

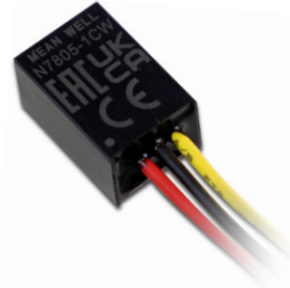
(PV Type)



(PH Type)



(C Type)



(CW Type)



TPTC004



■ 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

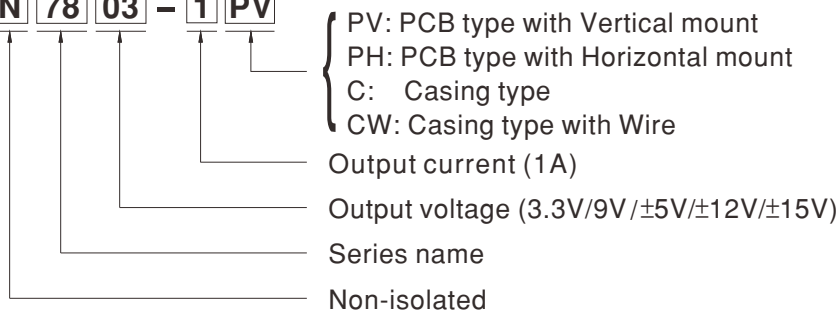
- Voltage step down
- Power supplies
- Industrial PC
- Digital set-top boxes
- Data communications
- Microcontroller related applications
- Point of load regulator in distributed power system

■ 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

N 78 03 - 1 PV



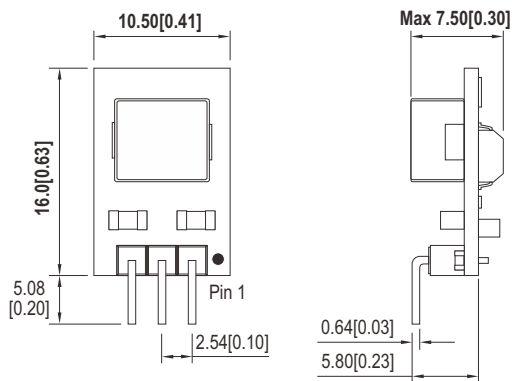
MODEL SELECTION TABLE							
ORDER NO.	INPUT			OUTPUT		EFFICIENCY (TYP.)	CAPACITOR LOAD (MAX.)
	INPUT VOLTAGE (RANGE)	INPUT CURRENT		OUTPUT VOLTAGE	OUTPUT CURRENT		
		NO LOAD	FULL LOAD				
N7803-1□	12V (6 ~ 36V)	6mA	615mA	3.3V	0 ~ 1000mA	91.5%	680μF
N7805-1□	12V (8 ~ 36V)	8mA	672mA	5V	0 ~ 1000mA	93%	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°C (Refer to "Derating Curve")		
	CASE TEMPERATURE	+110°C max.		
	WORKING HUMIDITY	5% ~ 95% RH non-condensing		
	STORAGE TEMP., HUMIDITY	-55 ~ +125°C, 10 ~ 95% RH non-condensing		
	TEMP. COEFFICIENT	0.03% / °C (0 ~ 71°C)		
	SOLDERING TEMPERATURE	1.5mm from case of 3 ~ 5sec./265°C 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 004 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°C)		
	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	<p>1.All parameters are specified at normal input, rated load, 25°C 70% RH ambient.</p> <p>2.Ripple & noise are measured at 20MHz by using a 12" twisted pair terminated with a 0.1µf & 47µf capacitor.</p> <p>3.Line regulation is measured from low line to high line at rated load.</p> <p>4.Load regulation is measured from 0% to 100% rated load.</p> <p>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)</p> <p>※ Product Liability Disclaimer : For detailed information, please refer to https://www.meanwell.com/serviceDisclaimer.aspx</p>			

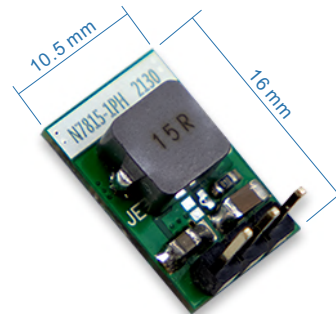
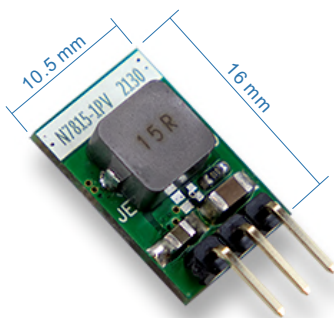
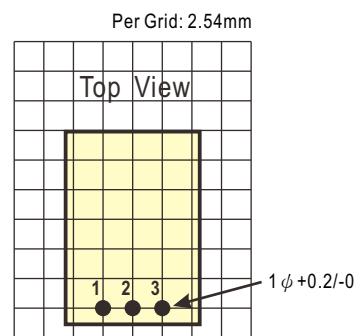
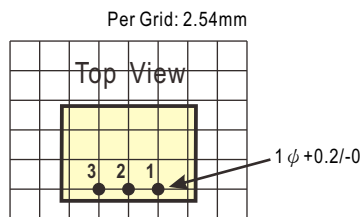
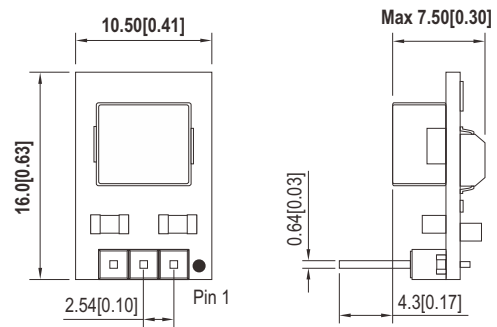
Mechanical Specification

