POWER MATE TECHNOLOGY CO.,LTD.

MKC03-SERIES

- 3 WATTS REGULATED OUTPUT POWER
- 2:1 WIDE INPUT VOLTAGE RANGE
- INTERNATIONAL SAFETY STANDARD APPROVAL
- FIVE-SIDED SHIELD
- HIGH EFFICIENCY UP TO 80%
- STANDARD 24 PIN DIP PACKAGE & SMD TYPE PACKAGE
- OVER CURRENT PROTECTION
- OUTPUT 1 / OUTPUT 2 ISOLATION (DS TYPE)

UL E193009
TUV
CB
CE MARK

The MKC03 series offer 3 watts of output power from a package in an IC compatible 24pin DIP configuration without derating to 71ºC ambient temperature. MKC03 series have 2:1 wide input voltage of 9-18, 18-36 and 36-75VDC. The MKC03 features 500VDC of isolation, short-circuit protection and as well as five sided shielding. All models are particularly suited to telecommunications, industrial, mobile telecom and test equipment applications.

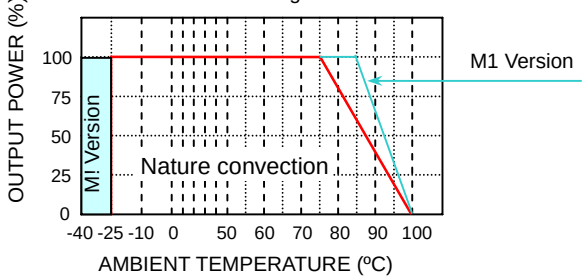
TECHNICAL SPECIFICATION

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 (Note 1)			10% of FL
Line regulation	LL to HL at Full Load		± 0.2%
Load regulation	25% to 100% FL	Single Dual DS	± 0.2% ± 1% ± 1%
Cross regulation(Dual)	Asymmetrical load 25% / 100% FL		± 5%
Ripple and noise	20MHz bandwidth		50mVp-p
Temperature coefficient			±0.02% / ºC, max
Transient response recovery time	25% load step change		200uS
Over load protection	% of FL at nominal input		180% typ
Short circuit protection			Continuous, automatics recovery

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 (Note 2)	Nominal Vin and full load		20mAp-p
Start up time	Nominal Vin and constant resistive load	Power up	350mSmax

MKC03-48S05 Derating Curve



GENERAL 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 3)		3.069×10^6 hrs

ENVIRONMENTAL SPECIFICATIONS		
Operating temperature range	Standard M1 (Note 4)	-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-810D
Vibration		10~55Hz, 10G, 30minutes along X,Y and Z
Relative humidity		5% to 95% RH

EMC CHARACTERISTICS		
Conducted emissions	EN55022	Class A
Radiated emissions	EN55022	Class A
ESD	EN61000-4-2	Perf. Criteria B
Radiated immunity	EN61000-4-3	Perf. Criteria A
Fast transient	EN61000-4-4	Perf. Criteria B
Surge	EN61000-4-5	Perf. Criteria B
Conducted immunity	EN61000-4-6	Perf. Criteria A

Model Number	Input Range	Output Voltage	Output Current	Input Current (5)	Eff (6) (%)	Capacitor(7) Load max
MKC03-12S33	9 – 18 VDC	3.3 VDC	500mA	196mA	74	2200uF
MKC03-12S05	9 – 18 VDC	5 VDC	500mA	286mA	77	1000uF
MKC03-12S12	9 – 18 VDC	12 VDC	250mA	333mA	79	220uF
MKC03-12S15	9 – 18 VDC	15 VDC	200mA	329mA	80	150uF
MKC03-12D05	9 – 18 VDC	± 5 VDC	± 250mA	293mA	75	± 470uF
MKC03-12D12	9 – 18 VDC	± 12 VDC	± 125mA	329mA	80	± 100uF
MKC03-12D15	9 – 18 VDC	± 15 VDC	± 100mA	329mA	80	± 68uF
MKC03-12DS05	9 – 18 VDC	V1:5 VDC;V2:5 VDC	V1:250mA;V2:250mA	293mA	75	V1:470uF;V2:470uF
MKC03-12DS12	9 – 18 VDC	V1:12 VDC;V2:12 VDC	V1:125mA;V2:125mA	329mA	80	V1:100uF;V2:100uF
MKC03-12DS15	9 – 18 VDC	V1:15 VDC;V2:15 VDC	V1:100mA;V2:100mA	329mA	80	V1:68uF;V2:68uF
MKC03-24S33	18 – 36 VDC	3.3 VDC	500mA	101mA	72	2200uF
MKC03-24S05	18 – 36 VDC	5 VDC	500mA	149mA	74	1000uF
MKC03-24S12	18 – 36 VDC	12 VDC	250mA	169mA	78	220uF
MKC03-24S15	18 – 36 VDC	15 VDC	200mA	169mA	78	150uF
MKC03-24D05	18 – 36 VDC	± 5 VDC	± 250mA	147mA	75	± 470uF
MKC03-24D12	18 – 36 VDC	± 12 VDC	± 125mA	169mA	78	± 100uF
MKC03-24D15	18 – 36 VDC	± 15 VDC	± 100mA	169mA	78	± 68uF
MKC03-24DS05	18 – 36 VDC	V1:5 VDC;V2:5 VDC	V1:250mA;V2:250mA	147mA	75	V1:470uF;V2:470uF
MKC03-24DS12	18 – 36 VDC	V1:12 VDC;V2:12 VDC	V1:125mA;V2:125mA	169mA	78	V1:100uF;V2:100uF
MKC03-24DS15	18 – 36 VDC	V1:15 VDC;V2:15 VDC	V1:100mA;V2:100mA	169mA	78	V1:68uF;V2:68uF
MKC03-48S33	36 – 75 VDC	3.3 VDC	500mA	48mA	76	2200uF
MKC03-48S05	36 – 75 VDC	5 VDC	500mA	75mA	74	1000uF
MKC03-48S12	36 – 75 VDC	12 VDC	250mA	84mA	79	220uF
MKC03-48S15	36 – 75 VDC	15 VDC	200mA	84mA	79	150uF
MKC03-48D05	36 – 75 VDC	± 5 VDC	± 250mA	75mA	74	± 470uF
MKC03-48D12	36 – 75 VDC	± 12 VDC	± 125mA	86mA	77	± 100uF
MKC03-48D15	36 – 75 VDC	± 15 VDC	± 100mA	86mA	77	± 68uF
MKC03-48DS05	36 – 75 VDC	V1:5 VDC;V2:5 VDC	V1:250mA;V2:250mA	75mA	74	V1:470uF;V2:470uF
MKC03-48DS12	36 – 75 VDC	V1:12 VDC;V2:12 VDC	V1:125mA;V2:125mA	86mA	77	V1:100uF;V2:100uF
MKC03-48DS15	36 – 75 VDC	V1:15 VDC;V2:15 VDC	V1:100mA;V2:100mA	86mA	77	V1:68uF;V2:68uF

