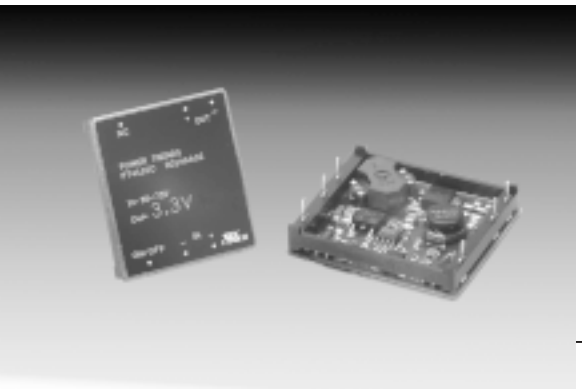


- 15W Output Power (1)
- Input Voltage Range: 36V to 75V
- 1500 VDC Isolation
- Low-Profile
- Current Limit
- Short-Circuit Protection
- Over-Temperature Shutdown
- UL1950 recognized
- CSA 22.2 950 certified
- Meets EN60950

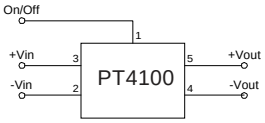
The PT4100—48V series of dc/dc converters provide up 18 Watts/in³ of isolated power in a single low-profile module. Designed to operate from a standard 48V telecom bus, these modules employ switching frequencies of up to 850kHz, planar magnetics, and surface-mount construction. They are designed for 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 Min	Typ	Max	Units
Output Current	I_o	Over V_{in} range, V_o = 3.3V	0	—	4.0 (1)	A
		V_o = 5V	0	—	3.0	
		V_o = 12V	0	—	1.25	
		V_o = 15V	0	—	1.0	
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, $V_o \le$ 5.2V	—	5.5	—	A
		V_o = 12V	—	3.5	—	
		V_o = 15V	—	2.0	—	
Inrush Current	I_{ir}	V_{in} = 48V @ max I_o	—	0.6	1.0	A
	t_{ir}	On start-up	—	1.0	5.0	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	—	70	90	mV_{pp}
		V_{in}=48V, I_o=3.0A, V_o=5V	—	75	100	
		V_{in}=48V, I_o=1.25A, V_o=12V	—	120	150	
		V_{in}=48V, I_o=1.0A, V_o=15V	—	100	200	
Transient Response	t_{tr}	50% load change	—	100	200	µSec
		V_o over/undershoot	—	3.0	5.0	%V_o
Efficiency	η	V_{in}=48V, I_o=4.0A, V_o = 3.3V	—	75	—	%
		V_{in}=48V, I_o=3.0A, V_o = 5V	—	80	—	
		V_{in}=48V, I_o=1.25A, V_o=12V	—	81	—	
		V_{in}=48V, I_o=1A, V_o=15V	—	82	—	
Switching Frequency	f_o	Over V_{in} and I_o, $V_o \le$5.2V	800	850	900	kHz
		V_o=12V/15V	600	650	700	
Recommended Operating Temperature Range	T_a	V_{in} = 48V @ max I_o, Free air convection, (40-60LFM)	-40	—	+85 (2)	°C
		PT4110 with 200 LFM airflow	0	—	+70 (1)	
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	—	—	1500	—	—	V
Capacitance	—	—	—	1100	—	pF
Resistance	—	—	10	—	—	MΩ
Flammability	—	Materials meet UL 94V-0				
Remote On/Off	On (3)	Referenced to –V_{in}	2.5		7.0	V
	Off		0		0.8	

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

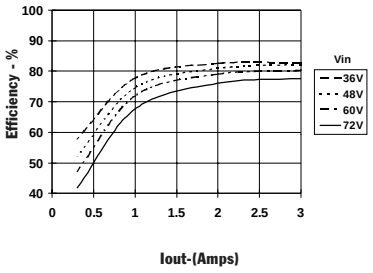
Surface Mount

PT4101C = 5 Volts
PT4102C = 12 Volts
PT4103C = 15 Volts
(1) **PT4110C** = 3.3 Volts
PT4117C = 5.2 Volts

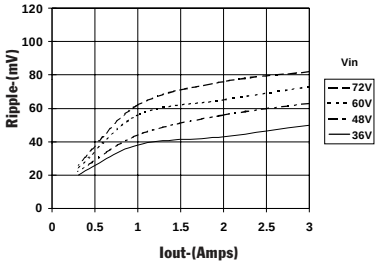
(For dimensions and PC board layout, see Package Style 710.)

PT4101, 5.0 VDC (See Note A.)

