Descriptions

0.5A Non-isolated Regulator





RoHS

CE Report EN62368-1

UKCA Report BS EN62368-1

Features

- Input voltage range up to 10:1
- High efficiency up to 93%
- No-load input current as low as 1.5 mA
- Operating ambient temperature range: -40℃ to 85℃
- Output short-circuit protection
- International standard pin package

Applications

- industrial control
- instrumentation
- electric power

Selection Guide

Certification	Part No.	Input Voltage (VDC)①	Output		Vin Min. / Vin Max. Full Load Efficiency (%)Typ.	Capacitive Load (μF)Max.
		Nominal (Range)	Voltage (VDC)	Current (mA) Max./Min.		
EN/BS EN	DNKU0.5-7803(L)	48 (9-90)	3.3	500	82/69	100
	DNKU0.5-7805(L)	48 (9-90)	5	500	87/75	
	DNKU0.5-78X6(L)	48 (9-90)	6.5	500	91/78	
	DNKU0.5-7809(L)	48 (14-90)	9	500	91/80	
	DNKU0.5-7812(L)	48 (18-90)	12	500	91/83	
	DNKU0.5-7815(L)	48 (20-90)	15	500	93/84	
	DNKU0.3-7824(L)	48 (36-90)	24	300	93/85	

Note:
①For input voltage exceeding 80 VDC, an input capacitor of 22uF/100V is required;
②Product images are for reference only; the actual product shall prevail.

Specifications

Product characteristics	Item	Operating Conditions		Min.	Typ.	Max.	Unit
Input Specifications	No-load Input Current	Nominal input voltage		--	--	1.5	mA
	Reverse Polarity at Input			Avoid / Not protected			
	Input Filter			Capacitance filter			
Output Specifications	Voltage Accuracy	10%-100%, input voltage range	3.3V output	--	±3.5	±4.5	%
			Others	--	±2	±3	
	Linear Regulation	Full load, input voltage range	3.3V/5V/6.5V output	--	±0.6	±1.5	
			9V/12V/15V output	--	±0.6	±2.0	
			24Voutput	--	±1.2	±2.5	
	Load Regulation	Nominal input voltage,10% -100% load		--	±1.0	±2.0	
	Ripple & Noise①	20MHz bandwidth, nominal input voltage, full load		--	40	80	mVp-p
	Temperature Coefficient	Operating temperature -40℃ to +85℃		--	--	±0.03	%/℃
	Transient Response Deviation	Nominal input voltage, 25% load step change		--	±0.4	±1.5	%
	Transient Recovery Time			--	0.2	1	ms
	Short-circuit Protection	Nominal input voltage		Continuous, self-recovery			
General Specifications	Operating Temperature	See Fig.1, Fig.2.		-40	--	+85	℃
	Storage Temperature			-55	--	+125	
	Pin Soldering Resistance Temperature②	Soldering spot is 1.5mm away from the case, 10 seconds max.		--	--	+300	
		Wave soldering, maximum 10 seconds		255	260	265	
	Storage Humidity	Non-condensing		5	--	95	%RH
	Switching Frequency③	Full load, nominal input voltage		--	300	--	kHz
	MTBF	MIL-HDBK-217F@25℃		2000	--	--	k hours
Mechanical Specifications	Case Material	Black plastic; flame-retardant and heat-resistant (UL94 V-0)					
	Dimensions	DNKU0.5-78xx、DNKU0.3-7824		11.50 x 9.00 x 17.50 mm			
		DNKU0.5-78xxL、DNKU0.3-7824L		19.00 x 11.50 x 9.00 mm			
	Weight	3.8g(typ.)					
	Cooling Method	Free air convection					

Notes:

①The "parallel cable" method is used for ripple and noise test;

②The pin soldering temperature tolerance is not the actual temperature set by the soldering iron but the temperature required for proper solder joints. The actual temperature set by the customer should be determined comprehensively based on factors such as PCB thickness, copper coverage, soldering iron power, and soldering iron tip selection;

③Different output voltage with different switching frequency.