Note

1. The MKC03 series required a minimum 10% loading on the output to maintain specified regulation. Operation under no-load condition will not damage these devices, however they may not meet all listed specification
2. Please add an external filter at converter input terminals when measuring input reflected ripple, as figure 1.
   L: Simulated source impedance of 12uH C: Nippon chemi-con KMF series 47uF/100V
3. BELLCORE TR-NWT-000332. Case 1: 50% Stress, Temperature at 40ºC. (Ground fixed and controlled environment)
4. M1 version is more efficient, therefore, it can be operated in a more extensive temperature range than standard.
5. Maximum value at nominal input voltage and full load of standard type.
6. Typical value at nominal input voltage and full load.
7. Test by minimum Vin and constant resistive load.

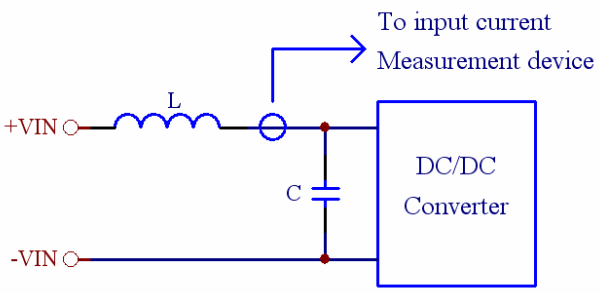
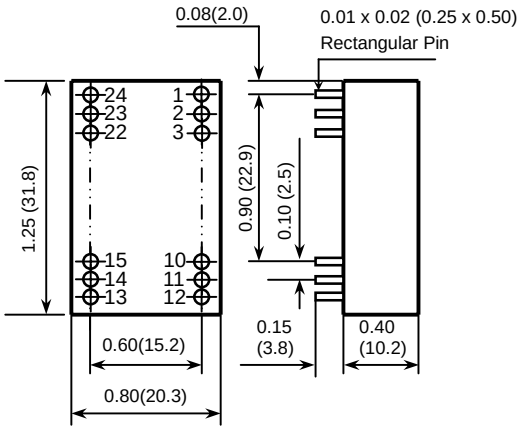


Figure 1

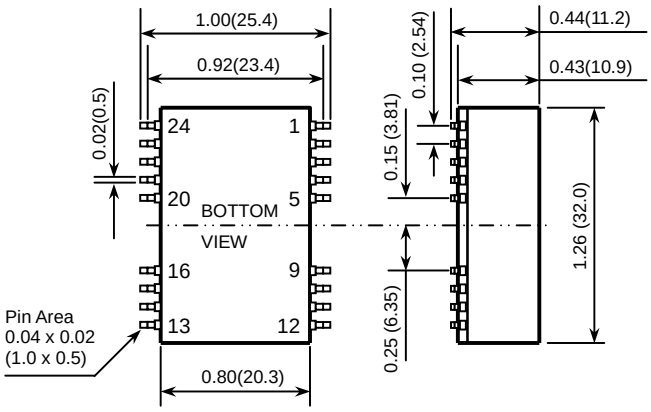
POWER MATE TECHNOLOGY CO.,LTD.

P-DUKE

3 WATTS DC-DC CONVERTER



Suffix-SMD



All dimensions in inches(mm)
Tolerance : x.xx±0.02(x.x±0.5)
x.xxx±0.01(x.xx±0.25)
Pin pitch tolerance ±0.014(0.35)

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