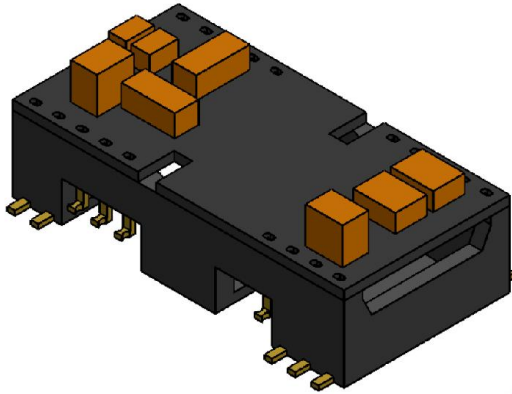




NEW



Features

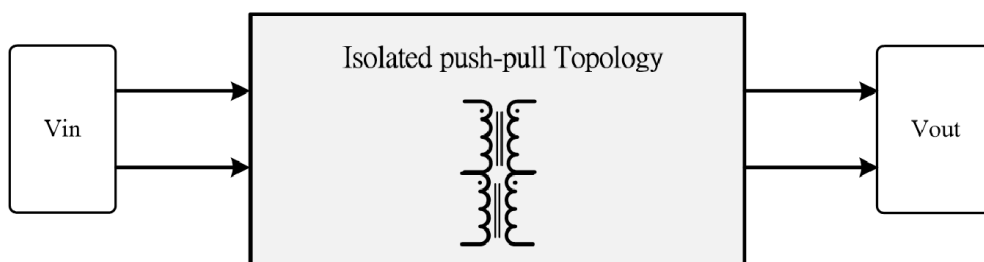
- 1:1 Input range
- Unregulated Outputs
- Efficiency up to 82%
- -40°C to +105°C operation without power derating
- No life-span constrained capacitor inside
- Continuous short circuit protection
- Input-to-output isolation 4kV_{DC} (or 6 kV_{DC} optional)

Applications

- Telecom / Datacom
- Industry Control System
- Measurement Equipment
- Semiconductor Equipment
- Wireless network
- Analyzer
- Detector
- Data switch

Description

Unicorn series is 1W Isolated, SMT, unregulated dc-dc converter without minimum load requirement. It features a high efficiency up to 82%, wide working temperature range -40~+105°C without derating, 2200uF high capacitive load, 4kV_{DC} (or 6kV_{DC} optional) isolation voltage, continuous short circuit protection, etc. EN55022 Conducted Class B compliance can be reached simply with an external cap. These DC-DC converter modules use advanced power processing, control and packaging technologies and are suitable for all kinds of systems, such as CAN bus for isolating data transfer lines in communication protocols or power device(IGBT、GaN) driving circuits.



Unicorn Series Block Diagram



MODEL NUMBER STRUCTURE

U 1 - 05 A - xx xV0

Series Name	Output Power	Input Voltage	Output Voltage	Procurement Code	Product Version
Unicorn series	1 : 1 Watt	05 : 5Vdc 12 : 12Vdc 24 : 24Vdc	A : 5Vdc	“xx” can be 0~1 and/or A~Z. Default as “GP”.	Blank : Standard H : 6kVdc I/O isolation.

Model Selection Guide

All specifications are typical at nominal input, full load at Ta25°C unless otherwise noted

Model	Input				Output			Efficiency @FL
	Voltage(V)		Current(mA)		Voltage	Current	Power	
	Range	Nominal	No load	Full load	(V)	(mA)	(W)	Typ.(%)
U1-05A-xxV0	4.5-5.5	5	29	249	5	200	1	80%
U1-12A-xxV0	10.8-13.2	12	11	101	5	200	1	82%
U1-24A-xxV0	21.6-26.4	24	8	51	5	200	1	81%

※ Modification or customized design is available. Please contact us for detail.

**Electrical Specifications****Input Specifications**

Parameter	Notes and Conditions	Min.	Typ	Max.	Unit
Transient Input Voltage ranges	U1-05A-xxV0			9	VDC
	U1-12A-xxV0			18	
	U1-24A-xxV0			30	
Operating Input Voltage ranges	U1-05A-xxV0	4.5	5	5.5	VDC
	U1-12A-xxV0	10.8	12	13.2	
	U1-24A-xxV0	21.6	24	26.4	

