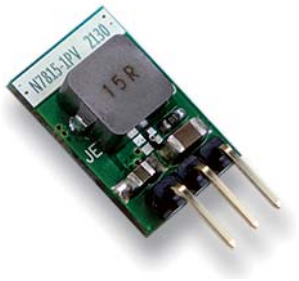
1A Non-Isolated DC-DC Switching Regulator

N78 series



(PV Type)

(PH Type)

(C Type)

(CW Type)

Features

- Compact size
- Pin-out compatible with LM78xx / LM79xx linear regulators
- High efficiency up to 96%, no heatsink required
- Wide input range up to 36V
- Support negative output
- Operating temperature range -40 ~ +85℃
- Comply to BS EN/EN55032 radiated Class B without additional components
- Protections: Short circuit / Overload / Over temperature
- Low ripple and noises
- 3 years warranty

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

GTIN CODE

MW Search: https://www.meanwell.com/serviceGTIN.aspx

Description

N78 series converters is 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℃ up to +85℃ with no additional heat sink, compliance with EN55032 radiated Class B without external components, and so on.

Model Encoding

N 78 03 – 1 PV

- PV: PCB type with Vertical mount
- PH: PCB type with Horizontal mount
- C: Casing type
- CW: Casing type with Wire

Output current (1A)

Output voltage (3.3V/9V/±5V/±12V/±15V)

Series name

Non-isolated

MODEL SELECTION TABLE

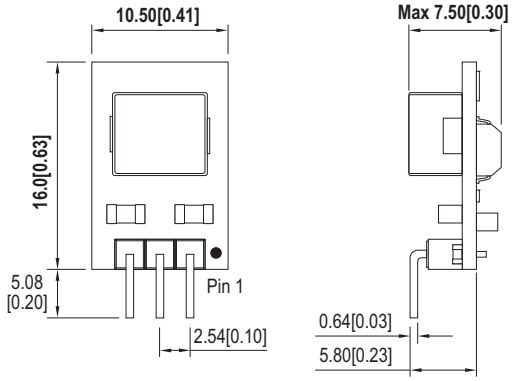
ORDER NO.	INPUT			OUTPUT		EFFICIENCY (TYP.)	CAPACITOR LOAD (MAX.)
	INPUT VOLTAGE (RANGE)	INPUT CURRENT		OUTPUT VOLTAGE	OUTPUT CURRENT		
		NO LOAD	FULL LOAD				
N7803-1□	12V (6 ~ 36V)	6mA	615mA	3.3V	0 ~ 1000mA	91.5%	680μF
N7805-1□	12V (8 ~ 36V)	8mA	672mA	5V	0 ~ 1000mA	93%	470μF
	12V (8 ~ 27V)	11mA	350mA	-5V	0 ~ 500mA	88.5%	470μF
N7809-1□	24V (13 ~ 36V)	10mA	730mA	9V	0 ~ 1000mA	95%	220μF
N7812-1□	24V (16 ~ 36V)	10mA	780mA	12V	0 ~ 1000mA	95.5%	220μF
	12V (8 ~ 20V)	20mA	505mA	-12V	0 ~ 300mA	89%	220μF
N7815-1□	24V (20 ~ 36V)	10mA	785mA	15V	0 ~ 1000mA	96%	150μF
	12V (8 ~ 18V)	24mA	635mA	-15V	0 ~ 300mA	88%	150μF

