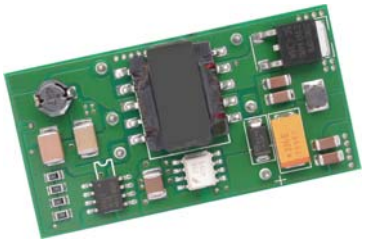
ISOLATED DC/DC CONVERTERS

48 Vdc Input, 3.3 Vdc/2 A, 5 Vdc/2 A, 12 Vdc/1 A, 24 Vdc/0.5 A Output

0RLC-10Txxx Series RoHS Compliant Rev.A

- Isolated
- Fixed Frequency
- High Power Density
- High Efficiency
- Output Over-Voltage Shutdown
- Safety Approval to UL60950-1 (Pending)
- Low Cost
- Trim
- OCP/SCP
- Remote On/Off
- Active Low/High (Option)



Description

The 0RLC-10T Series are isolated dc/dc converters that operate from a nominal 48 Vdc source. These units will provide up to 12 W of output power from a nominal 48 Vdc input. These units are designed to be highly efficient and very low cost. Features include remote on/off, over current protection and short circuit protection. These converters are provided in an industry standard package.

Part Selection

Output Voltage	Input Voltage	Max. Output Current	Max. Output Power	Typical Efficiency	Model Number Active High	Model Number Active Low
3.3 Vdc	36 Vdc - 75 Vdc	2 A	6.6 W	77%	0RLC-10T033	0RLC-10T03L
5.0 Vdc	36 Vdc - 75 Vdc	2 A	10 W	82%	0RLC-10T050	0RLC-10T05L
12 Vdc	36 Vdc - 75 Vdc	1 A	12 W	83%	0RLC-10T120	0RLC-10T12L
24 Vdc	36 Vdc - 75 Vdc	0.5 A	12 W	85%	0RLC-10T240	0RLC-10T24L

Notes: 1. Add “G” suffix at the end of the model number to indicate Tray Packaging.
2. All part numbers above indicate RoHS 6. Change the second letter "R" to "7" for RoHS 5 part numbers.

Absolute Maximum Ratings

Parameter	Min	Typ	Max	Notes
Continuous Input Voltage	-0.3 V	-	75 V	
Peak/Surge Input Voltage	-0.3 V	-	100 V	Transients of 100 ms or less in duration
Remote On/Off (Active Low)	-0.3 V	-	18 V	
Remote On/Off (Active High)	-0.3 V	-	7 V	
Ambient Temperature	0 °C	-	70 °C	
Storage Temperature	-40 °C	-	125 °C	

Input Specifications

Parameter	Min	Typ	Max	Notes
Input Voltage	36 V	-	75 V	
Input Current (no load)	-	-	40 mA	
Input Current (full load)	-	-	0.45 A	
Remote Off Input Current (Active Low)	-	5 mA	10 mA	
Remote Off Input Current (Active High)		-	10 mA	
Input Reflected Ripple Current (pk-pk)	-	15 mA	30 mA	With simulated source impedance of 10 uH, 5 Hz to 20 MHz; use a 47uF/100 V electrolytic capacitor with ESR = 1 ohm max. at 200 kHz at 25 °C.
Input Reflected Ripple Current (rms)	-	5 mA	10 mA	
I^2t Inrush Current Transient	-	0.039 A^2s	0.062 A^2s	
Turn-on Voltage Threshold	-	30 V	-	

Note: All specifications are typical at nominal input, full load at 25 °C unless otherwise stated.

