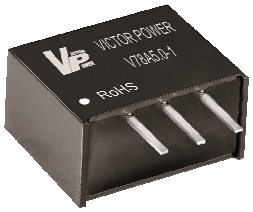
Victor Power Technologies

Global DC/DC Converter Manufacturer

V78A Series 0.75 ~ 7.5 Watts WIDE INPUT NON-ISOLATED, REGULATED & SINGLE OUTPUT



- Temperature Range: -40°C to +85°C
- Efficiency Up To 96%
- Wide Input Range 4.75VDC ~ 32VDC
- Pin-out Compatible with LM78XX
- Short Circuit Protection, Thermal Shutdown
- Low Ripple and Noise
- Industry Standard Pinout
- MTBF>2,000,000 hours

APPLICATIONS

The V78A Series has high efficiency switching regulator, ideally suited to replace LM78XX linear regulators and are pin compatible. The efficiency up to 96%, 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
V78A1.5-1	12/12	4.75~28/4.75~25	1.5/-1.5	500/-400	77	64	SIP
V78A1.8-1	12/12	4.75~28/4.75~25	1.8/-1.8	500/-400	81	68	SIP
V78A2.5-1	12/12	4.75~28/4.75~25	2.5/-2.5	500/-400	87	73	SIP
V78A3.3-1	24/12	4.75~28/4.75~25	3.3/-3.3	500/-400	91	*78*	SIP
V78A5.0-1	24/12	6.5~32/6.5~27	5/-5	500/-400	94	83	SIP
V78A6.5-1	24/12	8~32/6.5~25	6.5/-6.5	500/-300	94	84	SIP
V78A9.0-1	24/12	11~32/7.0~23	9/-9	500/200	95	86	SIP
V78A12-1	24/12	15~32/7~20	12/-12	500/-200	96	93	SIP
V78A15-1	24/12	18~32/7~17	15/-15	500/-200	96	87	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	Positive Output		20	30	mVp-p
		Negative Output		20	35	
Short Circuit Input Power				0.5	1.8	W
Short circuit protection				Continuous, automatic recovery		
Switching frequency			280	330	450	KHz
Output Current Limit					300	mA
Thermal Shutdown	Internal IC junction				150	℃
Temperature coefficient	Ambient (-40 ℃ to +85 ℃)				±0.02	%/℃
Max capacitance load	Positive Output				1000	µF
	Negative Output				600	

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	2000			K hours
Package Weight			2		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

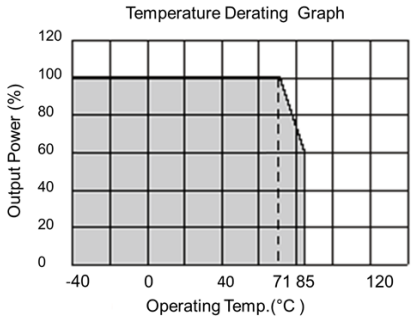


Fig 1

FOOTPRINT DETAILS

PIN	1	2	3
SINGLE	+Vin	GND	+Vout

RECOMMENDED CIRCUIT

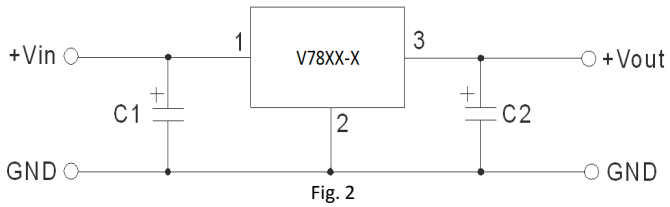
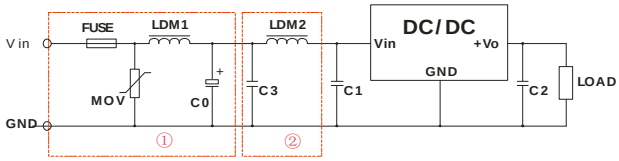


Fig. 2

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.

