Descriptions

1A Non-Isolated Regulator





RoHS

3 Years Warranty

c UL us Report UL62368-1

CE Report EN62368-1

UKCA Report BS EN62368-1

Features

- No-load input current as low as 0.1mA
- Operating ambient temperature range: -40℃ to +85℃
- Up to 96% efficiency
- Support the negative output
- Output short-circuit protection

Applications

- Industrial control
- Electric power
- Instrumentation

Selection Guide

Certification	Part No.②	Input Voltage (VDC)①	Output		Vin Min. / Vin Max. Full Load Efficiency (%)Typ.	Capacitive Load (μF) Max.
		Nominal (Range)	Voltage (VDC)	Current (mA) Max.		
EN/BS EN	DNKS1-7803(L)	24 (6-36)	3.3	1000	90/81	680
UL/EN/BS EN	DNKS1-7805(L)	24 (8-36)	5	1000	93/86	680
		12 (8-27)	-5	-500	86/82	330
EN/BS EN	DNKS1-78X6	24 (10-36)	6.5	1000	93/87	680
--	DNKS1-78X6L	24 (10-36)	6.5	1000	93/87	680
EN/BS EN	DNKS1-7809(L)	24 (13-36)	9	1000	95/90	680
EN/BS EN	DNKS1-7812(L)	24 (16-36)	12	1000	96/93	680
		12 (8-20)	-12	-300	89/88	330
	DNKS1-7815(L)	24 (20-36)	15	1000	96/94	680
		12 (8-18)	-15	-300	89/89	330

Note:
①When the input voltage exceeds 30VDC, an external 22μF/50V electrolytic capacitor is required to prevent voltage spikes from damaging the module;
②L-suffix: Add L-suffix for horizontal mount with 90 degree angled pins (DNKS1-78xxL);
③Product images are for reference only; the actual product shall prevail.

Specifications

Product Specifications	Item	Operating Conditions		Min.	Typ.	Max.	Unit
Input Specifications	No-load Input Current	Positive output		--	0.1	1	mA
	Reverse Polarity Input			Forbidden			
	Input Filter			Capacitance filter			
Output Specifications	Voltage Accuracy	Full load, input voltage range	3.3VDC output	--	±2	±4	%
			Other output	--	±2	±3	
	Linear Regulation	Full load, input voltage range		--	±0.2	±0.4	
	Load Regulation	Nominal input,10% -100% load		--	±0.4	±0.6	
	Ripple & Noise①	20MHz bandwidth, nominal input, 20% -100% load		--	20	75	mVp-p
	Temperature Coefficient	Operating ambient temperature -40℃ to +85℃		--	--	±0.03	%/℃
	Transient Response Deviation②	Nominal input voltage, 25% -50% -25%, 50% -75% -50% load step change		--	50	300	mV
	Transient Recovery Time			--	0.1	1	ms
	Short-circuit Protection	Nominal input		Continuous, self-recovery			
General Specifications	Operating Temperature	Derating if the temperature ≥71℃ (see Fig. 1)		-40	--	85	℃
	Storage Temperature			-55	--	125	
	Pin Soldering Resistance Temperature③	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 Frequency	100% load, input voltage range	3.3V/5V/6.5VDC output	420	520	620	kHz
			Other output	580	680	780	
	MTBF	MIL-HDBK-217F@25℃		2000	--	--	k hours
Mechanical Specifications	Case Material	Black plastic; flame-retardant and heat-resistant (UL94V-0)					
	Dimensions	DNKS1-78xx		11.50 x 9.00 x 17.50 mm			
		DNKS1-78xxL		19.00 x 11.50 x 9.00 mm			
	Weight	3.8g (Typ.)					
	Cooling Method	Free air convection					

Note:

①The "parallel cable" method is used for Ripple and Noise test, please refer to DC-DC Converter Application Notes for specific information;

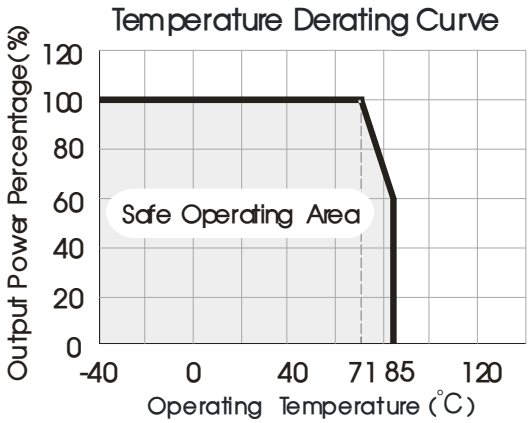
②With light loads at or below 20%, Ripple & Noise for 3.3/5V output parts increases to 100mVp-p max, and for 9V/12V/15V output parts to 2%Vo max;

