



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
- UL60950-1, EN60950-1, & IEC60950-1 SAFETY APPROVALS
- CE MARKED
- COMPLIANT TO RoHS II & REACH

APPLICATIONS

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

OPTIONS

Positive logic Remote on/off, Pin length

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 silicone. 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 Input(Output) to Base-plate	1600 VDC, min. 1minute 1000 VDC, min. 1minute
Isolation resistance	500VDC	10 ⁷ ohms, min.
Isolation capacitance		2500 pF, max.
Switching frequency		270kHz±10%
Safety approvals	QEB50-48S1P8 QEB50-48S2P5 QEB50-48S3P3 QEB50-48S05	IEC60950-1 UL60950-1 EN60950-1
Case material		Aluminum base-plate
Weight (approx)		42g (1.46 oz)
MTBF (Note 1)	MIL-HDBK-217F	6.971 x 10 ⁵ hrs

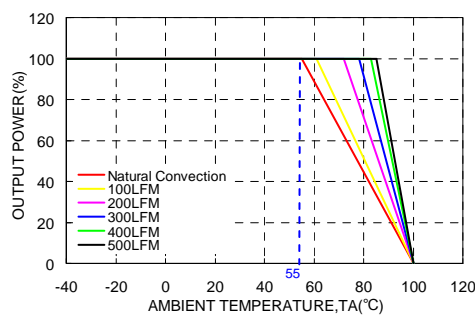
INPUT SPECIFICATIONS			
Input voltage range	24VDC nominal input 48VDC nominal input	18 ~ 36VDC 36 ~ 75VDC	
Input filter		L-C type	
Input surge voltage	24VDC input 48VDC input	50VDC 100ms, max. 100VDC 100ms, max.	
Start up time	Nominal input and constant resistive load	Power up Remote ON/OFF	25ms 25ms
Start-up voltage	24VDC input 48VDC input		18VDC, max. 36VDC, max.
Shutdown voltage	24VDC input 48VDC input		15VDC 32VDC
Remote ON/OFF (Note 6)			
Negative logic(Standard)	DC-DC ON DC-DC OFF		Short or 0V < Vr < 1.2V Open or 3V < Vr < 15V
Positive logic(OPTION)	DC-DC ON DC-DC OFF		Open or 3V < Vr < 15V 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 Ripple & Noise ⁽²⁾	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

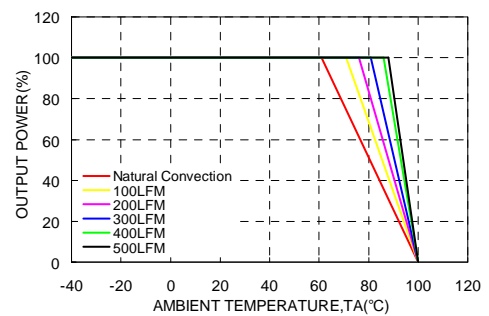
- Note :
1. MIL-HDBK-217F @Tc=70 °C, Full load.
 2. Typical value at nominal input and full load. (20MHz BW)
 3. Typical value at nominal input and no load.
 4. Typical value at nominal input and full load.
 5. Maximum output deviation is 10% inclusive of trim. If remote sense is not being used, the +SENSE should be connected to its corresponding +OUTPUT and likewise the -SENSE should be connected to its corresponding -OUTPUT.
 6. The positive logic and pin length are optional (see table). The CTRL pin voltage is referenced to -INPUT.
 7. Heat-sink is optional and P/N : 7G-0029A-F, 7G-0030A-F, 7G-0031A-F, 7G-0032A-F.
 8. The QEB50 series standard module meets EN55022 Class A and Class B with external components.
For more detail information, please contact with P-DUKE.
 9. 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.
 10. BASE-PLATE GROUNDING : When connect the four screw bolts to shield plane, the EMI could be reduced.
 11. The converter is provided by basic insulation.

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

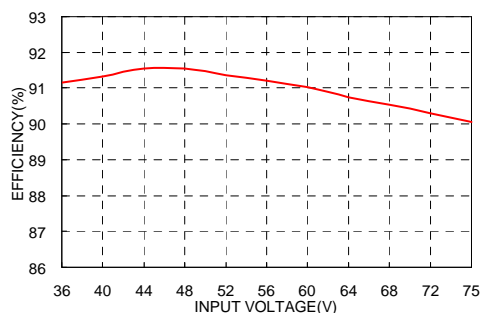
QEB50-48S05 Derating Curve



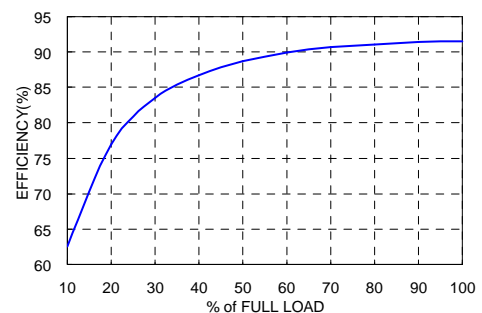
QEB50-48S05 Derating Curve With Heat-sink 7G-0029(Note 7)

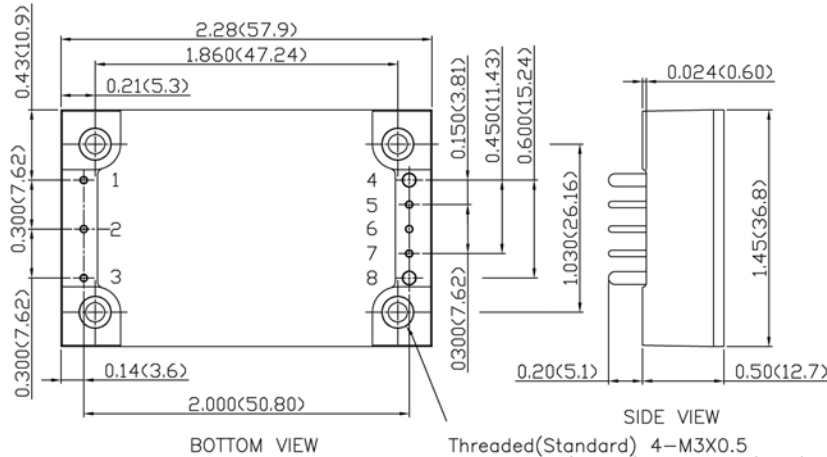


QEB50-48S05 Efficiency VS Voltage



QEB50-48S05 Efficiency VS Output Load

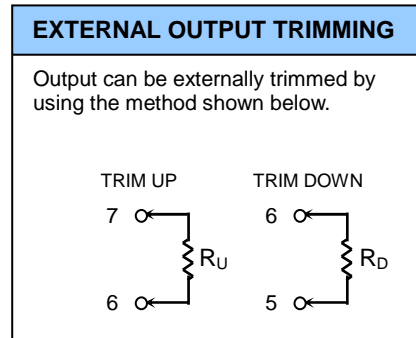


MECHANICAL DRAWING :


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)

- 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)
- Pin pitch tolerance \pm 0.01 (0.25)
- 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.