Electromagnetic Compatibility (EMC)

Emissions	CE	CISPR32/EN55032	CLASS B (see Fig. 6-② for recommended circuit)	
	RE	CISPR32/EN55032	CLASS B (see Fig. 6-② for recommended circuit)	
Immunity	ESD	IEC/EN 61000-4-2	Contact ±4kV	perf. Criteria B
	RS	IEC/EN 61000-4-3	10V/m	perf. Criteria B
	EFT	IEC/EN 61000-4-4	100kHz ±1kV (see Fig. 6-① for recommended circuit)	perf. Criteria B
	Surge	IEC/EN 61000-4-5	line to line ±1kV (see Fig. 6-① for recommended circuit)	perf. Criteria B
	CS	IEC/EN 61000-4-6	3Vr.m.s	perf. Criteria B

Characteristic Curve

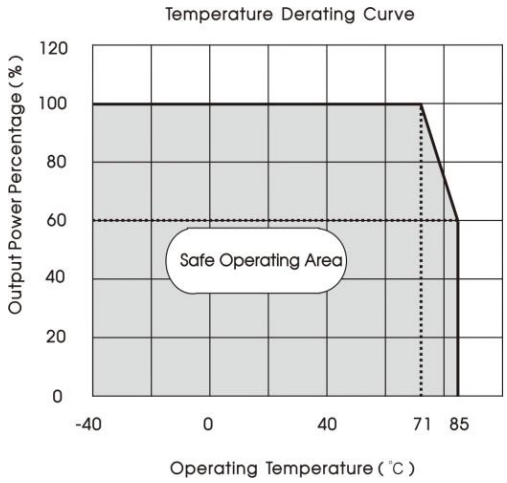


Fig.1 DNKU0.5-78xx(L)

DNKU0.3-7824(L) (Vin=36V~60V)

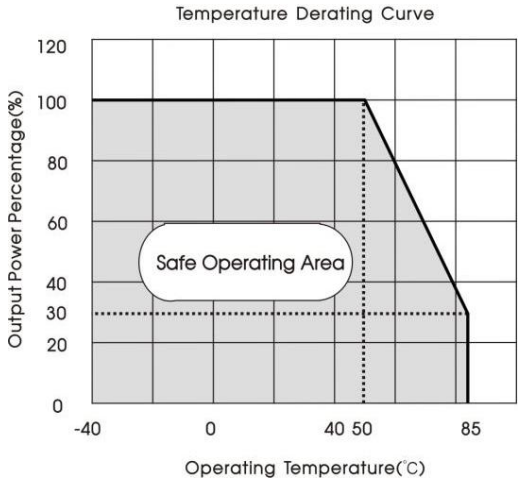


Fig.2 DNKU0.3-7824(L) (Vin≥60V)

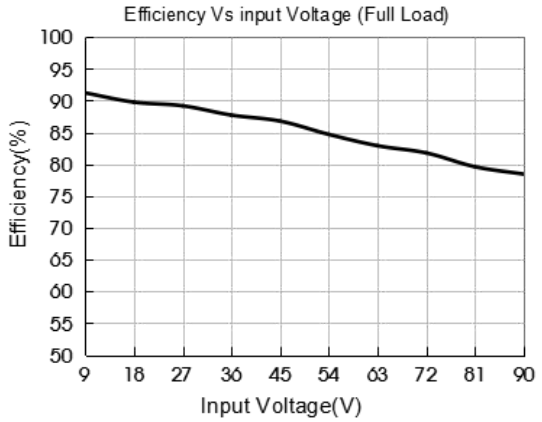


Fig.3 DNKU0.5-7805(L)

