

EP 20 Watt Series–Wide Input Range
DC-DC Converter

Features

20W DIL PACKAGE
9-18V,18-36V,36-75V
WIDE INPUT RANGE
100% BURN IN
HIGH EFFICIENCY
CUSTOM SOLUTIONS AVAILABLE
RoHS COMPLIANT



Specification

Output Specification

Voltage Setpoint Accuracy	+/-2% max.
Temperature Coefficient	+/-0.05%/°C
Ripple & Noise(20MHz BW) ¹	150mVp-p max.
Line Regulation ²	+/-0.5% max.
Load Regulation ³	+/-0.5% max.
Vout: 3.3V	+/-1% max.
Minimum Load	20% of Full Load
Short Circuit Protection	Continuous
Short Circuit Restart	Automatic
Over Load Protection	120%~190%
Transient Response ⁴	500uS max.

Input Specification

Input Voltage Range	2:1 Input Range
Input Filter	Pi Network
Protection	Fuse Recommended

Environmental Specifications

Operating Temperature	-40°C to +100°C (with derating)
Case Temperature	+110°C max.
Storage Temperature	-55°C to +105°C
Humidity	95% max.
Cooling	Free-Air Convection

General Specifications

Efficiency	85% min.
Isolation Voltage ⁵	1500VDC min.
Isolation Resistance	10 9 ohms min.
Isolation Capacitance	2200pF max.
Switching Frequency	400KHz Typ.
MTBF ⁶	>600,000 Hours
Weight	18.5g Typ.
Case Material	Five-Side Shielded Case
Case Size	31.8mm*20.3mm*12.2mm
Potting Material	Epoxy (UL94V-0)
Conducted Emissions	EN55022 Class A
Radiated Emissions	EN55022 Class A

ALL SPECIFICATIONS TYPICAL AT NOMINAL LINE, FULL LOAD , AND 25 °C UNLESS OTHERWISE NOTED

¹ Measured with 1uF ceramic capacitor connect to the output pins

² High Line to Low Line

³ Load Regulation is for output load current change from 20% to 100%.

⁴ 25% Step Load Change.

⁵ 1500VDC for 10 seconds

⁶ MIL-HDBK-217F @25 °C , Ground Benign.

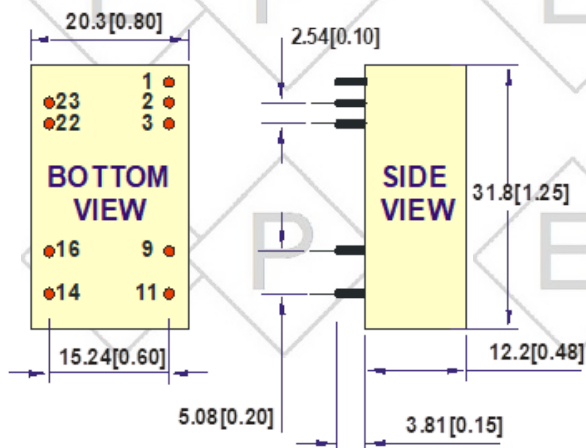
Selection Guide (1) 2:1 20W Output

MODEL NUMBER ⁷	INPUT VOLTAGE (VDC)	OUTPUT VOLTAGE (VDC)	OUTPUT CURRENT (mA)	INPUT ⁸ CURRENT(mA)		EFF (%) ⁹	PACKAGE	Capacitor Load max
				FULL LOAD	NO LOAD			
EP9-18-05S4000	9-18	5	4000	1938	110	86	A	1000uF
EP9-18-12S1666	9-18	12	1666	1937	30	86	A	220uF
EP9-18-12S1333	9-18	15	1333	1915	30	87	A	220uF
EP18-36-3.3S4000	18-36	3.3	4000	640	60	86	A	1000uF
EP18-36-05S4000	18-36	5	4000	969	60	86	A	1000uF
EP18-36-12S1666	18-36	12	1666	957	25	87	A	220uF
EP18-36-15S1333	18-36	15	1333	958	25	87	A	220uF
EP36-75-05S4000	36-75	5	4000	484	45	86	A	1000uF
EP36-75-12S1666	36-75	12	1666	479	25	87	A	220uF
EP36-75-15S1333	36-75	15	1333	479	25	87	A	220uF

Note: Other input to output voltages may be available. Please contact factory.

