



78B2 SERIES

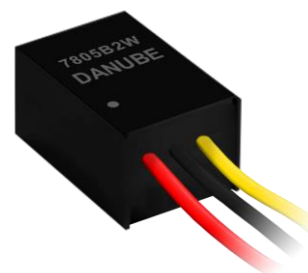
2.0A Non-Isolated DC-DC Converter



78xxB2C



78xxB2H



78xxB2W



FEATURES

- Single in line package
- Wide input range up to 32V
- High efficiency up to 96%
- Over temperature protection
- Over load protection
- Support negative output
- Short circuit protection
- Pin-out compatible with LM78xx / LM79xx

APPLICATIONS

- Voltage step down
- Power supplies
- Industrial PC
- Digital set-top boxes
- Data communications
- Microcontroller related applications
- Point of load regulator in distributed power system

DESCRIPTION

78B2 series converters are high efficiency switching regulators can suit to replace LM78xx / LM79xx linear regulators and its pin-out can be compatible with LM78xx / LM79xx IC. One of the key features is the model can be chosen positive or negative output voltage according to the application. It also features high efficiency up to 96% meant low power loss, wide working temperature range of -40°C up to $+85^{\circ}\text{C}$ with no additional heat sink, compliance with EN55032 radiated Class B without external components, and so on.

MODEL ENCODING

78	05	B2	C
Series Name	Output Voltage	Output Current	Package Type
	03.3 : 3.3V	2.0A	C : vertical mount
	05 : 5V		H : horizontal mount
	09 : 9V		W : wired
	12 : 12V		
	15 : 15V		

■ MODEL SELECTION TABLE

MODEL NUMBER	INPUT				OUTPUT		EFF. (%) @Vin Min.	CAPACITOR LOAD (Max.)
	VOLTAGE (VDC)		CURRENT (mA)@Vin Min.		VOLTAGE (VDC)	CURRENT (mA)		
	NOMINAL	RANGE	NO LOAD	FULL LOAD				
7801.8B2(C/H/W)	24	4.5~28	1	964	1.8	0 ~ 2000	83	2000uF
7802.5B2(C/H/W)	24	4.5~32	1	1248	2.5	0 ~ 2000	89	2000uF
	24	8~32	1	363	-2.5	0 ~ -1000	86	1000uF
7803.3B2(C/H/W)	24	6~32	1	1279	3.3	0 ~ 2000	89	1800uF
	24	8~31	1	485	-3.3	0 ~ -1000	85	1000uF
7805B2(C/H/W)	24	8~32	1	1344	5	0 ~ 2000	92	1000uF
	24	8~30	1	727	-5	0 ~ -1000	86	680uF
7806.5B2(C/H/W)	24	10~32	1	1413	6.5	0 ~ 2000	92	1000uF
	24	8~29	1	956	-6.5	0 ~ -1000	85	680uF
7809B2(C/H/W)	24	13~32	1	1458	9	0 ~ 2000	95	680uF
	24	8~26	1	1047	-9	0 ~ -800	86	330uF
7812B2(C/H/W)	24	16~32	1	1563	12	0 ~ 2000	96	470uF
	12	8~23	1	1035	-12	0 ~ -600	87	220uF
7815B2(C/H/W)	24	18~30	1	1739	15	0 ~ 2000	96	470uF
	12	8~20	1	1293	-15	0 ~ -600	87	220uF

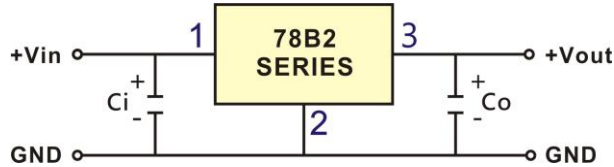
Note: For input voltages higher than 30VDC, an input capacitor (22uF) is required.

Efficiency and input current are measured at minimum input voltage and full load.

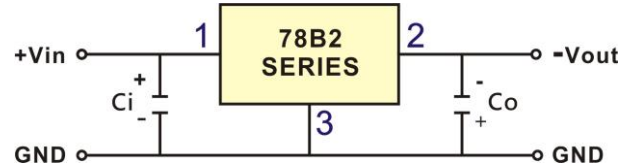
Other input to output voltages may be available. Please contact factory.

