

PT7773

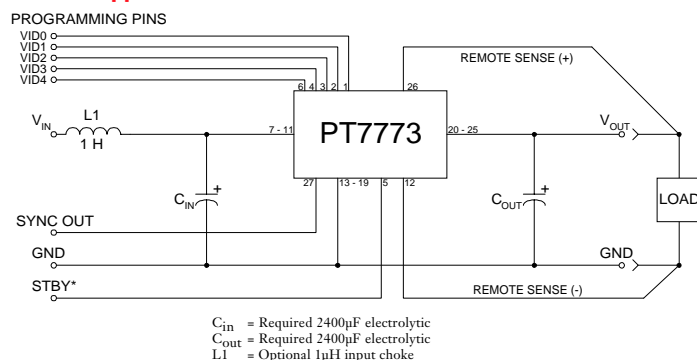
5V

32 AMP HIGH-PERFORMANCE
"SLEDGE HAMMER" PROGRAMMABLE ISRSLTS078
(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°C unless noted)	Symbols	Conditions	PT7773 SERIES			
			Min	Typ	Max	Units
Output Current	I _O	T _a = +60°C, 200 LFM, pkg N T _a = +25°C, natural convection	0.1 ⁽¹⁾ 0.1 ⁽¹⁾	—	32 26	A
Input Voltage Range	V _{in}	0.1A ≤ I _O ≤ 32A	4.5	—	5.5	V
Output Voltage Tolerance	ΔV _O	V _{in} = +5V, I _O = 32A 0°C ≤ T _a ≤ +55°C	V _O -0.03	—	V _O +0.03	V
Line Regulation	Reg _{line}	4.5V ≤ V _{in} ≤ 5.5V, I _O = 32A	—	±10	—	mV
Load Regulation	Reg _{load}	V _{in} = +5V, 0.1 ≤ I _O ≤ 32A	—	±10	—	mV
V _O Ripple/Noise pk-pk	V _n	V _{in} = +5V, I _O = 32A	—	50	—	mV
Transient Response with C _{out} = 2400 μ F	t _{rr} V _{os}	I _O step between 16A and 32A V _O over/undershoot	— —	100 200	— —	μ Sec mV
Efficiency	η	V _{in} = +5V, I _O = 20A, V _O = 2.5V	—	86	—	%
Switching Frequency	f _O	4.5V ≤ V _{in} ≤ 5.5V 0.1A ≤ I _O ≤ 32A	650	700	750	kHz
Absolute Maximum Operating Temperature Range	T _a	Over V _{in} Range	0	—	+85 ⁽²⁾	°C
Storage Temperature	T _s	—	-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 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**5 V****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

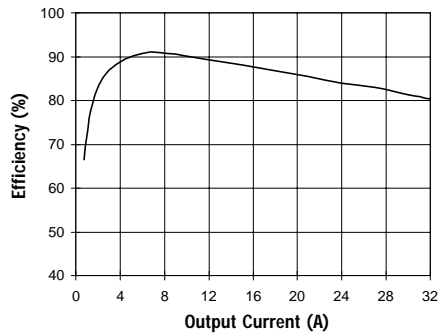
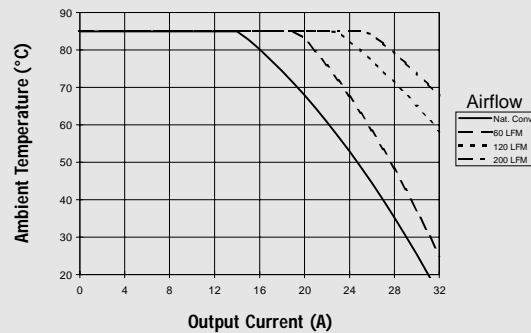
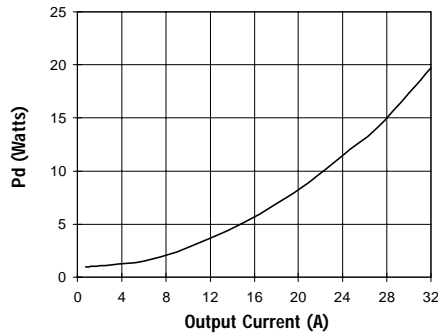
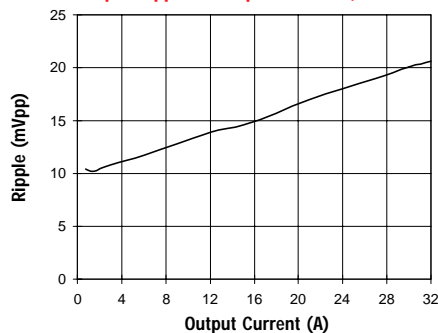
Logic 0 = Pin 12 potential (remote sense gnd)
 Logic 1 = Open circuit (no pull-up resistors)
 VID3 and VID4 may not be changed while the unit
 is operating.

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.

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.