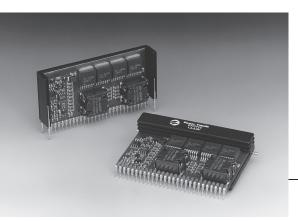
SLTS055A

(Revised 6/30/2000)



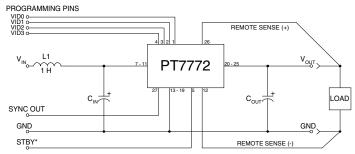
The PT7772 is a high-output Integrated Switching Regulator (ISR) housed in a 27-pin SIP package. The PT7772 operates from a 3.3V bus to provide a 32 amp low-voltage power source for the industry's latest highspeed μPs, ASICs, DŚPs.

The PT7772 has been designed to work in parallel with one or more of the PT7746 -32A current boosters to increase the load current capability in increments of 32A.

The output voltage is programmable from 1.3V to 2.05V with a 4-bit input, compatible with Intel's Pentium^a Pro Processor. A differential remote sense is also provided, to compensate for voltage drop between the ISR and

The PT7772 requires a capacitance of 2400µF at the input, and 680µF at the output for proper operation. Note that this product does not include short circuit protection.

Standard Application



 $\begin{array}{ll} C_{in} &= Required\ 2400\mu F\ electrolytic \\ C_{out} &= Required\ 680\mu F\ electrolytic \\ L1 &= Optional\ 1\mu H\ input\ choke \end{array}$

Pin-Out Information

	out milloring
Pin	Function
1	VID0
2	VID1
3	VID2
4	VID3
5	STBY*- Stand-by
6	Do not connect
7	V_{in}
8	V _{in}
9	V_{in}
10	V_{in}
11	V_{in}
12	Remote Sense Gnd
13	GND

Pin	Function
14	GND
15	GND
16	GND
17	GND
18	GND
19	GND
20	V _{out}
21	V_{out}
22	V _{out}
23	V_{out}
24	V _{out}
25	V_{out}
26	Remote Sense Vout
27	Sync Out

For STBY* pin; Open = output enabled Gnd = output disabled.

Specifications

Characteristics			F	PT7772 SERI	ES	
(T _a = 25°C unless noted)	Symbols	Conditions	Min	Тур	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 A
Input Voltage Range	V_{in}	$0.1A \le I_o \le 32A$	3.1 (2)	_	3.6	V
Output Voltage Tolerance	ΔV_{o}	V_{in} = +3.3V, I_{o} = 32A 0°C \leq T_{a} \leq +55°C	Vo-0.03	_	Vo+0.03	V
Line Regulation	Reg _{line}	$3.1V \le V_{in} \le 3.6V$, $I_o = 32A$	_	±10	_	mV
Load Regulation	Reg _{load}	$V_{\rm in}$ = +3.3V, $0.1 \le I_{\rm o} \le 32$ A	_	±10	_	mV
Vo Ripple/Noise pk-pk	Vn	$V_{\rm in}$ = +3.3V, $I_{\rm o}$ = 32A	_	50	_	mV
Transient Response	$egin{array}{c} t_{tr} \ V_{os} \end{array}$	C_{out} =680µF, I_{o} =25% load step from 24A V_{o} over/undershoot	_	100 200	_	μs mV
	$ au_{ m os}^{ m t_{tr}}$	C_{out} =2400 μ F, I_o =50% load step from 16A V_o over/undershoot	_	100 200	_	μs mV
Efficiency	η	$V_{\rm in}$ = +3.3V, $I_{\rm o}$ = 20A, $V_{\rm o}$ = 1.8V	_	90	_	%
Switching Frequency	f_{0}	$3.1V \le V_{in} \le 3.6V$ $0.1A \le I_o \le 32A$	650	700	750	kHz
Absolute Maximum Operating Temperature Range	T_a	_	0	_	+85 (3)	°C
Storage Temperature	T_s		-40		+125	°C
Weight	_	Vertical/Horizontal	_	53/66	_	grams

Notes: (1) The ISR will operate down to no load with reduced specifications.

(2) The minimum input voltage is 3.1V or V_{out}+1.2V, whichever is greater.
 (3) See Safe Operating Area curves for appropriate derating.

Output Capacitors: The PT7772 series requires a minimum output capacitance of 680µF for proper operation. Do not use Oscon type capacitors. The maximum allowable output capacitance is 30,000µF.

Input Filter: An input filter is optional for most applications. The input inductor must be sized to handle 32ADC with a typical value of 1µH. 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.

