Victor Power Technologies

Global DC/DC Converter Manufacturer

V78B Series

1.5 ~ 15 Watts WIDE INPUT NON-ISOLATED, REGULATED & SINGLE OUTPUT

- Efficiency Up To 97%
- Temperature Range: -40°C to +85°C
- Wide Input Range 4.75VDC ~ 32VDC
- Pin-out Compatible with LM78XX Linears
- Short Circuit Protection, Thermal Shutdown
- Low Ripple and Noise
- Industry Standard Pinout
- MTBF>2,100,000 hours

APPLICATIONS

The V78B Series has high efficiency switching regulator, ideally suited to replace LM78XX linear regulators and are pin compatible. The efficiency up to 97%, a low cost and very reliable products with Industry standard footprint.

PRODUCT INFORMATION

Part Number	Input Voltage (VDC)		Output Voltage	Output Current (mA)	Efficiency Vin (Min)	Efficiency Vin (Max)	Package Style
V78B1.5-1	12	4.75~26/4.75~24	1.5 / -1.5	1000/-800	80	71	SIP
V78B1.8-1	12	4.75~26 /4.75~24	1.8 / -1.8	1000/-800	83	73	SIP
V78B3.3-1	24	4.75~28 /4.75~25	3.3 / -3.3	1000/-600	90	*83*	SIP
V78B5.0-1	24	6.5~32 /7~27	5 / -5	1000/-600	93	85	SIP
V78B6.5-1	24	9~32 / 7~25	6.5 /-6.5	1000/-400	94	87	SIP
V78B9.0-1	24	12~32 / 7~23	9 / -9	1000/-400	95	90	SIP
V78B12-1	24	16~32 / 7~20	12 / -12	1000/-300	96	90	SIP
V78B15-1	24	20~32 / 7~17	15 / -15	1000/-300	97	91	SIP

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		25	35	mVp-p
Short Circuit Input Power			0.5	1.8	W
Short circuit protection			Continuous, automatic recovery		
Switching frequency		280	330	450	KHz
Quiescent current	Positive Output		5	8	mA
Thermal Shutdown	Internal IC junction		150		℃
Temperature coefficient	Ambient (-40 ℃ to +85 ℃)			±0.02	%/℃
Max capacitance load				1000	μF

COMMON SPECIFICATION

Item	Test conditions	MIN	TYP	MAX	Units
Operating Temp. Range		-40		85	℃
Operating Case Temp.				100	
Storage Temp. Range		-55		125	
Cooling			Free Air Convection		
Case Material			Plastic (UL94-V0)		
Lead Temperature	1.5mm from case for 10 seconds			300	℃
Storage Humidity Range				95	%
MTBF	+25 ℃， MIL-HDBK-217F	2100			K hours
Package Weight			3.6		g

EMC SPECIFICATIONS

EMI	Conducted Disturbance	CISPR22/EN55022 CLASS B (see Fig. 3-② for recommended circuit)	
	Radiated Emission	CISPR22/EN55022 CLASS B (see Fig. 3-② for recommended circuit)	
EMS	Electrostatic Discharge	IEC/EN 61000-4-2 Contact ±4KV	perf. Criteria B
	Radiation Immunity	IEC/EN 61000-4-3 10V/m	perf. Criteria A
	EFT	IEC/EN 61000-4-4 ±1KV (see Fig. 3-① for recommended circuit)	perf. Criteria B
	Surge Immunity	IEC/EN 61000-4-5 ±1KV (see Fig. 3-① for recommended circuit)	perf. Criteria B
	Conducted Disturbance Immunity	IEC/EN 61000-4-6 3Vr.m.s	perf. Criteria A
	Voltage dip, drop and short interruption	IEC/EN 61000-4-29 0%-70%	perf. Criteria B

