

FEATURES

- 20 WATTS MAXIMUM OUTPUT POWER
- OUTPUT CURRENT UP TO 5.5A
- STANDARD 2.0 X 1.0 X 0.4 INCH PACKAGE
- HIGH EFFICIENCY UP TO 89%
- 4:1 ULTRA WIDE INPUT VOLTAGE RANGE
- SIX-SIDED CONTINUOUS SHIELD
- FIXED SWITCHING FREQUENCY
- ISO9001 CERTIFIED MANUFACTURING FACILITIES
- COMPLIANT TO RoHS EU DIRECTIVE 2002/95/EC

OPTIONS

Negative logic Remote On/Off

DESCRIPTION

The MT20E-W series offer 20 watts of output power from a 2 x 1 x 0.4 inch package. The MT20E-W series with 4:1 ultra wide input voltage of 9-36 and 18-75VDC and features 1600VDC of isolation, short-circuit and over-voltage protection.



APPLICATIONS

Wireless Network
Telecom/Datacom
Industry Control System
Measurement Equipment
Semiconductor Equipment

TECHNICAL SPECIFICATION All specifications are typical at nominal input, full load and 25°C otherwise noted

OUTPUT SPECIFICATIONS

Output power	20 Watts, max.		
Voltage accuracy	Full load and nominal Vin		± 1%
Minimum load			0%
Voltage adjustability	Single output		± 10%
Line regulation	LL to HL at Full Load	Single	± 0.2%
		Dual	± 0.5%
Load regulation	No Load to Full Load	Single	± 0.5%
		Dual	± 1%
Cross regulation (Dual)	Asymmetrical load 25% / 100% FL		± 5%
Ripple and noise	20MHz bandwidth (Measured with a 0.1µF/50V MLCC)	See table	
Temperature coefficient			±0.02% / °C, max.
Transient response recovery time	25% load step change	250µS	
Over voltage protection	3.3V output	3.9VDC	
	5V output	6.2VDC	
Zener diode clamp	12V output	15VDC	
	15V output	18VDC	
Over load protection	% of FL at nominal input	150%, typ.	
Short circuit protection	Hiccup, automatics recovery		

GENERAL SPECIFICATIONS

Efficiency	See table		
Isolation voltage	Input to Output	1600VDC, min.	
	Input(Output) to case	1600VDC, min.	
Case grounding	Connect case to -Vin with decoupling Y Cap		
Isolation resistance		10 ⁹ ohms, min.	
Isolation capacitance		1500pF, max.	
Switching frequency		400KHz, typ.	
Case material	Nickel-coated copper		
Base material	FR4 PCB		
Potting material	Epoxy (UL94-V0)		
Dimensions	2.00 X 1.00 X 0.40 Inch (50.8X 25.4 X 10.2 mm)		
Weight	27g (0.95oz)		
MTBF (Note 1)	BELLCORE TR-NWT-000332	1.620 x 10 ⁶ hrs	
	MIL-HDBK-217F	6.590 x 10 ⁵ hrs	

INPUT SPECIFICATIONS

Input voltage range	24V nominal input	9 – 36VDC
	48V nominal input	18 – 75VDC
Input filter		Pi type
Input surge voltage 100mS max	24V input	50VDC
	48V input	100VDC
Input reflected ripple current	Nominal Vin and full load	20mA _{p-p}
Start up time	Nominal Vin and constant resistive load	20mS, typ.
	Power up Remote ON/OFF	20mS, typ.
Start-up voltage	24V input	9VDC
	48V input	18VDC
Shutdown voltage	24V input	7.5VDC
	48V input	15VDC
Remote ON/OFF (Note 6)		
(Positive logic)(Standard)	DC-DC ON	Open or 3V < Vr < 12V
	DC-DC OFF	Short or 0V < Vr < 1.2V
(Negative logic)(Option)	DC-DC ON	Short or 0V < Vr < 1.2V
	DC-DC OFF	Open or 3V < Vr < 12V
Input current of remote control pin	Nominal Vin	-0.5mA ~ +0.5mA
Remote off state input current	Nominal Vin	2.5mA

ENVIRONMENTAL SPECIFICATIONS

Operating ambient temperature	-40°C ~ +66°C (without derating)	
	+66°C ~ +105°C (with derating)	
Maximum case temperature	105°C	
Storage temperature range	-55°C ~ +125°C	
Thermal impedance (Note 7)	Nature convection	12°C/Watt
	Nature convection with heat-sink	10°C/Watt
Thermal shock	MIL-STD-810F	
Vibration	MIL-STD-810F	
Relative humidity	5% to 95% RH	