Output Specifications

Parameter		Min	Typ	Max	Notes
Output Voltage Set Point					
	Vo=3.3 V	3.201 V	3.30 V	3.399 V	
	Vo=5.0 V	4.850 V	5.00 V	5.150 V	
	Vo=12 V	11.64 V	12.00 V	12.36 V	V_{in}=48 V for all outputs
	Vo=24 V	23.28 V	24.00 V	24.72 V	
Line Regulation					
	Vo=3.3 V	-	5 mV	10 mV	
	Vo=5.0 V	-	10 mV	15 mV	
	Vo=12 V	-	20 mV	36 mV	
	Vo=24 V	-	35 mV	48 mV	
Load Regulation					
	Vo=3.3 V	-	10 mV	15 mV	
	Vo=5.0 V	-	15 mV	25 mV	
	Vo=12 V	-	36 mV	60 mV	
	Vo=24 V	-	48 mV	80 mV	
Regulation Over Temperature (0 °C to 70 °C)		-	75 mV	150mV	
Output Current					
	Vo=3.3 V	0.2 A	-	2.0 A	
	Vo=5.0 V	0.2 A	-	2.0 A	
	Vo=12 V	0.1 A	-	1.0 A	
	Vo=24 V	0.05 A	-	0.5 A	
Current Limit Threshold					
	Vo=3.3 V	-	3.0 A	-	
	Vo=5.0 V	-	3.0 A	-	
	Vo=12 V	-	1.5 A	-	
	Vo=24 V	-	0.75 A	-	
Short Circuit Surge Transient		-	TBD	-	A^2s
Ripple and Noise (rms)					
	Vo=3.3 V	-	10 mV	15 mV	
	Vo=5.0 V	-	18 mV	30 mV	
	Vo=12 V	-	21 mV	40 mV	0 - 20 MHz BW , with 1 uF ceramic load capacitance
	Vo=24 V	-	45 mV	70 mV	
Ripple and Noise (pk-pk)					
	Vo=3.3 V	-	40 mV	60 mV	
	Vo=5.0 V	-	60 mV	100 mV	
	Vo=12 V	-	80 mV	120 mV	
	Vo=24 V	-	120 mV	180 mV	
Turn on Time					
	Power On	-	-	200 mS	
	Remote On	0.5 mS	-	40 mS	
Overshoot at Turn on		-	0%	3%	
Output Capacitance					
	Vo=3.3 V	0 uF	-	800 uF	
	Vo=5.0 V	0 uF	-	800 uF	
	Vo=12 V	0 uF	-	100 uF	
	Vo=24 V	0 uF	-	20 uF	

Output Specifications (continued)

Parameter			Min	Typ	Max	Notes
Transient Response						
50% ~ 100% Max Load	Overshoot	V_O=3.3 V	-	100 mV	150 mV	di/dt = 0.1 A/uS; Vin = 48 V; Ta = 25 °C and 1 uF ceramic capacitor
	Settling Time		-	200 uS	300 uS	
100% ~ 50% Max Load	Overshoot		-	100 mV	150 mV	
	Settling Time		-	200 uS	300 uS	
50% ~ 100% Max Load	Overshoot	V_O=5.0 V	-	100 mV	150 mV	
	Settling Time		-	100 uS	150 uS	
100% ~ 50% Max Load	Overshoot		-	100 mV	150 mV	
	Settling Time		-	100 uS	150 uS	
50% ~ 100% Max Load	Overshoot	V_O=12 V	-	150 mV	250 mV	
	Settling Time		-	150 uS	200 uS	
100% ~ 50% Max Load	Overshoot		-	150 mV	250 mV	
	Settling Time		-	150 uS	200 uS	
50% ~ 100% Max Load	Overshoot	V_O=24 V	-	350 mV	500 mV	
	Settling Time		-	200 uS	250 uS	
100% ~ 50% Max Load	Overshoot		-	350 mV	500 mV	
	Settling Time		-	200 uS	250 uS	

Note: All specifications are typical at nominal input, full load at 25 °C unless otherwise stated.

General Specifications

Parameter	Min	Typ	Max	Notes
Efficiency				
V_O=3.3 V	73%	77%	-	V_{in}=48 V, I_O= Iomax
V_O=5.0 V	78%	82%	-	
V_O=12 V	79%	83%	-	
V_O=24 V	81%	85%	-	
Switching Frequency	200 kHz	250 kHz	300 kHz	
Output Trim Range	95%V_O	-	105%V_O	For all outputs
MTBF	TBD			Calculated Per Bell Core SR-332 (I_O = Nomal; T_a = 25 °C)
Dimensions				
Inches (L × W × H)	1.91 x 0.98 x 0.477			
Millimeters (L × W × H)	48.51 x 24.89 x 12.12			
Weight	-	10.3 g	-	

Note: All specifications are typical at 25 °C unless otherwise stated.

