PT4482—48V

Power Trends Products
from Texas Instruments

EXCALIBUR

SLTS096

(Revised 6/30/2000)

100 Watt 30 Amp Programmable Isolated DC-DC Converter

- 36V to 75V Input Range
- Programmable Output Voltage Range: 1.3V to 3.5V
- -40° to +100°C Operating Temp
- 1500 VDC Isolation
- 88% Efficiency
- Remote On/Off
- Differential Remote Sense
- 60A Output with PT4499
- Over-Current Protection
- Over-Temperature Protection
- Over-Voltage Protection
- Solderable Copper Case

Patent pending on package assembly

The PT4482 Excalibur™ module combines state-of-the-art power conversion technology with un-paralleled flexibility. Operating off a standard 48V telecom input, the PT4482 provides a full 100W output at load currents up to 30A, and over the programmable output voltage range of 1.3V to 3.5V. The output may be increased to 60A when used with the compatible PT4499 booster module.

The PT4482 features high efficiencies, ultra-fast transient response, and output short circuit and over-temperature protection.

Standard Application
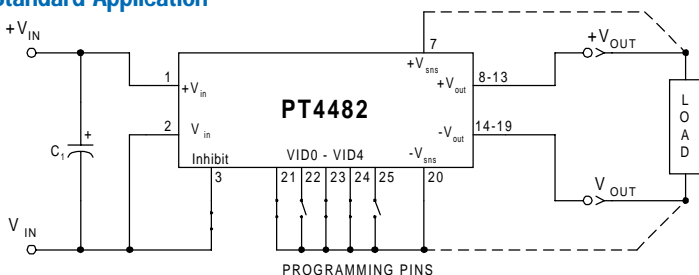
- C1 = Optional 33µF, 100V electrolytic capacitor
- Programming pins, VID0–VID4, are shown configured for Vo =3.3V
- For normal operation, pin 3 (Inhibit) must be connected to –Vin.
- For operation with the compatible current booster module, consult the PT4499 data sheet.
- Pins 4, 5, & 26 are used for booster applications only.

Specifications

Characteristics (T$_a$=25°C unless noted)	Symbols	Conditions (V$_{in}$=48V, V$_o$=3.3V unless noted)		PT4482			Units
				Min	Typ	Max	
Output Current	I$_o$	Over V$_{in}$ range		0	—	30	A
Current Limit	I$_{cl}$	V$_{in}$ = 36V		—	35	—	A
Current Sharing		with PT4499 current booster		—	±10	—	%
Input Voltage Range	V$_{in}$	I$_o$ = 0 to max I$_o$		36	48	75	V
Output Voltage Tolerance	ΔV$_o$	Over V$_{in}$ Range T$_A$= -40 to +100°C Baseplate		—	±1.0	±2.0	%V$_o$
Line Regulation	Reg$_{line}$	Over V$_{in}$ range @ max I$_o$		—	±0.1	±1.0	%V$_o$
Load Regulation	Reg$_{load}$	0 to 100% of I$_o$ max		—	±0.5	±1.0	%V$_o$
V$_o$ Ripple/Noise	V$_n$	I$_o$ =I$_o$max	V$_o$>2.0V V$_o$≤2.0V	— —	60 45	75 55	mV$_{pp}$
Transient Response	t$_{tr}$	50% to 75% I$_o$max @ 0.1A/µs V$_o$ over/undershoot (no ext caps)		— —	N/A 1.0	— —	µSec %V$_o$
		50% to 100% I$_o$max @1.0A/µs V$_o$ over/undershoot (no ext. caps)		— —	75 6	— —	µSec %V$_o$
V$_o$ Rise Time	V$_{otr}$	At turn-on		—	—	10	mSec
Efficiency	η	I$_o$=15A		—	88.5	—	%
Switching Frequency	f_o	—		—	300	—	kHz
Remote On/Off	Off On	Open or 2.5 to 5.1 VDC above -V$_{in}$ Short or 0 to 0.8 VDC above -V$_{in}$					
Over-Voltage Protection	OVP	Shutdown and latch off		—	125	—	%V$_o$
Isolation	—	—		1500	—	—	VDC
Maximum Operating Temperature Range	T$_c$	Measured at center of case		–40	—	+100	°C
Over-Temperature Shutdown Point	OTP	Case temperature - Auto reset		—	+105	—	°C
Reliability	MTBF	Per Bellcore TR-332 50% stress, t =40°C, ground benign		1.4	—	—	10^6 Hrs
Mechanical Shock	—	Per Mil-STD-883D, Method 2002.3, 1mS, Half-sine, mounted to a fixture		—	TBD	—	G's
Mechanical Vibration	—	Per Mil-STD-883D, Method 2007.2, 20-2000Hz, Soldered in a PC board		—	TBD	—	G's
Weight	—	—		—	90	—	grams

