

■ FEATURES

- Single in line package
- Wide input range up to 36V
- High efficiency up to 95%
- Over temperature protection
- Over load protection
- Support negative output
- Short circuit protection
- Pin-out compatible with 78Mxx / 79Mxx

■ 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

78A05 series converters are high efficiency switching regulators can suit to replace 78Mxx / 79Mxx linear regulators and its pin-out can be compatible with 78Mxx / 79Mxx 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 95% 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

78	05	A05	C
Series Name	Output Voltage	Output Current	Package Type
	03 : 3.3V	0.5A	Blank : open frame with vertical mount
	05 : 5V		C : potting
	09 : 9V		
	12 : 12V		
	15 : 15V		

MODEL SELECTION TABLE

MODEL NUMBER	INPUT				OUTPUT		EFF. (%) @Vin Min.	CAPACITOR LOAD (Max.)
	VOLTAGE (VDC)		CURRENT (mA)		VOLTAGE (VDC)	CURRENT (mA)		
	NOMINAL	RANGE	NO LOAD	FULL LOAD				
7803A05(C)	12	4.75~36	4	386	3.3	0 ~ 500	90	470uF
7805A05(C)	12	6.5~36	5	414	5	0 ~ 500	93	330uF
	12	8~31	9	218	-5	0 ~ -300	86	330uF
7809A05(C)	12	11~36	5	431	9	0 ~ 500	95	220uF
7812A05(C)	24	15~36	5	421	12	0 ~ 500	95	150uF
	12	8~24	15	259	-12	0 ~ -150	87	150uF
7815A05(C)	24	19~36	6	416	15	0 ~ 500	95	100uF
	12	8~21	17	331	-15	0 ~ -150	85	100uF

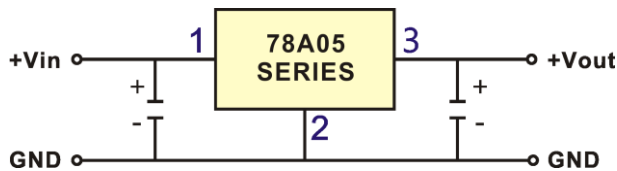
Note: For input voltages higher than 30VDC, an input capacitor (22uF) is required.

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

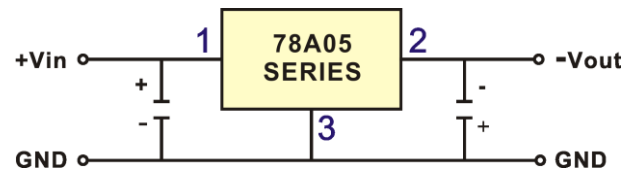
Other input to output voltages may be available. Please contact factory.

TYPICAL APPLICATIONS

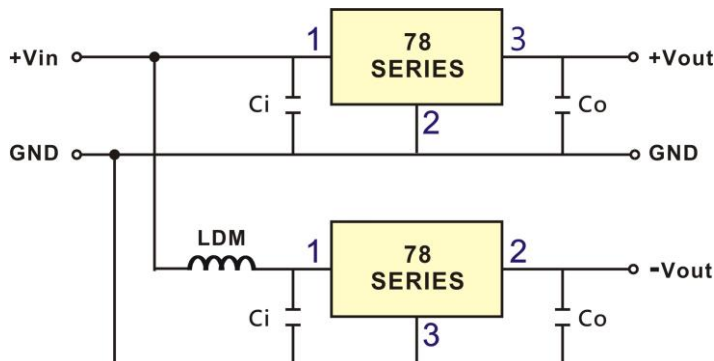
Positive output application circuit



Negative output application circuit



Positive and negative output paralleling application circuit



External capacitor table

Model Number	Ci (MLCC)	Co (MLCC)
7803A05	10uF / 50V	22uF / 10V
7805A05	10uF / 50V	22uF / 10V
7809A05	10uF / 50V	22uF / 25V
7812A05	10uF / 50V	22uF / 25V
7815A05	10uF / 50V	22uF / 25V

