

- Input Voltage Range: 18V to 40V
- 1500 VDC Isolation
- Low Profile
- Current Limit
- Short-Circuit Protection
- Over-Temperature Shutdown
- UL1950 recognized
- CSA 22.2 950 certified
- Meets EN60950

The PT4100—24V series of dc/dc converters provide 18 Watts/in³ of isolated power in a single low-profile module. Designed to operate from a standard 24V 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.

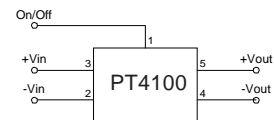
Specifications

Characteristics (T _a =25°C unless noted)	Symbols	Conditions	PT4100—24V SERIES			Units
			Min	Typ	Max	
Output Current	I _o	Over V _{in} range, V _o = 5V V _o = 12V V _o = 15V	0 0 0	— — —	3.0 1.25 1.0	A
Current Limit	I _{cl}	V _{in} = 18V, V _o = 5V V _o = 12V V _o = 15V	— — —	4.0 1.75 1.4	— — —	A
On/Off Standby Current	I _{in standby}	V _{in} = 24V, Pin 1 = -V _{in}	—	7	10	mA
Short Circuit Current	I _{sc}	V _{in} = 24V, V _o = 5V V _o = 12V V _o = 15V	— — —	6.25 2.5 2.0	— — —	A
Inrush Current	I _{ir} t _{ir}	V _{in} = 24V @ max I _o On start-up	— —	1.0 1.0	2.0 5.0	A mSec
Input Voltage Range	V _{in}	I _o = 0.1 to max I _o	18.0	24.0	40.0	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} =24V, I _o =3.0A, V _o =5V V _{in} =24V, I _o =1.25A, V _o =12V V _{in} =24V, I _o =1.25A, V _o =15V	— — —	75 75 100	100 150 200	mV _{pp}
Transient Response	t _{tr}	50% load change V _o over/undershoot	— —	125 3.0	200 5.0	μSec %V _o
Efficiency	η	V _{in} =24V, I _o =3.0A, V _o =5V V _{in} =24V, I _o =1.25A, V _o =12V V _{in} =24V, I _o =1A, V _o =15V	— — —	82 82 83	— — —	%
Switching Frequency	f _o	Over V _{in} and I _o , V _o =5V V _o =12V/15V	800 600	850 650	900 700	kHz
Recommended Operating Temperature Range	T _a	V _{in} = 24V @ max I _o Free air convection, (40-60LFM)	-40	—	+85 ⁽¹⁾	°C
Thermal Resistance	θ _{ja}	Free air convection, (40-60LFM)	—	12	—	°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 ⁽²⁾ Off	Referenced to -V _{in}	2.5 0	—	7.0 0.8	V

Notes: (1) See thermal derating curves.

(2) If pin2 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

PT4104A = 5 Volts
PT4105A = 12 Volts
PT4106A = 15 Volts

Surface Mount

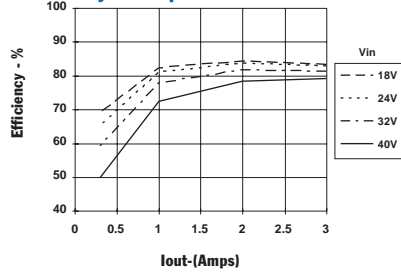
PT4104C = 5 Volts
PT4105C = 12 Volts
PT4106C = 15 Volts

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

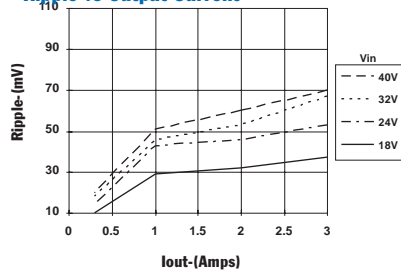
15 Watt Isolated DC-DC Converter

PT4104, 5.0 VDC (See Note A.)

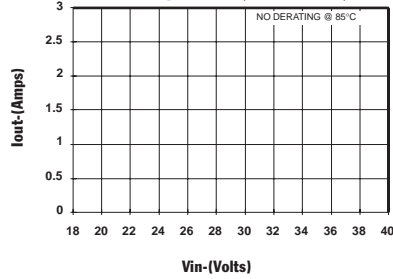
Efficiency vs Output Current



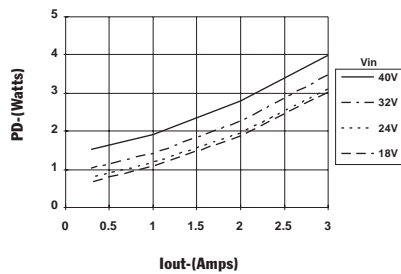
Ripple vs Output Current



Thermal Derating (Ta) (See Note B.)

