

FEATURES

- 50 WATTS MAXIMUM OUTPUT POWER
- SINGLE OUTPUT UP TO 20A
- COMPACT 2.28 X 1.45 X 0.50 INCH PACKAGE
- HIGH EFFICIENCY UP TO 91%
- 2:1 WIDE INPUT VOLTAGE RANGE
- FIXED SWITCHING FREQUENCY
- INDUSTRY STANDARD FOOTPRINT
- NO MINIMUM LOAD REQUIRED
- ADJUSTABLE OUTPUT VOLTAGE
- UNDER-VOLTAGE LOCKOUT
- INPUT TO OUTPUT ISOLATION: 1600VDC
- CE MARK MEETS 2006/95/EC, 2011/95/EC AND 2004/108/EC
- SAFETY MEETS UL60950-1, EN60950-1 AND IEC60950-1
- ISO9001 CERTIFIED MANUFACTURING FACILITIES
- COMPLIANT TO RoHS EU DIRECTIVE 2011/65/EU

OPTIONS

Positive logic Remote on/off, Pin length

APPLICATIONS

Wireless Network
Telecom/Datacom
Industry Control System
Distributed Power Architectures
Semiconductor Equipment

DESCRIPTION

QEB50 single output DC/DC converters provide up to 50 watts of output power in an industry standard quarter-brick package and footprint. These units are specifically designed to meet the power needs of low-voltage silicon. All models feature a wide input range, trimmable output voltage and a 20A current rating.

TECHNICAL SPECIFICATION

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

OUTPUT SPECIFICATIONS	
Output power	50 Watts, max.
Voltage accuracy	± 1.5%
Minimum load	0%
Voltage adjustability (Note 5)	+ 10% , -20%
Line regulation LL to HL at Full Load	±0.2%
Load regulation No load to Full Load	±0.3%
Remote Sense (Note 5)	10% of Vout(nom)
Ripple and noise 20MHz bandwidth (Measured with a 1µF M/C and a 10µFT/C)	See table
Temperature coefficient	±0.02% / °C, max.
Transient response recovery time 25% load step change	200µs
Over voltage Protection threshold (Non-latching Hiccup)	120% of Vout(nom) max.
Over Current Protection threshold	110% ~ 140% of Iout Rated
Short circuit protection	Continuous, automatic recovery
GENERAL SPECIFICATIONS	
Efficiency	See table
Isolation voltage Input to Output	1600 VDC, min. 1minute
Input(Output) to Base-plate	1000 VDC, min. 1minute
Isolation resistance 500VDC	10 ⁷ ohms, min.
Isolation capacitance	2500 pF, max.
Switching frequency	270kHz±10%
Design meets safety standard	IEC60950-1, UL60950-1, EN60950-1
Case material	Aluminum base-plate
Weight (approx)	42g (1.46 oz)
MTBF (Note 1)	BELLCORE TR-NWT-000332 2.500 x 10 ⁶ hrs MIL-HDBK-217F 3.568 x 10 ⁵ hrs

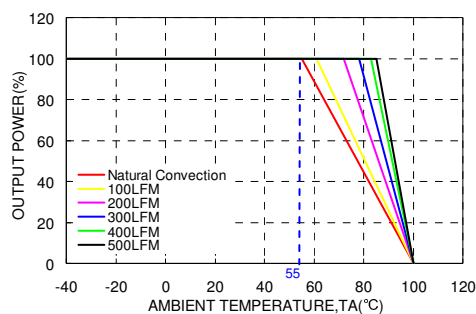
INPUT SPECIFICATIONS			
Input voltage range	24VDC nominal input	18 ~ 36VDC	
	48VDC nominal input	36 ~ 75VDC	
Input filter	L-C type		
Input surge voltage	24VDC input	50VDC 100ms, max.	
	48VDC input	100VDC 100ms, max.	
Start up time	Nominal input and constant resistive load	Power up Remote ON/OFF	25ms
Start-up voltage	24VDC input	18VDC, max.	
	48VDC input	36VDC, max.	
Shutdown voltage	24VDC input	15VDC	
	48VDC input	32VDC	
Remote ON/OFF (Note 6)			
Negative logic(Standard)	DC-DC ON	Short or 0V < Vr < 1.2V	
	DC-DC OFF	Open or 3V < Vr < 15V	
Positive logic(OPTION)	DC-DC ON	Open or 3V < Vr < 15V	
	DC-DC OFF	Short or 0V < Vr < 1.2V	
Input current of remote control pin	Nominal input	-0.5~1.0mA	
Remote off state input current	Nominal input	2.5mA	
ENVIRONMENTAL SPECIFICATIONS			
Operating base-plate temperature range (Note 7)	-40°C ~ +100°C		
Over temperature protection	+110°C		
Storage temperature range	-55°C ~ +125°C		
Thermal shock	MIL-STD-810F		
Vibration	MIL-STD-810F		
Relative humidity(non-condensing)	5% to 95% RH		
EMC CHARACTERISTICS			
EMI (Note 8)	EN55022	Class A, Class B	
Radiated immunity	EN61000-4-3	10 V/m	Perf. Criteria A
Fast transient (Note 9)	EN61000-4-4	± 2kV	Perf. Criteria B
Surge (Note 9)	EN61000-4-5	± 1kV	Perf. Criteria B
Conducted immunity	EN61000-4-6	10 Vr.m.s	Perf. Criteria A

