DC/DC Power Module 1W

- Working temperature range: -40℃ -85℃
- Isolation voltage: 3000VDC
- High efficiency: 89%
- Sustainable short circuit protection
- Complies with RoHS Directive

Table of Selections

Product Model	Input voltage (VDC)	Output			Full Load Efficiency (%) (Min/Typ)	Maximum Capacitive Load (μF)
	Nominal Value (range value)	Output Voltage (VDC)	Minimum Current (mA)	Maximum Current (mA)		
KF1-03S03	3.3 (2.97-3.63)	3.3	30	303	78/82	2400
KF1-03S05		5	20	200	80/83	2400
KF1-03S09		9	11	111	81/84	1000
KF1-03S12		12	8.4	84	82/85	560
KF1-03S15		15	6.7	67	85/88	560
KF1-03S24		24	4.2	42	86/89	220
KF1-05S03	5 (4.5-5.5)	3.3	30	303	80/83	2400
KF1-05S05		5	20	200	84/86	2400
KF1-05S09		9	11	111	84/86	1000
KF1-05S12		12	8.4	84	85/88	560
KF1-05S15		15	6.7	67	85/88	560
KF1-05S24		24	4.2	42	86/89	220
KF1-12S03	12 (10.8-13.2)	3.3	30	303	81/84	2400
KF1-12S05		5	20	200	82/86	2400
KF1-12S09		9	11	111	84/87	1000
KF1-12S12		12	8.4	84	84/87	560
KF1-12S15		15	6.7	67	86/88	560
KF1-12S24		24	4.2	42	86/89	220
KF1-15S05	15 (13.5-16.5)	5	20	200	82/86	2400
KF1-15S09		9	11	111	84/87	1000
KF1-15S12		12	8.4	84	84/87	560
KF1-15S15		15	6.7	67	86/88	2400
KF1-24S03	24 (21.6-26.4)	3.3	30	303	82/84	2400
KF1-24S05		5	20	200	85/87	2400
KF1-24S09		9	11	111	85/88	1000
KF1-24S12		12	8.4	84	85/88	560
KF1-24S15		15	6.7	67	85/88	560
KF1-24S24		24	4.2	42	86/89	220

Input Characteristics

Parameter	Condition	Min.	Typ.	Max.	unit
Impulse voltage	3.3VDC input	-0.7	--	5	VDC
	5VDC input	-0.7	--	9	
	12VDC input	-0.7	--	18	
	15VDC input	-0.7	--	21	
	24VDC input	-0.7	--	30	
Type of input filter		capacitor filtering			
Hot plug		nonsupport			

Output Characteristic

Parameter	Condition		Min.	Typ.	Max.	unit
Output voltage accuracy			See envelope curve diagram			
Linear adjustment rate	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 drift coefficient	loaded to capacity		--	±0.03	--	%/℃
Short-circuit protection			Sustainable, self-recovering			

Common features

Parameter	Condition	Min.	Typ.	Max.	unit
Insulation Voltage	Input-output, test time 1 minute, leakage current less than 1mA	3000	--	--	VDC
Insulation Resistance	Input-output, insulation voltage 500VDC	1000	--	--	MΩ
Isolating Capacitance	Input-output,100KHz/0.1V	--	20	--	pF
Operating Temperature	Temperature is reduced to 85℃ (see Figure 4)	-40	--	85	℃
Storage Temperature		-55	--	125	
Case Temperature Rise	Ta=25℃, input nominal, output full load	--	25	--	
Storage Humidity	No condensation	--	--	95	%RH
Soldering Temperature	1.5mm from Housing, 10s Duration	--	--	300	℃
Switching Frequency	Full load, nominal input voltage	--	220	--	kHz
Mean Time Between Failures (MTBF)	MIL-HDBK-217F@25℃	3500	--	--	kHours

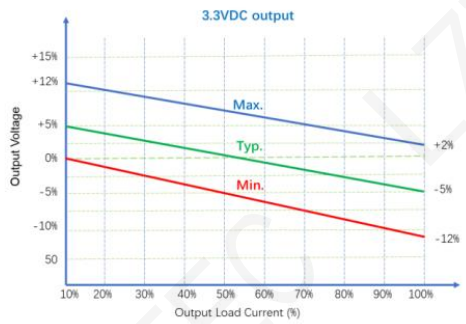
Physical Characteristics

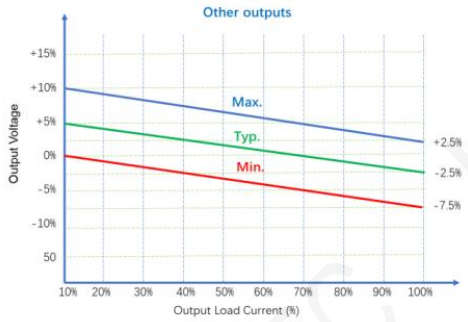
Sheathing material	Black flame retardant heat resistant plastic (UL94V-0)
Encapsulation size	19.65*6.00*10.16mm
Weight	2.4g
Cooling-down method	Natural air cooling

