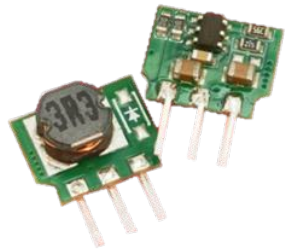
RHENXV
Your Vision, Our Solutions

DC-DC CONVERTERS

0.5A

DCK78_LB-0.5A Series



CE Report RoHS

FEATURES

- Wide Operating Temperature Range：-40°C To +85°C
- Up To 95% Efficiency
- No Load Current As Low As 0.2mA
- Short Circuit Protection
- The Pins Are Compatible With The K78xx Series

DESCRIPTION

Wide Voltage Input, Output 500mA, Non Isolated, Regulated, Single Output

MODEL NUMBERING

DCK78xxLB-0.5A

- DCK78 — Series
- xx — Output Voltage
- LB — Open frame
- 0.5A — Output Current

SELECTION GUIDE

Product model	Input Voltage Standard Value(range)	Output Voltage	Output Current (mA) (Max./Min.)	Efficiency % (Min./Typ.)	Maximum capacitive load (μF)
DCK7803LB-0.5A	24 (4.75-36)	3.3	500	86/80	680
DCK7805LB-0.5A	24 (6.5-36)	5	500	90/83	680
DCK7809LB-0.5A	24 (12-36)	9	500	93/88	680
DCK7812LB-0.5A	24 (15-36)	12	500	95/89	680
DCK7815LB-0.5A	24 (19-36)	15	500	95/90	680

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INPUT CHARACTERISTICS

Parameter	Conditions	Min.	Typ.	Max.	Units
Input Current (No-Load)	Positive Output	--	--	1.5	mA
Reverse Input	Prohibit				
Input Filter	Capacitive Filtering				

Remarks: This product does not support hot plug

OUTPUT CHARACTERISTIC

Parameter	Conditions		Min.	Typ.	Max.	Units
Output Voltage Precision	10%-100% Load, Input Voltage Range	3.3V Output	--	+/-2	+/-4	%
		Other Outputs	--	+/-2	+/-3	%
Linear Regulation Rate	Input Voltage Variation± 1%		--	+/-0.2	+/-0.4	--
Load Regulation Rate	10% To 100% Load		--	+/-0.3	+/-0.6	%
Ripple/ Noise	20MHz Bandwidth		--	20	75	mVp-p
Temperature Drift Coefficient	Operating Temperature -40°C To +85°C		--	--	+/-0.03	%/°C
Transient Response Deviation	Nominal Input Voltage, 25% Load Step Change		--	50	250	mV
Transient Recovery Time	Nominal Input Voltage, 25% Load Step Change		--	0.2	1	ms
Short Circuit Protection	Sustainable, Self-Healing					

GENERAL CHARACTERISTIC

Parameter	Conditions	Min.	Typ.	Max.	Units
Working Temperature	Derated For Use At Temperatures ≥ 71 °C (See Figure 1)	-40	--	+85	°C
Storage Temperature		-55	--	+125	°C
Storage Humidity	No Condensation	--	--	95	%RH
Pin Resistance To Welding Temperature	Welding Point Distance From The Shell 1.5mm, 10 Seconds	--	--	260	°C
Switching Frequency	Full Load, Nominal Input Voltage	550	--	850	kHz
Mean Time Between Failures	MIL-HDBK-217F@25°C	2000	--	--	K Hours

PHYSICAL CHARACTERISTICS

Parameter	Contents
Housing Material	None (Bare Board)
Overall Dimensions	10.27 × 6.00 × 8.61 mm
Weight	0.6g (Typ.)
Cooling Mode	Natural Air Cooling

EMC CHARACTERISTICS

Parameter	Category	Content
EMI	Conductive disturbance	CISPR32/EN55032 CLASS B（The recommended circuit is shown in Figure 2）
	Radiation disturbance	CISPR32/EN55032 CLASS B (The recommended circuit is shown in Figure 2)
EMS	Electrostatic discharge	IEC/EN61000-4-2 Contact ±4KV

