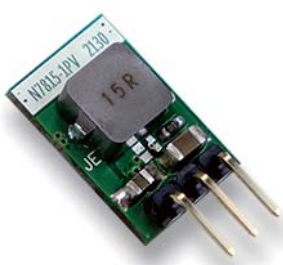




1A Non-Isolated DC-DC Switching Regulator

N78 series



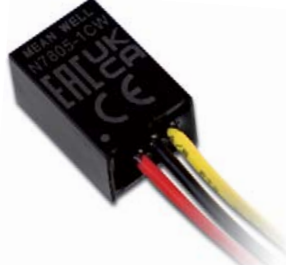
(PV Type)



(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°C
- Comply to BS EN/EN55032 radiated Class B without additional components
- Protections: Short circuit / Overload / Over temperature
- Low ripple and noises
- 3 years warranty

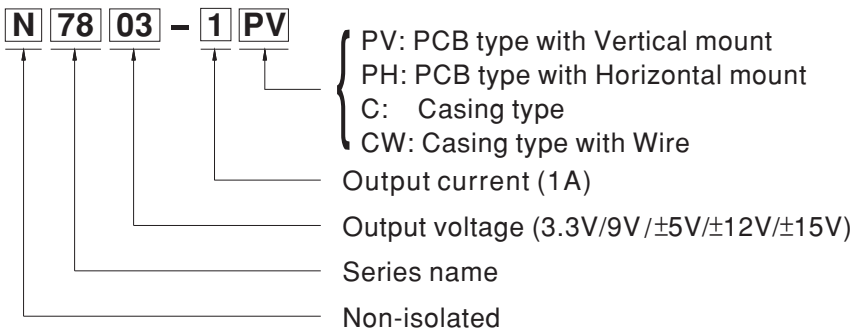
■ Applications

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

■ 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°C up to +85°C with no additional heat sink, compliance with EN55032 radiated Class B without external components, and so on.

■ Model Encoding



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



1A Non-Isolated DC-DC Switching Regulator

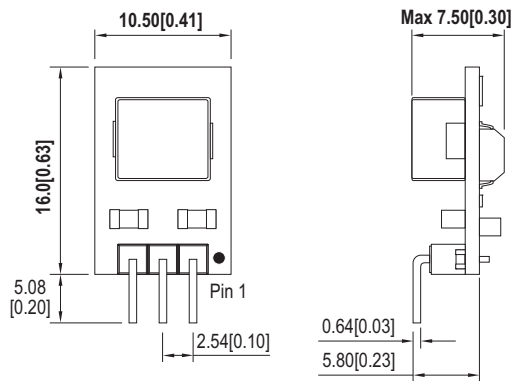
N78 series

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% / °C (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/Burest	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 ; C type : 4g ; CW type : 5.5g	
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			

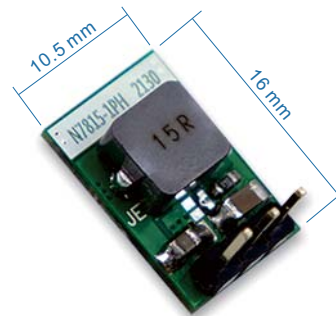
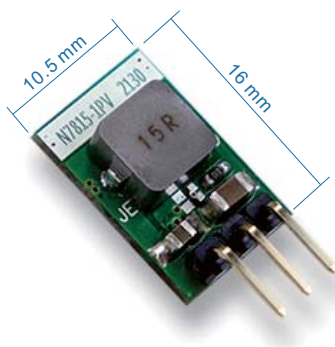
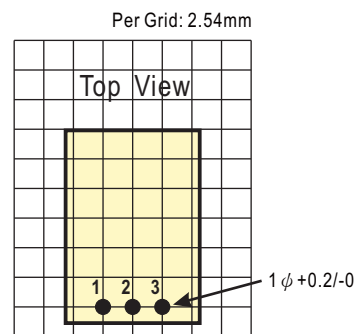
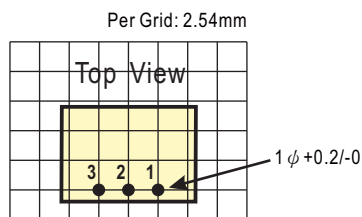
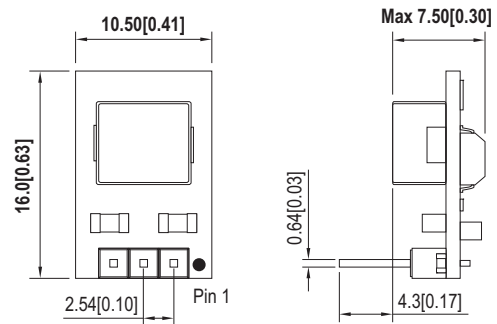
Mechanical Specification

