

**PART NUMBER:** VBWQ20**DESCRIPTION:** dc-dc converter**features**

- efficiency up to 90%
- wide (4:1) input range
- 20 W rated power output
- fixed switching frequency
- regulated outputs
- continuous short circuit protection



MODEL	input voltage		input current		output voltage (V dc)	output current		efficiency typ. (%)
	nominal (V dc)	range (V dc)	full load (mA)	no load (mA)		max. (A)	min. (mA)	
VBWQ20-Q24-S3R3	24	9.0~36.0	869	55	3.3	5.5	0	87
VBWQ20-Q24-S5	24	9.0~36.0	926	55	5	4	0	90
VBWQ20-Q24-S12	24	9.0~36.0	928	55	12	1.67	0	90
VBWQ20-Q24-S15	24	9.0~36.0	924	55	15	1.33	0	90
VBWQ20-Q48-S3R3	48	18.0~75.0	430	25	3.3	5.5	0	88
VBWQ20-Q48-S5	48	18.0~75.0	463	25	5	4	0	90
VBWQ20-Q48-S12	48	18.0~75.0	464	25	12	1.67	0	90
VBWQ20-Q48-S15	48	18.0~75.0	462	25	15	1.33	0	90

**NOTE:**

add suffix "-1" to the model number for remote on/off option

**INPUT**

parameter	conditions/description	min	nom	max	units
input voltage range	9~36 V dc		24		V dc
	18~75 V dc		48		V dc
under voltage protection	nominal input 24 V, dc-dc module ON		8.8		V dc
	nominal input 24 V, dc-dc module OFF		8		V dc
	nominal input 48 V, dc-dc module ON		17		V dc
	nominal input 48 V, dc-dc module OFF		16		V dc
CTRL	dc-dc module ON (or open circuit)	5.5			V dc
	dc-dc module OFF			1.2	V dc
input filter	PI type				



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**OUTPUT**

parameter	conditions/description	min	nom	max	units
voltage accuracy	refer to recommended circuit			±1.5	%
transient response	75% ~ 100% step load change				
	error band		±5		%Vout
	recover time			500	µs
ripple & noise	@ 20MHz Bandwidth:			75	mV pk-pk
line regulation	high line to low line			±0.2	%
load regulation	full load to zero load			±1	%
temperature coefficient	refer to recommended circuit		0.03		%/°C
switching frequency	10~100% load, nominal input		350		kHz
over voltage protection	zener or TVS clamp				
short circuit protection	continuous				
external trim adjust range			±10		%

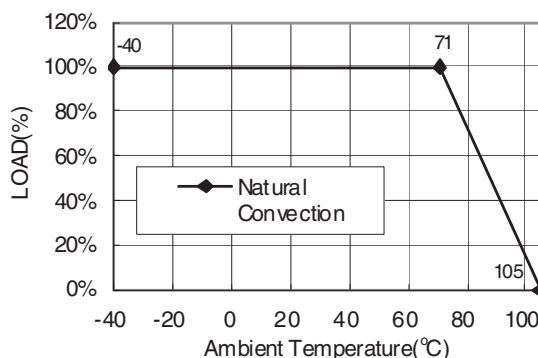
**GENERAL SPECIFICATIONS**

parameter	conditions/description
cooling	free air convection
operating temp. range	-40°C ~ +85°C
storage temp. range	-55°C ~ +125°C
case temperature	+105°C max.
derating above 71°C	linearly to zero power at 105°C
case material	black coated copper with non-conductive base
weight	35 g
EMI/RFI	six sided continuous shield
dimensions	2 x1 x0.4 inches (50.8 x 25.4 x 10.2 mm)
MTBF	>1,000,000 hours MIL-HDBK-217F (25°C)

