

- 15W Output Power ⁽¹⁾
- Input Voltage Range:
36V to 75V
- 1500 VDC Isolation
- Low-Profile
- Current Limit
- Short-Circuit Protection
- Over-Temperature Shutdown
- UL1950 recognized
- CSA 22.2 950 certified
- Meets EN60950

The PT4100—48V series of dc/dc converters provide up to 18 Watts/in³ of isolated power in a single low-profile module. Designed to operate from a standard 48V telecom bus, these modules employ switching frequencies of up to 850kHz, planar magnetics, and surface-mount construction. They are designed for Telecom, Industrial, Computer, Medical, and other distributed power applications that require input-to-output isolation.

Specifications

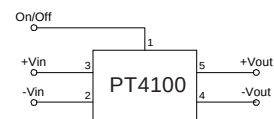
Characteristics (T _a =25°C unless noted)	Symbols	Conditions	PT4100—48V SERIES			Units
			Min	Typ	Max	
Output Current	I _o	Over V _{in} range V _o = 3.3V V _o = 5V V _o = 12V V _o = 15V	0 0 0 0	— — — —	4.0 ⁽¹⁾ 3.0 1.25 1.0	A
On/Off Standby Current	I _{in standby}	V _{in} = 48V, Pin 1 = -V _{in}	—	7	10	mA
Short Circuit Current	I _{sc}	V _{in} = 48V V _o ≤ 5.2V V _o = 12V V _o = 15V	— — — —	5.5 3.5 2.0	— — —	A
Inrush Current	I _{ir} t _{ir}	V _{in} = 48V @ max I _o On start-up	— —	0.6 1.0	1.0 5.0	A mSec
Input Voltage Range	V _{in}	I _o = 0.1 to max I _o	36.0	48.0	75.0	V
Output Voltage Tolerance	ΔV _o	Over V _{in} Range T _A = -40°C to +85°C	—	±1.0	±2.0	% V _o
Line Regulation	Reg _{line}	Over V _{in} range @ max I _o	—	±0.2	±1.0	% V _o
Load Regulation	Reg _{load}	10% to 100% of I _o max	—	±0.4	±1.0	% V _o
V _o Ripple/Noise	V _n	V _{in} =48V, I _o =4.0A, V _o =3.3V V _{in} =48V, I _o =3.0A, V _o =5V V _{in} =48V, I _o =1.25A, V _o =12V V _{in} =48V, I _o =1.0A, V _o =15V	— — — —	70 75 120 100	90 100 150 200	mV _{pp}
Transient Response	t _{tr}	50% load change V _o over/undershoot	— —	100 3.0	200 5.0	μSec % V _o
Efficiency	η	V _{in} =48V, I _o =4.0A, V _o = 3.3V V _{in} =48V, I _o =3.0A, V _o = 5V V _{in} =48V, I _o =1.25A, V _o =12V V _{in} =48V, I _o =1A, V _o =15V	— — — —	75 80 81 82	— — — —	%
Switching Frequency	f _o	Over V _{in} and I _o , V _o ≤ 5.2V V _o = 12V/15V	800 600	850 650	900 700	kHz
Recommended Operating Temperature Range	T _a	V _{in} = 48V @ max I _o Free air convection, (40-60LFM) PT4110 with 200 LFM airflow	-40 0	— —	+85 ⁽²⁾ +70 ⁽¹⁾	°C
Thermal Resistance	θ _{ja}	Free Air Convection, (40-60LFM)	—	14	—	°C/W
Case Temperature	T _c	@ Thermal shutdown	—	—	100	°C
Storage Temperature	T _s	—	-40	—	110	°C
Mechanical Shock	—	Per Mil-STD-202F, Method 213B, 6mS, Half-sine, mounted to a PCB	—	50	—	G's
Mechanical Vibration	—	Per Mil-STD-202F, Method 204D, 10-500Hz, Soldered in a PCB	—	10	—	G's
Weight	—	—	—	28	—	grams
Isolation Capacitance	—	—	1500	—	—	V
Resistance	—	—	10	1100	—	pF MΩ
Flammability	—	Materials meet UL 94V-0				
Remote On/Off	On ⁽³⁾ Off	Referenced to -V _{in}	2.5 0		7.0 0.8	V

Notes: (1) The PT4110 is limited to 13.2W output over the temperature range of 0–70°C with 200LFM airflow.

(2) See thermal derating curves

(3) If pin 2 is left open, the converter will operate when input power is applied

Standard Application



Pin-Out Information

Pin	Function
1	Remote ON/OFF
2	-V _{in}
3	+V _{in}
4	-V _{out}
5	+V _{out}
6	Do not connect

Ordering Information

Through-Hole

PT4101A = 5 Volts

PT4102A = 12 Volts

PT4103A = 15 Volts

(1) PT4110A = 3.3 Volts

PT4117A = 5.2 Volts

Surface Mount

PT4101C = 5 Volts

PT4102C = 12 Volts

PT4103C = 15 Volts

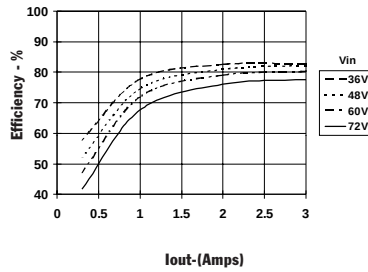
(1) PT4110C = 3.3 Volts

PT4117C = 5.2 Volts

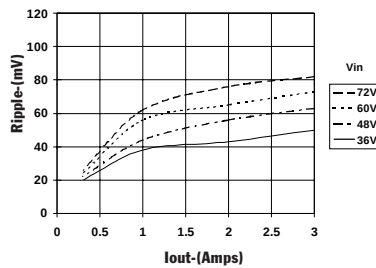
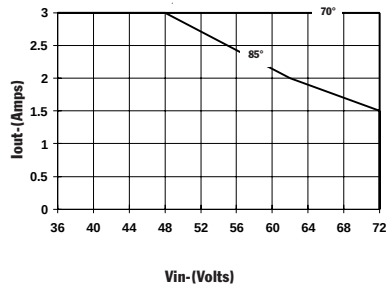
(For dimensions and PC board layout, see Package Style 710.)