Output Specifications

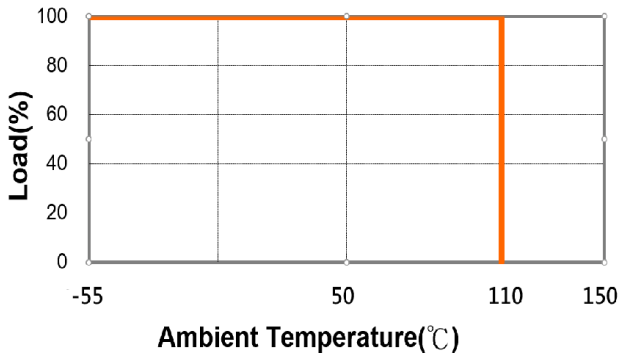
Parameter	Notes and Conditions	Min.	Typ	Max.	Unit
Output Voltage Accuracy	100% Load			±5	%
Line Regulation	Low line to High line at ±1.0% of Vin typ.		±1.5	±1.5	%
Load Regulation	10% to 100% load		±10	±15	%
Minimum Load		0			%
Output Ripple and Noise Voltage each output	Bandwidth 20MHz and with 1uF MLCC.Output Capacitor		50	100	mVp-p
Temperature Coefficient				±0.05	% / °C
Maximum Output Capacitive Load		2200			uF
Short-circuit Protection	Continuous				

General Specifications

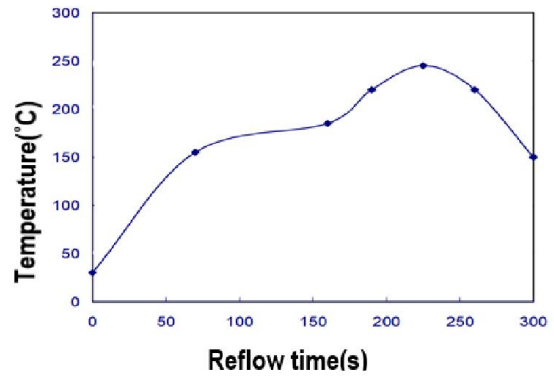
Parameter	Notes and Conditions	Min.	Typ	Max.	Unit
Switching Frequency	5Vin & 12Vin models		50		KHz
	24Vin model		75		
Storage Temperature range	All models	-55		125	°C
Operating Ambient Temperature	All models, nature convection	-40		105	°C
Thermal shock	Environmental engineering experimental tests	MIL-STD-810F			
Vibration		MIL-STD-810F			
Drop		MIL-STD-810F			
Isolation Voltage Input to Output	All models, 1 Minute	4000			VDC
Isolation Resistance Input to Output	All models, 500VDC, At 70%RH	1000			MΩ
Isolation Capacitance Input to Output	All models		4	10	pF
Humidity (non condensing)	All models			95	%
Calculated MTBF	MIL-HDBK-217F@25 °C		TBD		M HR
Weight			TBD		g (oz.)
Dimensions	0.71" x 0.354" x 0.3" (18.0 x 9.0 x 6.6mm)				
Case Material	Plastic				



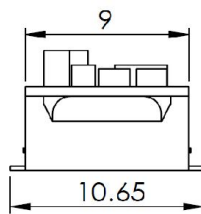
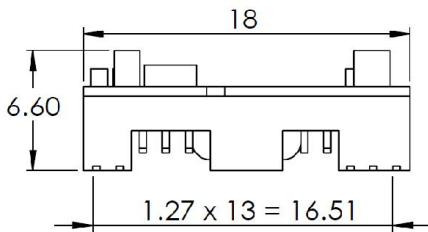
Derating Curve



Lead free Reflow Soldering Curve



Mechanical Dimensions

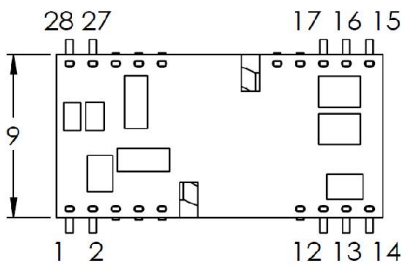


Pin Connections:

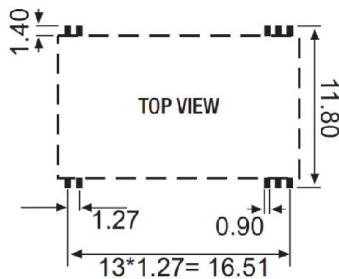
Pin #	Function
1	+Vin
2	-Vin
12	-Vout
13	+Vout
14~17	NC
27,28	NC

