Volgen Kaga Electronics (USA) Inc.

FEATURES

- 10 WATTS OUTPUT POWER
- OUTPUT CURRENT UP TO 2.5A
- STANDARD 2.0 X 1.0 X 0.4 INCH PACKAGE
- HIGH EFFICIENCY UP TO 87%
- 2:1 AND 4:1 WIDE INPUT VOLTAGE RANGE
- SIX-SIDED CONTINUOUS SHIELD
- FIXED SWITCHING FREQUENCY (300KHz)
- ISO9001 CERTIFIED MANUFACTURING FACILITIES
- COMPLIANT TO RoHS EU DIRECTIVE 2002/95/EC

DESCRIPTION

The MT10A and MT10A-W series offer 10 watts of output power from a 2.0 x 1.0 x 0.4 inch package. MT10A series have 2:1 wide input voltage of 9-18, 18-36 and 36-75VDC. MT10A-W series have 4:1 ultra wide input voltage of 9-36 and 18-75VDC.

TECHNICAL SPECIFICATION

All specifications are typical at nominal input, full load and 25ºC otherwise noted.

OUTPUT SPECIFICATIONS

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

GENERAL SPECIFICATIONS

Efficiency		See table
Isolation voltage		1600VDC, min.
Isolation resistance		10^9 ohms, min.
Isolation capacitance		300pF, max.
Switching frequency		300KHz, typ.
Case material		Nickel-coated copper
Base material		Non-conductive black plastic
Potting material		Epoxy (UL94-V0)
Dimensions		2.00 X 1.00 X 0.40 Inch (50.8 X 25.4 X 10.2 mm)
Weight		27g (0.95oz)
MTBF (Note 1)	BELLCORE TR-NWT-000332 MIL-HDBK-217F	1.976 x 10^6 hrs 1.416 x 10^6 hrs

INPUT SPECIFICATIONS

Input voltage range	MT10A	12V nominal input	9 – 18VDC
		24V nominal input	18 – 36VDC
		48V nominal input	36 – 75VDC
	MT10A-W	24V nominal input	9 – 36VDC
		48V nominal input	18 – 75VDC
Input filter			Pi type
Input surge voltage 100mS max		12V input	36VDC
		24V input	50VDC
		48V input	100VDC
Input reflected ripple current		Nominal Vin and full load	30mAp-p
Start up time	Nominal Vin and constant resistive load	Power up	20mS, typ.
Remote ON/OFF (Option) (Note 6)			
(Positive logic)	DC-DC ON		Open or 3.5V < Vr < 12V
	DC-DC OFF		Short or 0V < Vr < 1.2V
(Negative logic)	DC-DC ON		Short or 0V < Vr < 1.2V
	DC-DC OFF		Open or 3.5V < Vr < 12V
Input current of remote control pin		Nominal Vin	-0.5mA ~ +1mA
Remote off state input current		Nominal Vin	20mA

ENVIRONMENTAL SPECIFICATIONS

Operating ambient temperature (Reference derating curve)	Standard	-25ºC ~ +85ºC (with derating)
	M1 (Note 7)	-40ºC ~ +85ºC (non-derating)
	M2 (W series)	-40ºC ~ +85ºC (with derating)
Maximum case temperature		+100ºC
Storage temperature range		-55ºC ~ +105ºC
Thermal impedance (Note 8)	Nature convection	12ºC/watt
	Nature convection with heat-sink	10ºC/watt
Thermal shock		MIL-STD-810F
Vibration		MIL-STD-810F
Relative humidity		5% to 95% RH