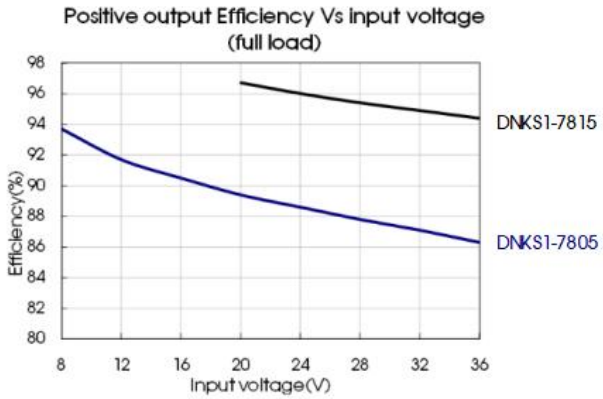
③The pin soldering temperature tolerance is not the actual temperature set by the soldering iron but the temperature required for proper solder joints. The actual temperature set by the customer should be determined comprehensively based on factors such as PCB thickness, copper coverage, soldering iron power, and soldering iron tip selection.

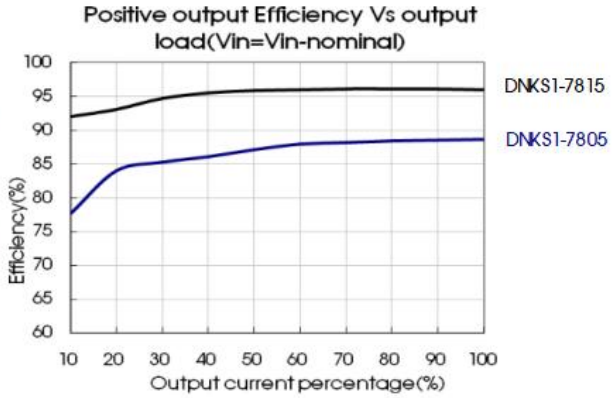
Electromagnetic Compatibility (EMC)

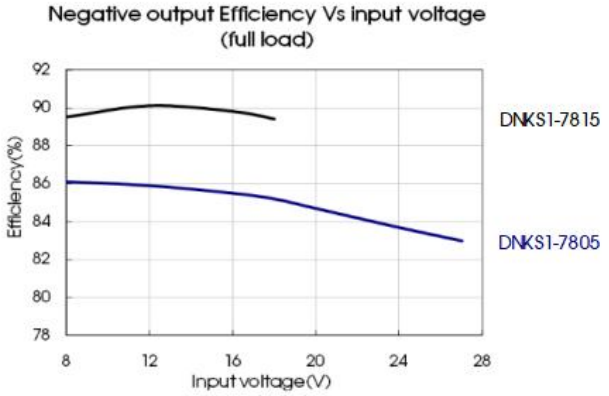
Emissions	CE	CISPR32/EN55032	CLASS B (see Fig. 4-② for recommended circuit)	
	RE	CISPR32/EN55032	CLASS B (see Fig. 4-② for recommended circuit)	
Immunity	ESD	IEC/EN 61000-4-2	Contact ±4kV	perf. Criteria B
	RS	IEC/EN 61000-4-3	10V/m	perf. Criteria A
	EFT	IEC/EN 61000-4-4	±1kV (see Fig. 4-① for recommended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

