Series **PT7700**

15 AMP HIGH-PERFORMANCE "BIG HAMMER" PROGRAMMABLE ISR

The PT7700 is a new series of highperformance, 15 Amp Integrated Switching Regulators (ISRs) housed in a 27-pin SIP package. The 15A capability allows easy integration of the latest high-speed, lowvoltage µPs and bus drivers into existing 5V systems.

The PT7700 series has been designed to work in parallel with one or more of the PT7749 - 15A current boosters for increased Iout in increments of 15A.

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Two products are offered in the series with different output voltage ranges that are easily programmed with a 4 bit input compatible with Intel's Pentium® Pro Processor. A differential remote sense is also provided which automatically compensates for any voltage drop from the ISR to the load.

An input filter and 1200µF of output capacitance are required for proper operation.

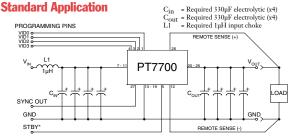
Ordering Information

PT7701 = 2 to 3.5 Volts

PT7702 = 1.3 to 2 Volts

Features

- Single-Device: +5V input
- 4-bit Programmable: 2V to 3.5V@15A or 1.3V to 2V @ 15A output
- High Efficiency
- Input Voltage Range: 4.5V to 5.5V
- Differential Remote Sense
- 27-pin SIP Package: V = 1.0"(H) x 3"(L) x 0.55"(W) H = 0.55"(H) x 3"(L) x 1.5"(W)
- Parallelable with PT7749 15A "Current Boosters'



Pin-Out Information

Pin	Function	Pin	Function	Pin	Function
1	VID0	10	Vin	19	GND
2	VID1	11	Vin	20	Vout
3	VID2	12	Remote Sense Gnd	21	Vout
4	VID3	13	GND	22	Vout
5	STBY* - Stand-by	14	GND	23	Vout
6	Vin	15	GND	24	Vout
7	Vin	16	GND	25	Vout
8	Vin	17	GND	26	Remote Sense Vout
9	Vin	18	GND	27	Sync Out
	For STBY* pin; open = of	utput en:	bled; ground = output disa	ıbled.	

				zontal throug zontal surface					
Programming Information PT7701 PT7702									
VID3	VID2	VID1	VIDO	Vout	Vout				
1	1	1	1	2.0V	1.30V				
1	1	1	0	2.1V	1.35V				
1	1	0	1	2.2V	1.40V				
1	1	0	0	2.3V	1.45V				
1	0	1	1	2.4V	1.50V				
1	0	1	0	2.5V	1.55V				
1	0	0	1	261	1.60W				

N = Vertical through-hole

1.65

1.70 1.75V

1.80 1.85V

1.90V

1.95 2.001 2.05V

2 91 3.0V

3.1

3.31

Logic 0 = Pin 12 (remote sense gnd) potential Logic 1 = Open circuit (no pull-up resistors)

Specifications

Characteristics				PT7700 SERIES			
(T _A = 25°C unless noted)	Symbols	Conditions	Min	Typ Max		Units	
Output Current	Io	$4.5\mathrm{V} \leq \mathrm{V_{in}} \leq 5.5\mathrm{V}$		0.1(1)	-	15(2)	ADC
Input Voltage Range	Vin	$0.1\mathrm{A} \leq \mathrm{I_o} \leq 15\mathrm{A}$		4.5 (3)	_	5.5	VDC
Static Voltage Tolerance	V_{o}	$\begin{array}{l} V_{in}=+5V,I_{o}=15A\\ 0^{\circ}C\leq T_{a}\leq+55^{\circ}C \end{array}$		Vo-0.05	_	Vo+0.05	VDC
Line Regulation	Regline	$4.5\mathrm{V} \leq \mathrm{V_{in}} \leq 5.5\mathrm{V}, \mathrm{I_o} = 15\mathrm{A}$		_	±10	_	mV
Load Regulation	Reg _{load}	V_{in} = +5V, $0.1 \le I_o \le 15A$		_	±10	_	mV
V _o Ripple/Noise pk-pk	Vn	$V_{in} = +5V$, $I_o = 15A$		_	50	_	mV
Transient Response with C _{out} = 1200μF	${f t_{tr}} {f V_{os}}$	$I_{\rm o}$ step between 7.5A and 15A $V_{\rm o}$ over/undershoot		_	100 200	_	μSec mV
Efficiency	η	V_{in} = +5V, I_o = 10A		 	89 87 85 79 77	 	% % % %
Switching Frequency	$f_{ m o}$	$\begin{array}{l} 4.5\mathrm{V} \leq \mathrm{V_{in}} \leq 5.5\mathrm{V} \\ 0.1\mathrm{A} \leq \mathrm{I_o} \leq 15\mathrm{A} \end{array}$		650	700	750	kHz
Operating Temperature	T_a	Forced Air Flow = 200 LFM Over $V_{in and} I_o Ranges$		0	_	+55	°C
Storage Temperature	Ts	—		-40	_	+125	°C
Weight	_	_		_	TBD	_	grams
Relative Humidity		Non-condensing		0	_	95	%

(1) ISR will operate down to no load with reduced specifications Please note that this product is not short-circuit protected.

(2) The PT7700 series can be easily paralleled with one or more of the PT7749 slave modules to provide increased output current in increments of 15A. Please contact Power Trends for the appropriate application note.

(3) The minimum input voltage is 4.5 V or V_{out} +1.2V, whichever is greater.

Output Capacitors: The PT7700 series requires A minimum output capacitance of 1200µF for proper operation. To reduce ESR, Power Trends recommends using four 330µF electrolytic capacitors in parallel.

Input Filter: An input filter is required for all applications. The input inductor must be sized to bandle 15ADC with a typical value of 1µH. The input capacitance must be rated for 14Arms of ripple current. Power Trends recommends using four Sanyo OSCON style capacitors with a 3.5Arms ripple current rating in parallel (p/n 6SA330M).

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