Control Specifications

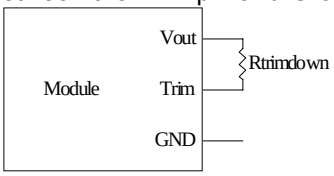
Parameter		Min	Typ	Max	Notes
Remote On/Off					
Signal Low (Unit On)	Active Low	-0.3 V	-	0.8 V	The remote on/off pin open, Unit On.
Signal High (Unit Off)		3.5 V	-	18 V	
Signal Low (Unit Off)	Active High	-0.3 V	-	0.8 V	
Signal High (Unit On)		3.5 V	-	7 V	

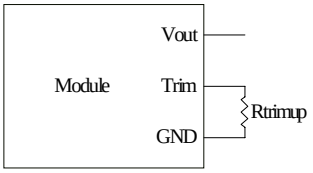
Output Trim Equations

Equations for calculating the trim resistor (in kΩ) given the desired adjusted voltage (Vadj) and the nominal output voltage of the converter (Vnom) are shown below. The Trim Down resistor should be connected between the Trim pin and Vout. The Trim Up resistor should be connected between the Trim pin and Ground. Only one of the resistors should be used for any given application.

$$R_{TrimDown} = \frac{A}{V_{nom} - V_{adj}} - B$$

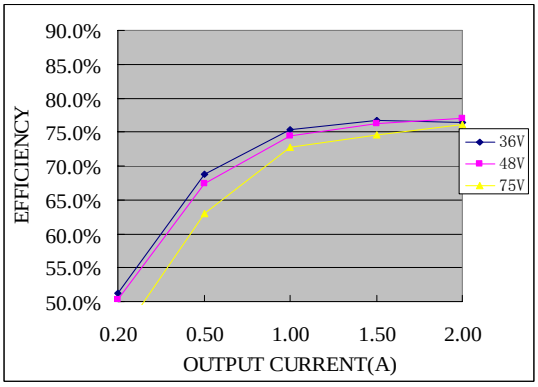
$$R_{TrimUp} = \frac{C}{V_{adj} - V_{nom}} - D$$



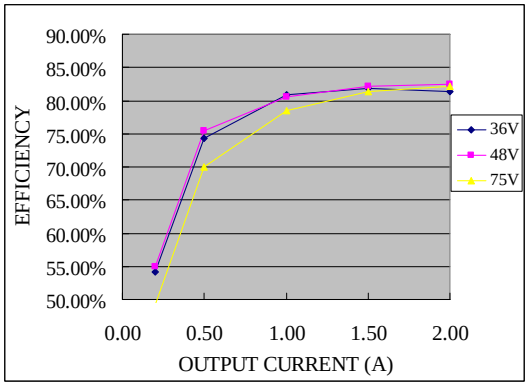


Vnom	A	B	C	D
24	489.490	28.310	26.660	6.810
12	113.550	16.990	13.020	6.490
5.0	56.410	51.200	18.228	36.500
3.3	21.628	75.400	13.020	64.900

