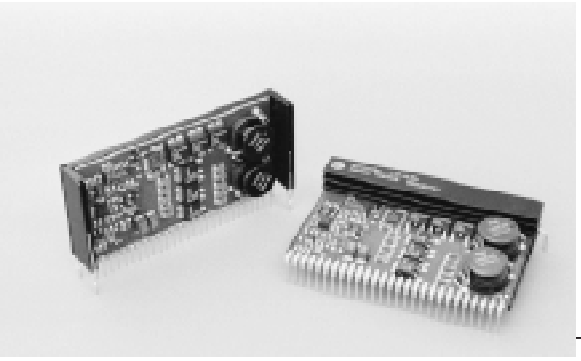
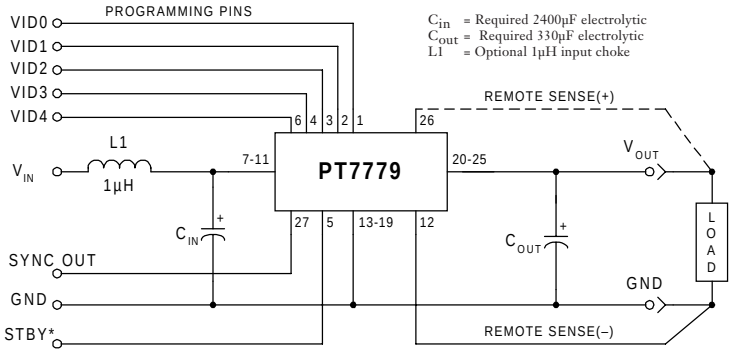


Description

The PT7779 is a high-output 32A Integrated Switching Regulator (ISR), housed in a 27-pin SIP package. The PT7779 is the next generation of the industry benchmark PT7771. The PT7779 includes short circuit protection and requires only 330µF of output capacitance for proper operation.

The 32A output capability allows the easy integration of the latest high-speed, µPs, ASICs, DSPs into existing 5V systems. For additional current, the PT7779 is designed to operate with up to two PT7741 32A compatible current boosters. The output voltage is programmable from 1.3V to 3.5V using a 5-bit input, that is compatible with Intel's Pentium® II Processors. A differential remote sense compensates for any voltage drop between the ISR and load.

Standard Application



Pin-Out Information

Pin	Function
1	VID0
2	VID1
3	VID2
4	VID3
5	STBY*- Stand-by
6	VID4
7	V_{in}
8	V_{in}
9	V_{in}
10	V_{in}
11	V_{in}
12	Remote Sense Gnd (3)
13	GND
14	GND

Pin	Function
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 V_{out}
27	Sync Out

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

Specifications

Characteristics (T_a = 25°C unless noted)	Symbols	Conditions	PT7779 Min	PT7779 Typ	PT7779 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)	— —	31 32	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 –40°C ≤ T_a ≤ +85°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} = 330µF	t_{tr} V_{os}	I_o step between 16A and 32A V_o over/undershoot	— —	100 200	— —	µSec mV
Efficiency	η	V_{in} = +5V, I_o = 20A, V_o = 3.3V	—	90	—	%
Switching Frequency	f_o	4.5V ≤ V_{in} ≤ 5.5V 0.1A ≤ I_o ≤ 32A	300	350	400	kHz
Absolute Maximum Operating Temperature Range	T_a	Over V_{in} Range	–40	—	+85 (2)	°C
Storage Temperature	T_s	—	-40	—	+125	°C
Mechanical Vibration		Per Mil-STD-883D, Method 2007.2, 20-20,000Hz, Soldered in a PC board	—	10/15	—	G's
Weight	—	Vertical/Horizontal	—	53/66	—	grams

Notes: *(1) ISR-will operate down to no load with reduced specifications.*
(2) Consult the Safe Operating Area curves, or contact the factory for the appropriate derating.
(3) If the remote sense ground is not used, pin 12 must be connected to pin13 for optimum output voltage accuracy.