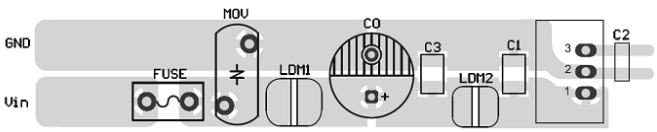
Part	C1 (ceramic capacitor)	C2 (ceramic capacitor)
V78A1.5-1	10uF/50V	10uF/6.3V
V78A1.8-1	10uF/50V	10uF/6.3V
V78A2.5-1	10uF/50V	10uF/6.3V
V78A3.3-1	10uF/50V	10uF/6.3V
V78A5.0-1	10uF/50V	10uF/10V
V78A6.5-1	10uF/50V	10uF/16V
V78A9.0-1	10uF/50V	10uF/16V
V78A12-1	10uF/50V	10uF/25V
V78A15-1	10uF/50V	10uF/25V

4. EMC solution-recommended circuit



Recommended EMC circuit

Fig. 3



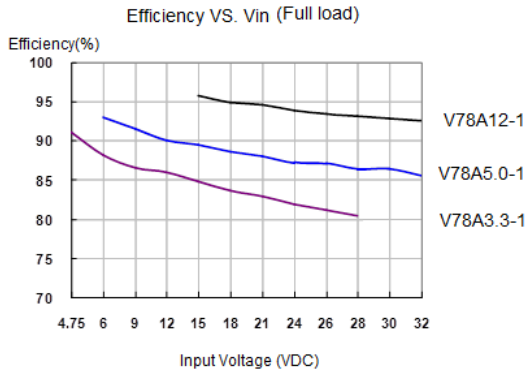
Recommended EMC circuit-PCB layout

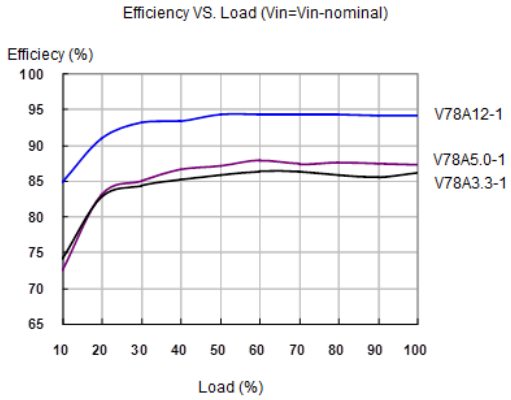
Fig. 4

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

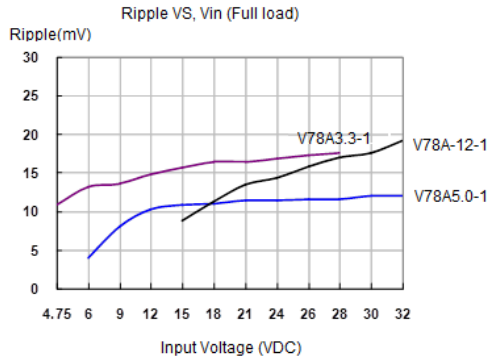
CHARACTERISTICS & CURVES

Efficiency





Ripple



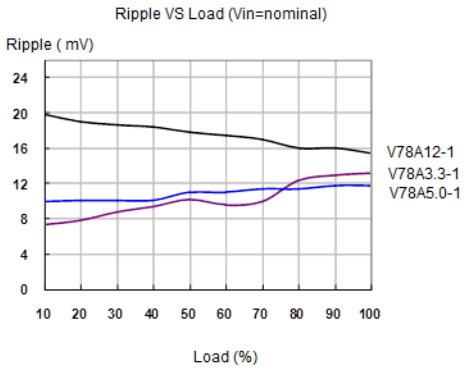


Fig. 2

DIMENSIONS & FOOTPRINT