SPECIFICATION				
INPUT	VOLTAGE RANGE	36V max.(Please refer to page 2)		
	SURGE VOLTAGE (100ms max.)	40V max.		
	FILTER	Capacitor		
	PROTECTION	Fuse recommended. 1500mA Slow-Blow Type for all models		
	INTERNAL POWER DISSIPATION	500mW		
OUTPUT	VOLTAGE ACCURACY	±3.0% max.		
	RATED POWER	3.3W ~ 15W		
	RIPPLE & NOISE Note.2	100mVp-p max.		
	LINE REGULATION Note.3	±0.3%		
	LOAD REGULATION Note.4	3.3V:±0.3% other:±0.4%		
	SWITCHING FREQUENCY (Typ.)	500KHz		
PROTECTION	SHORT CIRCUIT	Continuous, automatic recovery		
	OVERLOAD	200% ~ 300%		
		Protection type : recovers automatically after fault condition is removed		
	OVER TEMPERATURE	Protection type : shut down o/p voltage, automatic recovery		
ENVIRONMENT	COOLING	Free-air convection		
	WORKING TEMP.	-40 ~ +85℃ (Refer to "Derating Curve")		
	CASE TEMPERATURE	+110℃ max.		
	WORKING HUMIDITY	5% ~ 95% RH non-condensing		
	STORAGE TEMP., HUMIDITY	-55 ~ +125℃, 10 ~ 95% RH non-condensing		
	TEMP. COEFFICIENT	0.03% / ℃ (0 ~ 71℃)		
	SOLDERING TEMPERATURE	1.5mm from case of 3 ~ 5sec./265℃ max.		
	VIBRATION	10 ~ 500Hz, 2G 10min./1cycle, period for 60min. each along X, Y, Z axes		
SAFETY & EMC (Note.5)	SAFETY STANDARDS	EAC TP TC 020/2011 approved		
	ISOLATION VOLTAGE	Non-Isolation		
	EMC EMISSION	**Parameter**	**Standard**	**Test Level / Note**
		Conducted	BS EN/EN55032(CISPR32)	N/A
		Radiated	BS EN/EN55032(CISPR32)	Class B
	EMC IMMUNITY	**Parameter**	**Standard**	**Test Level / Note**
		ESD	BS EN/EN61000-4-2	Level 2, ±4KV contact
		Radiated Susceptibility	BS EN/EN61000-4-3	Level 2, 3V/m
		EFT/Bursts	BS EN/EN61000-4-4	Level 1, 0.5KV
		Surge	BS EN/EN61000-4-5	Level 1, 0.5KV Line-Line
		Conducted	BS EN/EN61000-4-6	Level 2, 3V(e.m.f.)
OTHERS	MTBF	1800Khrs MIL-HDBK-217F(25℃)		
	DIMENSION (L*W*H)	Open frame size: 10.5*7.5*16mm; Case size: 11.5mm*9.0mm*17.5mm		
	CASE MATERIAL	Non-Conductive plastic (UL 94V-0 rated)		
	PACKING	PV/PH type : 2g ; 150pcs/Box, 1800pcs/12 Box/per carton C type : 4g ; 42pcs/per tube, 3360pcs/80 tube/per carton CW type : 5.5g ; 70pcs/Box, 840pcs/12 Box/per carton		
NOTE	1.All parameters are specified at normal input, rated load, 25℃ 70% RH ambient. 2.Ripple & noise are measured at 20MHz by using a 12" twisted pair terminated with a 0.1μf & 47μf capacitor. 3.Line regulation is measured from low line to high line at rated load. 4.Load regulation is measured from 0% to 100% rated load. 5.The final equipment must be re-confirm that it still meet EMC directives. For guidance on how to perform these EMC tests, please refer to “EMI testing of component power supplies.”(as available on http://www.meanwell.com) ※ Product Liability Disclaimer : For detailed information, please refer to https://www.meanwell.com/serviceDisclaimer.aspx			

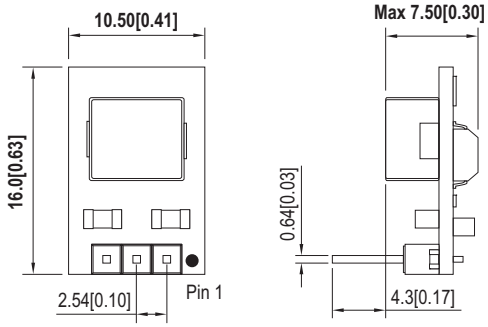
■ Mechanical Specification

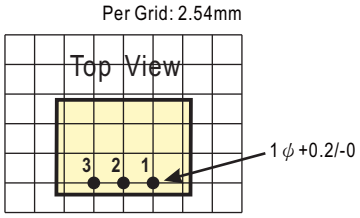
- All dimensions in mm(inch)
- Tolerance: x.x or x.xx±0.5mm(x.x or x.xx±0.01")
- Pin size is: 0.64*0.64±0.1mm (±0.003")

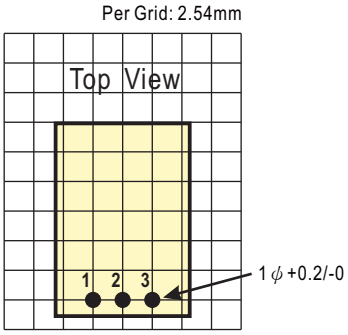
※ **PV Type:**
(PCB type with Vertical mount)