TYPICAL APPLICATIONS

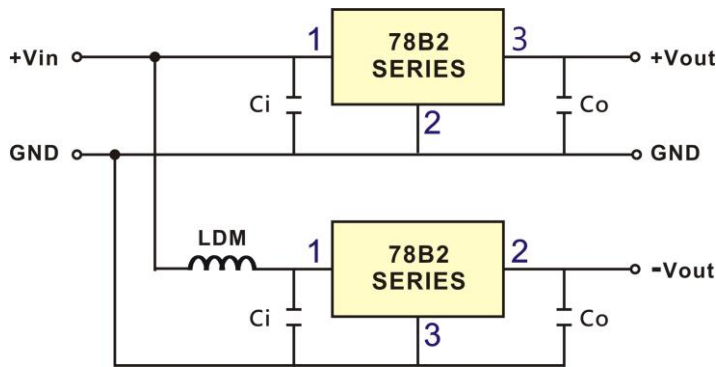
Positive output application circuit



Negative output application circuit



Positive and negative output paralleling application circuit



External capacitor table

Model Number	Ci (MLCC)	Co (MLCC)
7801.8B2	10uF / 50V	22uF / 10V
7802.5B2	10uF / 50V	22uF / 10V
7803.3B2	10uF / 50V	22uF / 10V
7805B2	10uF / 50V	22uF / 10V
7806.5B2	10uF / 50V	22uF / 25V
7809B2	10uF / 50V	22uF / 25V
7812B2	10uF / 50V	22uF / 25V
7815B2	10uF / 50V	22uF / 25V

Note: 1. Ci & Co are required and should be connected as close as possible to the module pins.

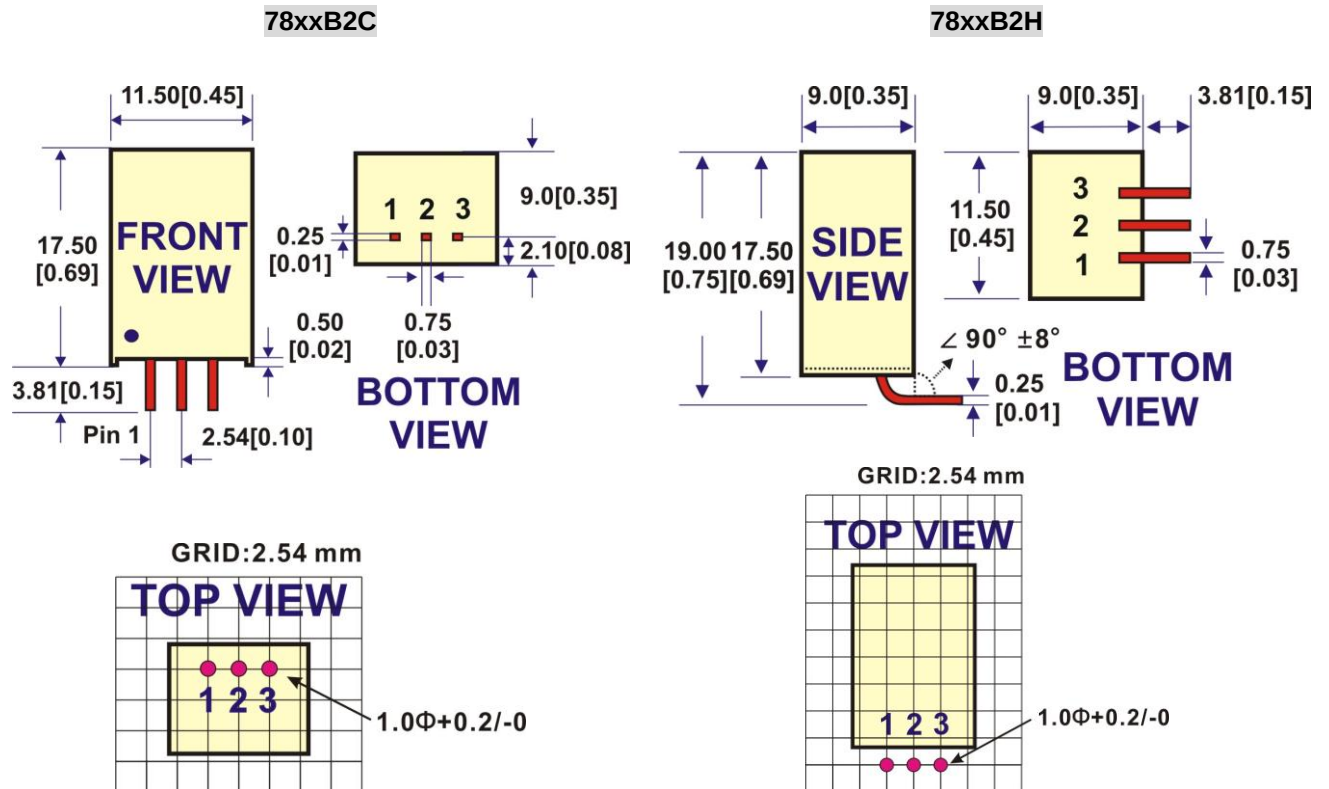
2. In order to further reduce the output ripple, Co can be added according to requirement and would be recommended to use tantalum or low ESR electrolytic capacitors.