PT4101, 5.0 VDC (See Note A.)

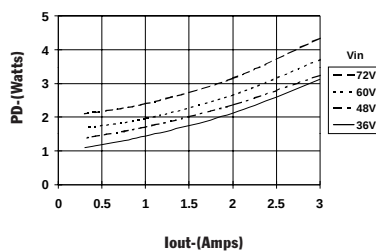
Efficiency vs Output Current



Ripple vs Output Current

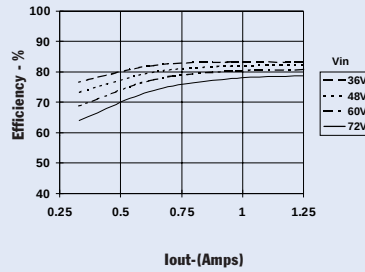
Thermal Derating (T_a) (See Note B.)

Power Dissipation vs Output Current

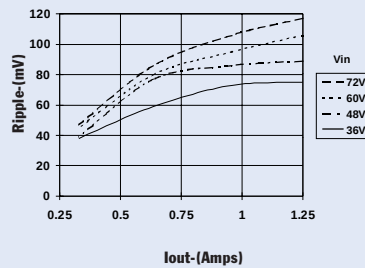
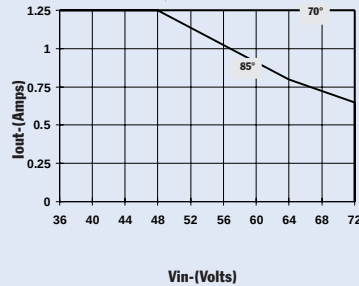


PT4102, 12.0 VDC (See Note A.)

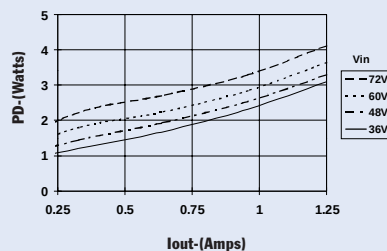
Efficiency vs Output Current



Ripple vs Output Current

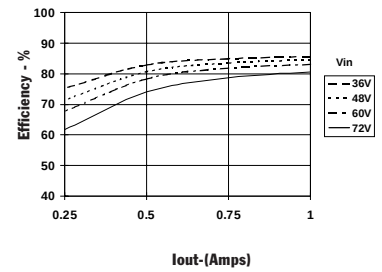
Thermal Derating (T_a) (See Note B.)

Power Dissipation vs Output Current

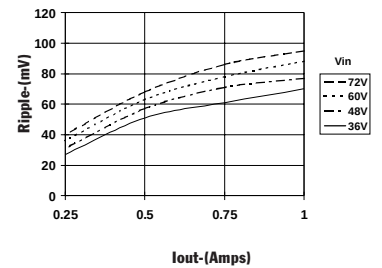
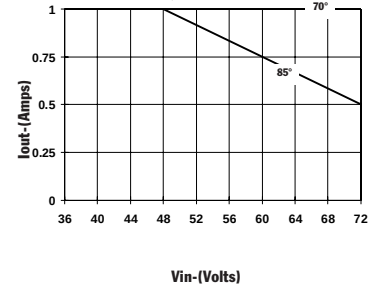


PT4103, 15.0 VDC (See Note A.)

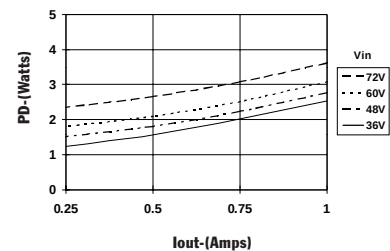
Efficiency vs Output Current



Ripple vs Output Current

Thermal Derating (T_a) (See Note B.)

Power Dissipation vs Output Current



Note A: All data listed in the above graphs, except for derating data, has been developed from actual products tested at 25°C. This data is considered typical data for the DC-DC Converter.
 Note B: Thermal derating graphs are developed in free air convection cooling of 40-60 LFM.

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 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 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, license, warranty or endorsement thereof.

Reproduction of information in TI data books or data sheets is permissible only if reproduction is without alteration and is accompanied by all associated warranties, conditions, limitations and notices. Representation or reproduction of this information with alteration voids all warranties provided for an associated TI product or service, is an unfair and deceptive business practice, and TI is not responsible nor liable for any such use.

Resale of TI's products or services with statements different from or beyond the parameters stated by TI for that product or service voids all express and any implied warranties for the associated TI product or service, is an unfair and deceptive business practice, and TI is not responsible nor liable for any such use.

Also see: [Standard Terms and Conditions of Sale for Semiconductor Products](http://www.ti.com/sc/docs/stdterms.htm). www.ti.com/sc/docs/stdterms.htm

Mailing Address:

Texas Instruments
Post Office Box 655303
Dallas, Texas 75265