External Capacitors: *The PT7779 requires a minimum output capacitance of 330µF for proper operation. The PT7779 also requires an input capacitance of 2400µF, which must be rated for a minimum of 2.0Arms of ripple current. For transient or dynamic load applications, additional capacitance may be required. For further information, see the accompanying application note on capacitor selection for this product.*

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

PT7779—5V

32 Amp Programmable Integrated Switching Regulator

Features

- +5V Input
- 32A Output (64A with PT7741 Booster)
- 5-bit Programmable: 1.3V to 3.5V
- High Efficiency
- Short Circuit Protection
- Differential Remote Sense
- 27-pin SIP Package

Programming Information

VID3	VID2	VID1	VID0	VID4=1 Vout	VID4=0 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	2.6V	1.60V
1	0	0	0	2.7V	1.65V
0	1	1	1	2.8V	1.70V
0	1	1	0	2.9V	1.75V
0	1	0	1	3.0V	1.80V
0	1	0	0	3.1V	1.85V
0	0	1	1	3.2V	1.90V
0	0	1	0	3.3V	1.95V
0	0	0	1	3.4V	2.00V
0	0	0	0	3.5V	2.05V

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

PT7779❑ = 1.3 to 3.5 Volts

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

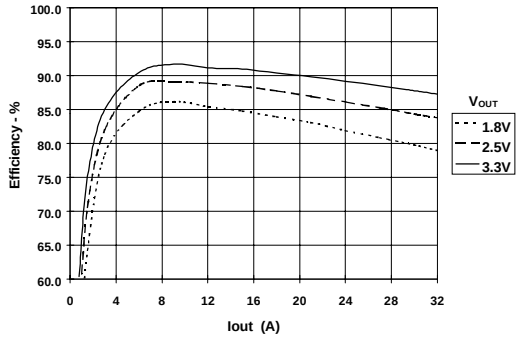
PT Series Suffix (PT1234X)

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

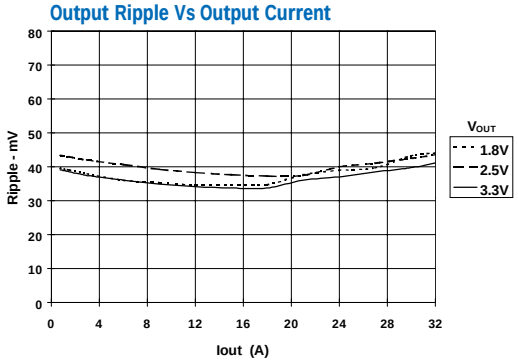
TYPICAL CHARACTERISTICS

Performance Characteristics, V_{in} =5V (See Note A)

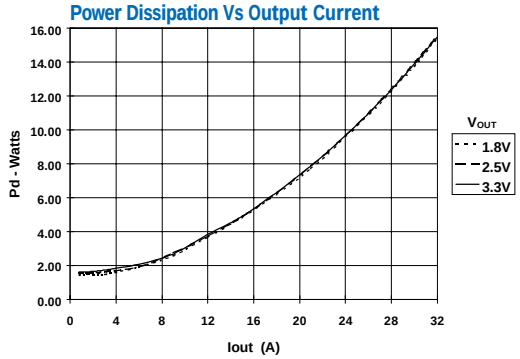
Efficiency Vs Output Current



Output Ripple Vs Output Current

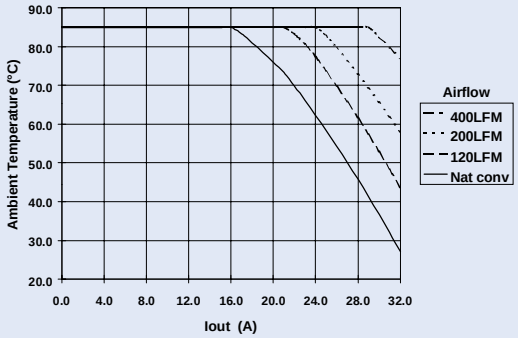


Power Dissipation Vs Output Current



Safe Operating Area Curves (See Note B)

PT7779, V_{IN} =5V, V_O =3.3V



Note A: *Characteristic data has been developed from actual products tested at 25°C. This data is considered typical for the regulator.*
Note B: *Safe Operating Area curves represent conditions at which internal components are at or beow manufacturer's rated operating temperatures.*

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