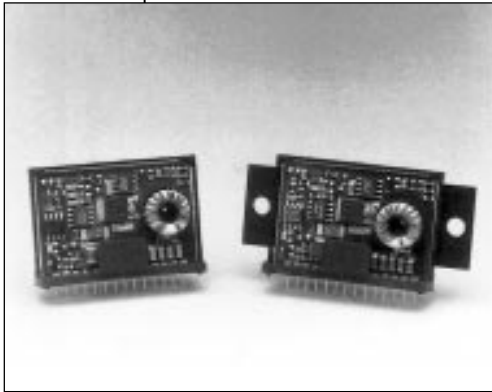


PT6511 Series

SLTS123

(Revised 5/2/97)

8 AMP HIGH-PERFORMANCE
5V TO 3.3V ISR

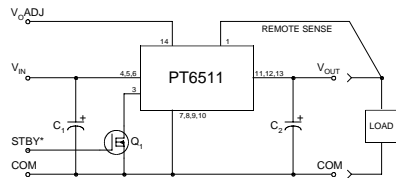
- Single Device 8A Output
- Input Voltage Range: 4.5V to 6.0V
- Adjustable Output Voltage
- 90% Efficiency
- Remote Sense Capability
- Standby Function
- Over-Temperature Protection

The PT6511 is a new addition to the Power Trends high performance +5V to

+3.3V family of 14-Pin SIP (Single In-line Package) Integrated Switching Regulators (ISRs), designed for stand alone operation in applications requiring as much as 8A of output current. The operating frequency is laser trimmed to a nominal 660 kHz for frequency sensitive applications.

Only two external capacitors are required for proper operation.

Standard Application



C_1 = Required 330 μ F electrolytic
 C_2 = Required 330 μ F electrolytic
 Q_1 = NPN or Open Collector Gate

Pin-Out Information

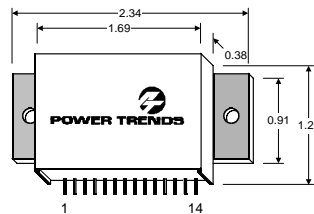
Pin No.	Function	Pin No.	Function
1	Remote Sense	8	GND
2	Do Not Connect	9	GND
3	STBY*, Standby	10	GND
4	V_{in}	11	V_{out}
5	V_{in}	12	V_{out}
6	V_{in}	13	V_{out}
7	GND	14	V_{out} Adjust

Ordering Information

PT6511 ■ = +3.3 Volts

PT Series Suffix (PT1234X)

Case/Pin Configuration	Heat Tab Configuration
Vertical Through-Hole	None R
Horizontal Through-Hole	A G
Horizontal Surface Mount	C B



Specifications

Characteristics ($T_A = 25^\circ\text{C}$ unless noted)	Symbols	Conditions	PT6511 SERIES			
			Min	Typ	Max	Units
Output Current	I_O	Over V_{in} range	0.1*	—	8.0	ADC
Current Limit	I_{cl}	$V_{in} = +5V$	—	13.0	20.0	ADC
Short Circuit Current	I_{sc}	$V_{in} = +5V$	—	15.0	—	Apk
Input Voltage Range	V_{in}	$0.1A \leq I_O \leq 8.0A$	4.5	—	6.0	VDC
Static Voltage Tolerance	V_o	$V_{in} = +5V, I_O = 8.0A$ $T_A = 0^\circ\text{C}$ to shutdown	3.2	3.3	3.4	VDC
Output Adjust Range	V_{adj}	$V_{nom} = 3.3V$	2.25	—	4.2**	VDC
Line Regulation	Reg_{line}	$4.5V \leq V_{in} \leq 6.0V, I_O = 8.0A$	—	± 7	± 17	mV
Load Regulation	Reg_{load}	$V_{in} = +5V, 0.1 \leq I_O \leq 8.0A$	—	± 17	± 33	mV
Ripple/Noise	V_n	$V_{in} = 5V, I_O = 8.0A$	—	50	—	mVpp
Transient Response with $C_2 = 330\mu F$	t_{tr}	I_O step between 4.0A and 8.0A	—	100	—	μSec
	V_{os}	V_o over/undershoot	—	150	—	mV
Efficiency	η	$V_{in} = +5V, I_O = 3.0A$	—	90	—	%
		$V_{in} = +5V, I_O = 8.0A$	—	83	—	%
Switching Frequency	f_o	Over V_{in} and I_O range	635	660	725	kHz
Operating Temperature	T_A	Free Air Convection (40-60 LFM) Over V_{in} and I_O Ranges	0	—	100	$^\circ\text{C}$
Thermal Resistance	θ_{ja}	Free Air Convection (40-60 LFM)	—	15	—	$^\circ\text{C}/W$
Storage Temperature	T_s	—	-40	—	+125	$^\circ\text{C}$
Mechanical Shock	—	Per Mil-STD-883D, Method 2002.3, 1 msec, Half Sine,	—	—	500	G's
Mechanical Vibration	—	Per Mil-STD-883D, Method 2007.2, 20-2000 Hz, mounted to a fixture	—	—	7.5	G's
Weight	—	—	—	23	—	grams
Relative Humidity	—	Non-condensing	0	—	95	%

* ISR will operate down to no load with reduced specifications.

** $V_{in, min} = 4.5V$ or $V_o + 1.2V$

*** See PT6500 series thermal derating curves.

Note: The PT6511 Series requires two 330 μF electrolytic capacitors for proper operation in all applications.

5/02/97

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.