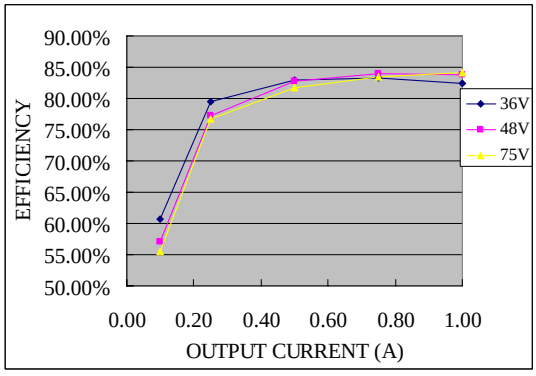
Efficiency Data



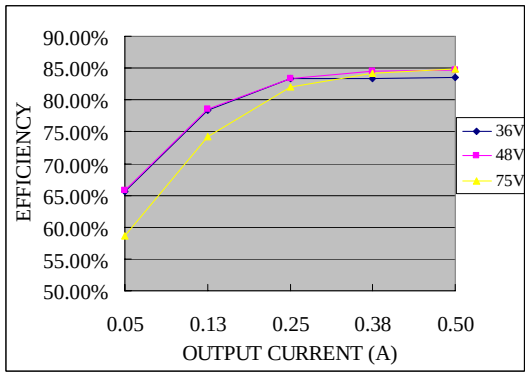
0RLC-10T033



0RLC-10T050

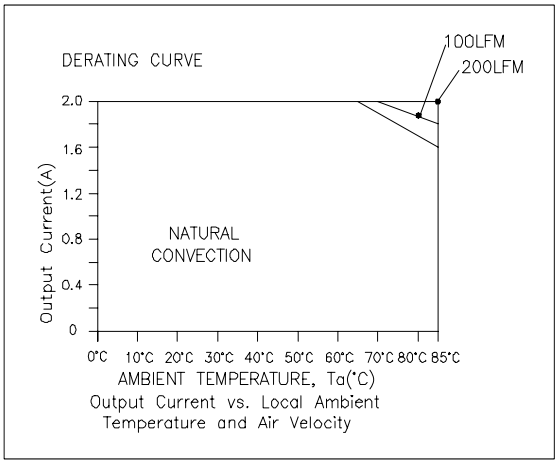


0RLC-10T120

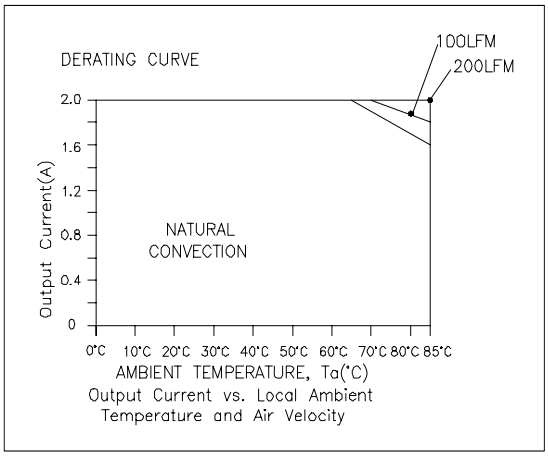


0RLC-10T240

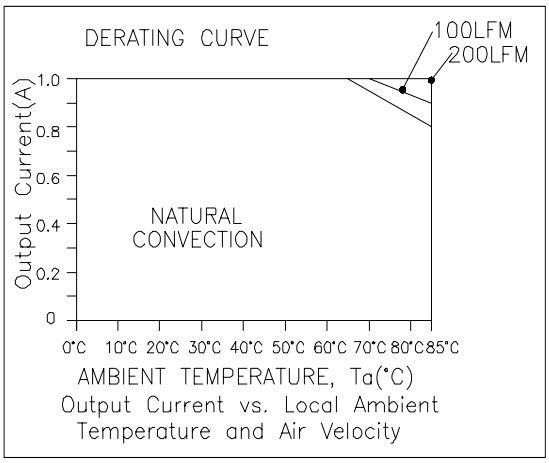
Thermal Derating Curves



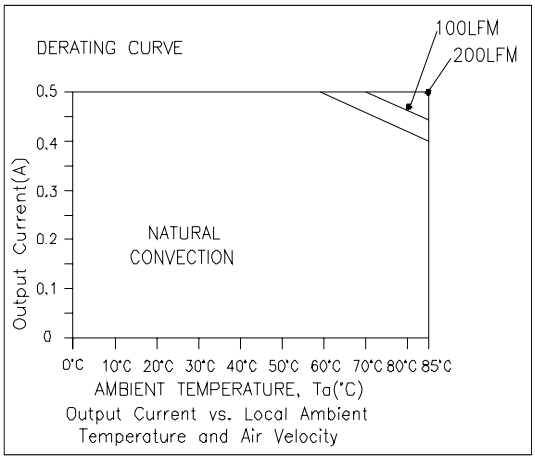
Vo=3.3 V, Io=2 A



Vo=5 V, Io=2 A

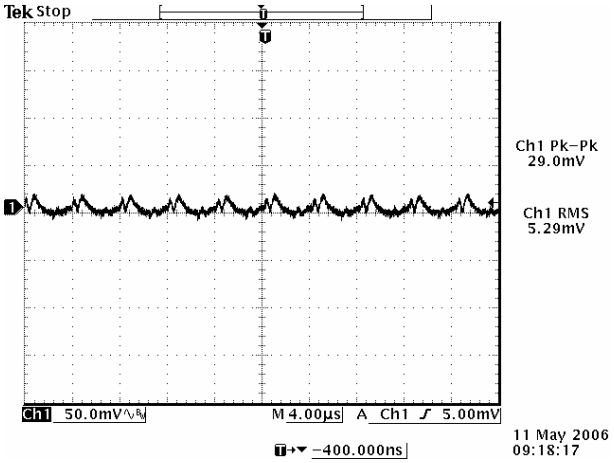


