POWER MATE TECHNOLOGY CO.,LTD.

VKC03-SERIES

- **3 WATTS REGULATED OUTPUT POWER**
- **4:1 WIDE INPUT VOLTAGE RANGE**
- **INTERNATIONAL SAFETY STANDARD APPROVAL**
- **FIVE-SIDED SHIELD**
- **HIGH EFFICIENCY UP TO 78%**
- **STANDARD 24 PIN DIP PACKAGE & SMD TYPE PACKAGE**
- **OVER CURRENT PROTECTION**

UL E193009
TUV R3-50007936
CB JPTUV-003641
CE MARK

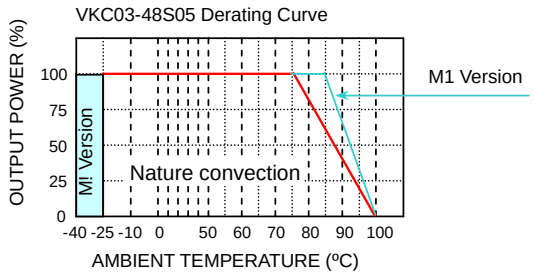
The VKC03 offers 3 watts of output power from a package in an IC compatible 24pin DIP configuration without derating to 71ºC ambient temperature. VKC03 series have 4:1 wide input voltage of 9-36 and 18-75VDC. The VKC03 features 1600VDC of isolation, short-circuit protection and as well as five sided shielding. A safety designed meet to EN60950-1 and UL60950-1. 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	± 0.2%
		Dual	± 1%
Cross regulation	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		200µS
Over load protection	% of FL at nominal input		180%, typ.
Short circuit protection			Continuous, automatics recovery

INPUT SPECIFICATIONS		
Input voltage range	24V nominal input (Note 2)	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(Note 3)	Nominal Vin and full load	20mAp-p
Start up time	Nominal Vin and constant resistor load	350mS, typ.
Remote ON/OFF (Note 4) (Positive logic)	DC-DC N	Open or 3.5V < Vr < 12V
	DC-DC OFF	Short or 0V < Vr < 1.2V
Remote off input current	Nominal Vin	2.5mA



GENERAL SPECIFICATIONS			
Efficiency			See table
Isolation voltage	Input to Output		1600VDC, min.
	Input(Output) to Case	DIP	1600VDC, min.
		SMD	1000VDC, 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 5)			2.941 x 10^6 hrs

ENVIRONMENTAL SPECIFICATIONS		
Operating ambient temperature		-25ºC ~ +85ºC (with 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		
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

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3 WATTS DC-DC CONVERTER

Model Number	Input Range	Output Voltage	Output Current	Input Current (7)	Eff (8) (%)	Capacitor (9) Load max
VKC03-24S05	9 – 36 VDC	5 VDC	500mA	147mA	75	1000uF
VKC03-24S12	9 – 36 VDC	12 VDC	250mA	169mA	78	170uF
VKC03-24S15	9 – 36 VDC	15 VDC	200mA	169mA	78	110uF
VKC03-24D05	9 – 36 VDC	± 5 VDC	± 250mA	149mA	74	± 550uF
VKC03-24D12	9 – 36 VDC	± 12 VDC	± 125mA	172mA	77	± 96uF
VKC03-24D15	9 – 36 VDC	± 15 VDC	± 100mA	172mA	77	± 47uF
VKC03-48S05	18 – 75 VDC	5 VDC	500mA	74mA	75	1000uF
VKC03-48S12	18 – 75 VDC	12 VDC	250mA	85mA	78	170uF
VKC03-48S15	18 – 75 VDC	15 VDC	200mA	86mA	77	110uF
VKC03-48D05	18 – 75 VDC	± 5 VDC	± 250mA	75mA	74	± 550uF
VKC03-48D12	18 – 75 VDC	± 12 VDC	± 125mA	86mA	77	± 96uF
VKC03-48D15	18 – 75 VDC	± 15 VDC	± 100mA	85mA	78	± 47uF

Note

1. The VKC03 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. Start up voltage：10 Vdc.
3. Please add an external filter at converter input terminals when measuring input reflected , figure 1.
   L: Simulated source impedance of 12uH C: Nippon chemi-con KMF series 47uF/100V.
4. The ON/OFF control pin voltage is referenced to -Vin.
5. BELLCORE TR-NWT-000332. Case I: 50% Stress, Temperature at 40ºC. (Ground fixed and controlled environment)
6. M1 version is more efficient, therefore, it can be operated in a more extensive temperature range than standard.
7. Maximum value at nominal input voltage and full load of standard type.
8. Typical value at nominal input voltage and full load
9. Test by minimum Vin and constant resistor load.

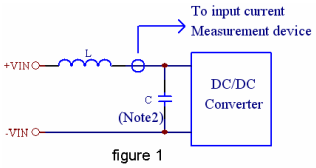
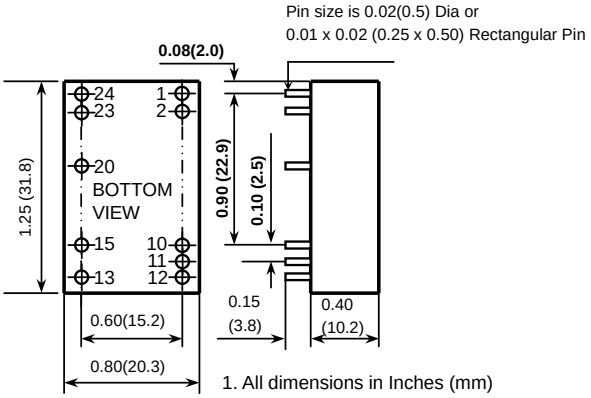
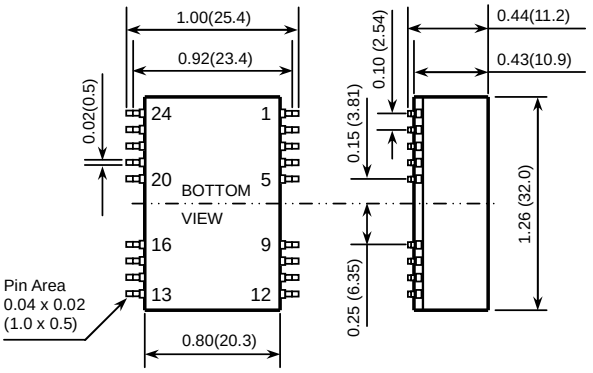


figure 1



1. All dimensions in Inches (mm)
   Tolerance x.xx±0.02(x.x±0.05)
2. Pin pitch tolerance ±0.014(0.35)

Suffix-SMD



DIP PIN CONNECTION					
PIN	SINGLE	DUAL	PIN	SINGLE	DUAL
1	+ INPUT	+ INPUT	24	- INPUT	- INPUT
2	+ INPUT	+ INPUT	23	- INPUT	- INPUT
			20	CTRL	CTRL
10	NC	COMMON	15	NC	+ OUTPUT
11	NC	COMMON			
12	- OUTPUT	NC	13	+ OUTPUT	- OUTPUT

SMD PIN CONNECTION					
PIN	SINGLE	DUAL	PIN	SINGLE	DUAL
1	+ INPUT	+ INPUT	24	- INPUT	- INPUT
2	+ INPUT	+ INPUT	23	- INPUT	- INPUT
			20	CTRL	CTRL
10	NC	COMMON	15	NC	+ OUTPUT
11	NC	COMMON			
12	- OUTPUT	NC	13	+ OUTPUT	- OUTPUT
Others	NC	NC	Others	NC	NC

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