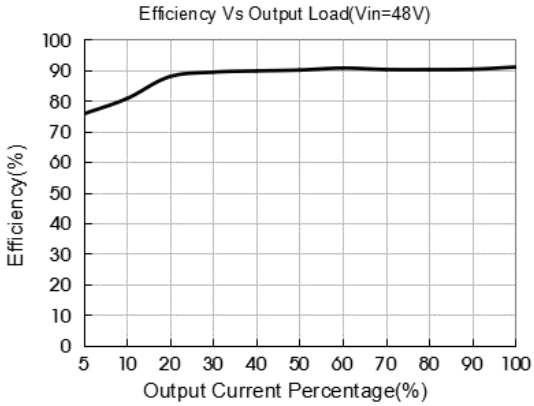


Fig.4 DNKU0.5-7805(L)

Design Reference

1. Typical application

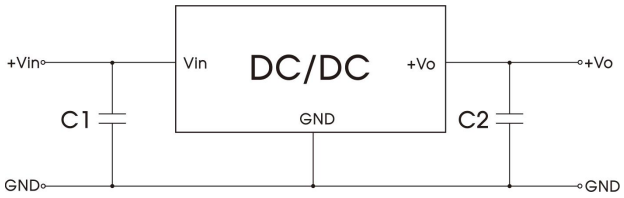


Fig. 5

Table 1

Part No.	C1 (ceramic capacitor)	C2 (ceramic capacitor)
DNKU0.5-7803(L)	10μF/100V	22μF/10V
DNKU0.5-7805(L)		22μF/10V
DNKU0.5-78X6(L)		22μF/10V
DNKU0.5-7809(L)		22μF/16V
DNKU0.5-7812(L)		22μF/25V
DNKU0.5-7815(L)		22μF/25V
DNKU0.3-7824(L)		10μF/50V

Notes:

1. The required C1 and C2 capacitors must be connected as close as possible to the terminals of the module;
2. Refer to Table 1 for C1 and C2 capacitor values. For certain applications, increased values and/or tantalum or low ESR electrolytic capacitors may also be used instead;
3. Converter cannot be used for hot swap and with output in parallel.