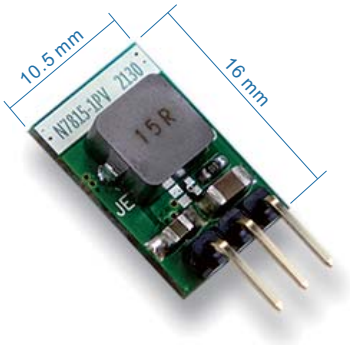


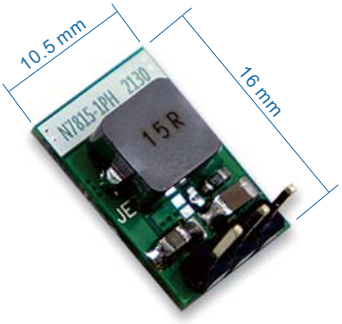
※ **PH Type:**
(PCB type with Horizontal mount)







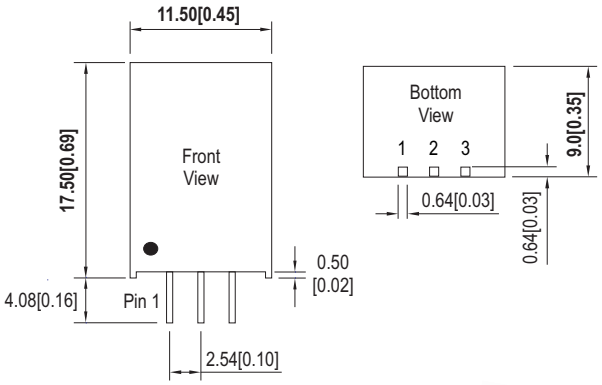


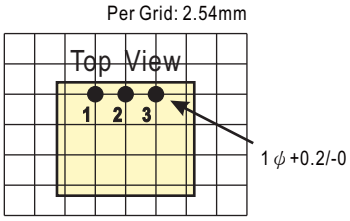


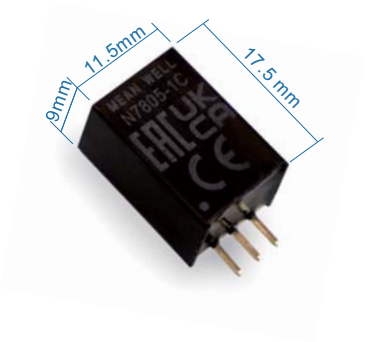
■ Plug Assignment

Pin-Out		
Pin No.	N78xx - PV/PH	
	+Output	-Output
1	+Vin	+Vin
2	GND	-Vout
3	+Vout	GND

※ **C Type:**
(Casing type)



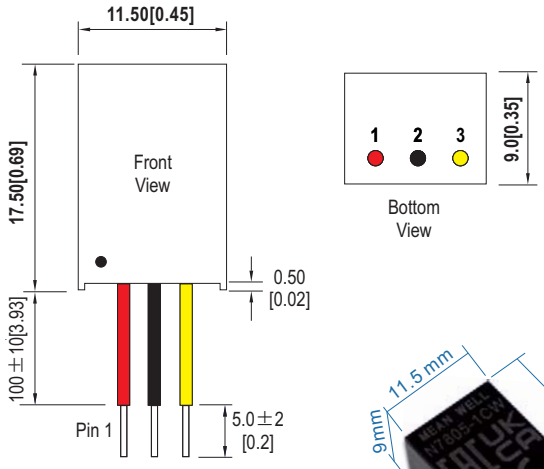


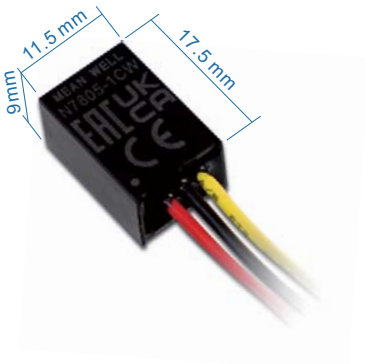


■ Plug Assignment

Pin-Out		
Pin No.	N78xx - C	
	+Output	-Output
1	+Vin	+Vin
2	GND	-Vout
3	+Vout	GND

※ **CW Type:**
(Casing type with Wire)