Model Number	Input Range	Output Voltage	Output Current		Output ⁽²⁾ Ripple & Noise	No load ⁽³⁾ Input Current	Eff (%) ⁽⁴⁾
			Min. load	Full load			
QEB50-24S3P3	18 ~ 36 VDC	3.3 VDC	0mA	15A	100mVp-p	65mA	90
QEB50-24S05	18 ~ 36 VDC	5 VDC	0mA	10A	100mVp-p	95mA	91
QEB50-24S12	18 ~ 36 VDC	12 VDC	0mA	4.17A	100mVp-p	60mA	91
QEB50-24S15	18 ~ 36 VDC	15 VDC	0mA	3.33A	100mVp-p	95mA	91
QEB50-48S1P8	36 ~ 75 VDC	1.8 VDC	0mA	20A	100mVp-p	65mA	87
QEB50-48S2P5	36 ~ 75 VDC	2.5 VDC	0mA	20A	100mVp-p	55mA	88
QEB50-48S3P3	36 ~ 75 VDC	3.3 VDC	0mA	15A	100mVp-p	70mA	90
QEB50-48S05	36 ~ 75 VDC	5 VDC	0mA	10A	100mVp-p	65mA	91
QEB50-48S12	36 ~ 75 VDC	12 VDC	0mA	4.17A	100mVp-p	35mA	91
QEB50-48S15	36 ~ 75 VDC	15 VDC	0mA	3.33A	100mVp-p	40mA	91

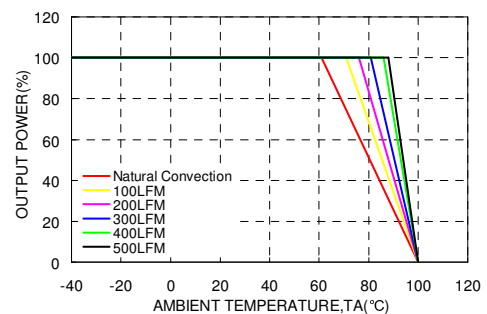
- Note :
- BELLCORE TR-NWT-000332. Case 1: 80% Stress, Temperature at 40°C.
MIL-HDBK-217F Notice2 @Ta=25 °C, Full load(Ground, Benign, controlled environment)
 - Typical value at nominal input and full load. (20MHz BW)
 - Typical value at nominal input and no load.
 - Typical value at nominal input and full load.
 - Maximum output deviation is 10% inclusive of trim. If remote sense is not being used, the +SENSE should be connected to its corresponding +OUTPUT and likewise the -SENSE should be connected to its corresponding -OUTPUT.
 - The positive logic and pin length are optional (see table). The CTRL pin voltage is referenced to -INPUT.
 - Heat-sink is optional and P/N : 7G-0029A-F, 7G-0030A-F, 7G-0031A-F, 7G-0032A-F.
 - The QEB50 series standard module meets EN55022 Class A and Class B with external components.
For more detail information, please contact with P-DUKE.
 - 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.
 - BASE-PLATE GROUNDING : When connect the four screw bolts to shield plane, the EMI could be reduced.
 - The converter is provided by basic insulation.

CAUTION: This power module is not internally fused. An input line fuse must always be used.

