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

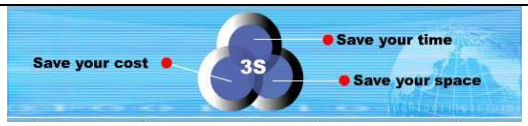
The MKC03 series offer 3 watts of output power from a package in an IC compatible 24pin DIP configuration without derating to 82ºC ambient temperature. MKC03 series have 2:1 wide input voltage of 9-18, 18-36 and 36-75VDC.

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	± 0.2%
		Dual	± 1%
		DS	± 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		500VDC, min.
	DS type, Output to Output		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		16g (0.55oz)
	SMD		18g (0.62oz)
MTBF (Note 1)	BELLCORE TR-NWT-000332		3.069 x 10^6 hrs
	MIL-HDBK-217F		2.003 x 10^6 hrs

INPUT SPECIFICATIONS			
Input voltage range	12V nominal input		9 – 18VDC
	24V nominal input		18 – 36VDC
	48V nominal input		36 – 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		20mAp-p
Start up time	Nominal Vin and constant resistive load	Power up	350mS,max.
ENVIRONMENTAL SPECIFICATIONS			
Operating ambient temperature	Standard		-25ºC ~ +85ºC (with derating)
	M1 (Note 6)		-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 ± 8KV Contact ± 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



POWER MATE TECHNOLOGY CO.,LTD.

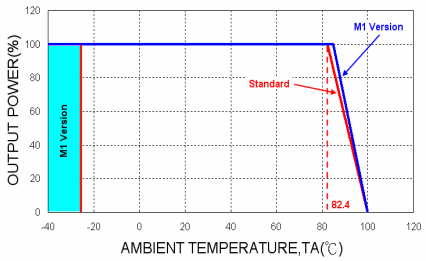
3 WATTS DC-DC CONVERTER

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

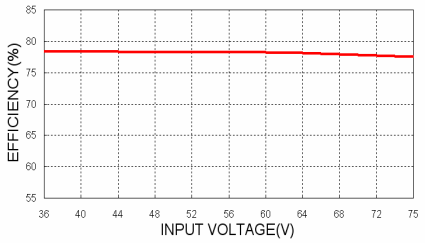
Note

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.

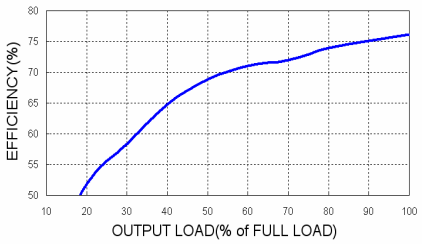
MKC03-48S05 Derating Curve



MKC03-48S05
Efficiency VS Input Voltage

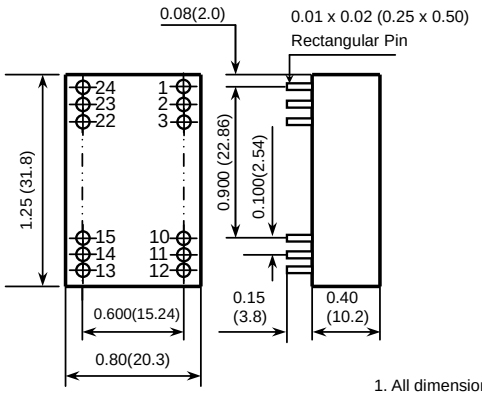


MKC03-48S05
Efficiency VS Output Load

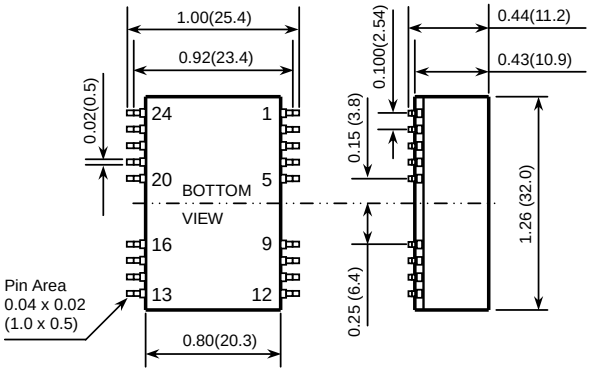


POWER MATE TECHNOLOGY CO.,LTD.

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

PEWATRON
a member of the Angst + Pfister Group

We are here for you. Addresses and Contacts

Sales Switzerland

Postcode 3000 – 9999
Liechtenstein

Matthias Rüegg
Ruhbergstrasse 32
CH-9230 Flawil

Phone + 41 44 877 35 18
Mobile + 41 76 491 66 66
Fax + 41 44 877 35 19

matthias.rueegg@pewatron.com

Postcode 1000 – 2999

Raffael Favaretto
Route d'Oron 124
CH-1673 Promasens

Phone + 41 44 877 35 22
Mobile + 41 76 444 63 14
Fax + 41 44 877 35 23

raffael.favaretto@pewatron.com

Sales Germany

Postcode 60000 – 79999

Dieter Hirthe
Mühlweg 23
D-71554 Weissach i.T.

Phone + 49 719 149 60 58
Mobile + 49 163 762 74 30
Fax + 49 719 193 31 88

dieter.hirthe@pewatron.com

Postcode 10000 – 59999
Postcode 80000 – 99999

Kurt Stritzelberger
Neumarkter Str. 86a
D-81673 Munich

Phone + 49 89 260 38 47
Mobile + 49 171 803 41 35
Fax + 49 89 43 10 91 91

kurt.stritzelberger@pewatron.com

Key Accounts
Aerospace and Defence

Claus Wübbena
Vogelkamp 26
D-26655 Westerstede

Phone + 49 4488 5204 614
Mobile + 49 173 9700 691
Fax + 49 4488 5204 616

claus.wuebbena@pewatron.com

Sales Austria

Kurt Stritzelberger
Neumarkter Str. 86a
D-81673 Munich

Phone + 49 89 260 38 47
Mobile + 49 17 18 03 41 35
Fax + 49 89 43 10 91 91

kurt.stritzelberger@pewatron.com

Sales Other Countries / Product Management

Sensors

Physical Sensors
Data Acquisition

Peter Felder
Phone + 41 44 877 35 05
peter.felder@pewatron.com

Geometrical Sensors

Eric Letsch
Phone + 41 44 877 35 14
eric.letsch@pewatron.com

Power Supplies

DC-DC Converters
Switching Power Supplies
DC-AC Inverters

Sebastiano Leggio
Phone + 41 44 877 35 06
sebastiano.leggio@pewatron.com

E-Components

Current Sensors
Man Machine Interface
Measurement Probes

Sebastiano Leggio
Phone + 41 44 877 35 06
sebastiano.leggio@pewatron.com

PEWATRON AG
Thurgauerstrasse 66
CH-8052 Zurich

Phone + 41 44 877 35 00
Fax + 41 44 877 35 25

www.pewatron.com
info@pewatron.com