

DKZ78XX-1000 (L) Series

WIDE INPUT NON-ISOLATED & REGULATED SINGLE OUTPUT

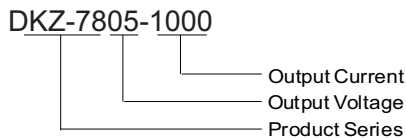
FEATURES

- Efficiency up to 97%
- Operating temperature: -40°C ~ +85°C
- Pin-out compatible with LM78XX Linear
- Short circuit protection, thermal shutdown
- Low ripple and noise
- Micro miniature SIP package
- No heatsink required
- Industry standard pinout
- MTBF>2,000,000 hours

APPLICATIONS

The DKZ78XX-1000 (L) series high efficiency switching regulators are ideally suited to replace 78xx linear regulators and are pin compatible. The efficiency of up to 97% means that very little energy is wasted as heat so there is no need for any heatsinks with their additional space and mounting costs.

MODEL SELECTION



Product Program						
Part Number	Input Voltage(VDC)		Output		Efficiency (%) (Typ)	
	Nominal	Range	Voltage (VDC)	Current (mA)	Vin (min.)	Vin (max.)
DKZ-7801-1000(L)	12	4.75-26	1.5	1000	80	71
DKZ-78X2-1000(L)	12	4.75-26	1.8	1000	83	74
DKZ-7802-1000(L)	12	4.75-28	2.5	1000	88	80
DKZ-7803-1000(L)	24	4.75~28	3.3	1000	90	83
DKZ-7805-1000(L)	24	6.5~32	5.0	1000	93	88
DKZ-78X6-1000(L)	24	9.0~32	6.5	1000	94	90
DKZ-7809-1000(L)	24	12~32	9.0	1000	95	92
DKZ-7812-1000(L)	24	16~32	12	1000	96	94
DKZ-7815-1000(L)	24	20~32	15	1000	97	94

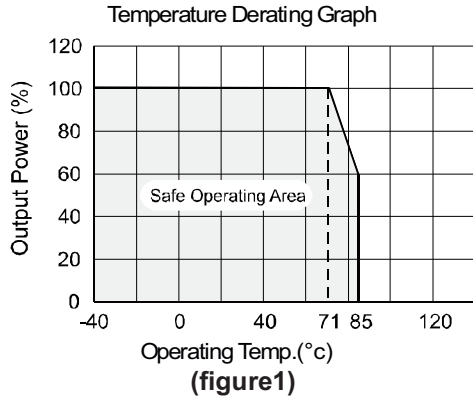
Add suffix "L" for 90° bend pins, for example: DKZ-7805-1000L

Output Specifications						
Item	Test conditions	Min.	Typ.	Max.	Units	
Output voltage accuracy	100% full load		±2	±3		
Line regulation	Vin=min. to max. at full load		±0.2	±0.4	%	
Load regulation*	10% to 100% load		±0.4	±0.6		
Ripple & Noise	20MHz bandwidth (refer to figure 3)		25	35	mVp-p	
Short circuit input power**			0.5	1.8	W	
Short circuit protection			Continuous, automatic recovery			
Thermal shutdown	Internal IC junction		150		°C	
Switching frequency	100% full load	280	330	450	KHz	
Output current limit	Vin= min. to max. (at full load)			3000	mA	
				2000		
Quiescent current			5	8	mA	
Temperature coefficient	-40°C ~ +85°C ambient			±0.02	%/°C	
Max capacitance load				1000	µF	

*DKZ78X2-1000 is ±0.75%(Max), **DKZ7801-1000 is 4W(Max).

COMMON SPECIFICATIONS						
Item	Test conditions	Min.	Typ.	Max.	Units	
Storage humidity				95	%	
Operating temperature	Power derating (above 71°C)	-40		85		
Operating case temp.				100		
Storage temperature		-55		125	°C	
Lead temperature	1.5mm from case for 10 seconds			300		
Cooling		Free air convection				
Case material		Plastic (UL94-V0)				
MTBF	25°C (MIL-HDBK-217F)	2000			k hours	
Weight			3.7		g	

