DC/DC Converter

TEN 20 Series 20 Watt

Features

- Wide 2 : 1 Input Range
- Highest Power Density
- Operating Temp. Range – 25°C to +71°C
- Indefinite Short-Circuit Protection
- I/O-Isolation 1500 VDC
- Remote on/off
- Input Filter meets EN 55022, Class A and FCC, Level A without external Components
- Industry Standard Pinout
- Shielded Metal Case with insulated Baseplate
- 2 Year Product Warranty

cULus pending

The TEN 20 series of DC/DC converters , comprising 18 different models, has been designed for a wide range of applications including communications, industrial systems and battery powered equipments. Full SMD-design with use of ceramic chip capacitors guarantees a high reliability and a long lifetime. Other features of this converters are internal filter to meet EN 55022, class A and FCC, level A and a high efficiency.

Models

Ordercode	Input voltage range	Output voltage	Output current max.	Efficiency typ.
TEN 20-1210	9 – 18 VDC	3,3 VDC	4'000 mA	81 %
TEN 20-1211		5 VDC	4'000 mA	84 %
TEN 20-1212		12 VDC	1'670 mA	88 %
TEN 20-1213		15 VDC	1'340 mA	88 %
TEN 20-1222		± 12 VDC	± 835 mA	88 %
TEN 20-1223		± 15 VDC	± 670 mA	88 %
TEN 20-2410	18 – 36 VDC	3,3 VDC	4'000 mA	82 %
TEN 20-2411		5 VDC	4'000 mA	85 %
TEN 20-2412		12 VDC	1'670 mA	89 %
TEN 20-2413		15 VDC	1'340 mA	89 %
TEN 20-2422		± 12 VDC	± 835 mA	89 %
TEN 20-2423		± 15 VDC	± 670 mA	89 %
TEN 20-4810	36 – 75 VDC	3,3 VDC	4'000 mA	82 %
TEN 20-4811		5 VDC	4'000 mA	85 %
TEN 20-4812		12 VDC	1'670 mA	89 %
TEN 20-4813		15 VDC	1'340 mA	89 %
TEN 20-4822		± 12 VDC	± 835 mA	89 %
TEN 20-4823		± 15 VDC	± 670 mA	89 %

Input Specifications

Input current no load / full load	12 Vin;	3.3 Vout models:	30 mA typ. / 1360 mA typ.
	12 Vin;	5 Vout models:	30 mA typ. / 1985 mA typ.
	12 Vin;	other output models:	30 mA typ. / 1895 mA typ.
	24 Vin;	3.3 Vout models:	17 mA typ. / 670 mA typ.
	24 Vin;	5 Vout models:	17 mA typ. / 980 mA typ.
	24 Vin;	other output models:	17 mA typ. / 935 mA typ.
	48 Vin;	3.3 Vout models:	10 mA typ. / 335 mA typ.
	48 Vin;	5 Vout models:	10 mA typ. / 490 mA typ.
	48 Vin;	other output models:	10 mA typ. / 420 mA typ.
Surge voltage (100 msec. max.)		12 Vin models:	25 V max.
		24 Vin models:	50 V max..
		48 Vin models:	100 V max.
Conducted noise (input)			EN 55022 Class A and FCC part 15, level A

Output Specifications

Voltage set accuracy		± 1 % max.
Regulation	– Input variation Vin min. to Vin max.	0.3 % max.
	– Load variation 10 – 100 %	0.5 % max.
Ripple and noise (20 MHz Bandwidth)		80 mVpk-pk max
Temperature coefficient		± 0.02 % / °C
Output current limitation		110-160% of I out max., foldback
Short circuit protection		idefinite, automatic recivery
Minimum load		10% of rated max current (operation at lower load condition is safe but a higher output ripple will be experianced)
Capacitive load	3.3 / 5 Vout models:	6'800 µF max.
	12 / 15 Vout models:	680 µF max.
	±12 / ±15 Vout models:	270 µF max.