TYPICAL CHARECTERISTICS

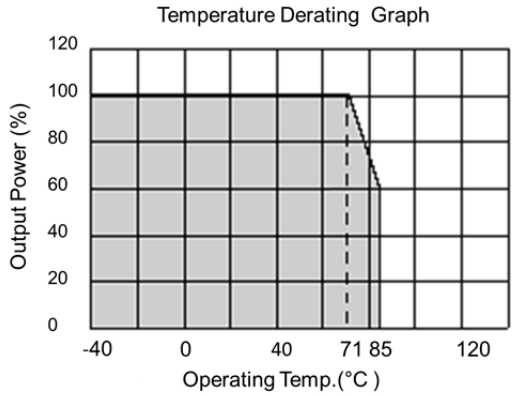


Fig. 1

FOOTPRINT DETAILS

PIN	1	2	3
SINGLE	+Vin	GND	+Vout

RECOMMENDED CIRCUIT

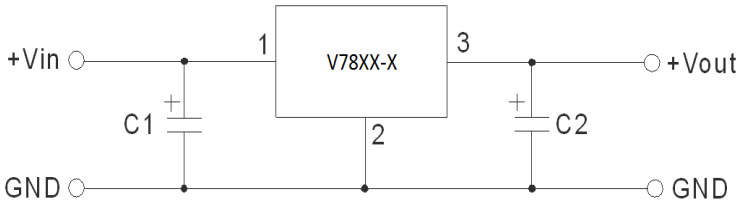
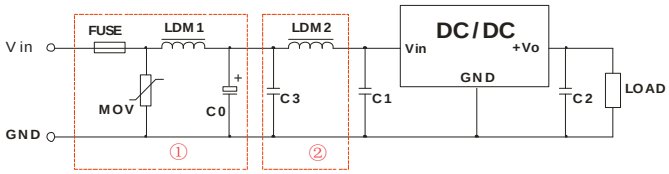


Fig. 2

1.C1 and C2 are required and should be fitted close to the converter pins.
2.The capacitance of C1, C2 can be increased properly if required, and tantalum or low ESR electrolytic capacitors may also suffice.
3. The external capacitor table as below.

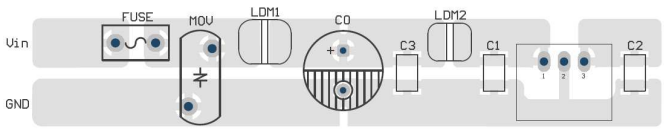
Part	C1 (ceramic capacitor)	C2 (ceramic capacitor)
V78B1.5-1	10uF/50V	22uF/6.3V
V78B1.8-1	10uF/50V	22uF/6.3V
V78B3.3-1	10uF/50V	22uF/6.3V
V78B5.0-1	10uF/50V	22uF/16V
V78B6.5-1	10uF/50V	10uF/16V
V78B9.0-1	10uF/50V	10uF/16V
V78B12-1	10uF/50V	10uF/25V
V78B15-1	10uF/50V	10uF/25V