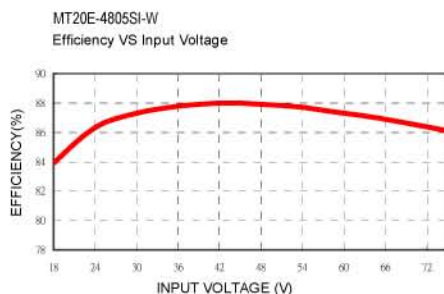
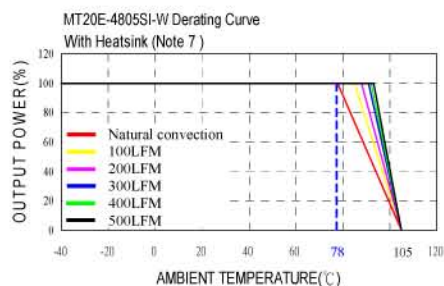
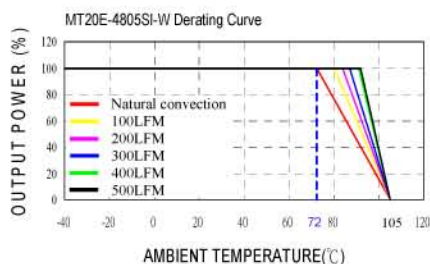
EMC CHARACTERISTICS

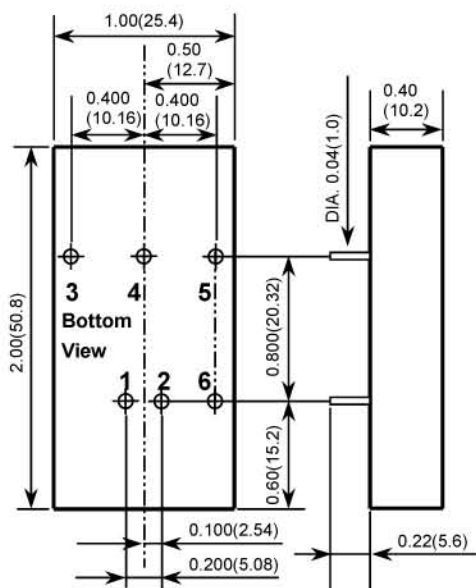
EMI (Note 8)	EN55022	Class A	
ESD	EN61000-4-2	Air Contact	± 8KV
			± 6KV
Radiated immunity	EN61000-4-3	10 V/m	Perf. Criteria A
Fast transient (Note 9)	EN61000-4-4	± 2KV	Perf. Criteria B
Surge (Note 9)	EN61000-4-5	± 1KV	Perf. Criteria A
Conducted immunity	EN61000-4-6	10 Vr.m.s	Perf. Criteria A

Model Number	Input Range	Output Voltage	Output Current		Output ⁽⁴⁾ Ripple & Noise	Input Current		Eff ⁽⁴⁾ (%)	Capacitor ⁽⁵⁾ Load max
			Min. load	Full load		No Load ⁽³⁾	Full Load ⁽²⁾		
MT20E-2433SI-W	9 – 36 VDC	3.3 VDC	0mA	5500mA	60mVp-p	50mA	934mA	85	18000 μ F
MT20E-2405SI-W	9 – 36 VDC	5 VDC	0mA	4000mA	75mVp-p	65mA	992mA	88	9600 μ F
MT20E-2412SI-W	9 – 36 VDC	12 VDC	0mA	1670mA	75mVp-p	22mA	1018mA	86	1650 μ F
MT20E-2415SI-W	9 – 36 VDC	15 VDC	0mA	1330mA	75mVp-p	22mA	1014mA	86	1050 μ F
MT20E-2405WI-W	9 – 36 VDC	$\pm$ 5 VDC	0mA	$\pm$ 2000mA	100mVp-p	55mA	992mA	88	$\pm$ 4800 μ F
MT20E-2412WI-W	9 – 36 VDC	$\pm$ 12 VDC	0mA	$\pm$ 833mA	100mVp-p	30mA	1004mA	87	$\pm$ 825 μ F
MT20E-2415WI-W	9 – 36 VDC	$\pm$ 15 VDC	0mA	$\pm$ 667mA	100mVp-p	30mA	1005mA	87	$\pm$ 525 μ F
MT20E-4833SI-W	18 – 75 VDC	3.3 VDC	0mA	5500mA	60mVp-p	35mA	467mA	85	18000 μ F
MT20E-4805SI-W	18 – 75 VDC	5 VDC	0mA	4000mA	75mVp-p	35mA	496mA	88	9600 μ F
MT20E-4812SI-W	18 – 75 VDC	12 VDC	0mA	1670mA	75mVp-p	15mA	503mA	87	1650 μ F
MT20E-4815SI-W	18 – 75 VDC	15 VDC	0mA	1330mA	75mVp-p	15mA	501mA	87	1050 μ F
MT20E-4805WI-W	18 – 75 VDC	$\pm$ 5 VDC	0mA	$\pm$ 2000mA	100mVp-p	35mA	490mA	89	$\pm$ 4800 μ F
MT20E-4812WI-W	18 – 75 VDC	$\pm$ 12 VDC	0mA	$\pm$ 833mA	100mVp-p	17mA	496mA	88	$\pm$ 825 μ F
MT20E-4815WI-W	18 – 75 VDC	$\pm$ 15 VDC	0mA	$\pm$ 667mA	100mVp-p	17mA	496mA	88	$\pm$ 525 μ F