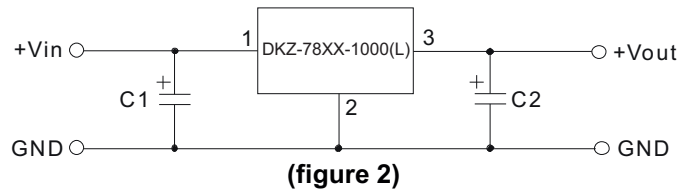
TYPICAL CHARECTERISTICS



EXTERNAL CAPACITOR TABLE

Part Number	C1 (Ceramic capacitor)	C2 (Ceramic capacitor)
DKZ-7801-1000(L)	10 μ F/50V	22 μ F/6.3V
DKZ-78X2-1000(L)	10 μ F/50V	22 μ F/6.3V
DKZ-7802-1000(L)	10 μ F/50V	22 μ F/6.3V
DKZ-7803-1000(L)	10 μ F/50V	22 μ F/6.3V
DKZ-7805-1000(L)	10 μ F/50V	22 μ F/16V
DKZ-78X6-1000(L)	10 μ F/50V	10 μ F/16V
DKZ-7809-1000(L)	10 μ F/50V	10 μ F/16V
DKZ-7812-1000(L)	10 μ F/50V	10 μ F/25V
DKZ-7815-1000(L)	10 μ F/50V	10 μ F/25V

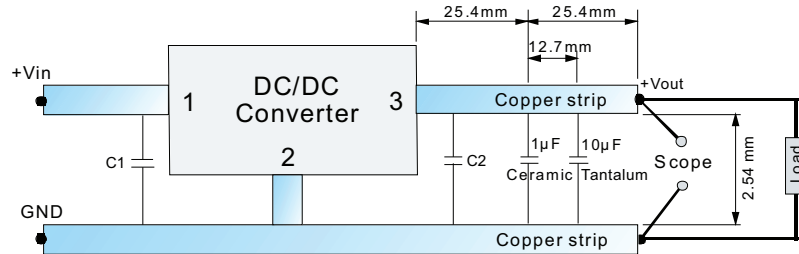
TYPICAL APPLICATION CIRCUIT



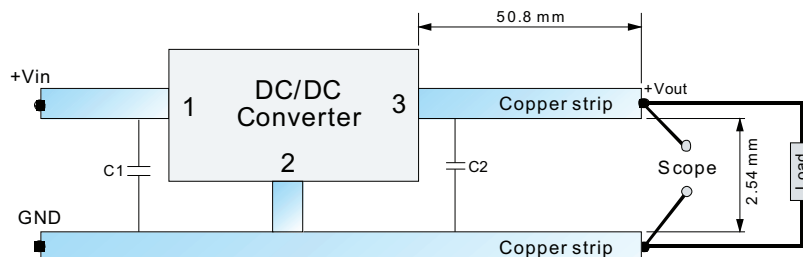
1. C1 and C2 are required and should be fitted close to the converter pins.
2. The capacitance of C1, C2 sees external capacitor table, it can be increased properly if required and tantalum or low ESR electrolytic capacitors may also suffice.
3. No parallel connection or plug and play.

TEST CONFIGURATIONS (TA=25°C)

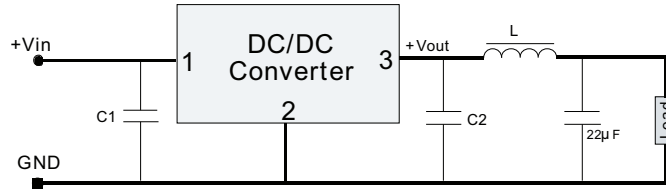
1 Efficiency and Output Voltage Ripple Test



2 Start-up and Load Transient Response Test



OUTPUT RIPPLE REDUCTION



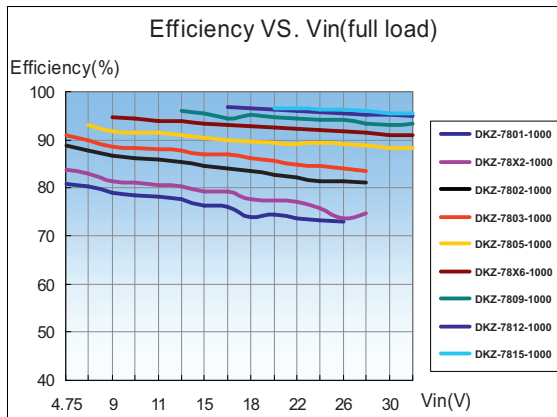
To reduce output ripple, it is recommended to add a LC filter in output port.