3. In using parallel application circuit, input voltage range should be taken notice of and a 10 μ H LDM component is recommended to reduce the interference.

SPECIFICATION

INPUT	Voltage Range	32V max.		
	Surge Voltage(100ms max.)	36V max.		
	Filter	Capacitor type		
	Protection	Fuse recommended (see page 6)		
	Internal Power Dissipation	1250mW		
OUTPUT	Voltage Accuracy	±3% max.		
	Rated Power	3.6W~30W		
	Ripple & Noise ¹	100mVp-p max.		
	Line Regulation ²	Others: ±0.4%	1.8V~3.3V: ±0.5%	
	Load Regulation ³	Others: ±1.0%	1.8V~3.3V: ±1.5%	
	Switching Frequency	400KHz typ.		
PROTECTION	Short Circuit	Protection type : continuous, recovery		
	Overload	200%~300%		
		Protection type : recovers automatically after fault condition is removed		
OTP	Protection type : recovers automatically after fault condition is removed			
ENVIRONMENT	Cooling	Free-air convection		
	Working Temperature	-40~ +85°C (refer to “Derating Curve”)		
	Working Humidity	5% ~ 95% RH non-condensing		
	Storage Temp., Humidity	-55 ~ +125°C,10 ~ 95% RH non-condensing		
	Temperature Coefficient	0.03% / °C (0~71°C)		
	Soldering Temperature	1.5mm from case of 3~5 sec./265°C(max.)		
	Vibration	10~500Hz, 2G 10min./1cycle, period for 60 min. each along X, Y, Z axes		
SAFETY & EMC	Isolation Voltage	Non-Isolation		
	EMC Emission	Parameter	Standard	Test Level / Note
		Conducted	EN55032(CISPR32)	N/A
		Radiated	EN55032(CISPR32)	Class B
	EMC Immunity	Parameter	Standard	Test Level / Note
		ESD	EN61000-4-2	Air discharge ±8KV
		Radiated Susceptibility	EN61000-4-3	3V/m
		EFT/Burst	EN61000-4-4	±0.5KV
		Surge	EN61000-4-5	Line-Line ±0.5KV
		Conducted	EN61000-4-6	3Vrms
OTHERS	MTBF ⁴	>3,200,000Hours		
	Weight	78B2C	4.0g typ.	
		78B2H	4.0g typ.	
		78B2W	5.5g typ.	
	Dimension(L*W*H)	Case size	11.5mm*9.0mm*17.5mm	
Case Material	Non-conductive plastic			
NOTE	¹ Ripple & noise are measured at 20MHz with 1uF ceramic capacitor connect to the output pins.			
	² High line to low line.			
	³ Load regulation is for output load current change from 10% to 100%.			
	⁴ MIL-HDBK-217F @25 °C, Ground Benign.			
	*All specifications are measured at Ta=25°C, humidity < 75%, nominal input voltage, and rated output load unless otherwise specified.			

MECHANICAL SPECIFICATION(1)



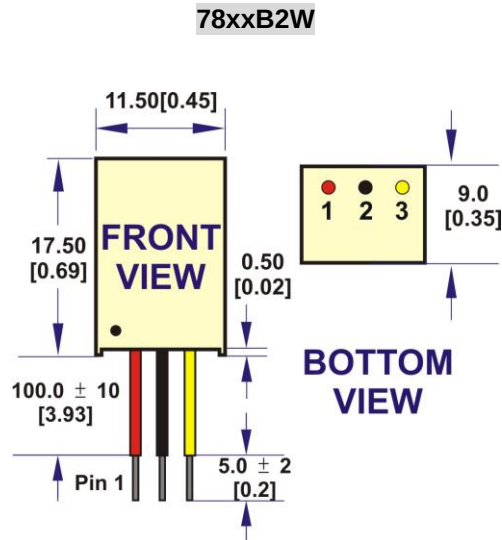
PIN CONNECTION		
PIN	+OUTPUT	-OUTPUT
1	+Vin	+Vin
2	GND	-Vout
3	+Vout	GND