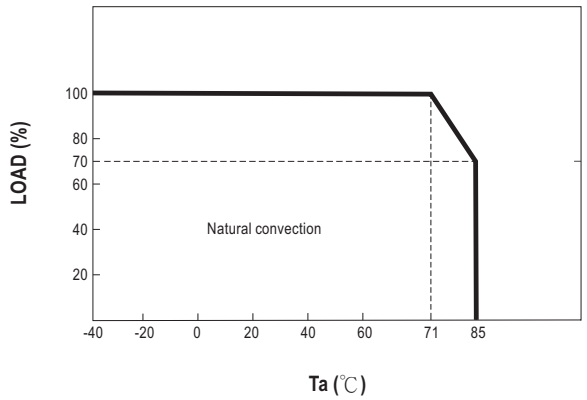




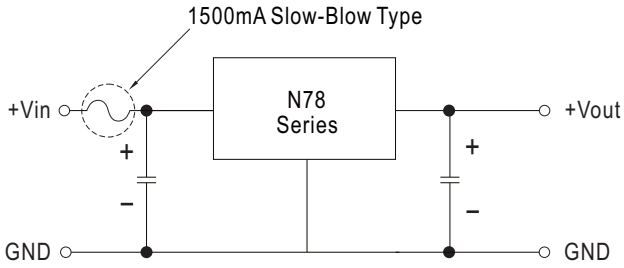
■ Plug Assignment

Pin-Out		
Pin No.	N78xx - CW	
	+Output	-Output
1 (Red)	+Vin	+Vin
2 (Black)	GND	-Vout
3 (Yellow)	+Vout	GND