L: Recommended parameter $10\mu\text{H} \sim 47\mu\text{H}$.

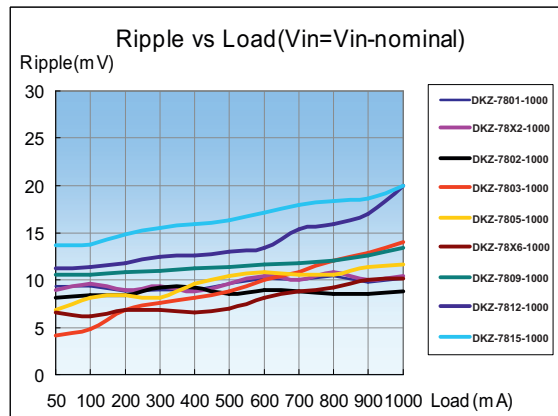
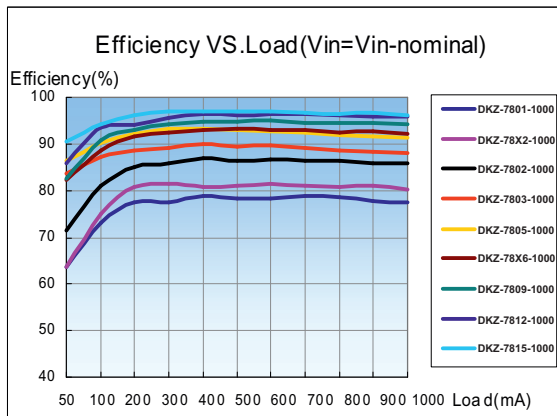
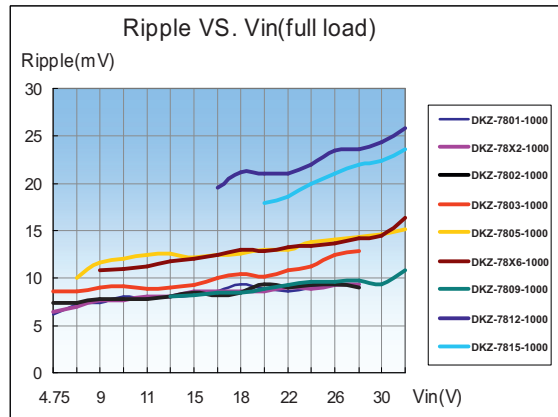
(figure 5)

CHARACTERISTICS CURVE

Efficiency



Ripple



OUTLINE DIMENSIONS & FOOTPRINT DETAILS

MECHANICAL DIMENSIONS

DKZ78XX

DKZ78XX-L

FOOTPRINT DETAILS	
Pin	Function
1	+Vin
2	GND
3	+Vout

Note:
 Unit:mm[inch]
 Pin section tolerances:±0.10mm[±0.004inch]
 General tolerances:±0.25mm[±0.010inch]

RECOMMENDED FOOTPRINT

DKZ78XX

DKZ78XX-L

Note: grid 2.54*2.54mm.

TUBE OUTLINE DIMENSIONS

DKZ78XX

DKZ78XX-L

Note:
 Unit:mm[inch]
 General tolerances:±0.50mm[±0.020inch]
 L=530mm[20.866inch] Devices per tube quantity: 44pcs
 L=220mm[8.661inch] Devices per tube quantity: 17pcs
 Short tube inner packaging dimensions: L*W*H=255*170*80mm
 Short tube outer packaging dimensions(with six inner packaging boxes):
 L*W*H=375*280*270mm
 Long tube inner packaging dimensions: L*W*H=580*200*100mm
 Long tube outer packaging dimensions(with two inner packaging boxes):
 L*W*H=600*215*220mm
 Long tube outer packaging dimensions(with three inner packaging boxes):
 L*W*H=600*215*325mm

Note:
 1. All specifications measured at Ta=25°C, humidity <75%, nominal input voltage and rated output load unless otherwise specified.
 2. In this datasheet, all the test methods of indications are based on corporate standards.