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

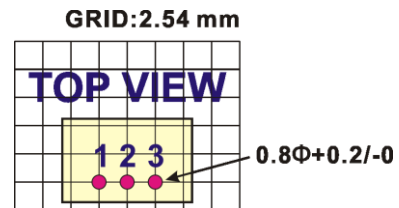
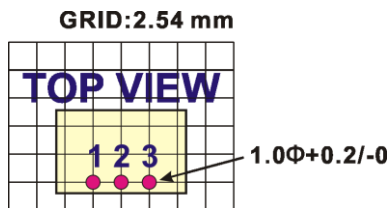
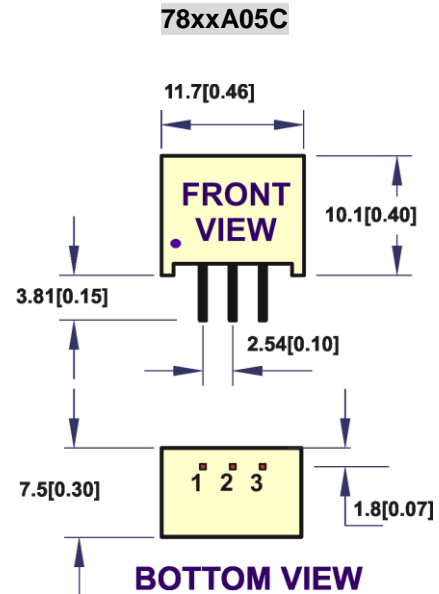
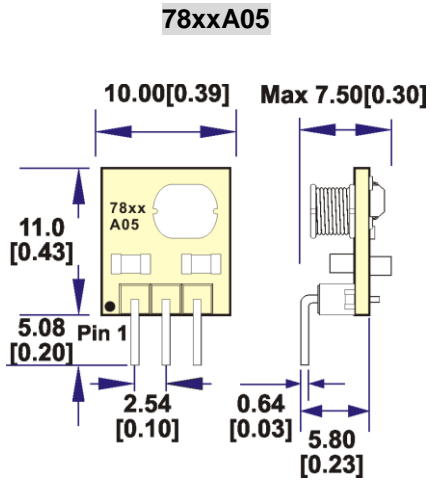
2. In order to further reduce the output ripple, Co can be added according to requirement and would be recommended to use tantalum or low ESR electrolytic capacitors.

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	36V max.		
	Surge Voltage(100ms max.)	40V max.		
	Filter	Capacitor type		
	Protection	Fuse recommended (see page 5)		
	Internal Power Dissipation	500mW		
OUTPUT	Voltage Accuracy	±3% max.		
	Rated Power	1.65W~7.5W		
	Ripple & Noise ¹	100mVp-p max.		
	Line Regulation ²	Others: ±0.2%	3.3V: ±0.3%	
	Load Regulation ³	Others: ±0.3%	3.3V: ±0.4%	
	Switching Frequency	500KHz 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”)		
	Case Temperature	+110 °C max.		
	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	>2,000,000Hours		
	Weight	78A05	1.2g typ.	
		78A05C	1.3g typ.	
	Dimension(L*W*H)	Open frame size	10mm*7.5mm*11mm	
		Case size	11.7mm*7.5mm*10.1mm	
	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



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

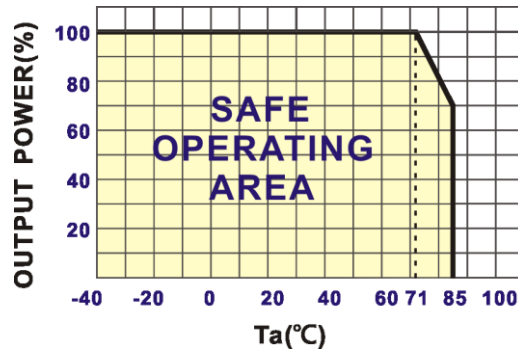
All dimensions are in mm[Inches]