■ Derating Curve

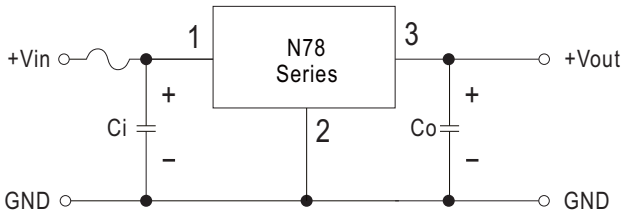


■ External Input Fuse Recommended

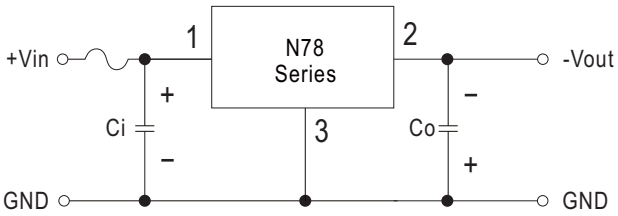


■ Positive or Negative Typical Applications

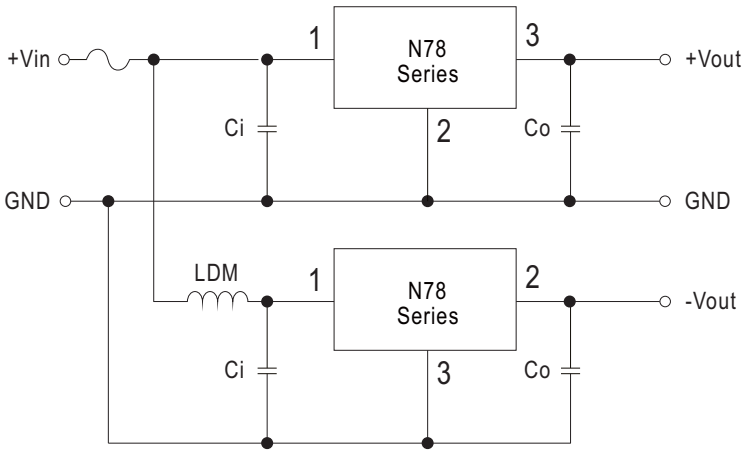
Positive output application circuit



Negative output application circuit



Positive and negative output paralleling application circuit

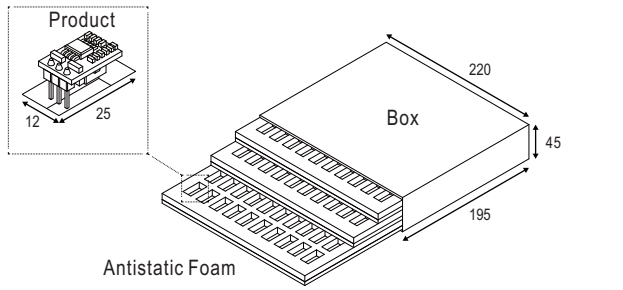


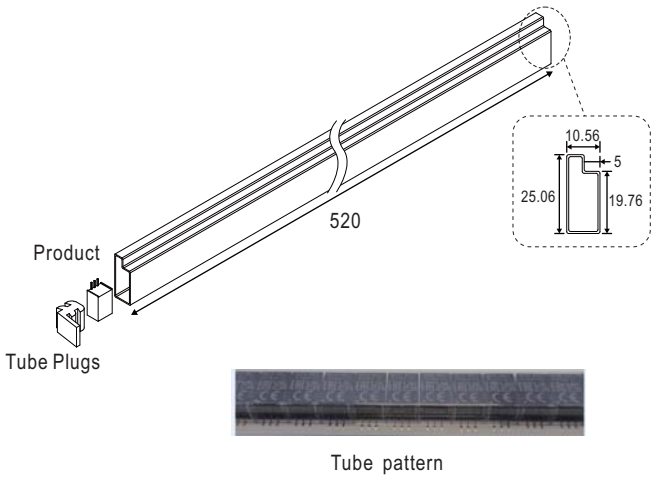
External capacitor table

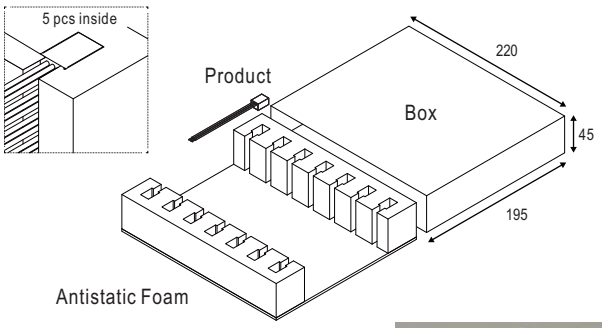
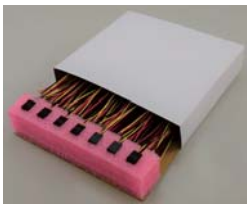
Model No.	Ci (MLCC)	Co (MLCC)
N7803-1□	10μF/50V	22uF/10V
N7805-1□	10μF/50V	22uF/10V
N7809-1□	10μF/50V	22uF/25V
N7812-1□	10μF/50V	22uF/25V
N7815-1□	10μF/50V	22uF/25V

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

■ Packing

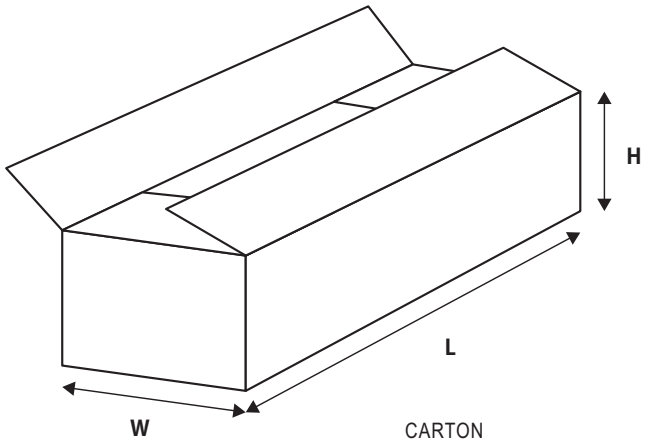
Standard Packing	N78-1PV(PH)			
	MPQ per(Box)	One Box G.W.	Max. Q'TY/ Carton(PCS)	One Carton G.W.
Unit : mm  	150pcs	395g	1800	6.2Kg

Unit : mm	N78-1C			
	MPQ Per Tube (PCS)	One Tube G.W.	Max. Q'TY/ Carton(PCS)	One Carton G.W.
 Tube pattern	42	200g	3360	17Kg

Standard Packing	N78-1CW			
	MPQ per(Box)	One Box G.W.	Max. Q'TY/ Carton(PCS)	One Carton G.W.
Unit : mm  	70	460g	840	6.3Kg

Standard Packing

Unit : mm



CARTON
L620 x W230 x H230

■ Installation Manual

Please refer to : http://www.meanwell.com/manual.html