4. EMC solution-recommended circuit



Recommended EMC circuit

Fig. 3



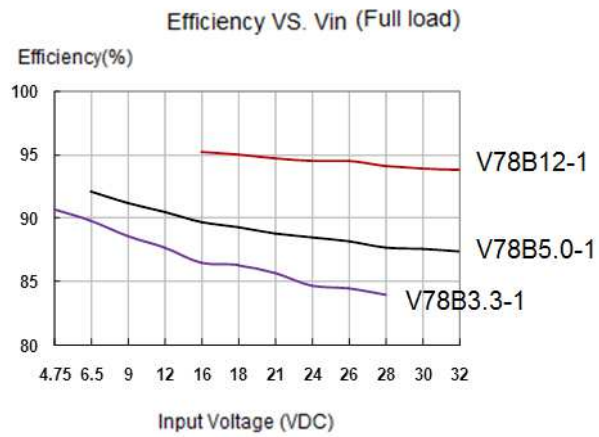
Recommended EMC circuit-PCB layout

Fig. 4

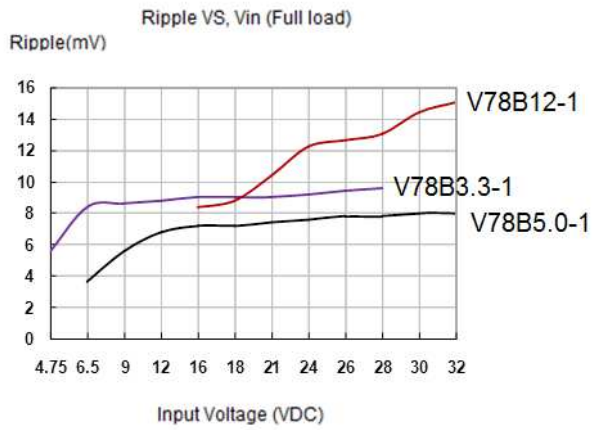
FUSE	MOV	LDM1	C0	C3	C1/C2	LDM2
Selected based on the actual input current from the customer	S10K35	82μH	680μF /50V	4.7μF /50V	Refer to Fig. 2	12μH

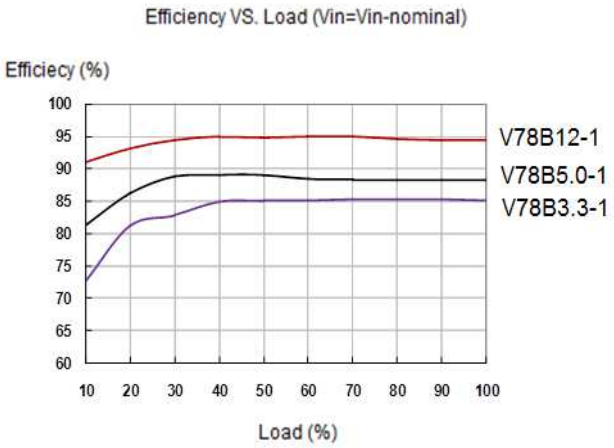
CHARACTERISTICS & CURVES

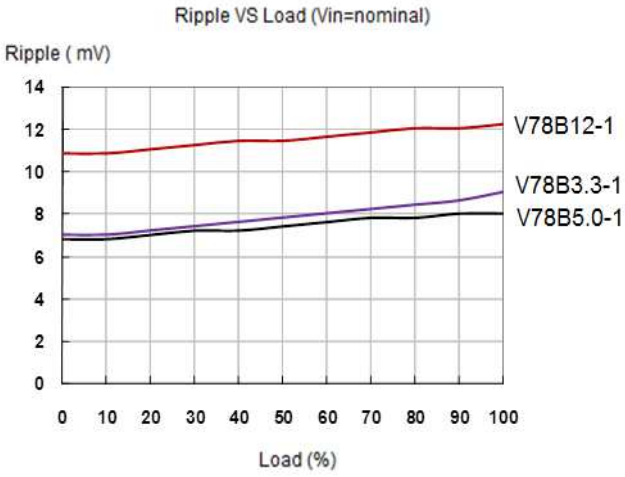
Efficiency



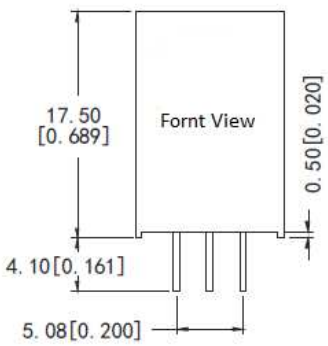
Ripple

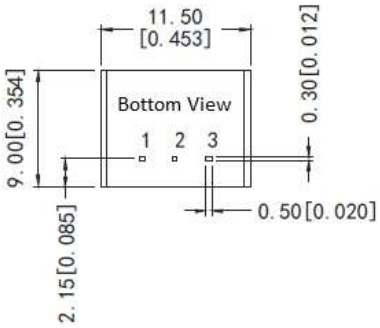






DIMENSIONS & FOOTPRINT





Dimensions: mm (Inch)
Pin tolerance: ±0.10 (±0.004)
Pin pitch tolerance: ±0.25(±0.01)