EMC CHARACTERISTICS

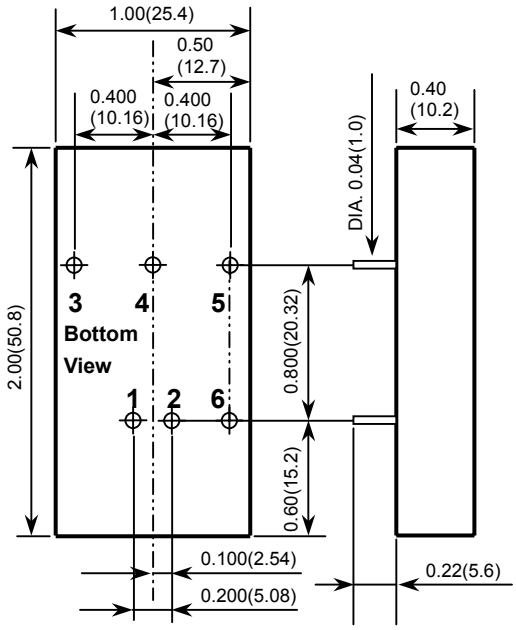
EMI (Note 9)	EN55022			Class A
ESD	EN61000-4-2	Air Contact	± 8KV ± 6KV	Perf. Criteria B
Radiated immunity	EN61000-4-3		10 V/m	Perf. Criteria A
Fast transient (Note 10)	EN61000-4-4		± 2KV	Perf. Criteria B
Surge (Note 10)	EN61000-4-5		± 1KV	Perf. Criteria B
Conducted immunity	EN61000-4-6		10 Vr.m.s	Perf. 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]		
MT10A-1233SI	9 – 18 VDC	3.3 VDC	0mA	2000mA	50mVp-p	17mA	724mA	80	6800μF
MT10A-1205SI	9 – 18 VDC	5 VDC	0mA	2000mA	50mVp-p	21mA	1082mA	81	4700μF
MT10A-1212SI	9 – 18 VDC	12 VDC	0mA	830mA	50mVp-p	38mA	1037mA	84	690μF
MT10A-1215SI	9 – 18 VDC	15 VDC	0mA	670mA	50mVp-p	36mA	1046mA	84	470μF
MT10A-1205WI	9 – 18 VDC	± 5 VDC	0mA	± 1000mA	75mVp-p	39mA	1042mA	84	± 680μF
MT10A-1212WI	9 – 18 VDC	± 12 VDC	0mA	± 416mA	75mVp-p	47mA	1053mA	83	± 330μF
MT10A-1215WI	9 – 18 VDC	± 15 VDC	0mA	± 333mA	75mVp-p	45mA	1041mA	84	± 110μF
MT10A-2433SI (W)	18 – 36 (9 – 36) VDC	3.3 VDC	0mA	2000(2500mA)	50mVp-p	15(13mA)	362(465mA)	80(78)	6800μF
MT10A-2405SI (W)	18 – 36 (9 – 36) VDC	5 VDC	0mA	2000mA	50mVp-p	22(11mA)	534 (548mA)	82 (80)	4700μF
MT10A-2412SI (W)	18 – 36 (9 – 36) VDC	12 VDC	0mA	830mA	50mVp-p	18(16mA)	519 (519mA)	84 (84)	690μF
MT10A-2415SI (W)	18 – 36 (9 – 36) VDC	15 VDC	0mA	670mA	50mVp-p	36(26mA)	523 (544mA)	84 (81)	470μF
MT10A-2405WI (W)	18 – 36 (9 – 36) VDC	± 5 VDC	0mA	± 1000mA	75mVp-p	28(15mA)	527 (534mA)	83 (82)	± 680μF
MT10A-2412WI (W)	18 – 36 (9 – 36) VDC	± 12 VDC	0mA	± 416mA	75mVp-p	24(15mA)	513 (547mA)	85 (80)	± 330μF
MT10A-2415WI (W)	18 – 36 (9 – 36) VDC	± 15 VDC	0mA	± 333mA	75mVp-p	31(22mA)	520 (548mA)	84 (80)	± 110μF
MT10A-4833SI (W)	36 – 75(18 – 75) VDC	3.3 VDC	0mA	2000(2500mA)	50mVp-p	11(10mA)	181(239mA)	80(76)	6800μF
MT10A-4805SI (W)	36 – 75 (18 – 75) VDC	5 VDC	0mA	2000mA	50mVp-p	14(9mA)	260 (270mA)	84 (81)	4700μF
MT10A-4812SI (W)	36 – 75 (18 – 75) VDC	12 VDC	0mA	830mA	50mVp-p	14(9mA)	253 (259mA)	86 (84)	690μF
MT10A-4815SI (W)	36 – 75 (18 – 75) VDC	15 VDC	0mA	670mA	50mVp-p	10(11mA)	252 (262mA)	87 (84)	470μF
MT10A-4805WI (W)	36 – 75 (18 – 75) VDC	± 5 VDC	0mA	± 1000mA	75mVp-p	16(12mA)	260 (267mA)	84 (82)	± 680μF
MT10A-4812WI (W)	36 – 75 (18 – 75) VDC	± 12 VDC	0mA	± 416mA	75mVp-p	19(20mA)	254 (281mA)	86 (78)	± 330μF
MT10A-4815WI (W)	36 – 75 (18 – 75) VDC	± 15 VDC	0mA	± 333mA	75mVp-p	16(20mA)	256 (270mA)	85 (81)	± 110μF

Note

1. BELLCORE TR-NWT-000332. Case 1: 50% Stress, Temperature at 40ºC.
   MIL-HDBK-217F Notice2 @Ta=25 ºC, Full load (Ground, Benign, controlled environment).
2. Maximum value at nominal input voltage and full load of standard type.
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 positive logic ON/OFF control add the suffix-P (Ex:MT10A-1205SI-P); To order negative logic ON-OFF control add the suffix-N (Ex: MT10A-1205SI-N)
7. M1 version is more efficient; therefore, it can be operated in a more extensive temperature range than standard and M2 version.
8. Heat sink is optional and P/N: 7G-0020C-F.
9. The MT10A series can meet EN55022 Class A with parallel an external capacitor to the input pins.
   Recommend: 12Vin : 4.7μF/25V 1210 MLCC .
   24Vin : 2.2μF/50V 1812 MLCC .
   48Vin : 1.5μF/100V 1812 MLCC .
10. An external input filter capacitor is required if the module has to meet EN61000-4-4, EN61000-4-5. The filter capacitor Kaga USA suggests: Nippon chemi-con KY series, 220μF/100V, ESR 48mΩ.

PIN CONNECTION		
PIN	SINGLE	DUAL
1	+ INPUT	+ INPUT
2	- INPUT	- INPUT
3	+ OUTPUT	+ OUTPUT
4	NO PIN	COMMON
5	- OUTPUT	- OUTPUT
6	CTRL (Option)	CTRL (Option)



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