POWER MATE TECHNOLOGY CO.,LTD.

MKC03-SERIES



FEATURES

- 3 WATTS REGULATED OUTPUT POWER
- OUTPUT CURRENT UP TO 0.5A
- STANDARD 1.25 X 0.80 X 0.40 INCH
- HIGH EFFICIENCY UP TO 80%
- 2:1 WIDE INPUT VOLTAGE RANGE
- FIVE-SIDED SHIELD
- FIXED SWITCHING FREQUENCY (300KHz)
- STANDARD 24 PIN DIP PACKAGE & SMD TYPE PACKAGE
- OVER CURRENT PROTECTION
- OUTPUT 1 / OUTPUT 2 ISOLATION (DS TYPE)
- CE MARK MEETS 2006/95/EC, 93/68/EEC AND 2004/108/EC
- UL60950-1, EN60950-1 AND IEC60950-1 LICENSED
- ISO9001 CERTIFIED MANUFACTURING FACILITIES
- COMPLIANT TO RoHS EU DIRECTIVE 2002/95/EC

APPLICATIONS

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

OPTIONS

SMD TYPE, M1 TYPE

DESCRIPTION

The MKC03 series offer 3 watts of output power from a package in an IC compatible 24pin DIP configuration without derating to 82ºC ambient temperature. MKC03 series have 2:1 wide input voltage of 9-18, 18-36 and 36-75VDC.

TECHNICAL SPECIFICATION

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

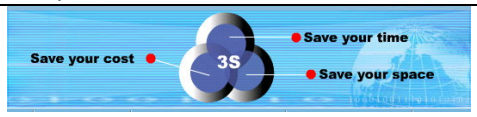
OUTPUT SPECIFICATIONS			
Output power			3 Watts, max.
Voltage accuracy	Full load and nominal Vin		± 1%
Minimum load			0%
Line regulation	LL to HL at Full Load		± 0.2%
Load regulation	No Load to Full Load	Single Dual DS	± 0.2% ± 1% ± 1%
Cross regulation (Dual)	Asymmetrical load 25% / 100% FL		± 5%
Ripple and noise	20MHz bandwidth		See table
Temperature coefficient			±0.02% / ºC, max.
Transient response recovery time	25% load step change		200µS
Over load protection	% of FL at nominal input		180%, typ.
Short circuit protection			Continuous, automatics recovery

GENERRALINPUT SPECIFICATIONS		
Efficiency		See table
Isolation voltage	Input to Output to Case DS type, Output to Output	500VDC, min. 500VDC, min.
Isolation resistance		10^9 ohms, min.
Isolation capacitance		300pF, max.
Switching frequency		300KHz, typ.
Approvals and standard		IEC60950-1, UL60950-1, EN60950-1
Case material		Nickel-coated copper
Base material		Non-conductive black plastic
Potting material		Epoxy (UL94-V0)
Dimensions		1.25 X 0.80 X 0.40 Inch (31.8 X 20.3 X 10.2 mm)
Weight	DIP SMD	16g (0.55oz) 18g (0.62oz)
MTBF (Note 1)	BELLCORE TR-NWT-000332 MIL-HDBK-217F	3.069 x 10^6 hrs 2.003 x 10^6 hrs

INPUT SPECIFICATIONS		
Input voltage range	12V nominal input 24V nominal input 48V nominal input	9 – 18VDC 18 – 36VDC 36 – 75VDC
Input filter		Pi type
Input surge voltage 100mS max	12V input 24V input 48V input	36VDC 50VDC 100VDC
Input reflected ripple current	Nominal Vin and full load	20mAp-p
Start up time	Nominal Vin and constant resistive load	Power up 350mS,max.

ENVIRONMENTAL SPECIFICATIONS		
Operating ambient temperature	Standard M1 (Note 6)	-25ºC ~ +85ºC (with derating) -40ºC ~ +85ºC (non-derating)
Maximum case temperature		100ºC
Storage temperature range		-55ºC ~ +105ºC
Thermal impedance	Nature convection	20ºC/Watt
Thermal shock		MIL-STD-810F
Vibration		MIL-STD-810F
Relative humidity		5% to 95% RH

EMC CHARACTERISTICS				
EMI	EN55022			Class A
ESD	EN61000-4-2	Air Contact	± 8KV ± 6KV	Perf. Criteria A
Radiated immunity	EN61000-4-3		10 V/m	Perf. Criteria A
Fast transient (Note 7)	EN61000-4-4		± 2KV	Perf. Criteria B
Surge (Note 7)	EN61000-4-5		± 1KV	Perf. Criteria B
Conducted immunity	EN61000-4-6		10 Vr.m.s	Perf. Criteria A

