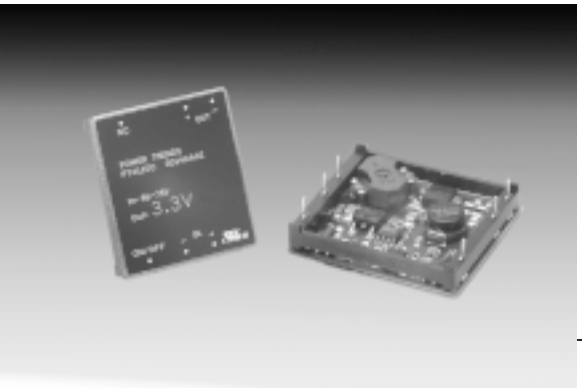
15 Watt Isolated DC-DC Converter

SLTS020A

(Revised 1/15/2001)



- 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

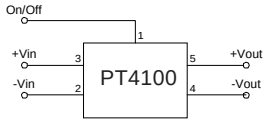
The PT4100—24V series of dc/dc converters provide 18 Watts/in³ of isolated power in a single low-profile module. Designed to operate from a standard 24V telecom bus, these modules employ switching frequencies of up to 850kHz, planar magnetics, and surface-mount construction. They are designed for Telecom, 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 Min	Typ	Max	Units
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 Resistance	— — —	— — —	1500 — 10	— 1100 —	— — —	V 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

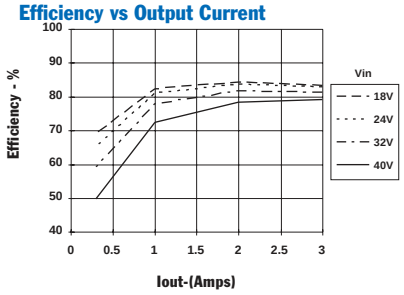
Surface Mount

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

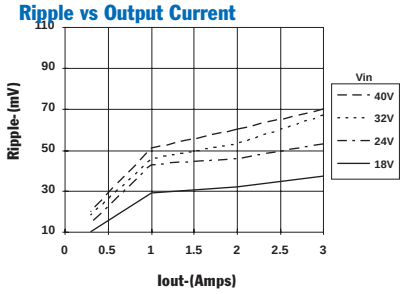
(For dimensions and PC board layout, see Package Style 710.)

PT4104, 5.0 VDC (See Note A.)

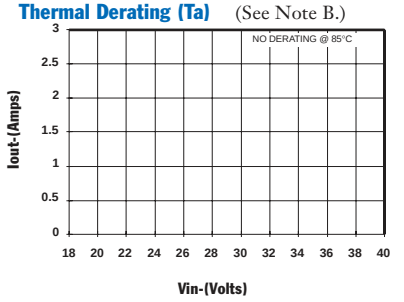
Efficiency vs Output Current



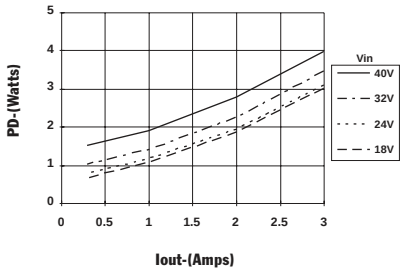
Ripple vs Output Current



Thermal Derating (Ta) (See Note B.)

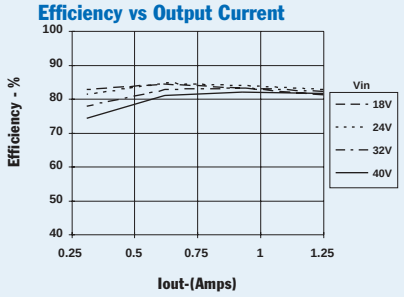


Power Dissipation vs Output Current

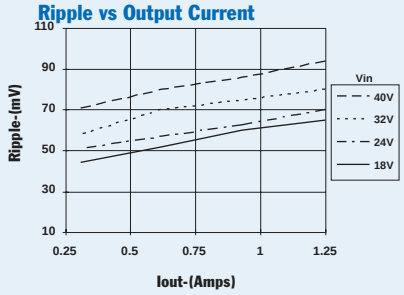


PT4105, 12.0 VDC (See Note A.)

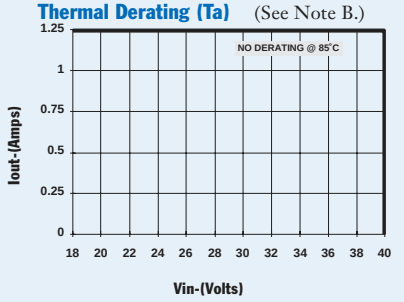
Efficiency vs Output Current



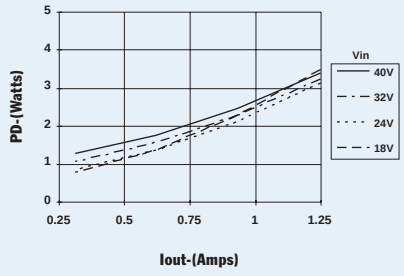
Ripple vs Output Current



Thermal Derating (Ta) (See Note B.)

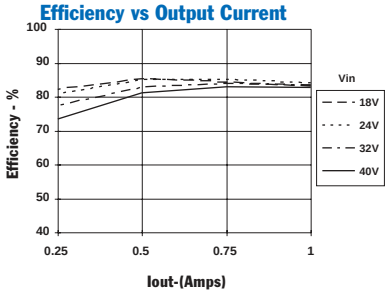


Power Dissipation vs Output Current

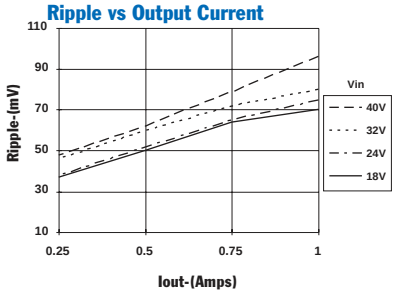


PT4106, 15.0 VDC (See Note A.)

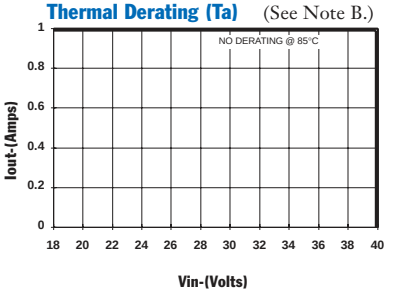
Efficiency vs Output Current



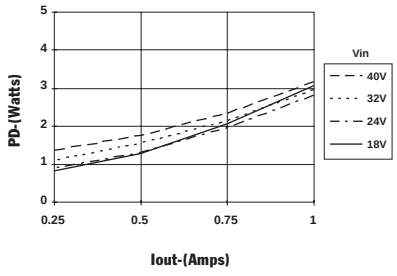
Ripple vs Output Current



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.*

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