All dimensions are in mm[Inches]

Pin size is 0.75*0.25mm ±0.10mm

Tolerance .X or .XX= ±0.5mm

MECHANICAL SPECIFICATION(2)



PIN CONNECTION		
PIN	+OUTPUT	-OUTPUT
1 (RED)	+Vin	+Vin
2 (BLACK)	GND	-Vout
3 (YELLOW)	+Vout	GND

All dimensions are in mm [Inches]

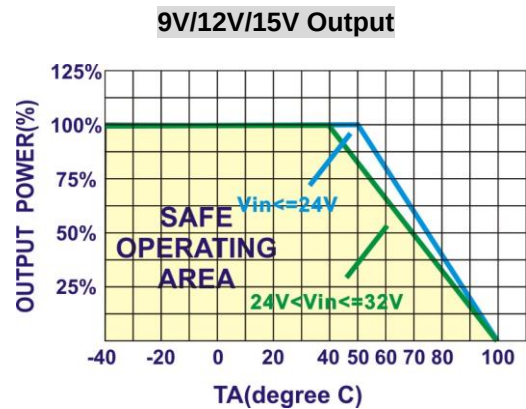
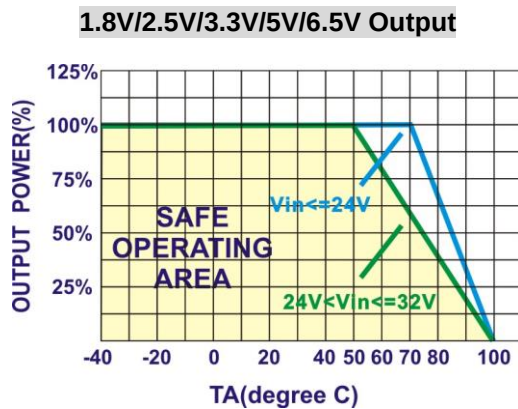
Tolerance .X or .XX = ±0.5mm

Wire outside diameter = 1.6mm ± 0.1

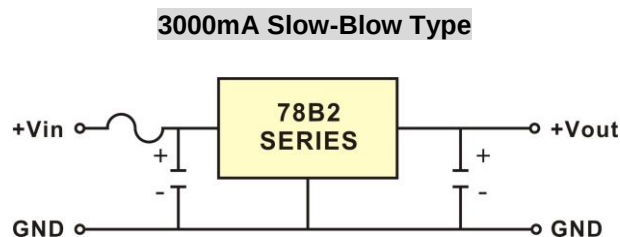
Wire core diameter = 0.75mm ± 0.1

Wire is UL 3385/CAS tem listed #22AWG /300V /105°C Rated

DERATING CURVE



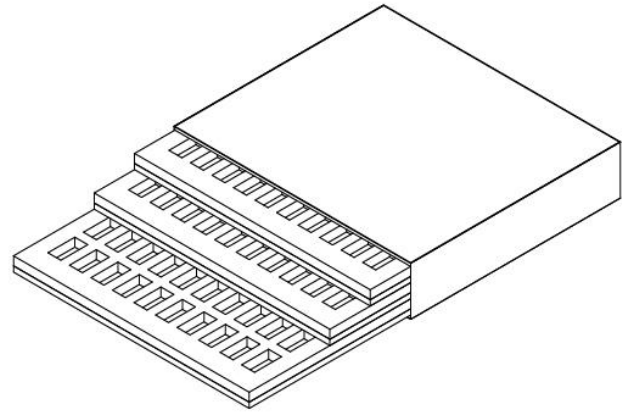
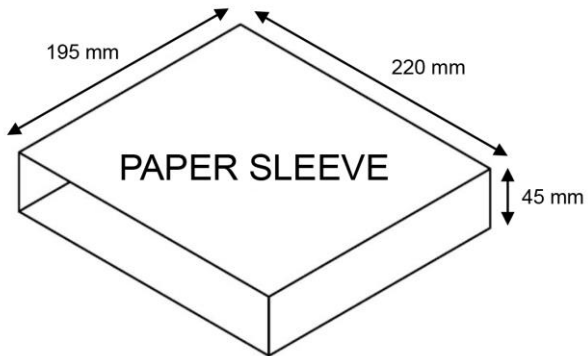
INPUT FUSE SELECTION GUIDE



Note: Certain applications may require the installation of external fuse in front of the input.