Mechanical Dimensions

Package "A"



All dimensions are in mm[inches]

PIN SINGLE

1	Remote On/Off
2 & 3	-Vin
9	NC
11	NC
14	+Vout
16	-Vout
22 & 23	+Vin

NOTE: Pin Size is Tolerance 0.8Φ
±0.05mm
All Dimensions In mm(Inches)
Tolerance .X or .XX= ±0.80mm

⁷ Isolation for 1500 VDC

⁸ NOMINAL INPUT VOLTAGE.

⁹ NOMINAL INPUT VOLTAGE, FULL LOAD

Recommended Footprint Details

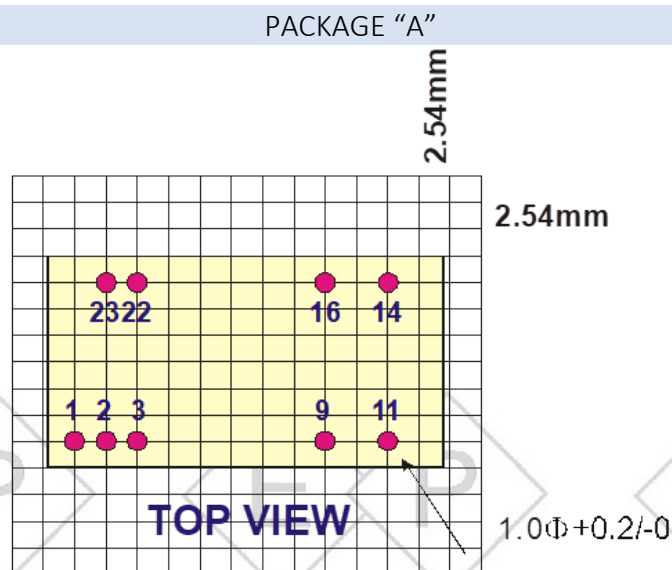
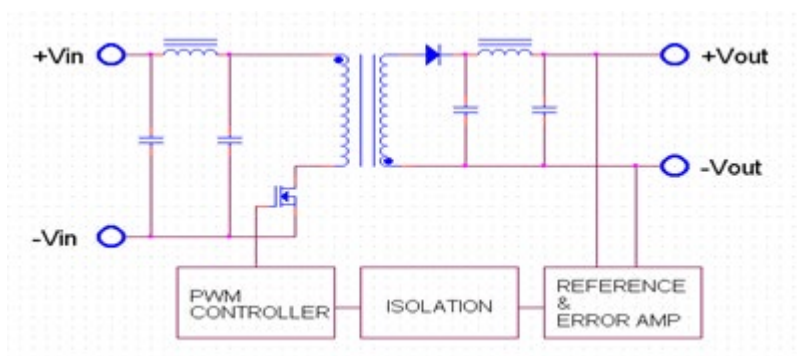


Table 1 (Remote On/Off Control)

Remote On/Off Control			
Control Input	PIN1	Control Common	PIN2&PIN3
Control Voltage		Converter Shutdown Idle Current	10mA
ON	>+2.5VDC or Open Circuit	Logic Compatibility	CMOS or Open
OFF	<+0.8VDC or Jumper to PIN2&PIN3		Collector TTL