100 Watt 30 Amp Programmable Isolated DC-DC Converter

Pin-Out Information

Pin	Function	Pin	Function
1	+V$_{in}$	14	-V$_{out}$
2	-V$_{in}$	15	-V$_{out}$
3	Inhibit	16	-V$_{out}$
4	V$_r$	17	-V$_{out}$
5	V$_a$	18	-V$_{out}$
6	Not used	19	-V$_{out}$
7	+V$_{sense}$	20	-V$_{sense}$
8	+V$_{out}$	21	VID0
9	+V$_{out}$	22	VID1
10	+V$_{out}$	23	VID2
11	+V$_{out}$	24	VID3
12	+V$_{out}$	25	VID4
13	+V$_{out}$	26	DRV

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

Ordering Information

PT4482□ = 1.3 to 3.5 Volts

(For dimensions and PC board layout, see Package Styles 1200, 1210 and 1215.)
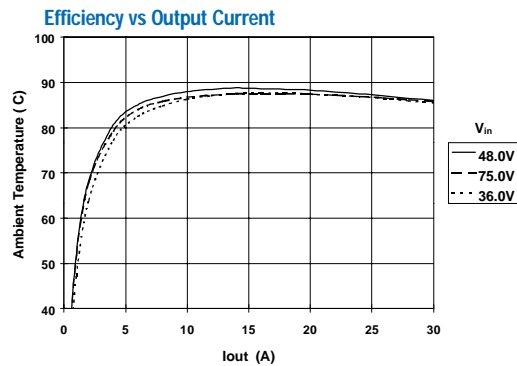
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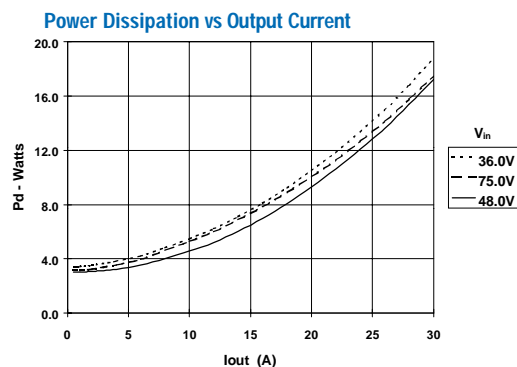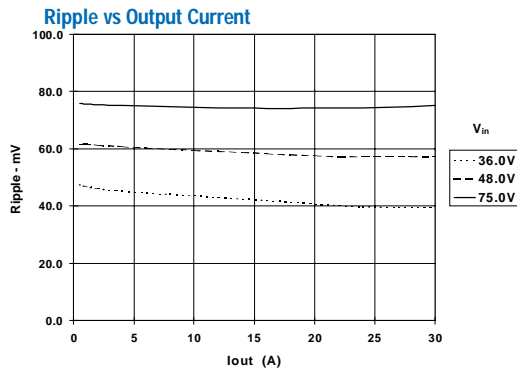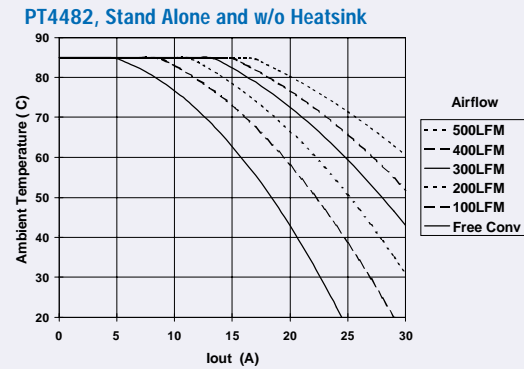
Case/Pin Configuration

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

TYPICAL CHARACTERISTICS

PT4482, V$_o$ =3.3V (See Note A)

Efficiency vs Output Current

Ripple vs Output Current

Power Dissipation vs Output Current

Safe Operating Area, V$_{in}$ =48V, V$_o$ =3.3V (See Note B)

PT4482, Stand Alone and w/o Heatsink

Note A: *All data listed in the above graphs has been developed from actual products tested at 25°C. This data is considered typical data for the DC-DC Converter.*
Note B: *SOA curves represent operating conditions at which the temperature of the metal case is at or below the maximum specified 100°C*

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