Features

- Efficiency up to 94%,Non isolated, no need for heatsinks
- SMD Package (UL94V-0 Material)
- Adjustable Output Voltage
- Wide input range.(4.75V ~ 18V)
- Short circuit protection, Thermal shutdown
- Remote On/Off Control
- Very Low Shutdown Current

INNOLINE
DC/DC-Converter

R-78Axx-1.0SMD Series

1.0 AMP SMD Single Output

Selection Guide

Part Number SMD	Input Range (1) (V)	Output Voltage (V)	Adjust Range (V)	Output Current (A)	Efficiency Min. Vin (%)	Efficiency Max. Vin (%)
R-78A1.8-1.0SMD	4.75 – 18	1.8	1.5~3.3	1.0	82	71
R-78A2.5-1.0SMD	4.75 – 18	2.5	1.5~4.5	1.0	87	77
R-78A3.3-1.0SMD	4.75 – 18	3.3	1.8~5.5	1.0	91	81
R-78A5.0-1.0SMD	6.5 – 18	5.0	2.5~5.5	1.0	94	86

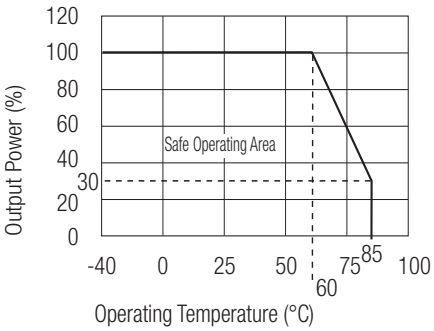
Description

The R-78Axx-1.0SMD series high efficiency switching regulators are ideally suited to pick-and-place mass production. The efficiency of up to 94% means that very little energy is wasted as heat. remote on/off control and adjustable output voltage are useful additional features of this versatile SMD converter series.

Specifications (typical at 25°C, 10% minimum load, unless otherwise specified)

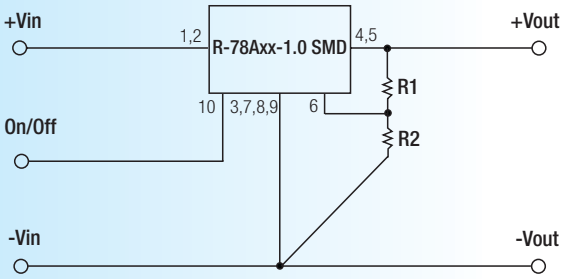
Characteristics	Conditions	Min.	Typ.	Max.
Input Voltage Range (Note 1)	See Table	4.75		18.0V
Output Voltage Range	See Table	1.5		5.5V
Output Current	All Series	0		1000mA
Output Current Limit	All Series			3000mA
Short Circuit Input Current	All Series			30mA
Internal Power Dissipation				0.4W
Short Circuit Protection			Continuous, automatic recovery	
Output Voltage Accuracy (At 100% Load)	All Series		±2	±3%
Adjustable Voltage Range	See Table 1			±50%
Line Voltage Regulation (Vin = min to max at full load)			0.2	0.4%
Load Regulation (10% to 100% full load)			0.7	1.0%
Dynamic Load Stability	100%<>50% load		±85mV	±100mV
Ripple & Noise (20MHz BW)			20mVp-p	30mVp-p
Temperature Coefficient	-40°C~+85°C ambient			0.015%/°C
Max capacitance Load				220µF
Switching Frequency		280	350	430kHz
Quiescent Current	Vin = min. to max. at 0% load		5	7mA
Shutdown Current			20	35µA
Remote On/Off Threshold Voltage		0.8	1.2	1.6V
ON/OFF Remote Control	ON: Open or 1.6<Vr<5V, OFF: GND or 0<Vr<1.6V			Ir=1.8uA typ.
Operating Temperature Range		-40°C		+85°C
Switch On/Off Time	(using Remote On/Off Control)			50ms
Operating Case Temperature				+100°C
Storage Temperature Range		-55°C		+125°C
Case Thermal Impendance				70°C / W
Thermal Shutdown	Internal IC junction		+160°C	
Package Weight				2.7g
MTBF (+25°C) *Detailed Information see Application Notes chapter "MTBF"*	using MIL-HDBK 217F		13338 x 10^3 hours	
. (+71°C)	using MIL-HDBK 217F		3880 x 10^3 hours	

Derating-Graph
(Ambient Temperature)



R-78Axx-1.0 SMD Series

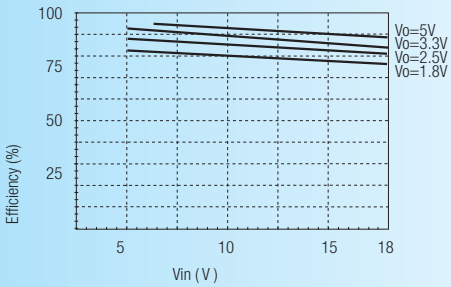
Standard Application Circuit



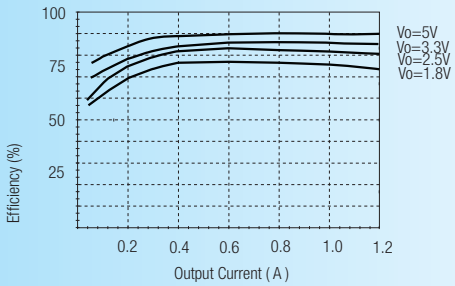
Add a blocking diode to Vout if current can flow backwards into the output, as this can damage the converter..
See Application Examples for details.