Pin size is 0.64*0.64mm ±0.10mm(78xxA05)

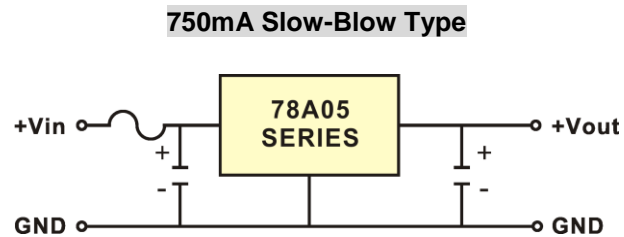
Pin size is 0.50*0.30mm ±0.10mm(78xxA05C)

Tolerance .X or .XX= ±0.5mm

■ DERATING CURVE



■ INPUT FUSE SELECTION GUIDE



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

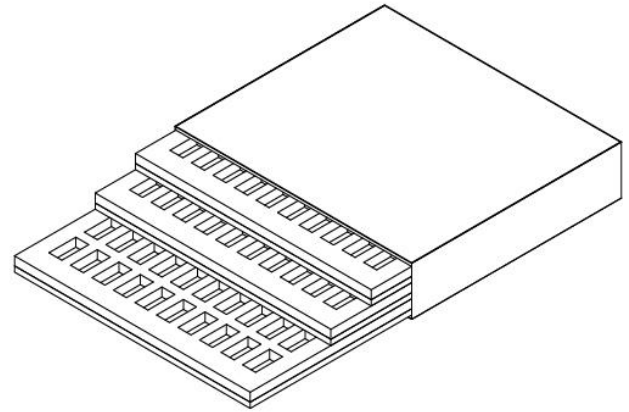
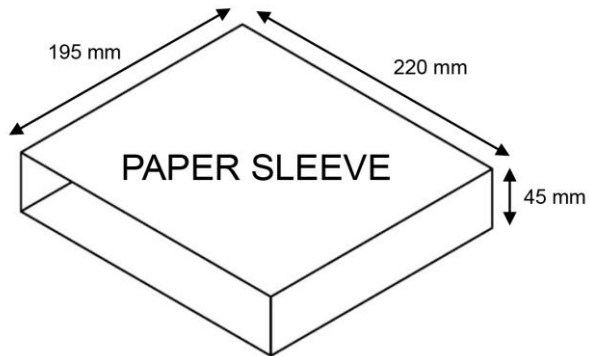


78A05 SERIES

0.5A Non-Isolated DC-DC Converter

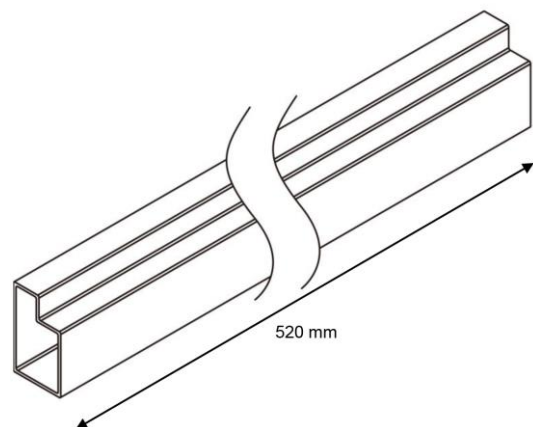
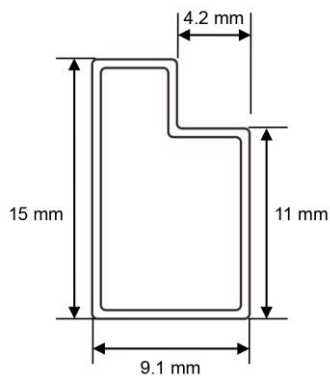
■ PACKAGING INFORMATION

78xxA05



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

78xxA05C



Packaging Quantity: 42 pcs converter per tube



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