

**SERIES: VYC30W | DESCRIPTION: DC-DC CONVERTER**
**FEATURES**

- up to 30 W output
- industry standard pinout
- 4:1 input range (9~36 V, 18~75 V)
- single, dual, and triple outputs
- 1,500 V isolation
- short circuit, over current, and over voltage protection
- wide temperature operation (-40~85°C)
- efficiency up to 88%



MODEL	input voltage range (Vdc)	output voltage (Vdc)	output current max (A)	output power max (W)	ripple and noise <sup>1</sup> max (mVp-p)	efficiency
						typ (%)
VYC30W-Q24-S5	9 ~ 36	5	6	30	120	87
VYC30W-Q24-S12	9 ~ 36	12	2.5	30	120	88
VYC30W-Q24-S15	9 ~ 36	15	2	30	120	87
VYC30W-Q24-D5	9 ~ 36	±5	3	30	120	86
VYC30W-Q24-D12	9 ~ 36	±12	1.25	30	120	88
VYC30W-Q24-D15	9 ~ 36	±15	1	30	120	87
VYC30W-Q24-T312	9 ~ 36	3.3 ±12	4 ±0.625	28.2	120	85
VYC30W-Q24-T315	9 ~ 36	3.3 ±15	4 ±0.5	28.2	120	85
VYC30W-Q24-T512	9 ~ 36	5 ±12	3 ±0.625	30	120	86
VYC30W-Q24-T515	9 ~ 36	5 ±15	3 ±0.5	30	120	86
VYC30W-Q48-S5	18 ~ 75	5	6	30	120	87
VYC30W-Q48-S12	18 ~ 75	12	2.5	30	120	88
VYC30W-Q48-S15	18 ~ 75	15	2	30	120	87
VYC30W-Q48-D5	18 ~ 75	±5	3	30	120	86
VYC30W-Q48-D12	18 ~ 75	±12	1.25	30	120	88
VYC30W-Q48-D15	18 ~ 75	±15	1	30	120	87
VYC30W-Q48-T312	18 ~ 75	3.3 ±12	4 ±0.625	28.2	120	85
VYC30W-Q48-T315	18 ~ 75	3.3 ±15	4 ±0.5	28.2	120	85
VYC30W-Q48-T512	18 ~ 75	5 ±12	3 ±0.625	30	120	86
VYC30W-Q48-T515	18 ~ 75	5 ±15	3 ±0.5	30	120	86

Notes: 1. Ripple and noise are measured at 20 MHz BW

## PART NUMBER KEY



## INPUT

parameter	conditions/description	min	typ	max	units
operating input voltage		9	24	36	Vdc
		18	48	75	Vdc
start-up time			10		ms
under voltage lockout	power up 24 V input			9.0	Vdc
	power up 48 V input			17.8	Vdc
	power down 24 V input	8.0			Vdc
	power down 48 V input	16.0			Vdc
Remote on/off <sup>1</sup>	module off	0		1.2	Vdc
	module on (or open circuit)	3.5		12	Vdc
filter	PI type				

Notes: 1. The on/off pin voltage is referenced to GND

## OUTPUT

parameter	conditions/description	min	typ	max	units
line regulation	single and dual output models, measured from low line to high line at full load		±0.2	±0.5	%
	triple output models (main output), measured from low line to high line at full load			±1	%
	triple output models (auxiliary outputs), measured from low line to high line at full load			±5	%
load regulation	single and dual output models, measured from 10% to full load at nominal input		±0.5	±1	%
	triple output models (main output), measured 10% to full load at nominal input			±2	%
	triple output models (auxiliary outputs), measured 10% to full load at nominal input			±5	%
voltage accuracy	single and dual output models, refer to recommended circuit		±1	±3	%
	triple output models (main output), refer to recommended circuit		±2		%
	triple output models (auxiliary outputs), refer to recommended circuit		±5		%
transient recovery time	25% ~ 50% ~ 25% step load charge		300	500	µs
transient peak deviation	25% rated load change		300		µs
cross regulation	dual output models, main output 50% load, supplemental output from 10~100% load triple output models, main output and one auxiliary output 50% load, another auxiliary output from 10~100% load			±5	%
adjustability			±10%		Vdc
switching frequency	100% load, input voltage range		400		kHz
temperature coefficient			±0.02		%/°C

## PROTECTIONS

parameter	conditions/description	min	typ	max	units
short circuit protection	hiccup, automatic recovery				
over current protection	input voltage range		130		%
over voltage protection	single and dual output models (main)	5 V	6.1		Vdc
		12 V	15		Vdc
		15 V	18		Vdc
	triple output models (main)	3.3 V	3.9		Vdc
		5 V	6.2		Vdc