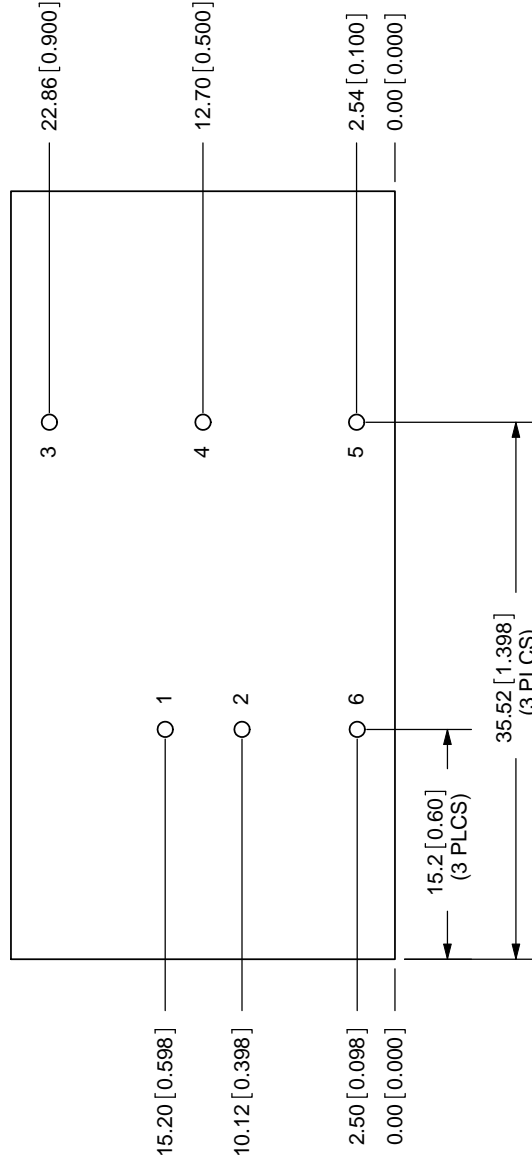
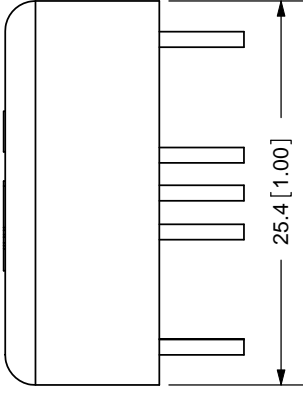
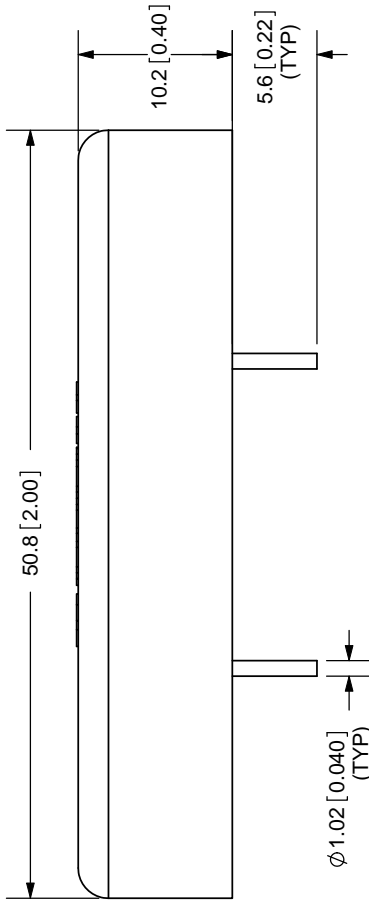
**ISOLATION SPECIFICATIONS**

parameter	conditions/description	min	nom	max	units
isolation voltage	input/output, flash tested for 1 min.	1500			V dc
isolation resistance	tested at 500 V dc	10 <sup>8</sup>			Ω

**DERATING CURVE (NATURAL CONVECTION)**



REV. A	DESCRIPTION NEW DRAWING	DATE 12/31/2008
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PIN CONNECTION

Pin	Single
1	+Vin
2	-Vin
3	+Vout
4	Trim
5	-Vout
6	Remote ON/OFF



TOLERANCE:  
X.XX±1.0mm  
X.XXX±0.25



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TITLE: DC-DC CONVERTER	REV: A
PART NO: VBWQ20_Series	UNITS: MM [INCHES]
DRAWN BY: JMS	APPROVED BY:
	SCALE: 2:1