Vo=12 V, Io=1 A

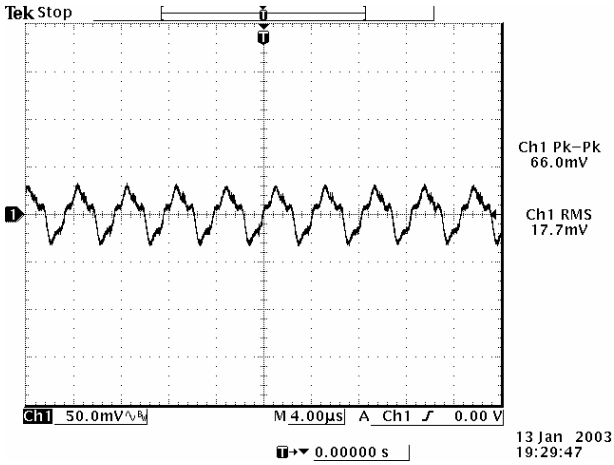


Vo=24 V, Io=0.5 A

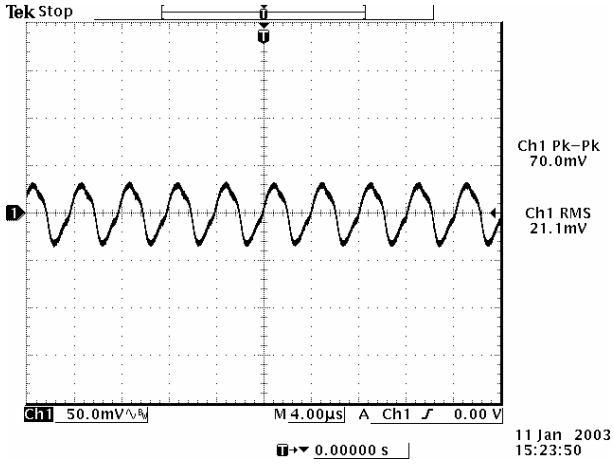
Ripple and Noise Waveforms



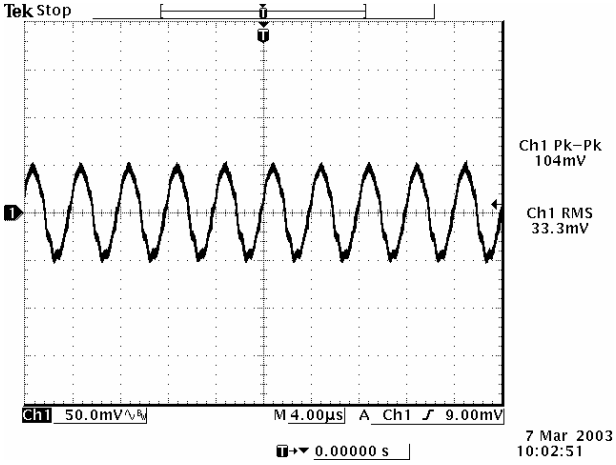
Vo=3.3 V



Vo=5.0 V



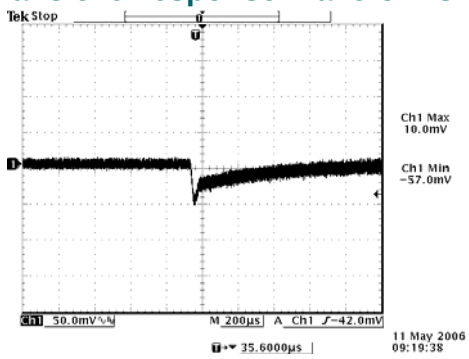
Vo=12 V



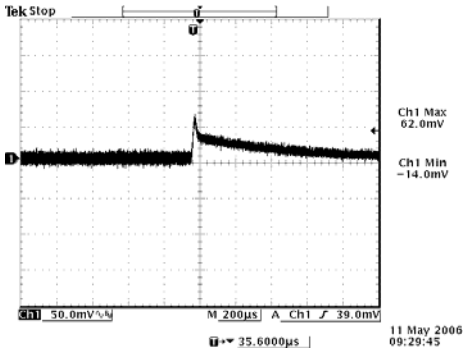
Vo=24 V

Note: Ripple and noise at full load, 48 Vdc input, with a 1 uF ceramic capacitor at the output, and Ta=25 deg C.