General Specifications

Temperature ranges	– Operating	– 40 °C ... + 71 °C
	– Case temperature	+ 105 °C max.
	– Storage	– 55 °C ... + 125 °C
Derating		2.5% / °C above 60°C
Humidity (non condensing)		95 % rel H max.
Reliability, calculated MTBF (MIL-HDBK-217 E)		>800'000 h @ + 25 °C
Isolation voltage	– Input / Output	1'500 VDC
Isolation capacity	– Input / Output	1'200 pF typ
Isolation resistance	– Input / Output (500 VDC)	> 1'000 MOhm
Switching frequency (fixed)		330 kHz typ. (Pulse width modulation PWM)
Remote ON / OFF	ON:	2.5 ... 100 VDC or open circuit.
	OFF:	-1 ... 1.0 VDC or short circuit pin 2 and pin 6
	OFF standby input current:	5 mA max.
	Control common:	referenced to negativ input

All specifications valid at nominal input voltage, full load and +25°C after warm-up time unless otherwise stated.

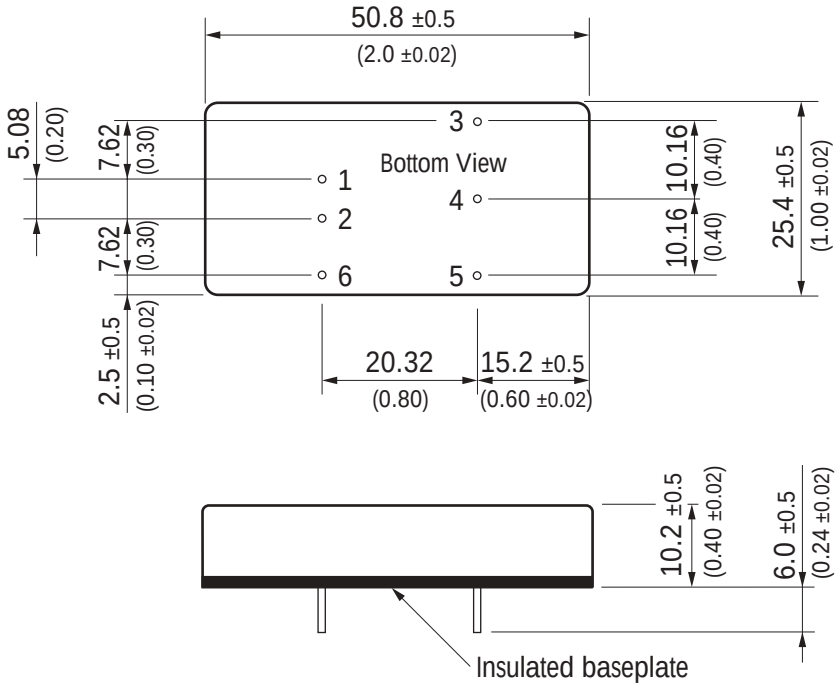
General Specifications

Safety standards	UL 60950, EN 60950, IEC 60950 Compliance up to 60 VDC input voltage (SELV limit)
Savety approvals	UL /cUL pending

Physical Specifications

Case material	Copper nickel plated
Baseplate	Non conductive plastic
Potting material	Silicon rubber TSE (UL 94V-0 rated)
Weight	30g (1.05oz)
Soldering temperature	max. 250 °C / 10 sec.

Outline Dimensions mm (inches)



Pin-Out		
Pin	**Single**	**Dual**
1	+Vin (Vcc)	+Vin (Vcc)
2	–Vin (GND)	–Vin (GND)
3	+Vout	+Vout
4	No pin	Common
5	–Vout	–Vout
6	Remote on/off	Remote on/off

Pin diameter ø 1.0 ±0.05 (0.039 ±0.002)

Dimensions in mm (Inch), Tolerance ±0.25 (0.02)

Specifications can be changed without notice

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