- All dimensions in mm (inch)
- Tolerance: x.x or x.xx $\pm 0.5\text{mm}$ (x.x or x.xx $\pm 0.01"$)
- Pin size is: $0.64 \times 0.64 \pm 0.1\text{mm}$ ($\pm 0.003"$)

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



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



Plug Assignment

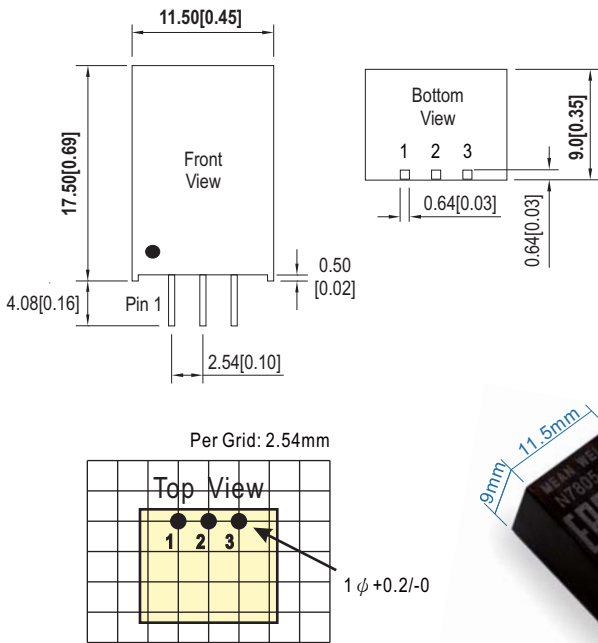
Pin-Out		
Pin No.	N78xx - PV/PH	
	+Output	-Output
1	+Vin	+Vin
2	GND	-Vout
3	+Vout	GND



1A Non-Isolated DC-DC Switching Regulator

N78 series

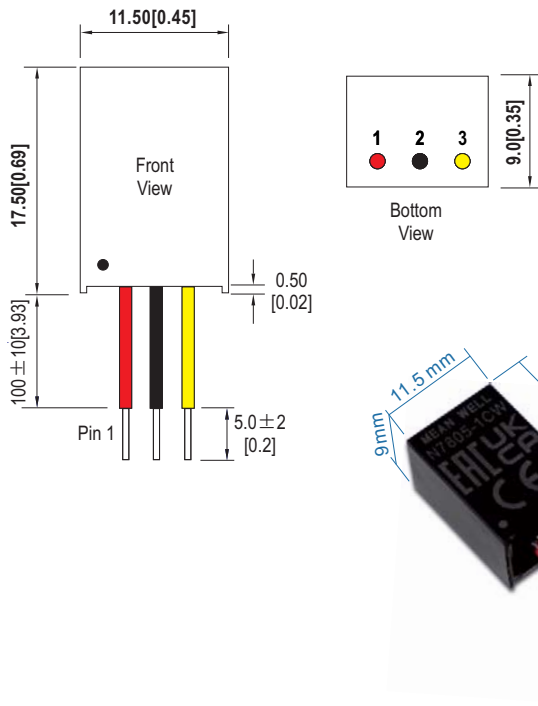
※ **C Type:**
(Casing type)



■ Plug Assignment

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

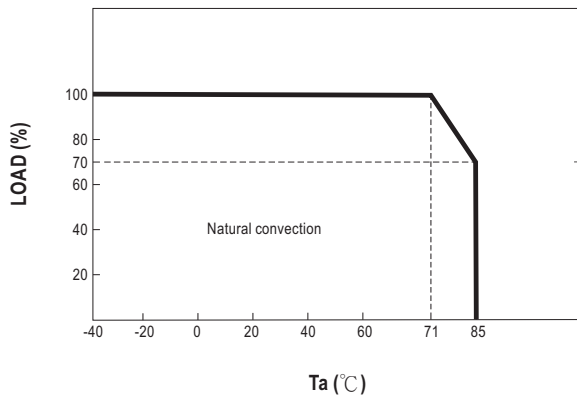
※ **CW Type:**
(Casing type with Wire)