CIRCUIT DESIGN AND APPLICATION

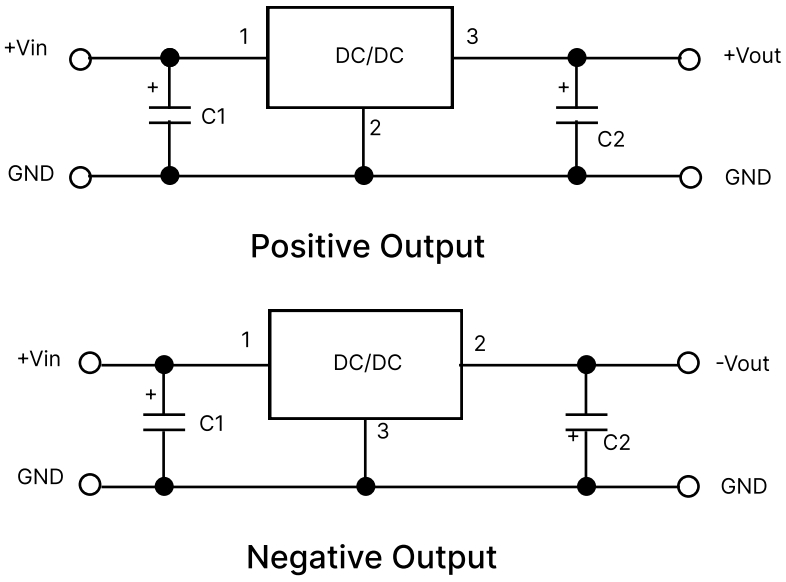


Figure 1: Application circuit

Table 1:
Recommended Capacitive Load Values

Product model	C1/C3	C2/C4
DCK7803LB-0.5A	10μF/50V	22μF/10V
DCK7805LB-0.5A		22μF/10V
DCK7809LB-0.5A		22μF/16V
DCK7812LB-0.5A		22μF/25V
DCK7815LB-0.5A		22μF/25V

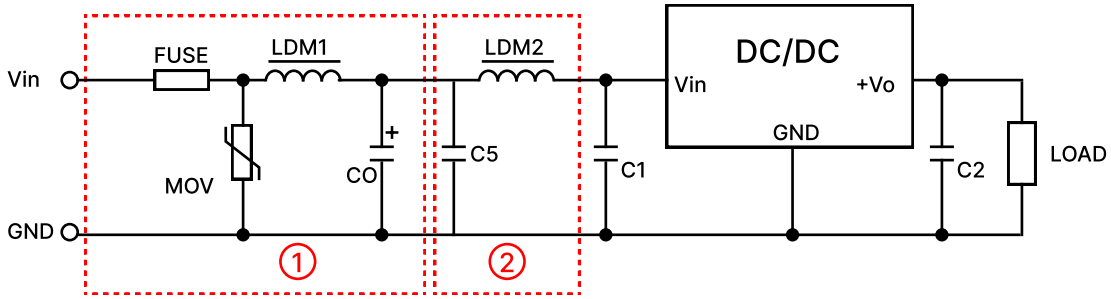


Figure 2: EMC Typical Recommended Circuits

Table 2:
Recommended Circuit Parameter Values

Category	Component	Value
EMI	FUSE	Based on actual selection
	MOV	20D470K
	LDM1	82μH
	C0	680pF/50V
	C1 C2	Reference Table 1
	C5	4.7μF /50V
	LDM2	12μH

1) Typical application: If it is required to further reduce the input and output ripple, a capacitor filter network can be connected at the input and output terminals. The application circuit is shown in Figure 1. However, proper filter capacitor shall be selected. If the capacitance is too large, it may cause startup problems. For each output, under the condition of ensuring safe and reliable operation, the recommended capacitive load values are shown in Table 1.

2) Typical EMC recommended circuits are shown in Figure 2.

