VU-15W Series

15W 2:1 Regulated Single & Dual output

Features

- Wide 2:1 Input Range
- 1600 VDC Isolation
- Efficiency up to 91%
- -40 ~ 85°C Operation Temperature Range
- No Minimum Load Required
- Continuous Short Circuit Protection
- Over Voltage Protection
- Over Load Protection
- Soft Start
- High Power Density:15W in DIL-24 Package
- Remote On/Off
- Built-in EMC filter meets EN55032 classA without external components

The VU-15W series are high performance 15W single & dual output DC-DC converters. These converters are consisted with nickle-coated copper 24-pin DIL package with high performance features such as synchronous rectification, high efficiency and tight line / load regulation. Devices are encapsulated using flame retardant resin. Input voltages of 12,24 and 48 with output voltage of 3.3, 5.1, 12, 15, ±5, ±12, ±15Vdc. Features include high efficiency operation up to 91% .

ALL SPECIFICATIONS ARE TYPICAL AT 25°C, NOMINAL INPUT AND FULL LOAD UNLESS OTHERWISE NOTED.

OUTPUT SPECIFICATIONS

Output Voltage Accuracy		±1%, max.
Maximum Output Current		See table, max.
Line Regulation		Single:±0.2%, max. Dual:±0.5%, max.
Load Regulation(Io=0% to 100%)		Single: ±0.5%, max. Dual:±1%, max(balanced load), max.
Cross Regulation (Dual Output) (1)		±5%, max.
Ripple&Noise(20MHz bandwidth) (2)		60mVpk-pk, max.
Over Voltage Protection (Zener diode clamp)	3.3V output	3.9V
	5.1V output	6.2V
	12V output	15V
	15V output	18V
	±5V output	±6.2V
	±12V output	±15V
	±15V output	±18V
Over Current Protection		150% of FL, typ.
Short Circuit Protection		Indefinite(hiccup) (Automatic Recovery)
Temperature Coefficient		±0.02%/°C
Capacitive Load (3)		See table, max.
Transient Recovery Time (4)		250μs, typ.
Transient Response Deviation(4)		±3%, max.

INPUT SPECIFICATIONS

Input Voltage Range	See table
Start up Time (Nominal Vin and constant resistive load)	20mS, typ.
Input Filter	Pi Type
Input Current(No-Load)	See table, max.
Input Current(Full-Load)	See table, typ.
Input Reflected Ripple Current(5)	20mApk-pk, max.
Remote On/Off (Positive logic)(6)	
ON:	3.0 ... 12Vdc or open circuit
OFF:	0 ... 1.2Vdc or Short circuit pin1 and pin2/3
OFF idle current:	5 mA, typ.

ENVIRONMENTAL SPECIFICATIONS

Operating Ambient Temperature	-40°C ~ +85°C(See Derating Curve) -40°C ~ +60°C(For 100% load)
Maximum Case Temperature	105°C
Storage Temperature	-55°C ~ +125°C
Cooling	Nature Convection

GENERAL SPECIFICATIONS

Efficiency	See table, typ.
I/O Isolation Voltage(60sec)	
Input/Output	1600Vdc
Case/Input & Output	1600Vdc
Isolation Resistance	1000 MΩ, min.
Isolation Capacitance	2000 pF, typ.
Switching frequency	250K~330kHz, typ.
Humidity	95% rel H
Reliability Calculated MTBF(MIL-HDBK-217 F)	> 460Khrs
Safety Standard	UL/cUL 60950-1 , 62368-1 IEC/EN 60950-1 , 62368-1
Safety Approvals	EN 60950-1 , 62368-1

EMC CHARACTERISTICS

Radiated Emissions	EN55032	CLASSA
Conducted Emissions	EN55032	CLASSA
ESD	IEC61000-4-2	Perf. Criteria B
RS	IEC61000-4-3	Perf. Criteria A
EFT (7)	IEC61000-4-4	Perf. Criteria B
Surge (7)	IEC61000-4-5	Perf. Criteria B
CS	IEC61000-4-6	Perf. Criteria A
PFMF	IEC61000-4-8	Perf. Criteria A