Characteristics

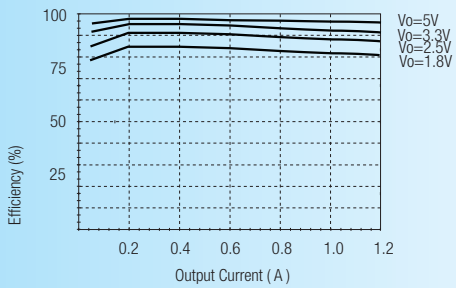
Efficiency



Efficiency Vs Vin (Full Load)

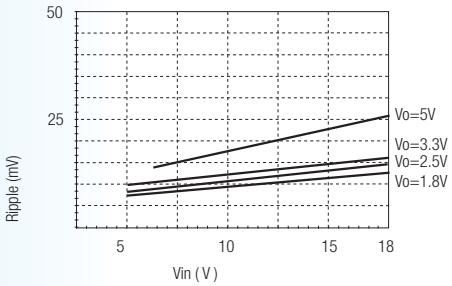


Efficiency Vs Load (Vin=Max)

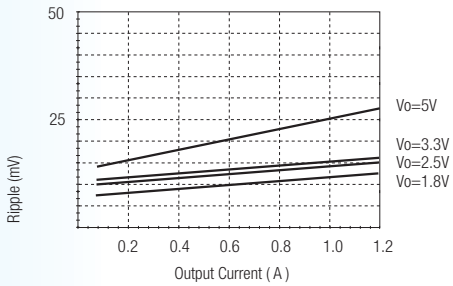


Efficiency Vs Load (Vin=Min)

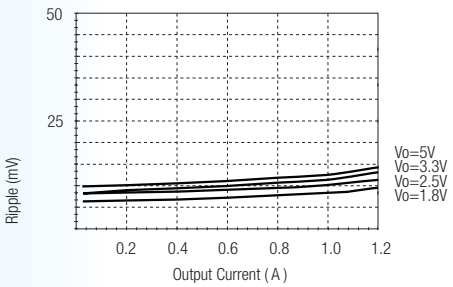
Ripple



Ripple Vs Vin (Full Load)



Ripple Vs Load (Vin=Max)

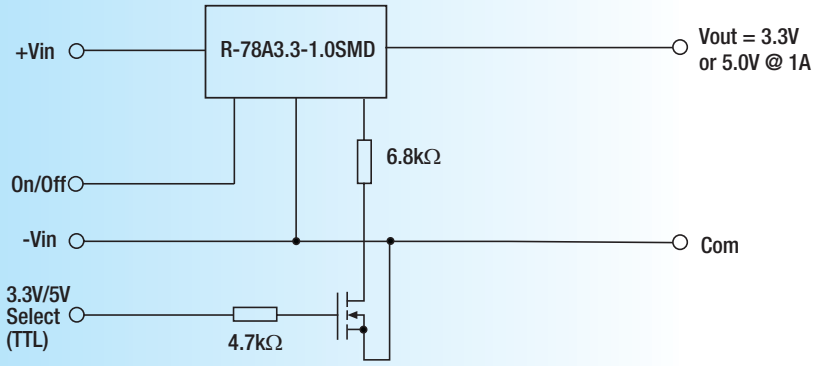


Ripple Vs Load (Vin=Min)