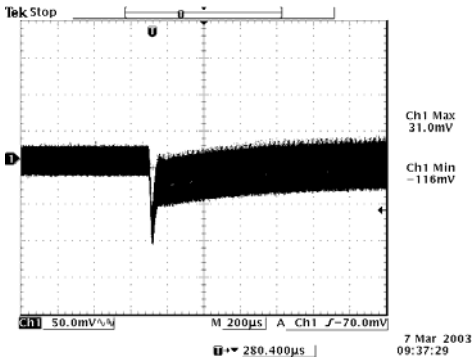
Transient Response Waveforms



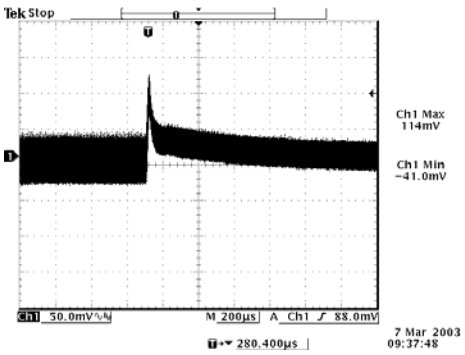
Vout=3.3 V 50% to 100% Load Transients



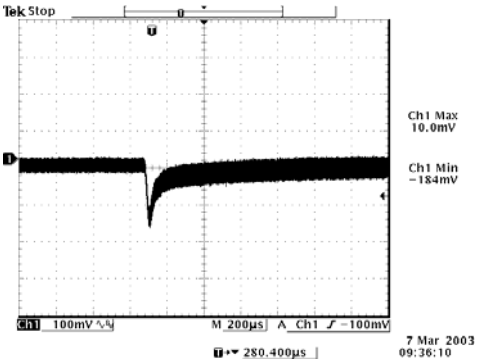
Vout=3.3 V 100% to 50% Load Transients



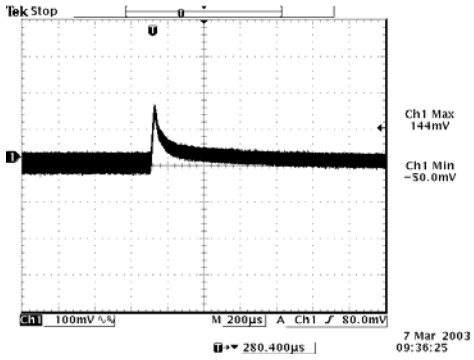
Vout=5.0 V 50% to 100% Load Transients



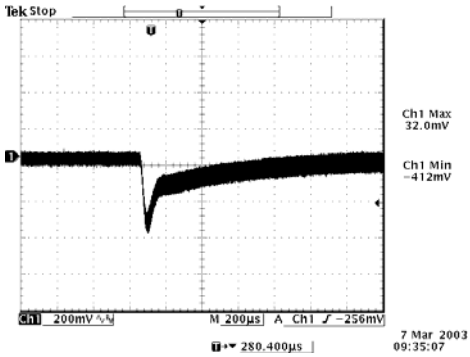
Vout=5.0 V 100% to 50% Load Transients



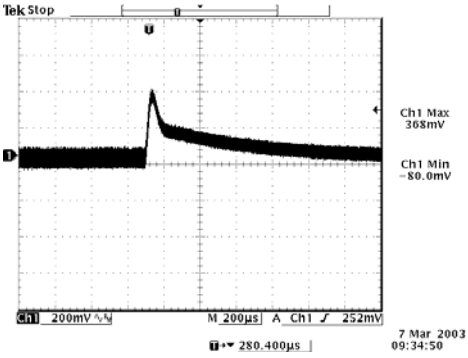
Vout=12 V 50% to 100% Load Transients



Vout=12 V 100% to 50% Load Transients



Vout=24 V 50% to 100% Load Transients



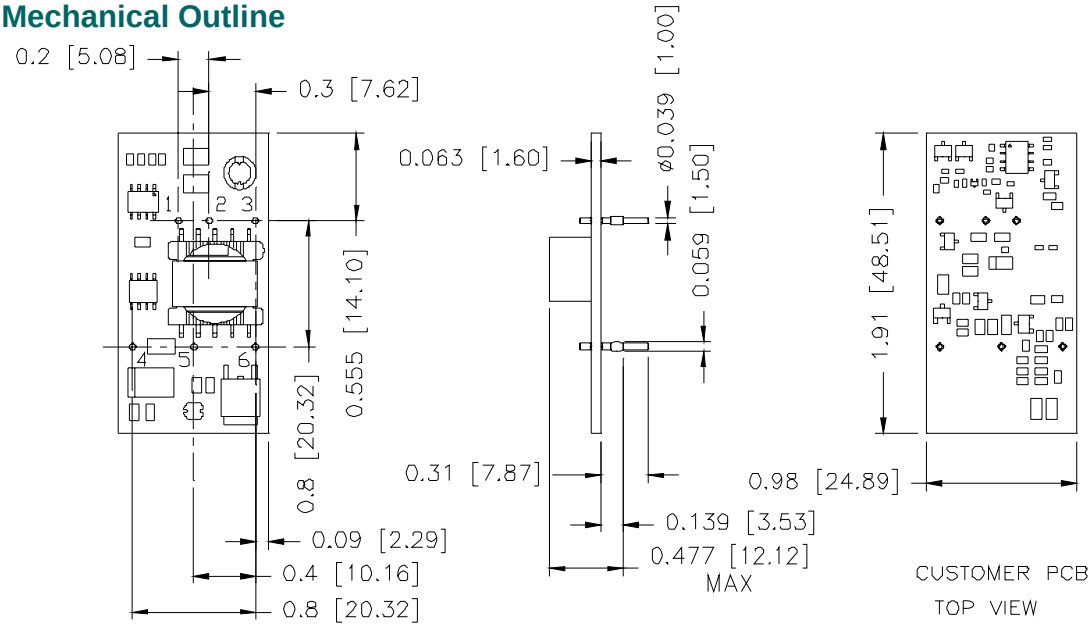
Vout=24 V 100% to 50% Load Transients

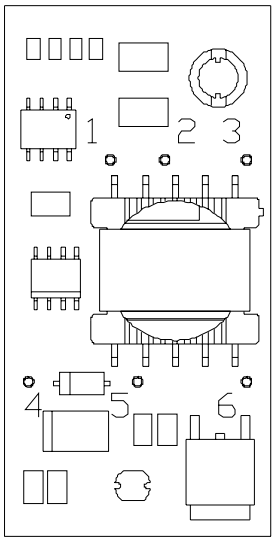