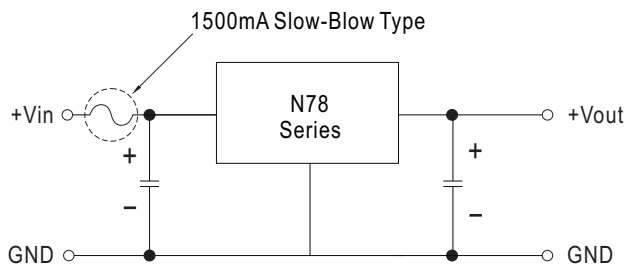
■ Plug Assignment

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

Derating Curve

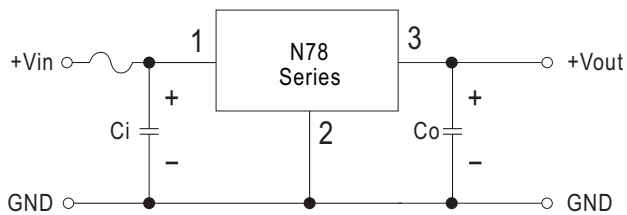


External Input Fuse Recommended

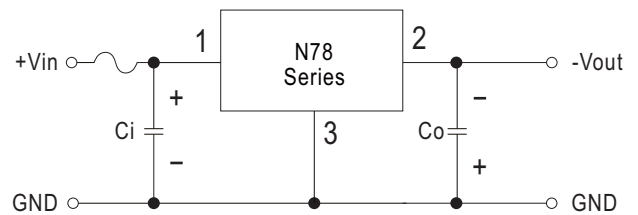


Positive or Negative Typical Applications

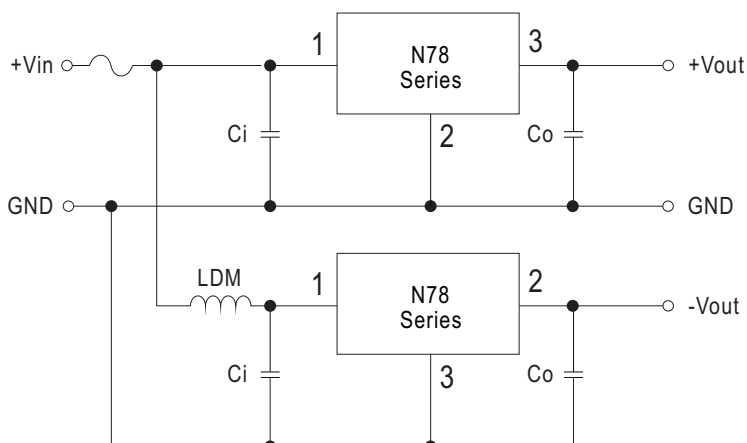
Positive output application circuit



Negative output application circuit



Positive and negative output paralleling application circuit



External capacitor table

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

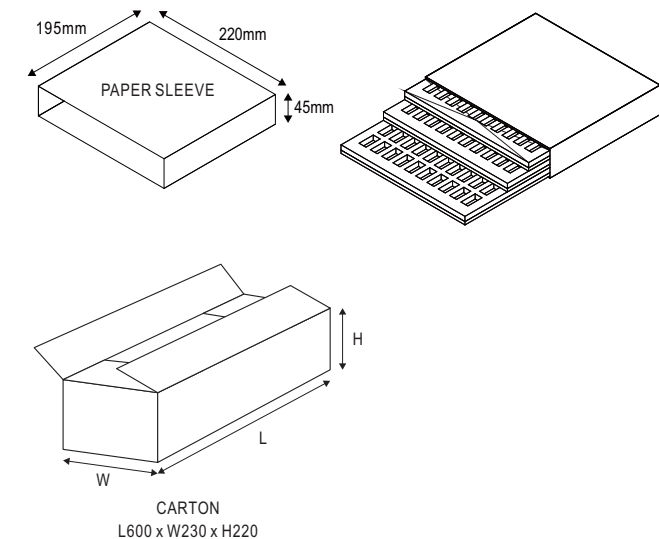
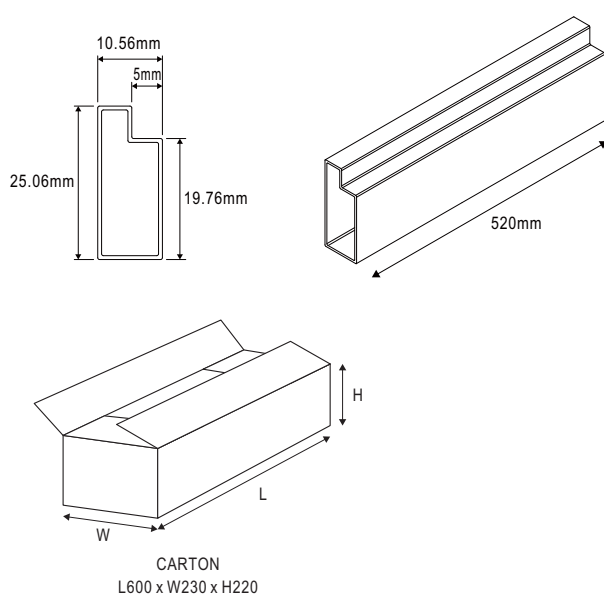
※ In using parallel application circuit, input voltage range should be taken notice of and a 10μH LDM component is recommended to reduce the interference.