Note:

1. BELLCORE TR-NWT-000332. Case 1: 50% Stress, Temperature at 40°C.
MIL-HDBK-217F Notice2 @Ta=25 °C, Full load(Ground, Benign, controlled environment)
2. Maximum value at nominal input voltage and full load.
3. Typical value at nominal input voltage and no load.
4. Typical value at nominal input voltage and full load.
5. Test by minimum Vin and constant resistive load.
6. The ON/OFF control pin voltage is referenced to -Vin.
To order negative logic ON/OFF control add the suffix-N (Ex: MT20E-4805SI-W-N)
7. Heat sink is optional and P/N: 7G-0020C-F.
8. The MT20E-W series can meet EN55022 Class A with parallel an external capacitor to the input pins.
Recommend : 24Vin : NA.
48Vin : 1 μ F/100V 1210 MLCC.
9. An external input filter capacitor is required if the module has to meet EN61000-4-4, EN61000-4-5.
The filter capacitor Kaga USA suggest: Nippon chemi-con KY series, 220 μ F/100V, ESR 48m Ω .





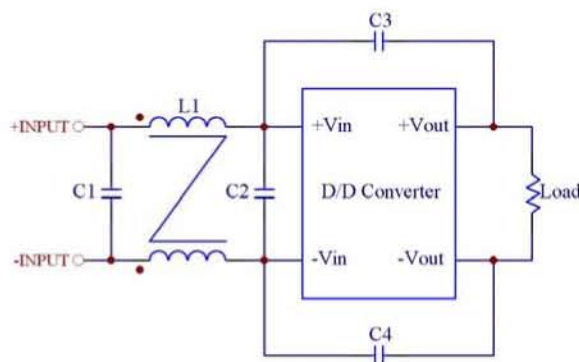
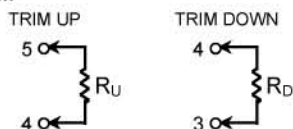
- All dimensions in Inches (mm)
Tolerance: X.XX±0.02 (X.XX±0.5)
X.XXX±0.01 (X.XX±0.25)
- Pin pitch tolerance ±0.01(0.25)
- Pin dimension tolerance ±0.004 (0.1)

PIN CONNECTION

PIN	SINGLE	DUAL
1	+ INPUT	+ INPUT
2	- INPUT	- INPUT
3	+ OUTPUT	+ OUTPUT
4	TRIM	COMMON
5	- OUTPUT	- OUTPUT
6	CTRL	CTRL

EXTERNAL OUTPUT TRIMMING

Output can be externally trimmed by using the method shown below.



Recommended Filter for EN55022 Class B Compliance

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

	C1	C2	C3	C4	L1
MT20E-24xxx-W	4.7µF/50V 1812 MLCC	N/A	1000pF/2KV MLCC	1000pF/2KV MLCC	450µH Common Choke PMT-048
MT20E-48xxx-W	2.2µF/100V 1812 MLCC	2.2µF/100V 1812 MLCC	1000pF/2KV MLCC	1000pF/2KV MLCC	325µH Common Choke PMT-050