## SAFETY AND COMPLIANCE

parameter	conditions/description	min	typ	max	units
isolation voltage	tested for 1 minute at 1 mA max.	1,500			Vdc
isolation resistance	at 500 Vdc	1,000			MΩ
isolation capacitance	100 kHz / 0.1 V		2,000		pF
RoHS compliant	yes				
MTBF	M1L-HDBK-217F	1,000,000			hours

## ENVIRONMENTAL

parameter	conditions/description	min	typ	max	units
case operating temperature		-40		85	°C
maximum case temperature	during operation			105	°C
storage temperature		-40		125	°C
storage humidity	non-condensing	5		95	%

## DERATING CURVES

### output power vs. ambient temperature



- ① without heat sink  
 ② with heatsink  
 (Natural Convection)

## MECHANICAL

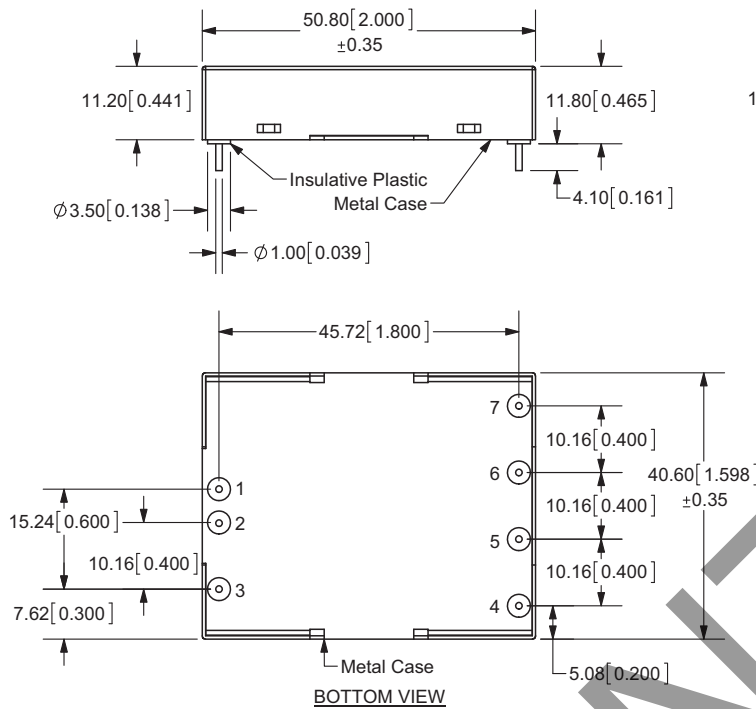
parameter	conditions/description	min	typ	max	units
dimensions	2.0 x 1.6 x 0.44 inch (50.8 x 40.6 x 11.2mm)				
case material	nickel-coated copper (six-sided)				
weight	with heat sink		50		g
			70		g

## MECHANICAL DRAWING

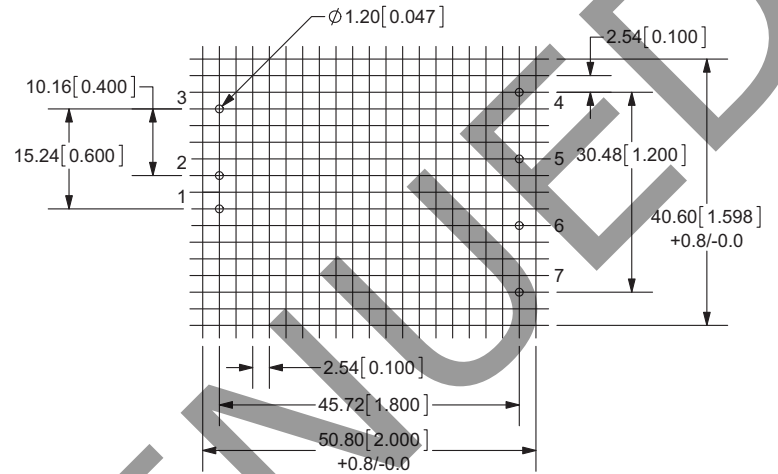
unit: mm [inch]

General tolerances: ±0.25mm [±0.010 inch]

Pin section tolerances: ±0.10mm [±0.004 inch]