PHYSICAL SPECIFICATIONS

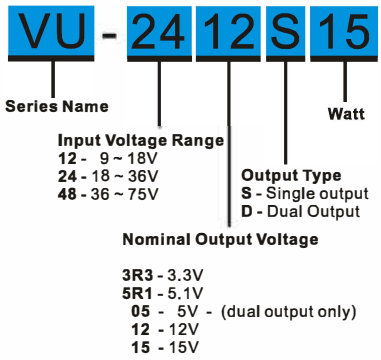
Case Material	Nickel-coated Copper
Base Material	Non-conductive black plastic (UL94V-0 rated)
Pin Material	Φ0.5mm Brass Solder-coated
Potting Material	Epoxy (UL94V-0 rated)
Weight	20.0g
Dimensions	1.25"x0.8"x0.40"

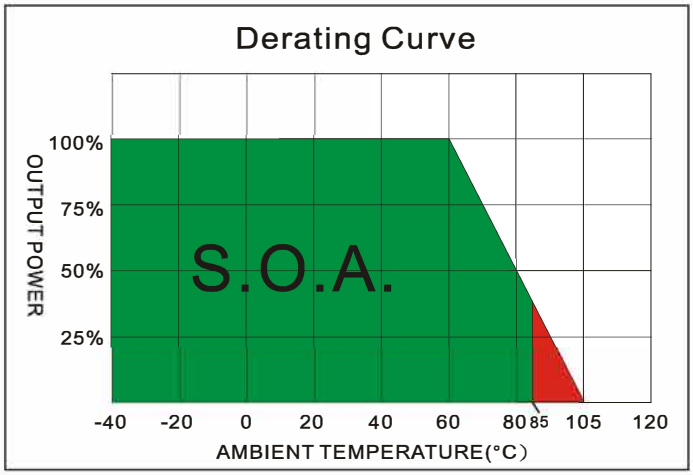
ABSOLUTE SPECIFICATIONS (8)

These are stress ratings. Exposure of devices to any of these conditions may adversely affect long-term reliability.

Input Surge Voltage(1000mS)	12 Models	36Vdc, max.
	24 Models	50Vdc, max.
	48 Models	100Vdc, max.
Soldering Temperature (1.5mm from case 10sec max.)		260°C, max.

PART NUMBER STRUCTURE





MODEL SELECTION GUIDE

MODEL NUMBER	INPUT Voltage Range (Vdc)	INPUT Current No-Load (mA, max.)	INPUT Current Full Load (mA, typ.)	OUTPUT Voltage (Vdc)	OUTPUT Current Min. load (mA)	OUTPUT Current Full load (mA)	EFFICIENCY @FL (%, typ.)	Capacitor Load @FL (μF, max.)
VU-123R3S15	9-18	15	1309	3.3	0	4000	86	4700
VU-125R1S15	9-18	15	1465	5.1	0	3000	89	3300
VU-1212S15	9-18	15	1436	12	0	1250	89	600
VU-1215S15	9-18	15	1420	15	0	1000	90	400
VU-1205D15	9-18	15	1488	±5	0	±1500	86	±1500
VU-1212D15	9-18	15	1420	±12	0	±625	90	±288
VU-1215D15	9-18	15	1420	±15	0	±500	90	±200
VU-243R3S15	18-36	10	647	3.3	0	4000	87	4700
VU-245R1S15	18-36	10	732	5.1	0	3000	89	3300
VU-2412S15	18-36	10	710	12	0	1250	90	600
VU-2415S15	18-36	10	702	15	0	1000	91	400
VU-2405D15	18-36	10	744	±5	0	±1500	86	±1500
VU-2412D15	18-36	10	710	±12	0	±625	90	±288
VU-2415D15	18-36	10	710	±15	0	±500	90	±200
VU-483R3S15	36-75	5	327	3.3	0	4000	86	4700
VU-485R1S15	36-75	5	370	5.1	0	3000	88	3300
VU-4812S15	36-75	5	359	12	0	1250	89	600
VU-4815S15	36-75	5	359	15	0	1000	89	400
VU-4805D15	36-75	5	372	±5	0	±1500	86	±1500
VU-4812D15	36-75	5	359	±12	0	±625	89	±288
VU-4815D15	36-75	5	355	±15	0	±500	90	±200