Simplified Schematic

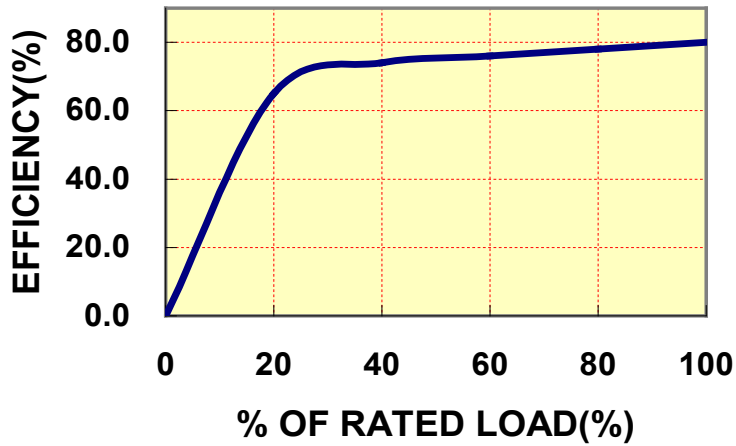
SINGLE OUTPUT



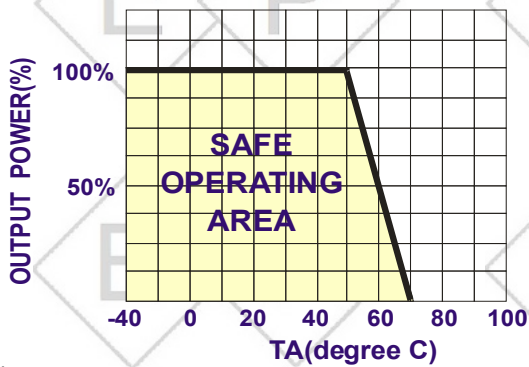
Typical Performance Curves

Specifications typical at $T_a=25^\circ\text{C}$, nominal input voltage, rated output current unless otherwise specified.

OUTPUT LOAD VS EFFICIENCY

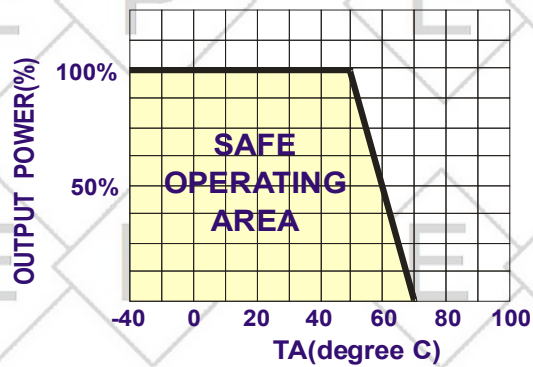


TEMPERATURE DERATING



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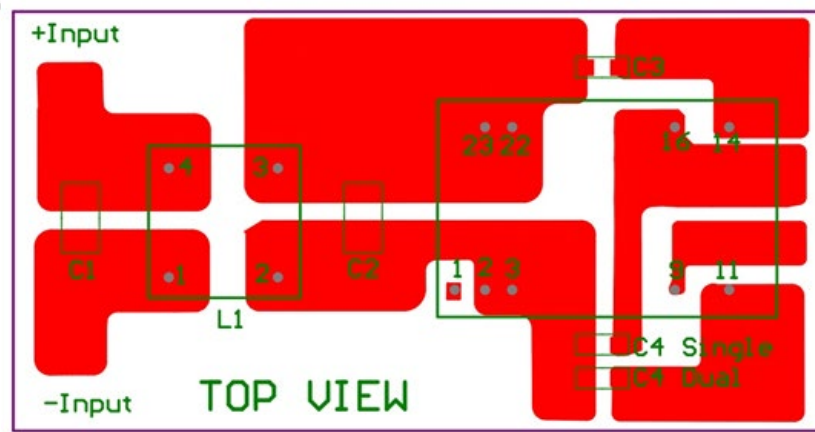
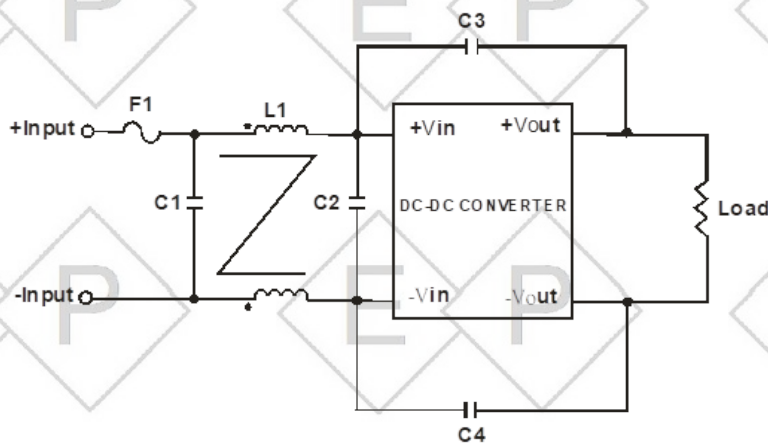
(With heat sink)