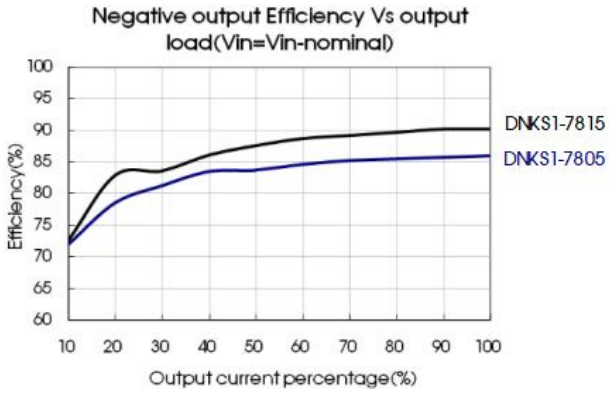
Characteristic Curve











Design Reference

1.Typical application circuits

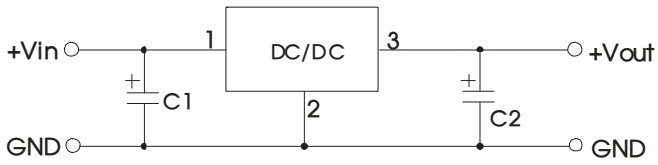


Fig1. Positive output application circuit

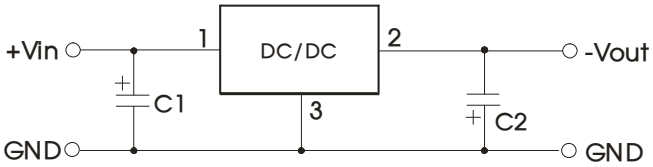


Fig2. Negative output application circuit

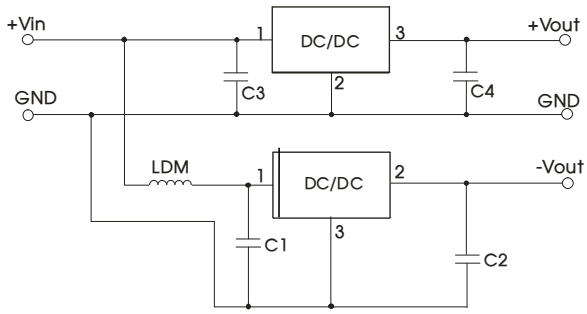


Fig. 3 Positive and Negative output application circuit

Table1

Part No.	C1/C3 (ceramic capacitor)	C2/C4 (ceramic capacitor)
DNKS1-7803(L)	10μF/50V	22μF/10V
DNKS1-7805(L)		22μF/10V
DNKS1-78X6(L)		22μF/10V
DNKS1-7809(L)		22μF/16V
DNKS1-7812(L)		22μF/25V
DNKS1-7815(L)		22μF/25V

Note:

1.The required capacitors C1 and C2 (C3 and C4) must be connected as close as possible to the terminals of the module;

2.Refer to Table 1 for C1 and C2 (C3 and C4) capacitor values.

3.For certain applications, increased values for C2 and C4 and/or tantalum or low ESR electrolytic capacitors may also be used instead;

4.When using configurations as shown in figure 3, we recommended to add an inductor (LDM) with a value of up to 10μH which helps reducing mutual interference;

5. Converter cannot be used for hot swap and with output in parallel.

2. EMC compliance recommended circuit

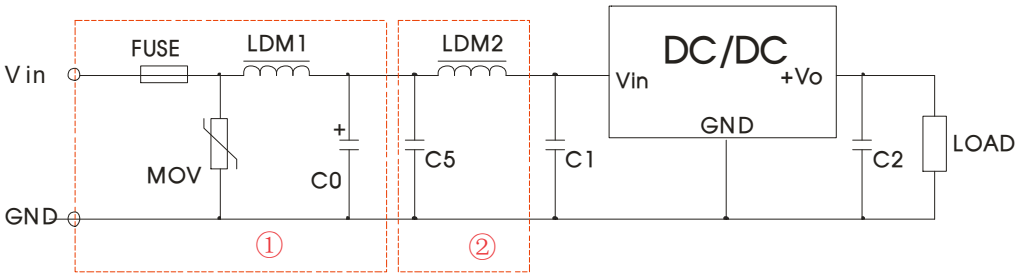


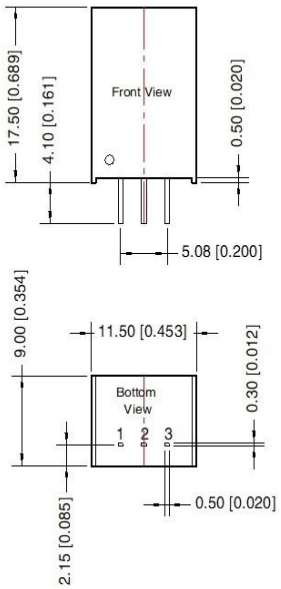
Fig. 4 EMC recommended circuit

FUSE	MOV	LDM1	C0	C1/C2	C5	LDM2
Select fuse value according to actual input current	S20K30	82μH	680μF /50V	Refer to table 1	4.7μF /50V	12μH

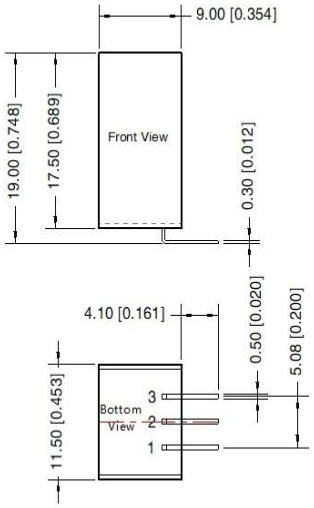
Note:1.in Fig. 4 shows EMS compliance filter and part ② filter for EMI compliance; depending on requirement both filters ① and ② can be used in series as shown.

Dimensions and Recommended

DNKS1-78xx

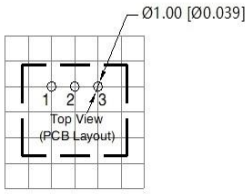


DNKS-78xxL

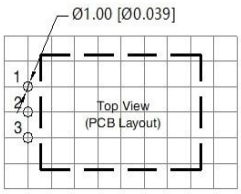


THIRD ANGLE PROJECTION

DNKS1-78xx



DNKS1-78xxL



Note: Grid 2.54*2.54mm

Pin-Out		
Pin	Positive Output	Negative Output
1	Vin	Vin
2	GND	-Vo
3	+Vo	GND

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

Note:

1. If the product is not operated within the required load range, the product performance cannot be guaranteed to comply with all parameters in the datasheet;
2. Unless otherwise specified, parameters in this datasheet were measured under the conditions of Ta=25℃, humidity<75% 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.