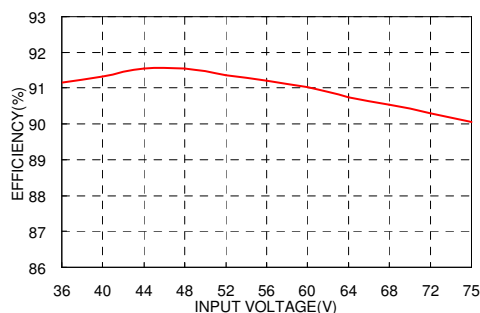
QEB50-48S05 Derating Curve



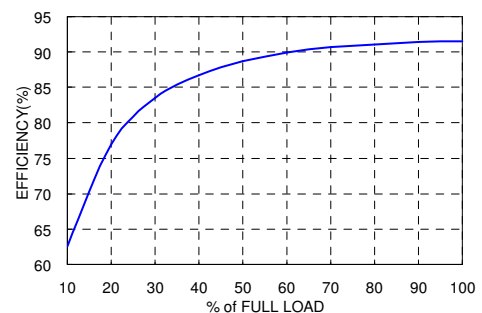
QEB50-48S05 Derating Curve With Heat-sink 7G-0029(Note 7)



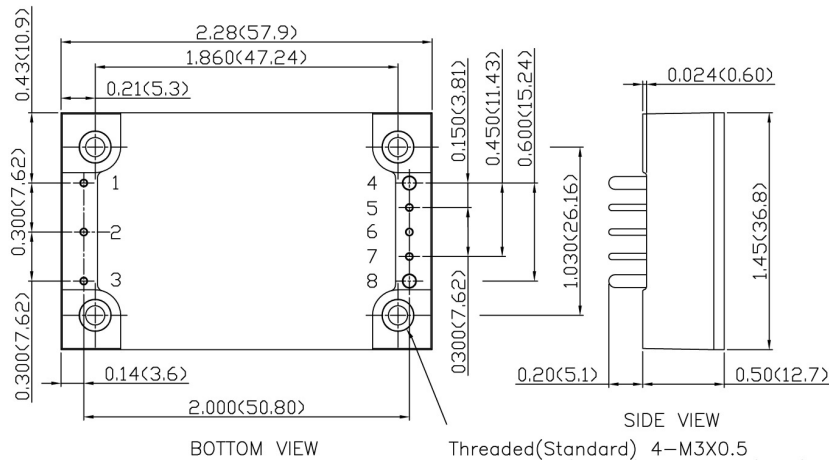
QEB50-48S05 Efficiency VS Voltage



QEB50-48S05 Efficiency VS Output Load



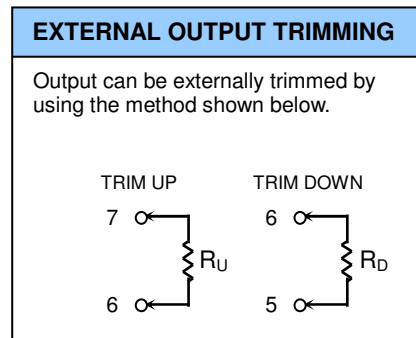
MECHANICAL DRAWING :



Threaded(Standard) 4-M3X0.5
Trough hole(Option) 4- ϕ 0.126(ϕ 3.2)
The screw locked torque:
MAX 0.34N.M/3.5kgf-cm/0.34N-M(Note10)

1. All dimensions in Inch (mm)
Tolerance: X.XX \pm 0.02 (X.X \pm 0.5)
X.XXX \pm 0.01 (X.XX \pm 0.25)
2. Pin pitch tolerance \pm 0.01 (0.25)
3. Pin dimension tolerance \pm 0.004 (0.1)

PIN CONNECTION		
PIN	DEFINE	DIAMETER
1	-INPUT	0.040 Inch (1.02mm)
2	CTRL	0.040 Inch (1.02mm)
3	+INPUT	0.040 Inch (1.02mm)
4	-OUTPUT	0.060 Inch (1.52mm)
5	-SENSE	0.040 Inch (1.02mm)
6	TRIM	0.040 Inch (1.02mm)
7	+SENSE	0.040 Inch (1.02mm)
8	+OUTPUT	0.060 Inch (1.52mm)



Remote On/Off and Pin Options	Suffix
Negative remote ON/OFF logic, 0.200" pin length (standard)	-
Negative remote ON/OFF logic, 0.145" pin length	-L
Positive remote ON/OFF logic, 0.200" pin length	-P
Positive remote ON/OFF logic, 0.145" pin length	-S

Heat-Sink and Mounting Hole Tread Options	Suffix
Without heat-sink	-
7G-0029A-F	-HS
7G-0030A-F	-HS1
7G-0031A-F	-HS2
7G-0032A-F	-HS3
Through hole (No thread)	-TH

Example : QEB50-48S3P3-PHS

* The module can't equip heat-sink with TH option.