- All dimensions in mm (inch)
- Tolerance: $x.x \pm 0.25\text{mm}$ ($x.xx \pm 0.01"$)
 $x.xx \pm 0.13\text{mm}$ ($x.xxx \pm 0.005"$)
- Pin pitch tolerance: $\pm 0.05\text{mm}$ ($\pm 0.002"$)

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



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

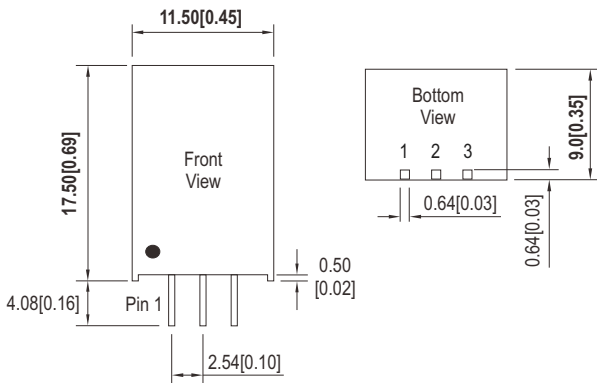


Plug Assignment

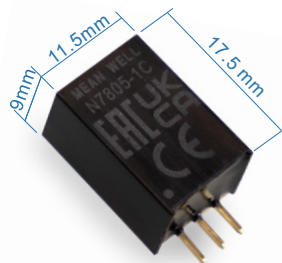
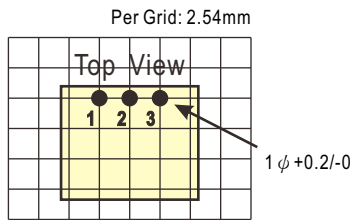
Pin-Out		
Pin No.	N78xx - PV/PH	
	+Output	-Output
1	+Vin	+Vin
2	GND	-Vout
3	+Vout	GND

※ C Type:
(Casing type)

■ Plug Assignment

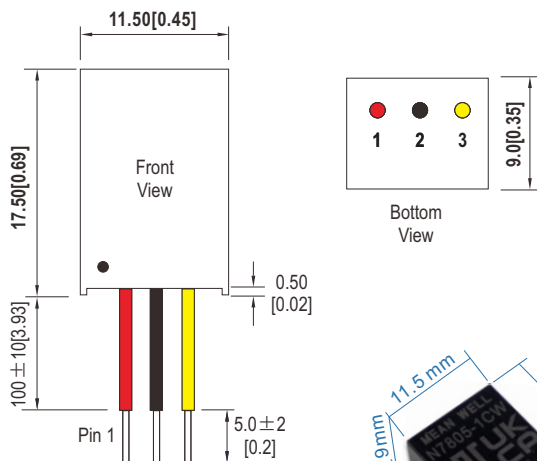


Pin-Out		
Pin No.	N78xx - C	
	+Output	-Output
1	+Vin	+Vin
2	GND	-Vout
3	+Vout	GND

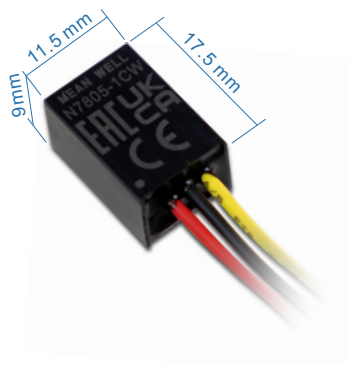


※ CW Type:
(Casing type with Wire)