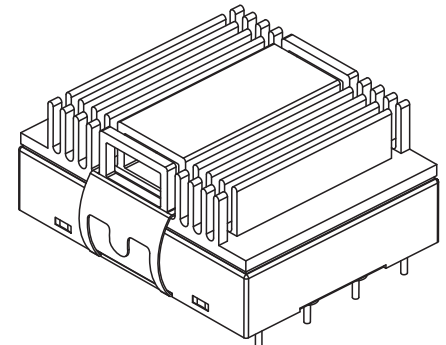
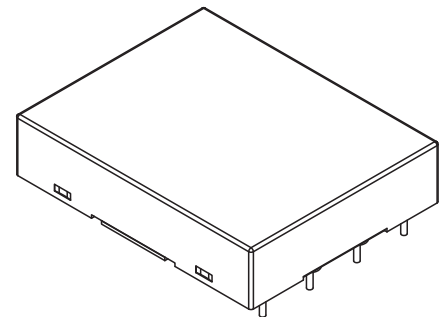
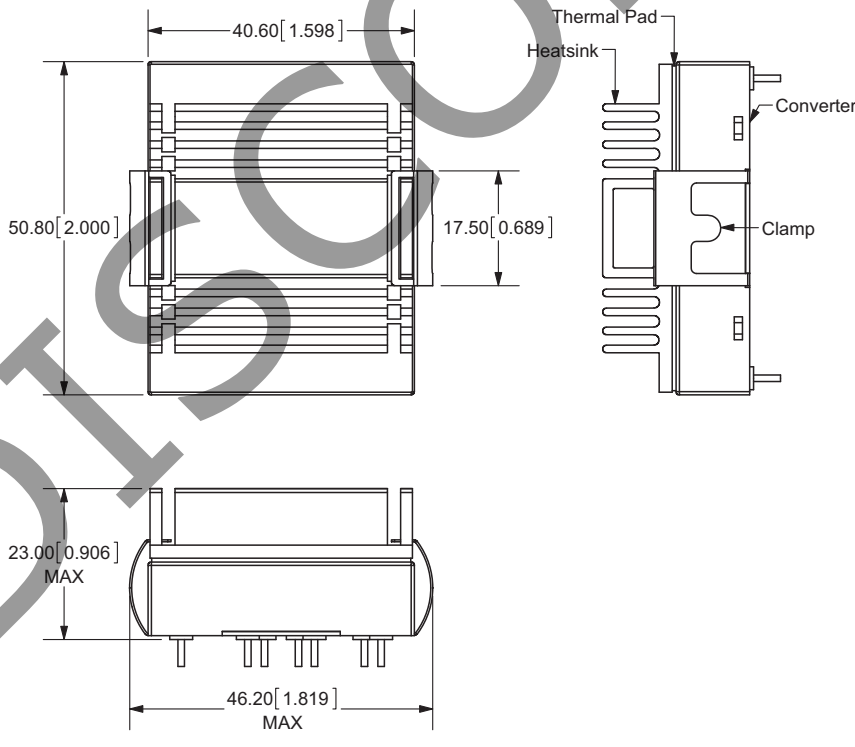
## RECOMMENDED FOOTPRINT (TOP VIEW)



PIN CONNECTIONS			
Pin	Single	Dual	Triple
1	Vin	Vin	Vin
2	GND	GND	GND
3	On/Off	On/Off	On/Off
4	Trim	Trim	-Vo2
5	0V	-Vo	0V
6	+Vo	0V	+Vo1
7	No Pin	+Vo	+Vo2

unit: mm [inch]

tolerance: ±0.5mm [±0.020 inch]



