

Using the PT78 Series Integrated Switching Regulator (ISR)

The Integrated Switching Regulator (ISR) by Power Trends is a complete switch-mode power regulator capable of delivering regulated voltages at currents up to 1.5 Amps. The ISR utilizes current mode control in a Buck regulator topology operating at a nominal frequency of 650 kHz.

Ripple and Noise Typically, the PT78ST105 has an output ripple/noise of 50mV_{pp} (@I_o=1.5 Amp, V_{in}=+9VDC). This output ripple/noise increases with increasing input voltage. To reduce the amount of output ripple/noise, additional output capacitance may be added directly at the terminals of the ISR. Adding a 1μF ceramic capacitor will decrease the output ripple/noise by 33%. See filter application note.

Over-Current Protection Two independent output current detection circuits protect the ISR from damage if the output is over-loaded or shorted. The first circuit limits the output current to a maximum of 2 to 3 Amps. The second circuit shuts down the ISR if the peak output current reaches 3.5 Amps. The unit will automatically restart 10μsec after the over-load or short-circuit condition is removed.

Minimum Input Voltage Unlike a linear regulator where the output voltage decreases as V_{in} decreases, PT78/79 Series ISRs have a minimum input voltage threshold. The control IC inside the package will not operate below an input voltage of +6 VDC. Above V_o+4 (+9V_{in} minimum) the output voltage will be the specified output voltage and extremely well regulated.

IMPORTANT NOTICE

Texas Instruments and its subsidiaries (TI) reserve the right to make changes to their products or to discontinue any product or service without notice, and advise customers to obtain the latest version of relevant information to verify, before placing orders, that information being relied on is current and complete. All products are sold subject to the terms and conditions of sale supplied at the time of order acknowledgment, including those pertaining to warranty, patent infringement, and limitation of liability.

TI warrants performance of its semiconductor products to the specifications applicable at the time of sale in accordance with TI's standard warranty. Testing and other quality control techniques are utilized to the extent TI deems necessary to support this warranty. Specific testing of all parameters of each device is not necessarily performed, except those mandated by government requirements.

Customers are responsible for their applications using TI components.

In order to minimize risks associated with the customer's applications, adequate design and operating safeguards must be provided by the customer to minimize inherent or procedural hazards.

TI assumes no liability for applications assistance or customer product design. TI does not warrant or represent that any license, either express or implied, is granted under any patent right, copyright, mask work right, or other intellectual property right of TI covering or relating to any combination, machine, or process in which such semiconductor products or services might be or are used. TI's publication of information regarding any third party's products or services does not constitute TI's approval, warranty or endorsement thereof.