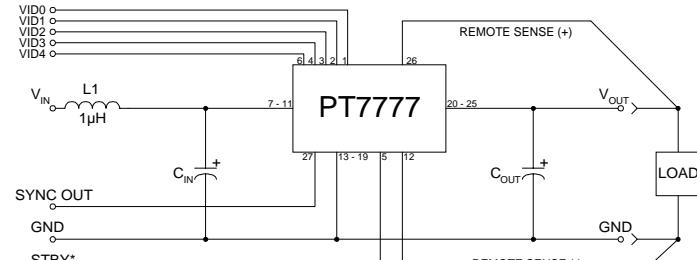
**Standard Application****PROGRAMMING PINS**VID0
VID1
VID2
VID3
VID4

C_{in} = Required 2400 μ F electrolytic
 C_{out} = Required 680 μ F electrolytic
 L1 = Optional 1uH input choke

The PT7777 is a new 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 PT7777

can be easily programmed from 1.3V to 3.5V with a 5 bit input compatible with Intel's Pentium® Pro Processor. A differential remote sense is also provided which automatically compensates for any voltage drop from the ISR to the load.

680 μ F of output capacitance is required for proper operation.

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 ($T_a = 25^\circ C$ unless noted) | Symbols | Conditions | PT7777 SERIES | | | |
|---|----------------------|--|--------------------|----------|--------------|-----------------|
| | | | Min | Typ | Max | Units |
| Output Current | I_o | $T_a = +60^\circ C$, 200 LFM, pkg N $T_a = +25^\circ C$, natural convection | 0.1 ⁽¹⁾ | — | 32 | A |
| Input Voltage Range | V_{in} | $0.1A \leq I_o \leq 32A$ | 4.5 ⁽²⁾ | — | 5.5 | V |
| Output Voltage Tolerance | ΔV_o | $V_{in} = +5V, I_o = 32A$ $0^\circ C \leq T_a \leq +55^\circ C$ | $V_o - 0.03$ | — | $V_o + 0.03$ | V |
| Line Regulation | Reg_{line} | $4.5V \leq V_{in} \leq 5.5V, I_o = 32A$ | — | ± 10 | — | mV |
| Load Regulation | Reg_{load} | $V_{in} = +5V, 0.1 \leq I_o \leq 32A$ | — | ± 10 | — | mV |
| V_o Ripple/Noise pk-pk | V_n | $V_{in} = +5V, I_o = 32A$ | — | 50 | — | mV |
| Transient Response with $C_{out} = 680\mu F$ | t_{tr} V_{os} | I_o step between 1.6A and 32A V_o over/undershoot | — | 100 | — | μ Sec mV |
| Efficiency | η | $V_{in} = +5V, I_o = 20A, V_o = 3.3V$ | — | 90 | — | % |
| Switching Frequency | f_o | $4.5V \leq V_{in} \leq 5.5V$ $0.1A \leq I_o \leq 32A$ | 650 | 700 | 750 | kHz |
| Absolute Maximum Operating Temperature Range | T_a | — | 0 | — | +85 | $^\circ C$ |
| Recommended Operating Temperature Range | T_a | Forced Air Flow = 200 LFM Over V_{in} and I_o Ranges | 0 | — | +65 | $^\circ C$ |
| Storage Temperature | T_s | — | -40 | — | +125 | $^\circ C$ |
| Weight | — | Vertical/Horizontal | — | 53/66 | — | grams |

(1) ISR-will operate down to no load with reduced specifications. Please note that this product is not short-circuit protected.

(2) The minimum input voltage is 4.5V or $V_{out} + 1.2V$, whichever is greater.

Output Capacitors: The PT7777 series requires a minimum output capacitance of 680 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 1uH. 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.

Features

- +5V input
- 5-bit Programmable: 1.3V to 3.5V@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 | 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 grid)
 Logic 1 = Open circuit (no pull-up resistors)
 VID3 and VID4 may not be changed while the unit is operating.

Ordering Information

PT7777□ = 1.3 to 3.5 Volts

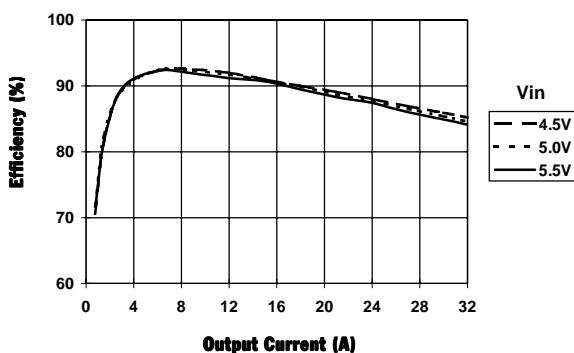
For dimensions and PC board layout, see Package Style 1020 and 1030

PT Series Suffix (PT1234X)**Case/Pin Configuration**

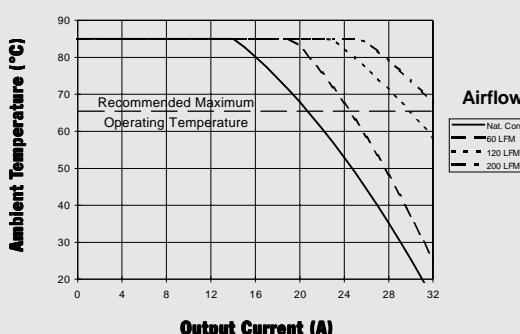
| | |
|--------------------------|----------|
| Vertical Through-Hole | N |
| Horizontal Through-Hole | A |
| Horizontal Surface Mount | C |

CHARACTERISTIC DATA

Efficiency vs Output Current (@Vout=+3.3V)

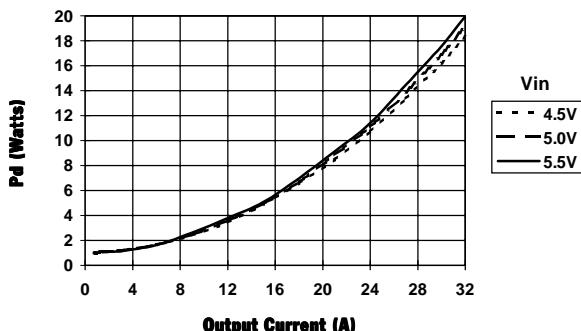


Safe Operating Area (@Vin=+5V, Vout=+3.3V, Pkg N)

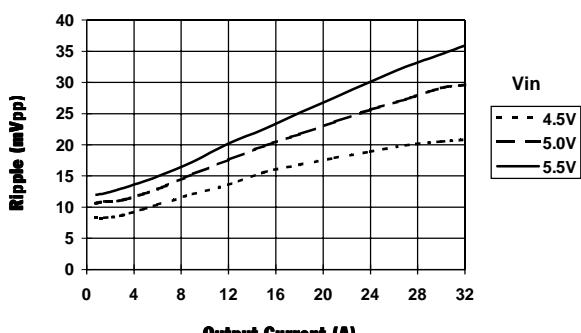


Note: SOA curves represent operating conditions at which internal components are at or below manufacturer's maximum rated operating temperatures.

Power Dissipation vs Output Current (@Vout=+3.3V)



Output Ripple vs Output Current (@Vout=+3.3V)



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