2	42	86/87	220
KS1-15S05	15 (13.5-16.5)	5	20	200	82/86	2400
KS1-15S09		9	12	111	84/87	1000
KS1-15S12		12	9	84	84/87	560
KS1-15S15		15	7	67	86/87	2400
KS1-24S03	24 (21.6-26.4)	3.3	31	303	70/75	2400
KS1-24S05		5	20	200	85/87	2400
KS1-24S09		9	12	111	85/87	1000
KS1-24S12		12	9	84	85/87	560
KS1-24S15		15	7	67	85/87	560
KS1-24S24		24	4.2	42	86/86	220

Input characteristics

Parameter	Condition	Min.	Typ.	Max.	unit
input currenton	3.3VDC input		384/5	--/15	mA
	5VDC input	--	235/3	--/15	
	12VDC input	--	99/3	--/15	
	15VDC input	--	73/3	--/15	
	24VDC input	--	51/3	--/15	
Input Reflected Ripple Current		--	15	--	mA
Surge Voltage	3.3/5VDC input	-0.7	--	9	VDC
	12VDC input	-0.7	--	18	
	15VDC input	-0.7	--	21	
	24VDC input	-0.7	--	30	
Input Filter Type		Capacitor Filtering			
Hot Plug Support		Not Supported			

Output Characteristic

Parameter	Condition		Min.	Typ.	Max.	unit
Output voltage accuracy			See the envelope curve diagram.			
Line Regulation	Input voltage variation ±1%	3.3VDC output	--	±1.5	--	%
		Other outputs	--	±1.2	--	
Load regulation rate	10% to 100% load	3.3DC output	--	10	--	
		5VDC output	--	8	--	
		9VDC output	--	8	--	
		12VDC output	--	7	--	
		15VDC output	--	6	--	
		24VDC output	--	6	--	
Ripple noise	20MHz bandwidth		--	45	100	mVp-p
Temperature Coefficient	Full Load		--	±0.03	--	%/℃
Short-circuit protection			Sustainable, self-recovering			

General characteristics

Parameter	Condition	Min.	Typ.	Max.	unit
Insulation voltage	Input-output, test time 1 minute, leakage current less than 1mA	1500	--	--	VDC
Insulation resistance	Input-output, insulated voltage 500VDC	1000	--	--	MΩ
Isolating capacitance	Input-output, 100KHz/0.1V	--	20	50	pF
Operating Temperature	Use at temperatures above 85℃ (see Figure 4)	-40	--	85	℃
Storage temperature		-55	--	125	
Case Temperature Rise	Ta=25℃, nominal input, full load output	--	25	--	
Storage Humidity	no condensation	--	--	95	%RH
Soldering Temperature	1.5mm from Housing, 10s Duration	--	--	300	
Switching Frequency	Full load, nominal input voltage	--	270	--	kHz
Mean Time Between Failures (MTBF)	MIL-HDBK-217F@25℃	3500	--	--	kHours

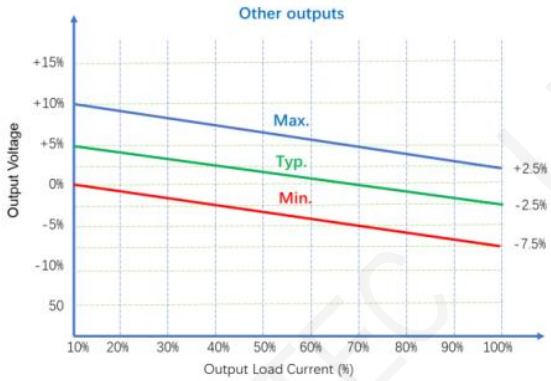
Physical Characteristics

Encapsulation Material	Black flame-retardant heat-resistant plastic (UL94V-0)
Encapsulation Dimensions	19.65*6.00*10.16mm
Weight	2.4g
Heat Dissipation Method	natural air cooling

EMC Characteristic

EMI	conduction disturbance	CISPR32/EN55032 CLASS B (Recommended circuit is shown in Figure 5)
	radiation disturbance	CISPR32/EN55032 CLASS B (Recommended circuitry is shown in Figure 5)
EMS	electrostatic discharge	IEC/EN61000-4-2 Contact ±8KV perf. Criteria B