PRODUCT CHARACTERISTIC CURVE

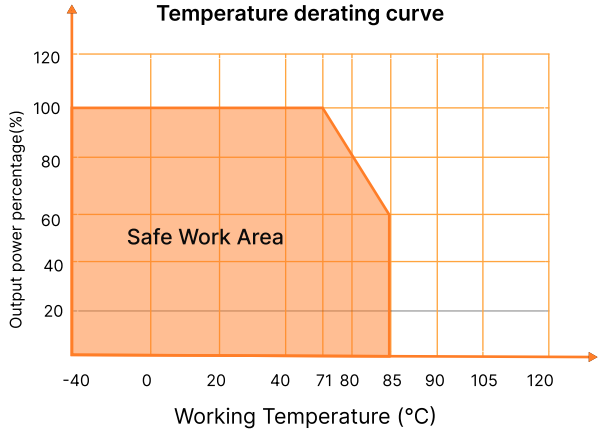


Figure 4: Temperature Derating Curve

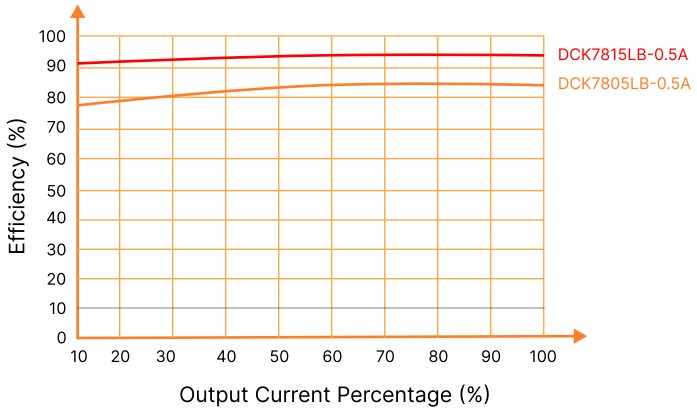


Figure 5: Efficiency VS Output Load
(Nominal Voltage Input)

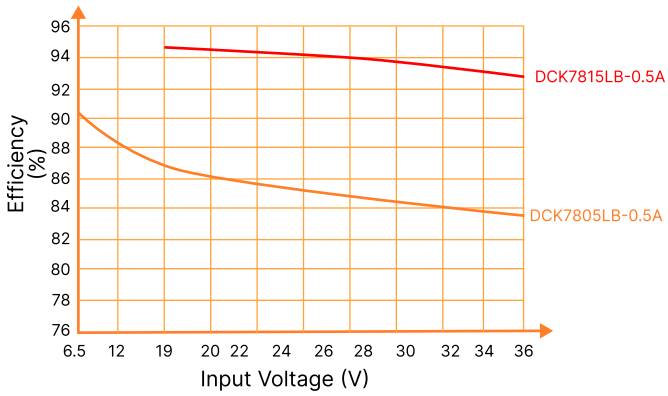


Figure 6: Efficiency VS Input Voltage
(100% Load)

OVERALL DIMENSIONS AND PIN FUNCTIONS

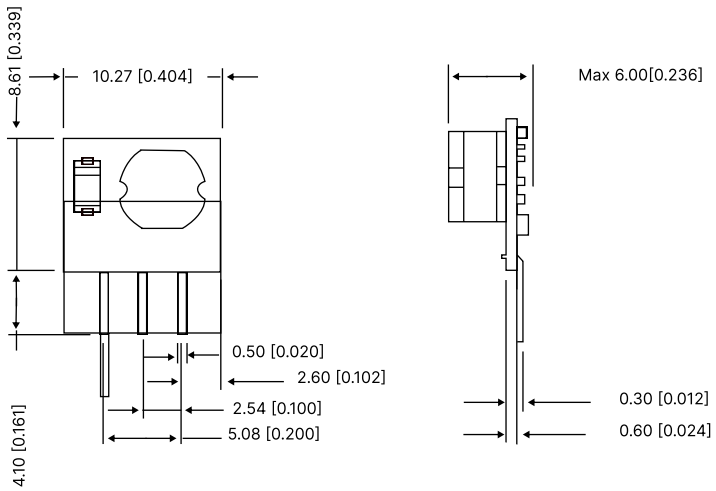
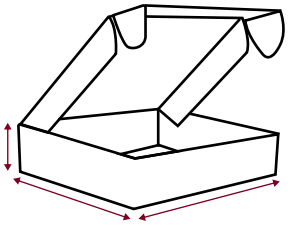


Table 3: Pin Function Table

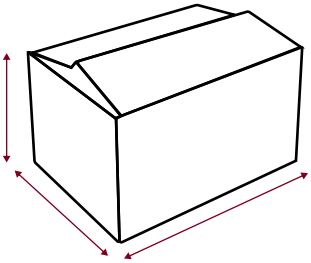
Pin	Positive output
1	Vin
2	GND
3	+Vo

Note:
Dimensions in mm
Terminal diameter tolerance:+/-0.10
Undeclared tolerance:+/-0.50

PACKAGING METHOD



1500 Pieces/Inner box



7500 Pieces/Outer box

NOTES & INSTRUCTIONS

1.The input voltage shall not exceed the specified range value, otherwise permanent and unrecoverable damage maybe caused.

2. Unless otherwise specified, the parameters in this manual are measured at 25 °C,40%~75% humidity, input nominal voltage and output pure resistance mode under full load.

3.All index test methods are based on the company's enterprise standards.

4.The copyright and the final interpretation right of the product belong to RHENXV.