2. EMC compliance circuit

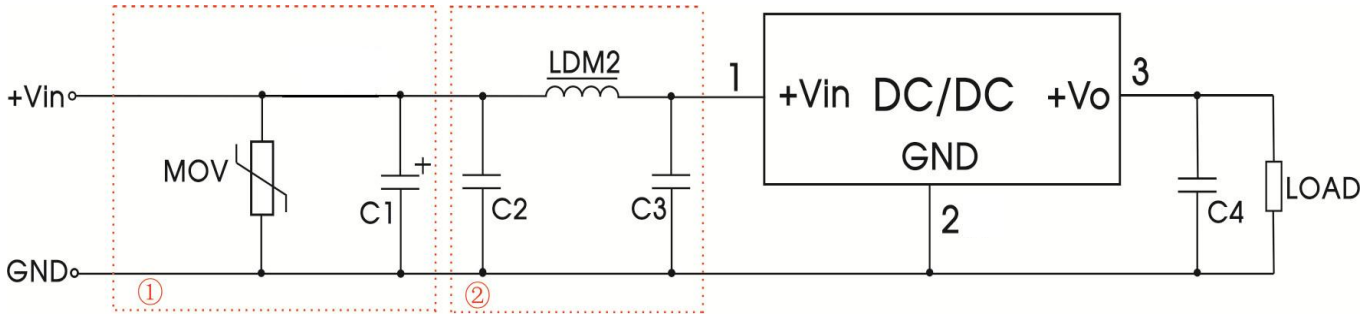
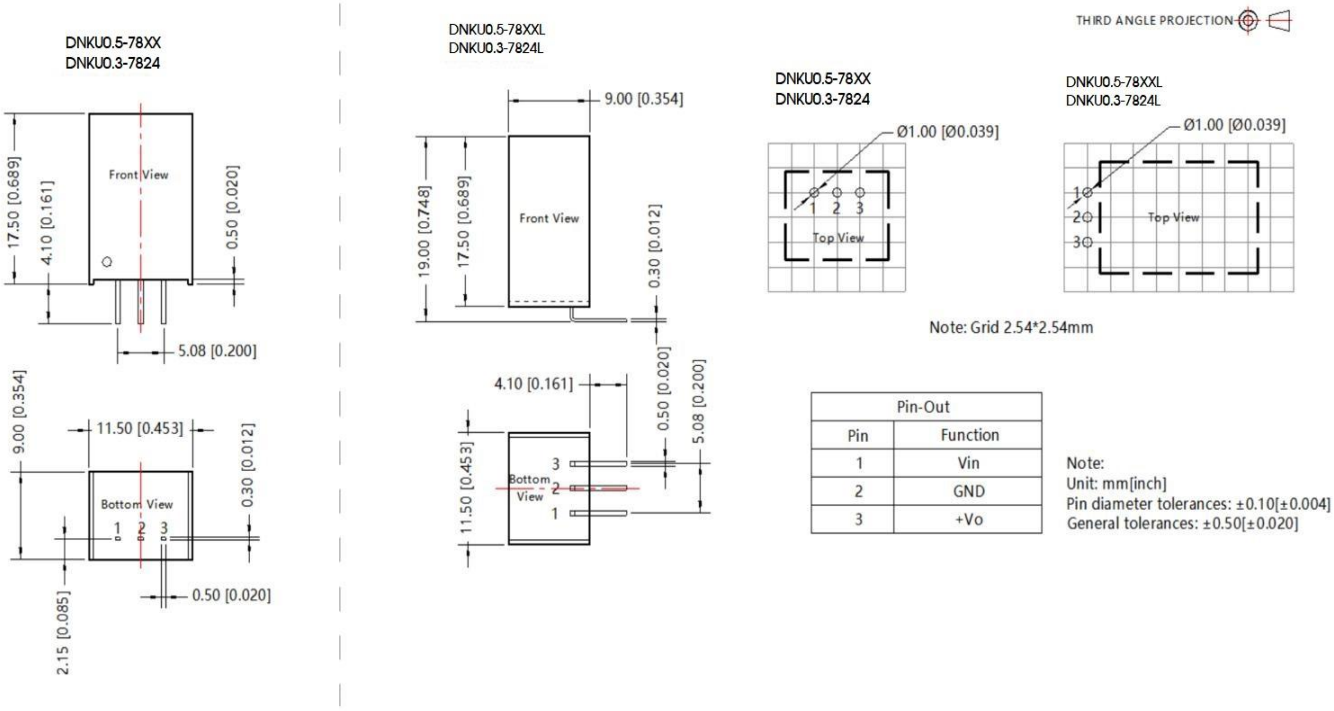


Fig.6

Table.2

Part No.	MOV	C1	C2	LDM2	C3	C4
DNKU0.5-78xx(L) DNKU0.3-7824(L)	S20K30	680μF /100V	4.7μF/100V	120μH	4.7μF/100V	10μF/50V

Dimensions and Recommended



Pin-Out	
Pin	Function
1	Vin
2	GND
3	+Vo

Note:
Unit: mm[inch]
Pin diameter tolerances: ±0.10[±0.004]
General tolerances: ±0.50[±0.020]

Notes:

1. The maximum capacitive load offered were tested at input voltage range and full load;
2. Unless otherwise specified, parameters in this datasheet were measured under the conditions of Ta=25℃, humidity<75%RH with nominal input voltage and rated output load;
3. All index testing methods in this datasheet are based on our company corporate standards;
4. Products are related to laws and regulations: see "Features" and "EMC"
5. Our products shall be classified according to ISO14001 and related environmental laws and regulations, and shall be handled by qualified units;
6. The image certification marks are for reference only; please refer to the selection table for actual specifications. Certification is based on the physical mark or packaging label.