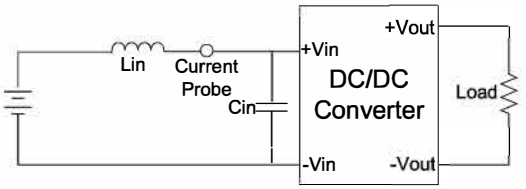
NOTE

1. One load is 25% to 100% load, the other load is 100% load, the output voltage variable rate is within ±5%.
2. Measured with a 1.0μF ceramic capacitor.
3. Tested by minimal Vin and constant resistive load.
4. Tested by normal Vin and 25% load step change (75%-50%-25% of Io).
5. Measured Input reflected ripple current with a simulated source inductance of 12μH and a source capacitor Cin(47μF, ESR<1.0Ω at 100KHz).
6. The remote on/off control pin is referenced to -Vin(pin2 and pin3).
7. An external filter capacitor is required if the module has to meet IEC61000-4-4 and IEC61000-4-5.
   The filter capacitor suggest: Nippon chemi-con KY series, 2pcs 330μF/100V paraller connection or 680μF/100V.
8. Exceeding the absolute ratings of the unit could cause damage.
   It is not allowed for continuous operating.
9. Operation under no-load conditions will not damage these devices, however they may not meet all listed specifications.

TEST CONFIGURATIONS

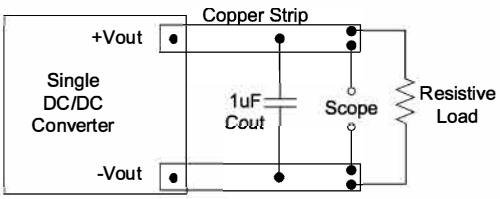
Input Reflected Ripple Current Test Step

Input reflected ripple current is measured through a source inductor Lin(12µH) and a source capacitor Cin(47µF, ESR<1.0Ω at 100KHz) at nominal input and full load.

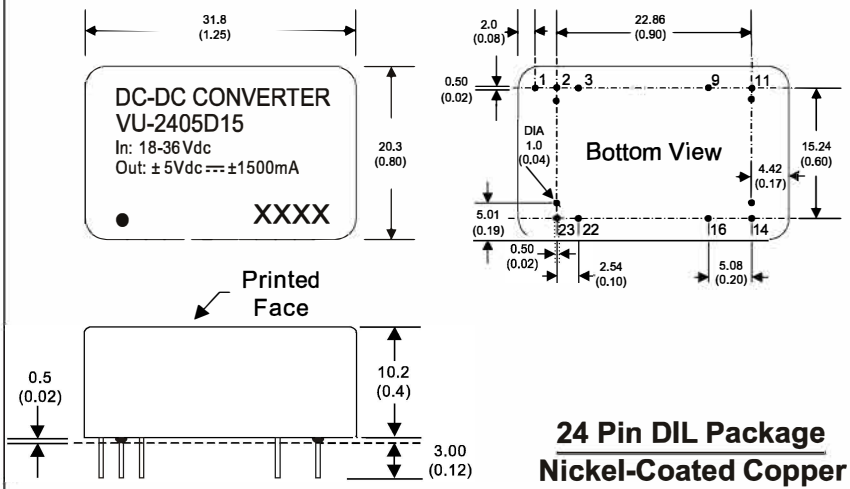


Output Ripple & Noise Measurement Test

Use a capacitor Cout(1.0µF) measurement.
The Scope measurement bandwidth is 0-20MHz.



MECHANICAL SPECIFICATIONS



24 Pin DIL Package
Nickel-Coated Copper

All dimensions are typical in millimeters (inches).

1. Pin diameter: 0.5 ±0.05 (0.02 ±0.002)
2. Pin pitch and length tolerance: ±0.35 (±0.014)
3. Case Tolerance: ±0.5 (±0.02)
4. Stand-off tolerance: ±0.1 (±0.004)

PIN CONNECTIONS		
PIN NUMBER	SINGLE	DUAL
1	Remote On/Off	Remote On/Off
2	-V Input	-V Input
3	-V Input	-V Input
9	N.P.	Common
11	N.C.	-V Output
14	+V Output	+V Output
16	-V Output	Common
22	+V Input	+V Input
23	+V Input	+V Input

ALL PSU LTD, Unit D6 Laser Quay, Culpeper Close
Medway City Estate, Rochester, Kent, ME2 4HU
Tel: 01634 725527, Email: sales@allpsu.co.uk, Web: www.allpsu.co.uk

DRAWING: Brian APPROVED: Ken

Last Update : 29.SEP.2020