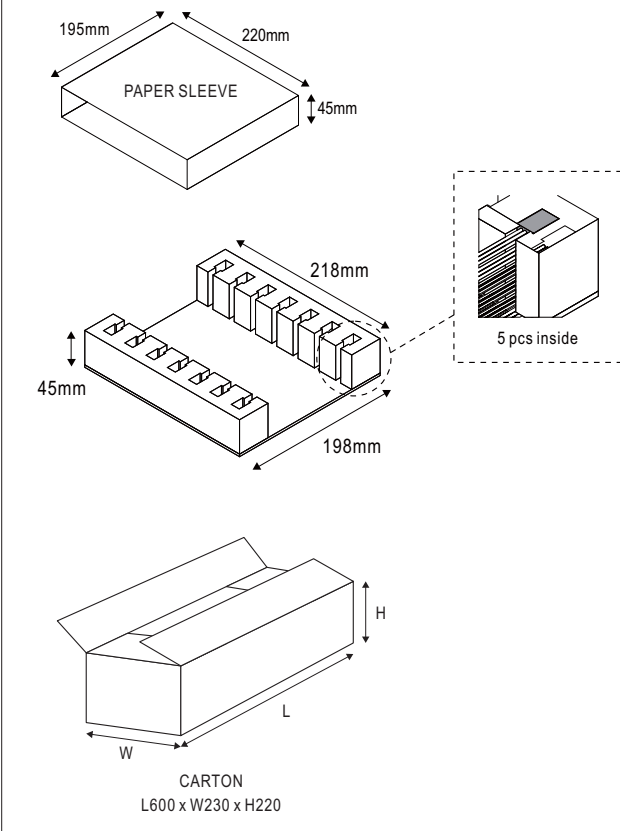
1A Non-Isolated DC-DC Switching Regulator

N78 series

■ Packing

PV/PH Type Packing	MPQ (PCS)	One Box G.W.	Max. Q'TY/ Carton(PCS)	One Carton G.W.
Unit : mm  PAPER SLEEVE 195mm 220mm 45mm CARTON L600 x W230 x H220	150	0.45Kg	1800	6.2Kg
C type Packing	MPQ Per tube (PCS)	One Box G.W.	Max. Q'TY/ Carton(PCS)	One Carton G.W.
Unit : mm  10.56mm 5mm 25.06mm 19.76mm 520mm CARTON L600 x W230 x H220	42	0.2Kg	3360	17Kg

Packing

CW Type Packing	MPQ (PCS)	One Box G.W.	Max. Q'TY/ Carton(PCS)	One Carton G.W.
<p>Unit : mm</p>  <p>PAPER SLEEVE</p> <p>195mm 220mm 45mm</p> <p>218mm 198mm 45mm</p> <p>5 pcs inside</p> <p>CARTON L600 x W230 x H220</p>	70	0.46Kg	840	6.3Kg

Installation Manual

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