EMC Characteristic

EMI	Conductive harassment	CISPR32/EN55032 CLASS B (recommended circuit is shown in Figure 5)
	Radiation harassment	CISPR32/EN55032 CLASS B (recommended circuit is shown in Figure 5)
EMS	electrostatic discharge	IEC/EN61000-4-2 Contact ±8KV perf. Criteria B

Product Feature Curve Diagram





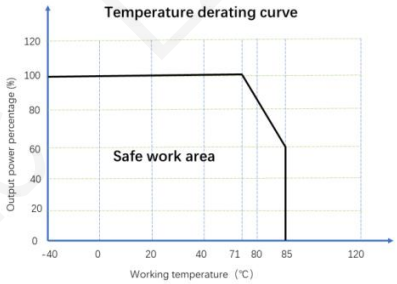


Figure 4: Temperature Derating Curve

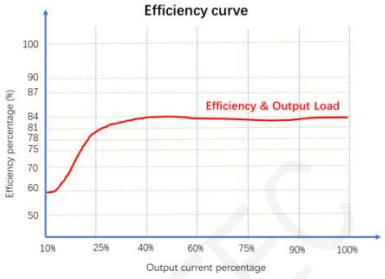


Figure : Efficiency VS Output Load (Nominal Voltage Input)

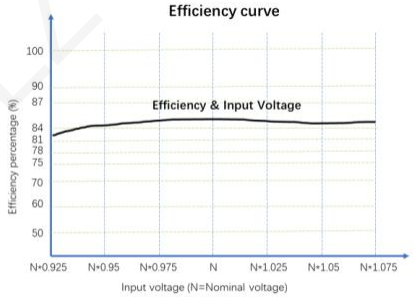
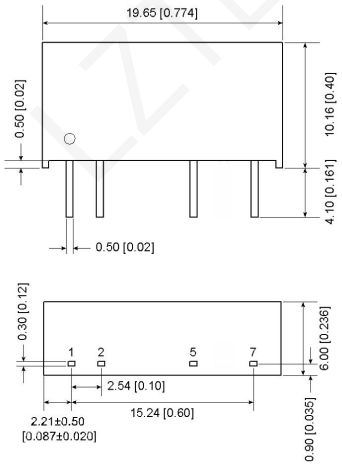


Figure : Efficiency VS Input Voltage (100% Load)

External dimensions/printing layout recommendations



PIN	Function
1	Vin
2	GND
5	-Vo
7	+Vo

Size unit: mm[inch]

End diameter tolerance: ±0.10[±0.004]

Unmarked tolerances: ±0.50[±0.020]

Circuit design and application

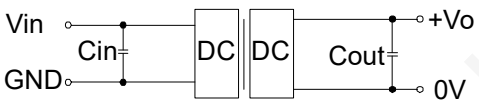


图4

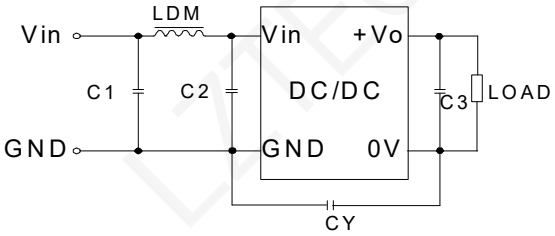


图 5

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
--	--	24	0.47

Recommended capacitive load value table

	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

Recommended circuit parameter value table

NOTE:

- ✧ To further reduce input/output ripple, a capacitor filter network can be connected at the input/output terminals. For each output channel, a recommended capacitive load value table should be used while ensuring safe and reliable operation.
- ✧ The input voltage should not exceed the specified range, otherwise it may cause permanent irreparable damage;
- ✧ Unless otherwise specified, the parameters in this manual are measured at 25℃, humidity 40%~75%, input nominal voltage and output pure resistance mode under full load;
- ✧ All test methods for indicators are based on our company's standards.

Zhuhai Lizhi Technology Co., Ltd
E-Mail: sales@lyztec.com
E-Mail: zena.liu@lyztec.com

WEB:WWW.LYZTEC.COM