32 Amp "Sledge Hammer" Programmable ISR

Features

- +3.3V input
- 4-bit Programmable: 1.3V to 2.05V@32A
- High Efficiency
- Differential Remote Sense
- Parallelable with PT7746
 32A "Current Booster"
- 27-pin SIP Package

Programming Information VID3 VID2 VID1 VID0 Vout

AID2	AIDZ	AIDT	VIDU	VOUL
1	1	1	1	1.30V
1	1	1	0	1.35V
1	1	0	1	1.40V
1	1	0	0	1.45V
1	0	1	1	1.50V
1	0	1	0	1.55V
1	0	0	1	1.60V
1	0	0	0	1.65V
0	1	1	1	1.70V
0	1	1	0	1.75V
0	1	0	1	1.80V
0	1	0	0	1.85V
0	0	1	1	1.90V
0	0	1	0	1.95V
0	0	0	1	2.00V
0	0	0	0	2.05V

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

Ordering Information

PT7772 = 1.3 to 2.05 Volts

For dimensions and PC board layout, see Package Style 1020 and 1030

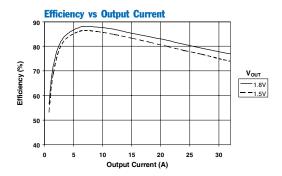
PT Series Suffix (PT1234X)

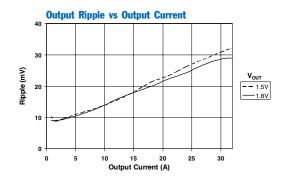
Case/Pin	
Configuration	

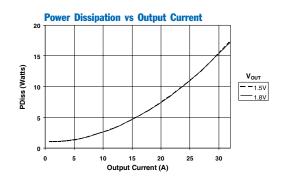
Comiguration	
Vertical Through-Hole	N
Horizontal Through-Hole	A
Horizontal Surface Mount	C

TYPICAL CHARACTERISTICS

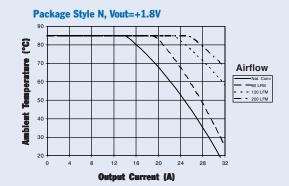
Characteristic Data, V_{IN} =3.3V (See Note A)







Safe Operating Area, V_{IN} =3.3V (See Note B)



Note A: All data listed 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.



PACKAGE OPTION ADDENDUM

28-Aug-2010

PACKAGING INFORMATION

Orderable Device	Status ⁽¹⁾	Package Type	Package Drawing	Pins	Package Qty	Eco Plan ⁽²⁾	Lead/ Ball Finish	MSL Peak Temp ⁽³⁾	Samples (Requires Login)
PT7772N	NRND	SIP MODULE	EJD	27		TBD	Call TI	Call TI	Samples Not Available

(1) The marketing status values are defined as follows:

ACTIVE: Product device recommended for new designs.

LIFEBUY: TI has announced that the device will be discontinued, and a lifetime-buy period is in effect.

NRND: Not recommended for new designs. Device is in production to support existing customers, but TI does not recommend using this part in a new design.

PREVIEW: Device has been announced but is not in production. Samples may or may not be available.

OBSOLETE: TI has discontinued the production of the device.

(2) Eco Plan - The planned eco-friendly classification: Pb-Free (RoHS), Pb-Free (RoHS Exempt), or Green (RoHS & no Sb/Br) - please check http://www.ti.com/productcontent for the latest availability information and additional product content details.

TBD: The Pb-Free/Green conversion plan has not been defined.

Pb-Free (RoHS): TI's terms "Lead-Free" or "Pb-Free" mean semiconductor products that are compatible with the current RoHS requirements for all 6 substances, including the requirement that lead not exceed 0.1% by weight in homogeneous materials. Where designed to be soldered at high temperatures, TI Pb-Free products are suitable for use in specified lead-free processes.

Pb-Free (RoHS Exempt): This component has a RoHS exemption for either 1) lead-based flip-chip solder bumps used between the die and package, or 2) lead-based die adhesive used between the die and leadframe. The component is otherwise considered Pb-Free (RoHS compatible) as defined above.

Green (RoHS & no Sb/Br): TI defines "Green" to mean Pb-Free (RoHS compatible), and free of Bromine (Br) and Antimony (Sb) based flame retardants (Br or Sb do not exceed 0.1% by weight in homogeneous material)

(3) MSL, Peak Temp. -- The Moisture Sensitivity Level rating according to the JEDEC industry standard classifications, and peak solder temperature.

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