NC = No Connection

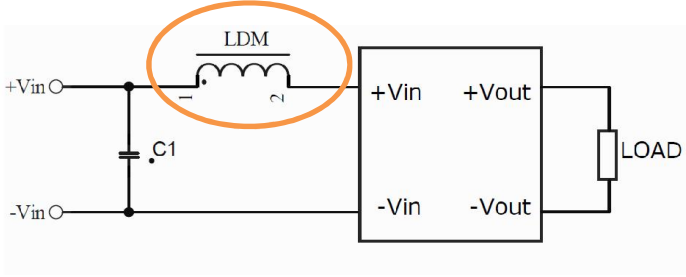
Unit: mm
Tolerance: ±0.25 mm



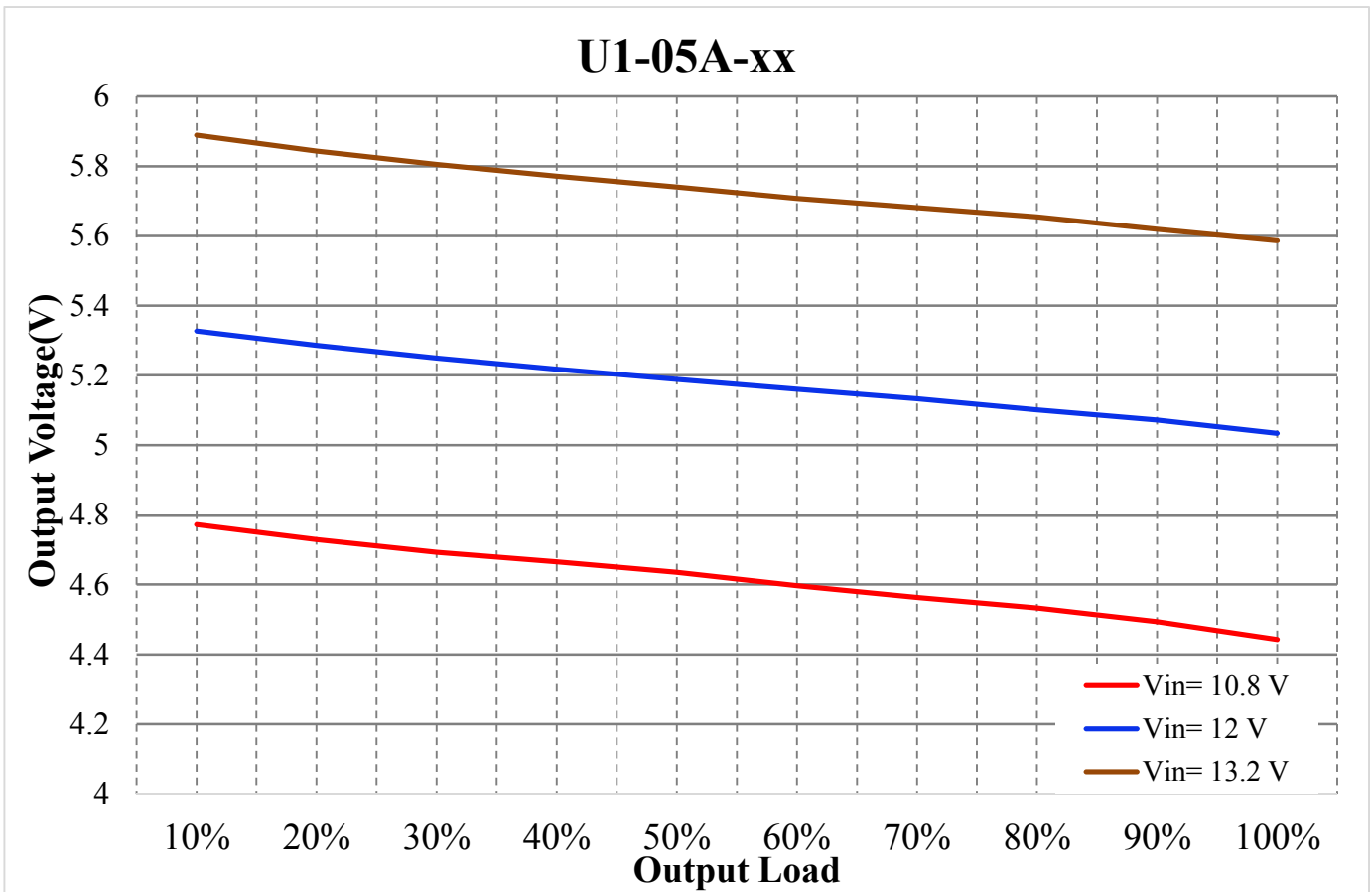
Recommended Footprint Details



Suggested Solution for EN55022 Class B Conducted Emission



Model	C1	LDM
U1-05A-xx	10uF/16V	4.7uH
U1-12A-xx	10uF/25V	4.7uH
U1-24A-xx	4.7uF/50V	47uH



Conducted EMI input terminal value (typ)
 ESAN018050-S-P-15 @Vin = 18VDC, Iout = 3A