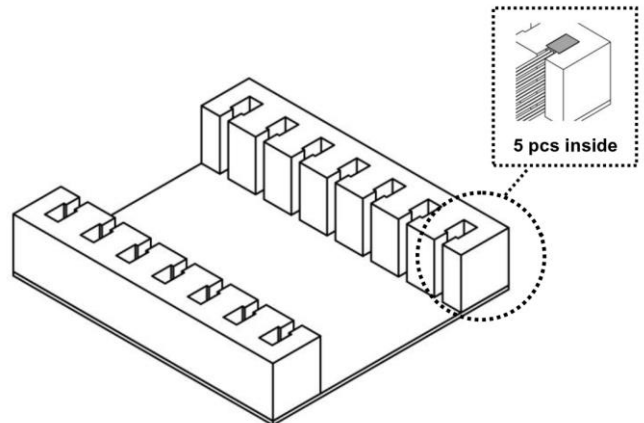
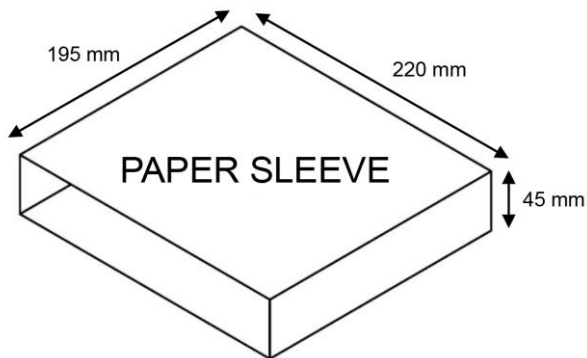
■ PACKAGING INFORMATION(1)

78xxB2H



Packaging Quantity: 50 pcs converter per tray
3 trays per paper sleeve

78xxB2W



Packaging Quantity: 70 pcs converter per tray
1 tray per paper sleeve

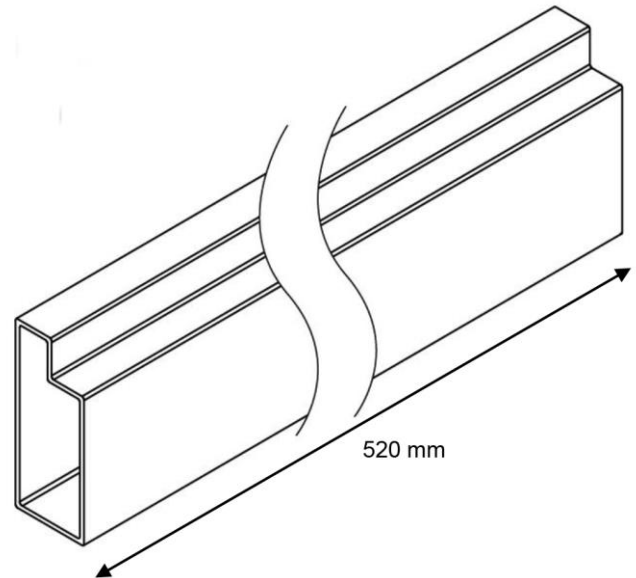
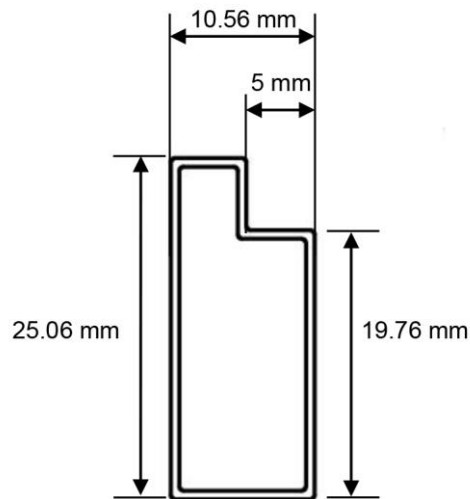


78B2 SERIES

2.0A Non-Isolated DC-DC Converter

■ PACKAGING INFORMATION(2)

78xxB2C



Packaging Quantity: 42 pcs converter per tube



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