

PT7773

5V

**32 AMP HIGH-PERFORMANCE
"SLEDGE HAMMER" PROGRAMMABLE ISR**

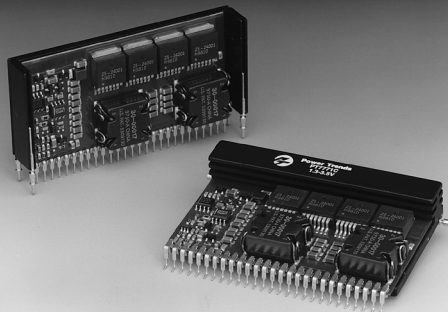
SLTS078
(Revised 5/31/2000)

Description

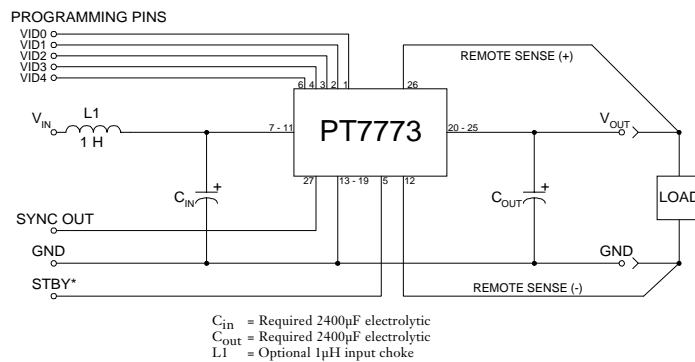
The PT7773 is one of a series of high-performance, 32 Amp Integrated Switching Regulators (ISRs) housed in a 27-pin SIP package. The 32A capability allows easy integration of the latest high-speed, low-voltage μ Ps, ASICs, DSPs, and bus drivers into existing 5V systems.

The output voltage of the PT7773 is programmable over the low voltage range, 0.8V to 3.1V via a 5-bit input. A differential remote sense is also provided, which automatically compensates for any voltage drop between the ISR and load.

An output capacitance of 2400 μ F is required for proper operation.



Standard Application



Pin-Out Information

Pin	Function	Pin	Function
1	VID0	14	GND
2	VID1	15	GND
3	VID2	16	GND
4	VID3	17	GND
5	STBY*- Stand-by	18	GND
6	VID4	19	GND
7	V_{in}	20	V_{out}
8	V_{in}	21	V_{out}
9	V_{in}	22	V_{out}
10	V_{in}	23	V_{out}
11	V_{in}	24	V_{out}
12	Remote Sense Gnd	25	V_{out}
13	GND	26	Remote Sense V_{out}
		27	Sync Out

For STBY* pin; open = output enabled; ground = output disabled.

Specifications

Characteristics ($T_a = 25^\circ\text{C}$ unless noted)	Symbols	Conditions	PT7773 SERIES			
			Min	Typ	Max	Units
Output Current	I_o	$T_a = +60^\circ\text{C}$, 200 LFM, pkg N $T_a = +25^\circ\text{C}$, natural convection	0.1 ⁽¹⁾ 0.1 ⁽¹⁾	—	32 26	A
Input Voltage Range	V_{in}	$0.1\text{A} \leq I_o \leq 32\text{A}$	4.5	—	5.5	V
Output Voltage Tolerance	ΔV_o	$V_{in} = +5\text{V}$, $I_o = 32\text{A}$ $0^\circ\text{C} \leq T_a \leq +55^\circ\text{C}$	$V_o - 0.03$	—	$V_o + 0.03$	V
Line Regulation	Reg_{line}	$4.5\text{V} \leq V_{in} \leq 5.5\text{V}$, $I_o = 32\text{A}$	—	± 10	—	mV
Load Regulation	Reg_{load}	$V_{in} = +5\text{V}$, $0.1 \leq I_o \leq 32\text{A}$	—	± 10	—	mV
V_o Ripple/Noise pk-pk	V_n	$V_{in} = +5\text{V}$, $I_o = 32\text{A}$	—	50	—	mV
Transient Response with $C_{out} = 2400\mu\text{F}$	t_{rr}	I_o step between 16A and 32A	—	100	—	μSec
	V_{os}	V_o over/undershoot	—	200	—	mV
Efficiency	η	$V_{in} = +5\text{V}$, $I_o = 20\text{A}$, $V_o = 2.5\text{V}$	—	86	—	%
Switching Frequency	f_o	$4.5\text{V} \leq V_{in} \leq 5.5\text{V}$ $0.1\text{A} \leq I_o \leq 32\text{A}$	650	700	750	kHz
Absolute Maximum Operating Temperature Range	T_a	Over V_{in} Range	0	—	+85 ⁽²⁾	$^\circ\text{C}$
Storage Temperature	T_s	—	-40	—	+125	$^\circ\text{C}$
Weight	—	Vertical/Horizontal	—	53/66	—	grams

Notes: (1) ISR will operate down to no load with reduced specifications. Please note that this product is not short-circuit protected.
(2) See SOA curves or consult the factory for the appropriate derating.