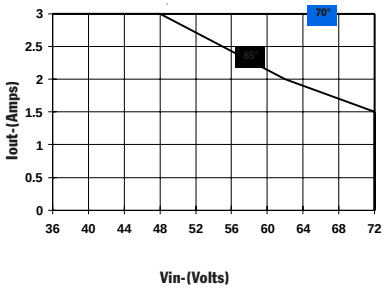
Efficiency vs Output Current



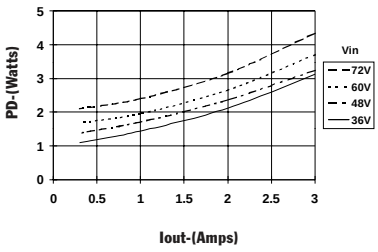
Ripple vs Output Current



Thermal Derating (T_a) (See Note B.)

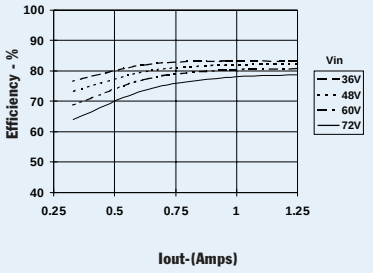


Power Dissipation vs Output Current

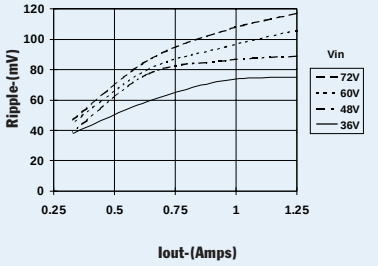


PT4102, 12.0 VDC (See Note A.)

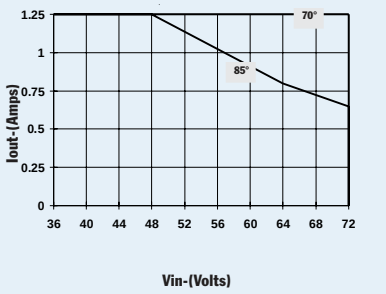
Efficiency vs Output Current



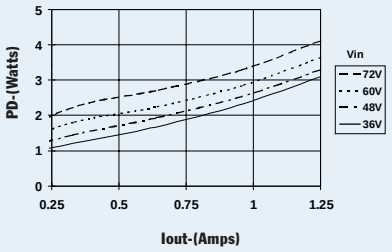
Ripple vs Output Current



Thermal Derating (T_a) (See Note B.)

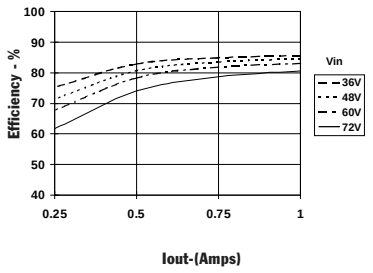


Power Dissipation vs Output Current

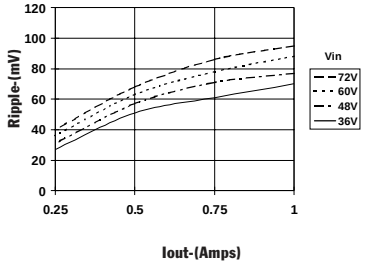


PT4103, 15.0 VDC (See Note A.)

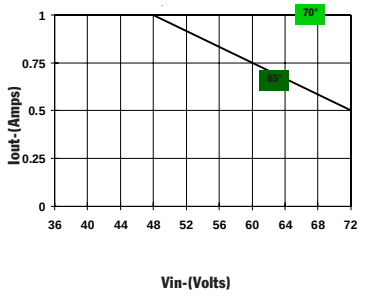
Efficiency vs Output Current



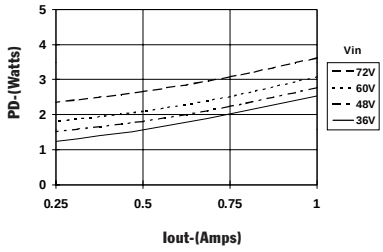
Ripple vs Output Current



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.*

PACKAGING INFORMATION

Orderable Device	Status (1)	Package Type	Package Drawing	Pins	Package Qty	Eco Plan (2)	Lead/Ball Finish (6)	MSL Peak Temp (3)	Op Temp (°C)	Device Marking (4/5)	Samples
PT4101C	OBSOLETE	DIP MODULE	EGE	6		TBD	Call TI	Call TI	-40 to 85		

(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.

(4) There may be additional marking, which relates to the logo, the lot trace code information, or the environmental category on the device.

(5) Multiple Device Markings will be inside parentheses. Only one Device Marking contained in parentheses and separated by a "~" will appear on a device. If a line is indented then it is a continuation of the previous line and the two combined represent the entire Device Marking for that device.

(6) Lead/Ball Finish - Orderable Devices may have multiple material finish options. Finish options are separated by a vertical ruled line. Lead/Ball Finish values may wrap to two lines if the finish value exceeds the maximum column width.

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