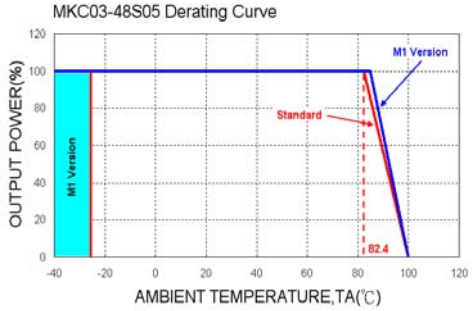


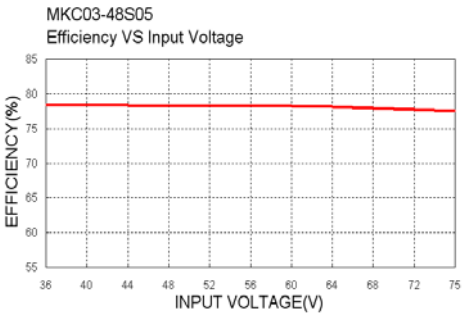
WWW.PDUKE.COM

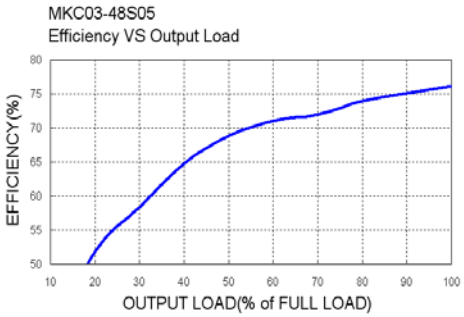
Model Number	Input Range	Output Voltage	Output Current		Output (4) Ripple & Noise	Input Current		Eff (4) (%)	Capacitor(5) Load max
			Min. load	Full load		No load(3)	Full load(2)		
MKC03-12S33	9 – 18 VDC	3.3 VDC	0mA	500mA	50mVp-p	8mA	196mA	74	2200μF
MKC03-12S05	9 – 18 VDC	5 VDC	0mA	500mA	50mVp-p	10mA	286mA	77	1000μF
MKC03-12S12	9 – 18 VDC	12 VDC	0mA	250mA	50mVp-p	13mA	333mA	79	220μF
MKC03-12S15	9 – 18 VDC	15 VDC	0mA	200mA	50mVp-p	13mA	329mA	80	150μF
MKC03-12D05	9 – 18 VDC	± 5 VDC	0mA	± 250mA	50mVp-p	13mA	293mA	75	± 470μF
MKC03-12D12	9 – 18 VDC	± 12 VDC	0mA	± 125mA	50mVp-p	16mA	329mA	80	± 100μF
MKC03-12D15	9 – 18 VDC	± 15 VDC	0mA	± 100mA	50mVp-p	16mA	329mA	80	± 68μF
MKC03-12DS05	9 – 18 VDC	V1:5 VDC;V2:5 VDC	0mA	V1:250mA;V2:250mA	50mVp-p	18mA	293mA	75	V1:470μF;V2:470μF
MKC03-12DS12	9 – 18 VDC	V1:12 VDC;V2:12 VDC	0mA	V1:125mA;V2:125mA	50mVp-p	18mA	329mA	80	V1:100μF;V2:100μF
MKC03-12DS15	9 – 18 VDC	V1:15 VDC;V2:15 VDC	0mA	V1:100mA;V2:100mA	50mVp-p	18mA	329mA	80	V1:68μF;V2:68μF
MKC03-24S33	18 – 36 VDC	3.3 VDC	0mA	500mA	50mVp-p	12mA	101mA	72	2200μF
MKC03-24S05	18 – 36 VDC	5 VDC	0mA	500mA	50mVp-p	12mA	149mA	74	1000μF
MKC03-24S12	18 – 36 VDC	12 VDC	0mA	250mA	50mVp-p	16mA	169mA	78	220μF
MKC03-24S15	18 – 36 VDC	15 VDC	0mA	200mA	50mVp-p	16mA	169mA	78	150μF
MKC03-24D05	18 – 36 VDC	± 5 VDC	0mA	± 250mA	50mVp-p	18mA	147mA	75	± 470μF
MKC03-24D12	18 – 36 VDC	± 12 VDC	0mA	± 125mA	50mVp-p	18mA	169mA	78	± 100μF
MKC03-24D15	18 – 36 VDC	± 15 VDC	0mA	± 100mA	50mVp-p	18mA	169mA	78	± 68μF
MKC03-24DS05	18 – 36 VDC	V1:5 VDC;V2:5 VDC	0mA	V1:250mA;V2:250mA	50mVp-p	16mA	147mA	75	V1:470μF;V2:470μF
MKC03-24DS12	18 – 36 VDC	V1:12 VDC;V2:12 VDC	0mA	V1:125mA;V2:125mA	50mVp-p	20mA	169mA	78	V1:100μF;V2:100μF
MKC03-24DS15	18 – 36 VDC	V1:15 VDC;V2:15 VDC	0mA	V1:100mA;V2:100mA	50mVp-p	20mA	169mA	78	V1:68μF;V2:68μF
MKC03-48S33	36 – 75 VDC	3.3 VDC	0mA	500mA	50mVp-p	8mA	48mA	76	2200μF
MKC03-48S05	36 – 75 VDC	5 VDC	0mA	500mA	50mVp-p	10mA	75mA	74	1000μF
MKC03-48S12	36 – 75 VDC	12 VDC	0mA	250mA	50mVp-p	10mA	84mA	79	220μF
MKC03-48S15	36 – 75 VDC	15 VDC	0mA	200mA	50mVp-p	10mA	84mA	79	150μF
MKC03-48D05	36 – 75 VDC	± 5 VDC	0mA	± 250mA	50mVp-p	10mA	75mA	74	± 470μF
MKC03-48D12	36 – 75 VDC	± 12 VDC	0mA	± 125mA	50mVp-p	12mA	86mA	77	± 100μF
MKC03-48D15	36 – 75 VDC	± 15 VDC	0mA	± 100mA	50mVp-p	12mA	86mA	77	± 68μF
MKC03-48DS05	36 – 75 VDC	V1:5 VDC;V2:5 VDC	0mA	V1:250mA;V2:250mA	50mVp-p	18mA	75mA	74	V1:470μF;V2:470μF
MKC03-48DS12	36 – 75 VDC	V1:12 VDC;V2:12 VDC	0mA	V1:125mA;V2:125mA	50mVp-p	18mA	86mA	77	V1:100μF;V2:100μF
MKC03-48DS15	36 – 75 VDC	V1:15 VDC;V2:15 VDC	0mA	V1:100mA;V2:100mA	50mVp-p	18mA	86mA	77	V1:68μF;V2:68μF