Note: Transient response at Vin=48 V, di/dt=0.1 A/uS, with external 1 uF ceramic capacitor, and Ta=25 deg C.

ISOLATED DC/DC CONVERTERS

48 Vdc Input, 3.3 Vdc/2 A, 5 Vdc/2 A, 12 Vdc/1 A, 24 Vdc/0.5 A Output

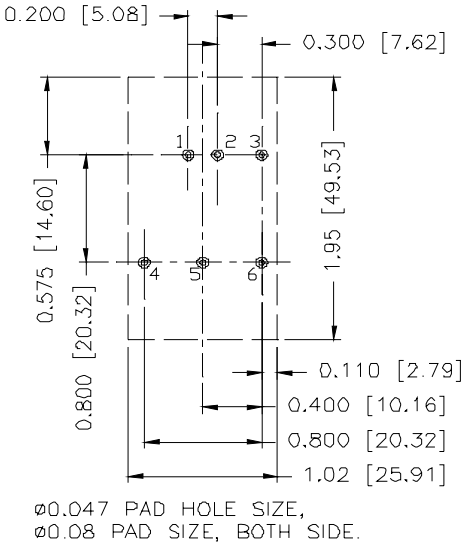
Mechanical Outline





Pin Connections

Pin	Function
1	Vin+
2	Vin-
3	Enable
4	Vo+
5	Trim
6	Vo-



RoHS Compliance

Complies with the European Directive 2002/95/EC, calling for the elimination of lead and other hazardous substances from electronic products.

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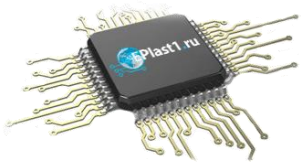
Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits,General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



Как с нами связаться

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