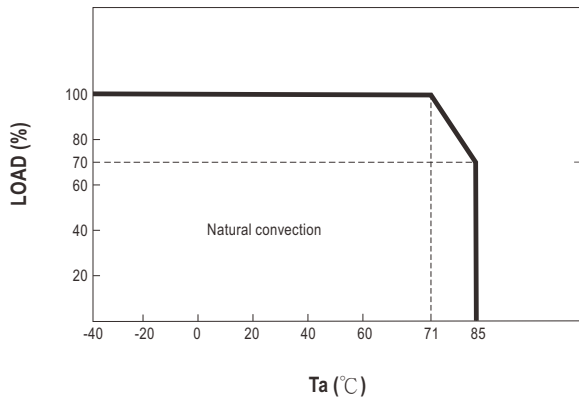
■ Plug Assignment



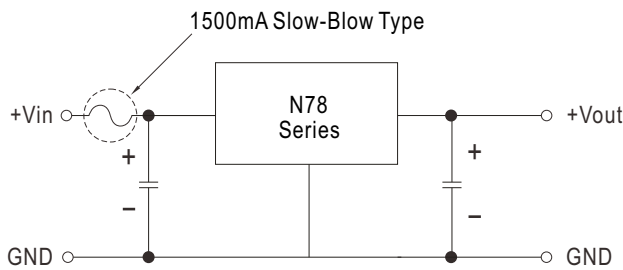
Pin-Out		
Pin No.	N78xx - CW	
	+Output	-Output
1 (Red)	+Vin	+Vin
2 (Black)	GND	-Vout
3 (Yellow)	+Vout	GND



Derating Curve

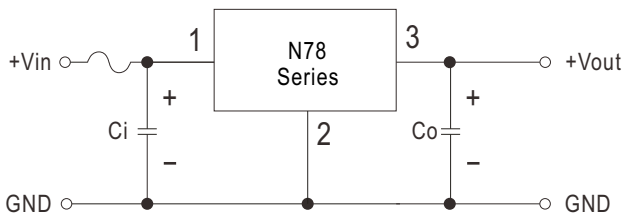


External Input Fuse Recommended

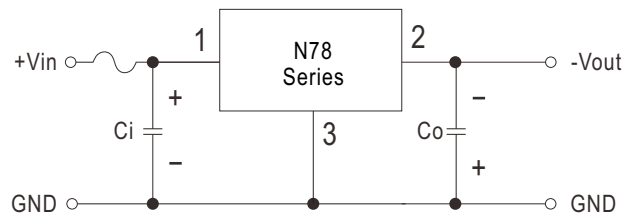


Positive or Negative Typical Applications

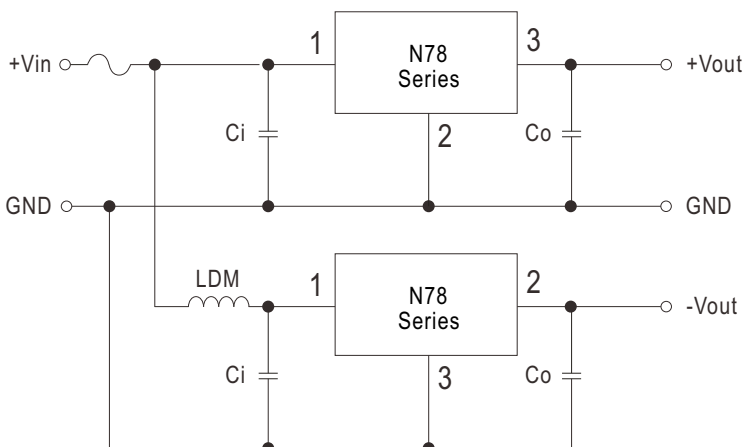
Positive output application circuit



Negative output application circuit



Positive and negative output paralleling application circuit



External capacitor table

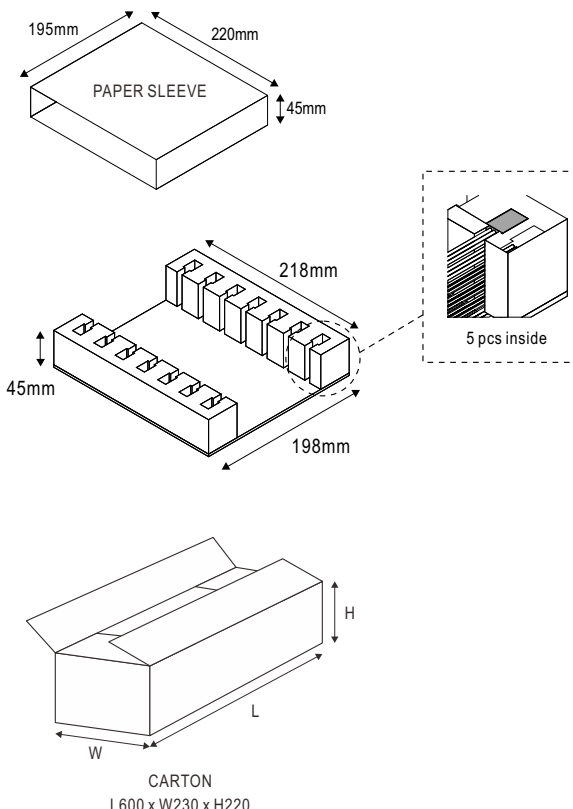
Model No.	Ci (MLCC)	Co (MLCC)
N7803-1 □	10μF/50V	22μF/10V
N7805-1 □	10μF/50V	22μF/10V
N7809-1 □	10μF/50V	22μF/25V
N7812-1 □	10μF/50V	22μF/25V
N7815-1 □	10μF/50V	22μF/25V

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

Packing

PV/PH 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>CARTON L600 x W230 x H220</p>	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.
<p>Unit : mm</p> <p>CARTON L600 x W230 x H220</p>	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>