

**PT7773**

**5V**

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

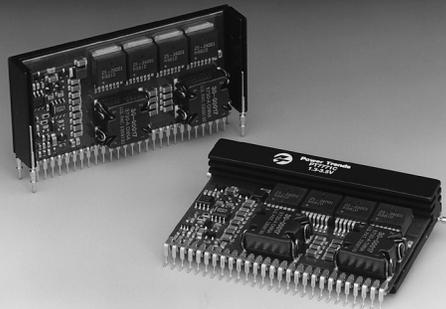
**SLTS078**  
(Revised 5/31/2000)

**Description**

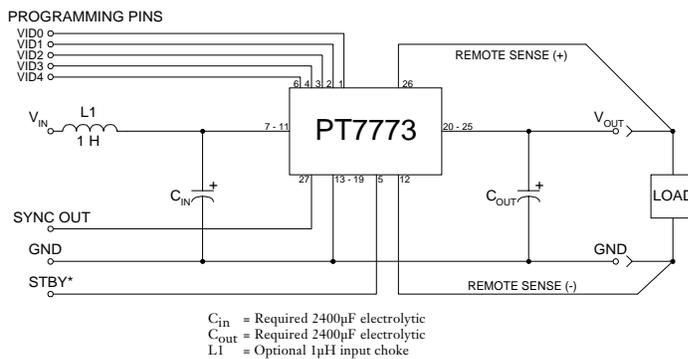
The PT7773 is one of a series of high-performance, 32 Amp Integrated Switching Regulators (ISRs) housed in a 27-pin SIP package. The 32A capability allows easy integration of the latest high-speed, low-voltage  $\mu$ Ps, ASICs, DSPs, and bus drivers into existing 5V systems.

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 $\mu$ 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 <sub>in</sub>	20	V <sub>out</sub>
8	V <sub>in</sub>	21	V <sub>out</sub>
9	V <sub>in</sub>	22	V <sub>out</sub>
10	V <sub>in</sub>	23	V <sub>out</sub>
11	V <sub>in</sub>	24	V <sub>out</sub>
12	Remote Sense Gnd	25	V <sub>out</sub>
13	GND	26	Remote Sense V <sub>out</sub>
		27	Sync Out

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

**Specifications**

Characteristics (T <sub>a</sub> = 25°C unless noted)	Symbols	Conditions	PT7773 SERIES			
			Min	Typ	Max	Units
Output Current	I <sub>o</sub>	T <sub>a</sub> = +60°C, 200 LFM, pkg N T <sub>a</sub> = +25°C, natural convection	0.1 <sup>(1)</sup> 0.1 <sup>(1)</sup>	—	32 26	A
Input Voltage Range	V <sub>in</sub>	0.1A ≤ I <sub>o</sub> ≤ 32A	4.5	—	5.5	V
Output Voltage Tolerance	ΔV <sub>o</sub>	V <sub>in</sub> = +5V, I <sub>o</sub> = 32A 0°C ≤ T <sub>a</sub> ≤ +55°C	V <sub>o</sub> -0.03	—	V <sub>o</sub> +0.03	V
Line Regulation	Reg <sub>line</sub>	4.5V ≤ V <sub>in</sub> ≤ 5.5V, I <sub>o</sub> = 32A	—	±10	—	mV
Load Regulation	Reg <sub>load</sub>	V <sub>in</sub> = +5V, 0.1 ≤ I <sub>o</sub> ≤ 32A	—	±10	—	mV
V <sub>o</sub> Ripple/Noise pk-pk	V <sub>n</sub>	V <sub>in</sub> = +5V, I <sub>o</sub> = 32A	—	50	—	mV
Transient Response with C <sub>out</sub> = 2400 $\mu$ F	t <sub>rr</sub>	I <sub>o</sub> step between 16A and 32A	—	100	—	$\mu$ Sec
	V <sub>os</sub>	V <sub>o</sub> over/undershoot	—	200	—	mV
Efficiency	$\eta$	V <sub>in</sub> = +5V, I <sub>o</sub> = 20A, V <sub>o</sub> = 2.5V	—	86	—	%
Switching Frequency	f <sub>o</sub>	4.5V ≤ V <sub>in</sub> ≤ 5.5V 0.1A ≤ I <sub>o</sub> ≤ 32A	650	700	750	kHz
Absolute Maximum Operating Temperature Range	T <sub>a</sub>	Over V <sub>in</sub> Range	0	—	+85 <sup>(2)</sup>	°C
Storage Temperature	T <sub>s</sub>	—	-40	—	+125	°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 $\mu$ F for proper operation. Do not use Oscon type capacitors. The maximum allowable output capacitance is 30,000 $\mu$ 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 $\mu$ 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.

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**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**

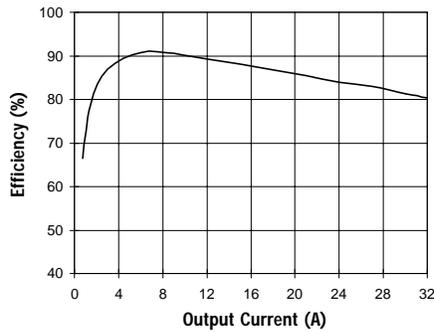
**PT7773** = 0.8 to 3.1 Volts  
 For dimensions and PC board layout, see Package Style 1020 and 1030

**PT Series Suffix (PT1234X)**

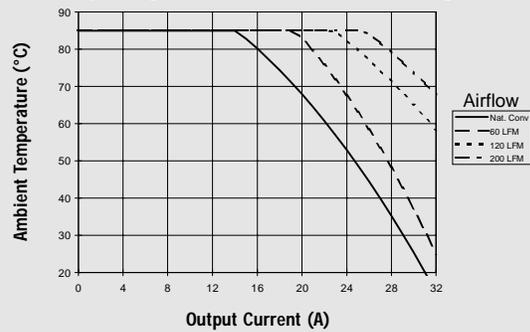
Case/Pin Configuration	
Vertical Through-Hole	<b>N</b>
Horizontal Through-Hole	<b>A</b>
Horizontal Surface Mount	<b>C</b>

**CHARACTERISTIC DATA**

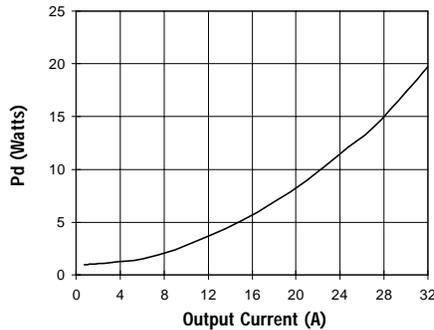
**Efficiency vs Output Current (@Vout=+2.5V) (See Note A)**



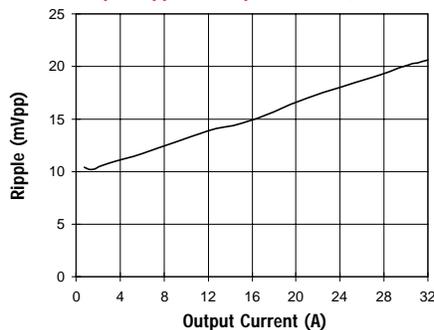
**Safe Operating Area (@Vin=+5V, Vout=+2.5V, Pkg N) (See Note B)**



**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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