## APPLICATION NOTES

### 1. EMI & EMS recommended external circuit

	Single output, 18 ~ 75 Vin	Single output, 9 ~ 36 Vin	Dual output, 18 ~ 75 Vin	Dual output, 9 ~ 36 Vin	Triple output, 18 ~ 75 Vin	Triple output, 9 ~ 36 Vin
TVS	SMCJ90A,1500W(Bringtking)	SMCJ48A,1500W(Bringtking)	SMCJ90A,1500W(Bringtking)	SMCJ48A,1500W(Bringtking)	SMCJ48A,1500W(Bringtking)	SMCJ48A,1500W(Bringtking)
LCM	232uH(0.1V 100KHz) 15T core: N5 T12*6*4 (Acme)	232uH(0.1V 100KHz) 15T core: N5 T12*6*4 (Acme)	232uH(0.1V 100KHz) 15T core: N5 T12*6*4 (Acme)	232uH(0.1V 100KHz) 15T core: N5 T12*6*4 (Acme)	232uH(0.1V 100KHz) 15T core: N5 T12*6*4 (Acme)	232uH(0.1V 100KHz) 15T core: N5 T12*6*4 (Acme)
C0	680µF/1,000V (CapXon)	1,000µF/50V(CapXon)	680µF/100V (CapXon)	1000µF/50V(CapXon)	680µF/50V(CapXon)	1,000µF/100V (CapXon)
C1	105K/100V 1210(TDK)	105K/100V 1210(TDK)	105K/100V 1210(TDK)	105K/100V 1210(TDK)	105K/100V 1210(TDK)	105K/100V 1210(TDK)
C2	225K/100V 1210(TDK)	225K/100V 1210(TDK)	225K/100V 1210(TDK)	225K/100V 1210(TDK)	225K/100V 1210(TDK)	225K/100V 1210(TDK)
C3	No component	No component	102K/2,000V 1206 (TDK)	102K/2,000V 1200 (TDK)	No component	No component
C4	No component	No component	102K/2,000V 1206 (TDK)	102K/2,000V 1206 (TDK)	102K/2,000V 1206 (TDK)	102K/2,000V 1206 (TDK)

Figure 1 (Single output)

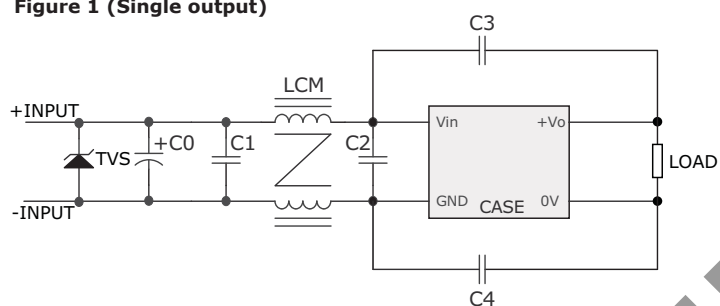


Figure 2 (Dual output)

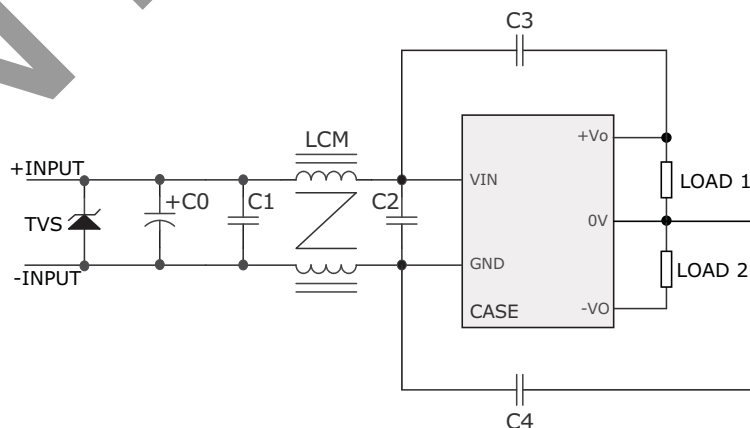
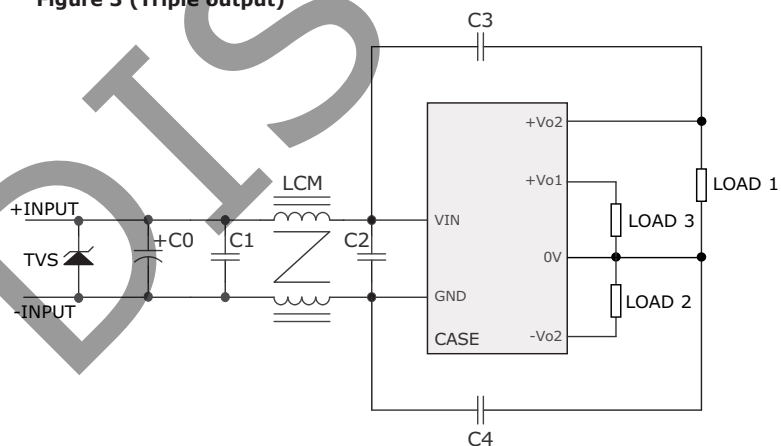


Figure 3 (Triple output)



## REVISION HISTORY

rev.	description	date
1.0	initial release	08/23/2011
1.01	updated spec	10/07/2011
1.02	added two dual 5 V models	11/15/2011
1.03	V-Infinity branding removed	09/06/2012

The revision history provided is for informational purposes only and is believed to be accurate.



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