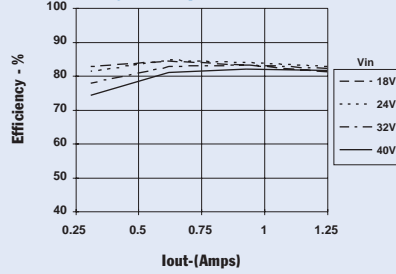


Power Dissipation vs Output Current

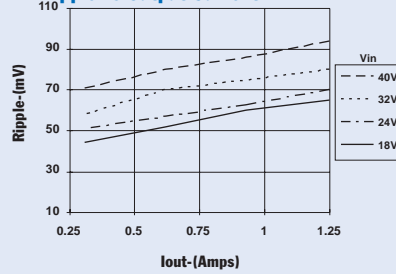


PT4105, 12.0 VDC (See Note A.)

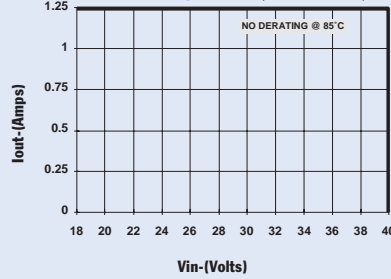
Efficiency vs Output Current



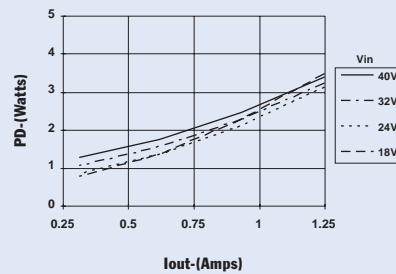
Ripple vs Output Current



Thermal Derating (Ta) (See Note B.)

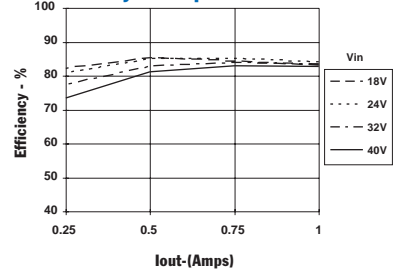


Power Dissipation vs Output Current

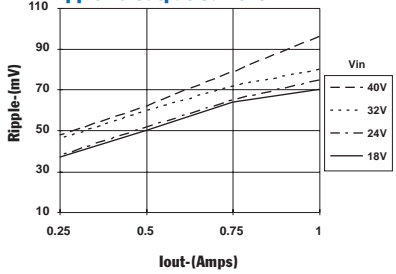


PT4106, 15.0 VDC (See Note A.)

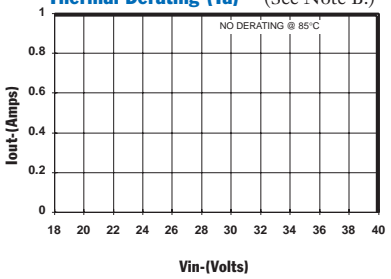
Efficiency vs Output Current



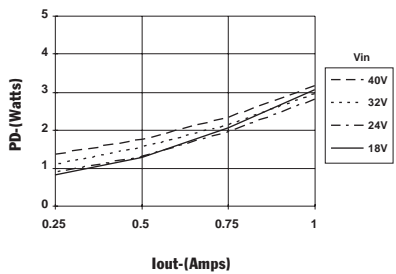
Ripple vs Output Current



Thermal Derating (Ta) (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	MSL Peak Temp ⁽³⁾
PT4104A	NRND	DIP MOD ULE	EGD	6	16	Pb-Free (RoHS)	Call TI	N / A for Pkg Type
PT4104C	NRND	DIP MOD ULE	EGE	6	16	Pb-Free (RoHS)	Call TI	Level-1-215C-UNLIM
PT4104CT	NRND	DIP MOD ULE	EGE	6	100	Pb-Free (RoHS)	Call TI	Level-1-215C-UNLIM
PT4105A	NRND	DIP MOD ULE	EGD	6	16	Pb-Free (RoHS)	Call TI	N / A for Pkg Type
PT4106A	NRND	DIP MOD ULE	EGD	6	16	Pb-Free (RoHS)	Call TI	N / A for Pkg Type

⁽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.

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