Recommended Filter for EN55022 Class B Compliance

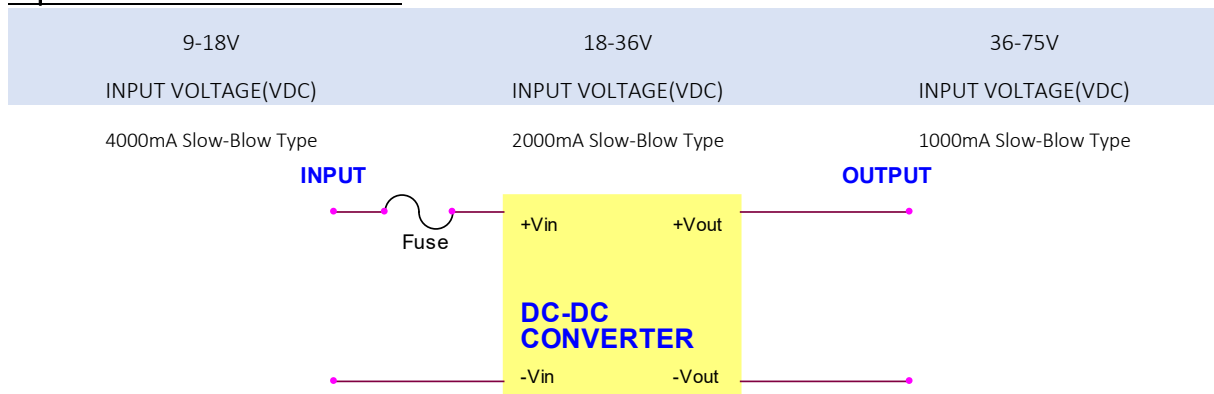
The components used in the above figure, together with the manufacturer's part numbers for these components, are as follows:

	C1	C2	C3	C4	L1
EP-20W EP9-18-**	3.3uF/50V 1812 MLCC	N/A	1000pF/2KV MLCC	1000pF/2KV MLCC	325uH Common Choke
EP-20W EP18-36-**	4.7uF/50V 1812 MLCC	N/A	1000pF/2KV MLCC	1000pF/2KV MLCC	325uH Common Choke
EP-20W EP36-75-**	2.2uF/100V 1812 MLCC	2.2uF/100V 1812 MLCC	1000pF/2KV MLCC	1000pF/2KV MLCC	325uH Common Choke



Recommended EN55022 Class B Filter Circuit Layout

Input Fuse Selection Guide



Note: Certain applications may require the installation of external fuse in front of the input.

EP 20W Series Application Notes:

EXTERNAL CAPACITANCE REQUIREMENTS:

No external capacitance is required for operation of the EP 20Watt Series.

To meet the reflected ripple requirements of the converter, an input impedance of less than 0.5 ohm from DC to 100KHz is required.

External output capacitance is not required for operation, however it is recommended that 10uF tantalum and 0.1uF ceramic capacitance be selected for reduced system noise.

We Can Offer EMC-Filter According To EN55011/22 Class A.



Spezifikationen können sich ohne Vorankündigung ändern.

Für etwaige fehlerhafte Angaben oder unvollständige Bezeichnungen kann keine Haftung übernommen werden.