Output Capacitors: The PT7773 series requires a minimum output capacitance of 2400 μ F for proper operation. Do not use Oscon type capacitors. The maximum allowable output capacitance is 30,000 μ F.

Input Filter: An input filter is optional for most applications. The input inductor must be sized to handle 32ADC with a typical value of 1 μ H. The input capacitance must be rated for a minimum of 2.6Arms of ripple current. For transient or dynamic load applications, additional capacitance may be required.

PT7773

5V

Features

- +5V input
- 5-bit Programmable: 0.8V to 3.1V @32A
- High Efficiency
- Input Voltage Range: 4.5V to 5.5V
- Differential Remote Sense
- 27-pin SIP Package

Programming Information

VID3	VID2	VID1	VID0	VID4=1 Vout	VID4=0 Vout
1	1	1	1	1.6V	0.80V
1	1	1	0	1.7V	0.85V
1	1	0	1	1.8V	0.90V
1	1	0	0	1.9V	0.95V
1	0	1	1	2.0V	1.00V
1	0	1	0	2.1V	1.05V
1	0	0	1	2.2V	1.10V
1	0	0	0	2.3V	1.15V
0	1	1	1	2.4V	1.20V
0	1	1	0	2.5V	1.25V
0	1	0	1	2.6V	1.30V
0	1	0	0	2.7V	1.35V
0	0	1	1	2.8V	1.40V
0	0	1	0	2.9V	1.45V
0	0	0	1	3.0V	1.50V
0	0	0	0	3.1V	1.55V

Logic 0 = Pin 12 potential (remote sense gnd)
 Logic 1 = Open circuit (no pull-up resistors)
 VID3 and VID4 may not be changed while the unit is operating.

Ordering Information

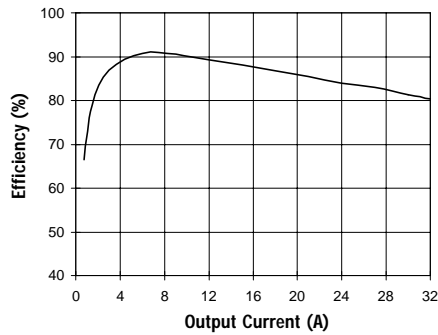
PT7773 = 0.8 to 3.1 Volts
 For dimensions and PC board layout, see Package Style 1020 and 1030

PT Series Suffix (PT1234X)

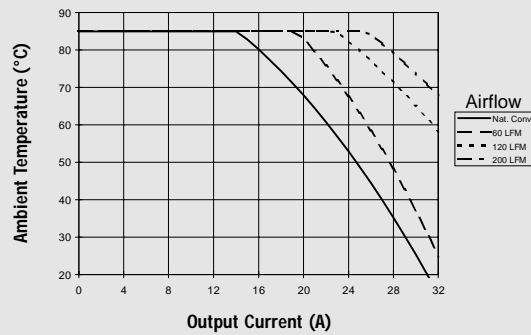
Case/Pin Configuration	
Vertical Through-Hole	N
Horizontal Through-Hole	A
Horizontal Surface Mount	C

CHARACTERISTIC DATA

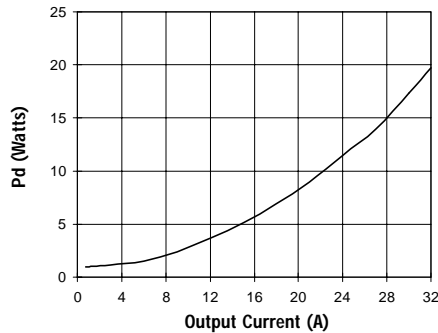
Efficiency vs Output Current (@Vout=+2.5V) (See Note A)



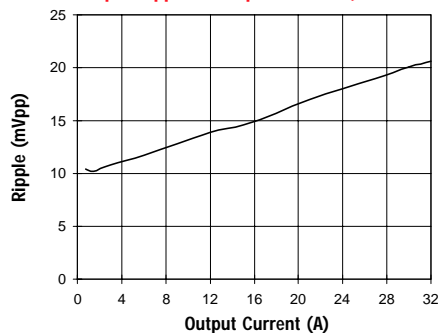
Safe Operating Area (@Vin=+5V, Vout=+2.5V, Pkg N) (See Note B)



Power Dissipation vs Output Current (@Vout=+2.5V)



Output Ripple vs Output Current (@Vout=+2.5V)



Note A: Characteristic data in the above graphs has been developed from actual products tested at 25°C. This data is considered typical for the ISR.

Note B: SOA curves represent operating conditions at which internal components are at or below manufacturer's maximum rated operating temperatures.

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