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. M1 version is more efficient, therefore, it can be operated in a more extensive temperature range than standard.
7. An external input filter capacitor is required if the module has to meet EN61000-4-4, EN61000-4-5.
   The filter capacitor Power Mate suggest: Nippon chemi-con KY series, 220μF/100V, ESR 48mΩ.

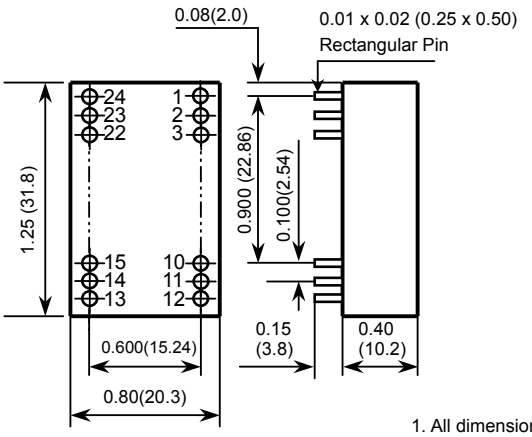




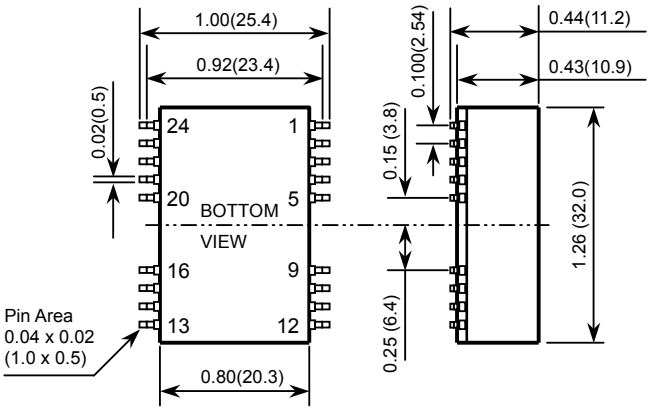


WWW.PDUKE.COM

3 WATTS
DC-DC CONVERTER



Suffix-SMD



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)

DIP PIN CONNECTION

PIN	SINGLE	DUAL	DS	PIN	SINGLE	DUAL	DS
1	+ INPUT	+ INPUT	+ INPUT	24	+ INPUT	+ INPUT	+ INPUT
2	NC	- OUTPUT	- V1 out	23	NC	- OUTPUT	- V1 out
3	NC	COMMON	+ V1 out	22	NC	COMMON	+ V1 out
10	-OUTPUT	COMMON	- V2 out	15	- OUTPUT	COMMON	- V2 out
11	+OUTPUT	+OUTPUT	+ V2 out	14	+OUTPUT	+OUTPUT	+ V2 out
12	- INPUT	- INPUT	- INPUT	13	- INPUT	- INPUT	- INPUT

SMD PIN CONNECTION

PIN	SINGLE	DUAL	DS	PIN	SINGLE	DUAL	DS
1	+ INPUT	+ INPUT	+ INPUT	24	+ INPUT	+ INPUT	+ INPUT
2	NC	- OUTPUT	- V1 out	23	NC	- OUTPUT	- V1 out
3	NC	COMMON	+ V1 out	22	NC	COMMON	+ V1 out
10	-OUTPUT	COMMON	- V2 out	15	-OUTPUT	COMMON	- V2 out
11	+OUTPUT	+OUTPUT	+ V2 out	14	+OUTPUT	+OUTPUT	+ V2 out
12	- INPUT	- INPUT	- INPUT	13	- INPUT	- INPUT	- INPUT
Others	NC	NC	NC	Others	NC	NC	NC