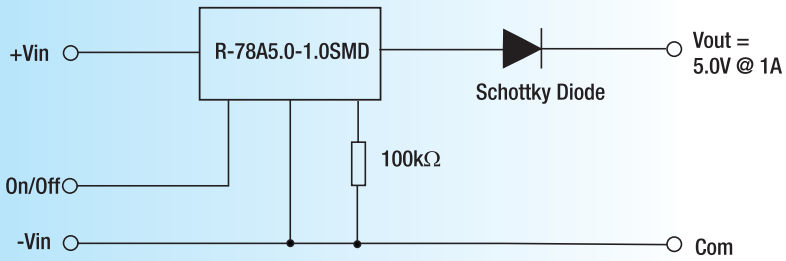
R-78Axx-1.0 SMD Series

Application Examples

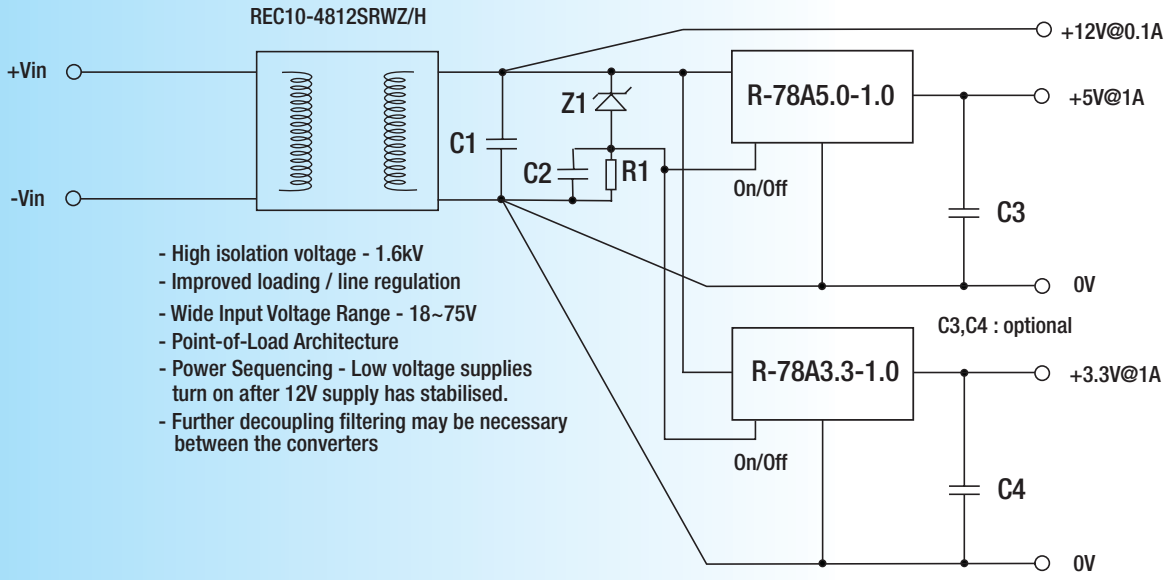
3.3V/5V Selectable 1A Power Supply



Output protection from external voltage



Converter output voltage set to 5.4V to compensate for Schottky diode drop



- High isolation voltage - 1.6kV
- Improved loading / line regulation
- Wide Input Voltage Range - 18~75V
- Point-of-Load Architecture
- Power Sequencing - Low voltage supplies turn on after 12V supply has stabilised.
- Further decoupling filtering may be necessary between the converters

R-78Axx-1.0 SMD Series

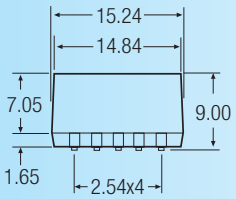
Table 1: Adjustment Resistor Values

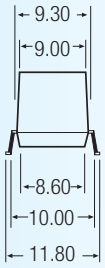
1.0Adc	R-78A1.8-1.0SMD		R-78A2.5-1.0SMD		R-78A3.3-1.0SMD		R-78A5.0-1.0SMD	
Vout (nom.)	1.8Vdc		2.5Vdc		3.3Vdc		5.0Vdc	
Vout (adj)	R1	R2	R1	R2	R1	R2	R1	R2
1.5 (V)	3KΩ		200Ω					
1.8 (V)			12KΩ		770Ω			
2.5 (V)		12KΩ			21KΩ		5.6KΩ	
3.0 (V)		4.7KΩ		50KΩ	88.4KΩ		17KΩ	
3.3 (V)		2.7KΩ		29KΩ			27KΩ	
3.6 (V)				19.4KΩ		69KΩ	42KΩ	
3.9 (V)				14kΩ		30.5KΩ	58KΩ	
4.5 (V)				8kΩ		12.1kΩ	180KΩ	
4.9 (V)						7.k6Ω	850KΩ	
5.0 (V)						6.8kΩ		
5.1 (V)						6.2kΩ		540kΩ
5.5 (V)						4kΩ		71kΩ

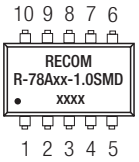
Package Style and Pinning (mm)

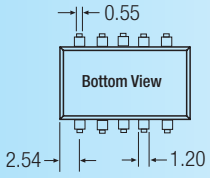
3rd angle projection

SMD 10Pin Package

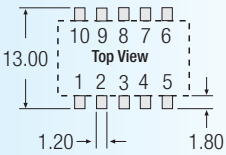








Recommended Footprint Details



Pin Connections	
Pin #	
1,2	+Vin
3,7,8,9	GND
4,5	+Vout
6	V adj
10	Remote On/Off

xx.x ±0.5mm
xx.xx ±0.25mm