Product Feature Curve Diagram



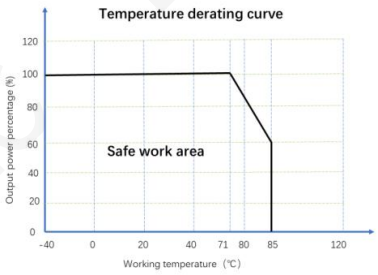


Figure 4: Temperature Derating Curve

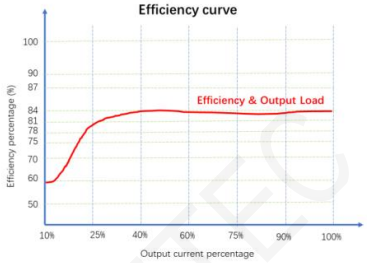


Figure 5: Efficiency VS Output Load
(Nominal Voltage Input)

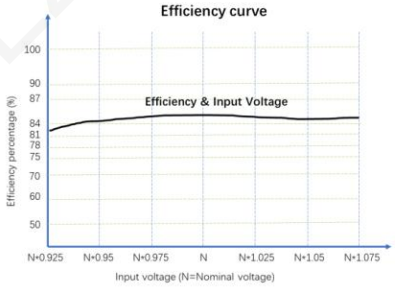
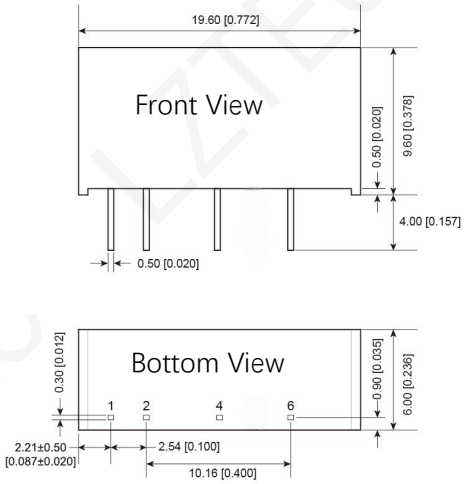


Figure 6: Efficiency VS Input Voltage
(100% Load)

Dimensions/Recommended print layout



Pin	Function
1	Vin
2	GND
4	-Vo
6	+Vo

Unit: mm [inch]

Terminal diameter tolerance: ±0.10[±0.004]

Unmarked tolerance: ±0.50[±0.020]

Circuit Design and Application

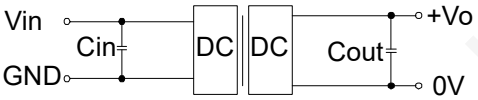


图4

Vin(VDC)	Cin(μF)	Vo(VDC)	Cout(μF)
3.3/5	4.7	3.3/5	10
12	2.2	9	4.7
15	2.2	12	2.2
24	1	15	1

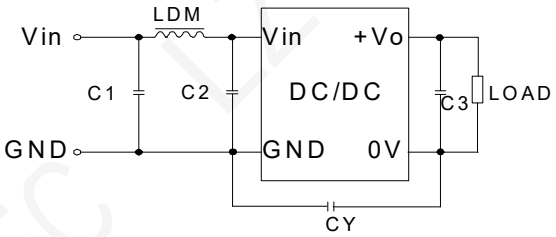


图 5

	Input voltage (VDC)	3.3/5/12/15/24
EMI	C1	4.7μF /50V
	C2	4.7μF /50V
	C3	Refer to the Cout parameter in Figure 4
	CY	270pF/2kV
	LDM	6.8μH

NOTE:

- ✧ To further reduce input/output ripple, a capacitor filter network can be connected at the input/output terminals, with careful selection of appropriate filter capacitors. Excessively large capacitors may cause startup issues. For each output channel, the recommended capacitance values (per the Capacitive Load Value Table) should be used under conditions ensuring safe and reliable operation.
- ✧ The input voltage must not exceed the specified range, as exceeding it may cause permanent and irreversible damage.
- ✧ Unless otherwise specified, all parameters in this manual are measured at 25℃ and 40% to 75% humidity, with the nominal input voltage and full load in pure resistance mode.
- ✧ All the test methods are based on our company's standards.

Zhuhai Lizhi Technology Co., Ltd.
E-mail: sales@lyztec.com
WEB.WWW.LYZTEC.COM