CQB75W8 SERIES
75 WATT 8:1 INPUT ISOLATED DC-DC CONVERTER

Features

- Efficiency Up to 90%
- Fixed Switching Frequency
- Regulated Outputs
- Remote On/Off
- Low No Load Power Consumption
- Fully Protected (OTP/OCP/OVP/UVLO)
- 3000Vac I/O Isolation
- Operating Case Temperature -40 to +105℃
- Quarter Brick Size Meet Industrial Standard 2.28"x1.45"x0.5"
- CB Test Certificate IEC 62368-1
- UL 62368-1 2nd (Reinforce Insulation) Approval
- EN 50155 Compliant with External Circuits
- Shock & Vibration EN 50155 (EN 61373) Compliant
- Fire & Smoke EN 45545-2 Compliant
- 5000m Operating Altitude
- -55℃ Operating Available (Suffix "-M2")

E176177

MODEL NUMBER	INPUT VOLTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT		INPUT CURRENT		% EFF.		CAPACITOR LOAD MAX.
			MIN.	MAX.	NO LOAD	FULL LOAD	(1)	(2)	
CQB75W8-36S12	9-75 VDC	12 VDC	0 mA	6.25 A	8 mA	2315 mA	90	90	14000uF
CQB75W8-36S15	9-75 VDC	15 VDC	0 mA	5 A	8 mA	2315 mA	90	90	10000uF
CQB75W8-36S24	9-75 VDC	24 VDC	0 mA	3.12 A	10 mA	2311 mA	90	90	3900μF
CQB75W8-36S28	9-75 VDC	28 VDC	0 mA	2.67 A	10 mA	2307 mA	90	90	3200μF
CQB75W8-36S48	9-75 VDC	48 VDC	0 mA	1.56 A	10 mA	2311 mA	90	90	1100μF

NOTE:

1. Nominal Input Voltage 36 VDC.
2. Measured at 48Vin.
3. An External Input Capacitor 220uF for All Models are Recommended to Reduce Input Ripple Voltage.
4. -55℃ Start-up Screen per MIL-STD105E S1 Sampling Procedure for "-M2" Version.

PART NUMBER

Series	Nominal Input Voltage	Number of Outputs	Nominal Output Voltage	Remote On/Off Logic	Mounting Inserts	Operating Case Temp. Range
CQB75W8-	II	O	XX	L	-Y (Option)	-Z (Option)
CQB75W8	36： 36 VDC	S： Single	12：12VDC 15：15VDC 24：24VDC 28：28VDC 48：48VDC	None：Positive N：Negative	None：M3x0.5 Mounting Inserts -C：Clear Mounting Insert (3.2mm DIA.)	None：-40~105℃ -M2：-55~105℃

Part Number Example:

CQB75W8-36S12N-C-M2: Quarter Brick, 75W, 8:1 9-75Vdc Input, Single 12Vdc Output, Negative Logic, Clear Mounting Insert, -55~105℃ Operating Case Temp. Range

TECHNICAL SPECIFICATIONS

(All specifications are typical at nominal input, full load at 25℃ unless otherwise noted.)

ABSOLUTE MAXIMUM RATINGS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Input Voltage	Continuous	All	-0.3		75	V_{dc}
Input Surge Voltage	100ms max.	All			100	V_{dc}
Operating Case Temperature	At the center part of base plate (with Derating) Suffix "-M2" (with Derating)	All -M2	-40 -55		105 105	℃
Storage Temperature		All	-55		125	℃

INPUT CHARACTERISTICS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Operating Input Voltage		All	9	36	75	V_{dc}
Input Under Voltage Lockout						
Turn-On Voltage Threshold		All	8.4	8.8	9.0	V_{dc}
Turn-Off Voltage Threshold		All	7.6	8	8.2	V_{dc}
Lockout Hysteresis Voltage		All		0.8		V_{dc}
Maximum Input Current	V_{in}=9V, Full load	All		10.5		A
No-Load Input Current	V_{in}=36V, I_o=0A	See Model Number Table				mA
Input Filter	Pi filter	All				
Inrush Current (I^2t)	As per ETS300 132-2	All			0.1	A^2s
Input Reflected Ripple Current	P-P thru 12uH inductor, 5Hz to 20MHz	All		30		mA

OUTPUT CHARACTERISTICS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Voltage Set Point Accuracy	V_{in}=36V, Full load, T_c=25℃	All	-1.0		+1.0	%
Output Voltage Regulation						
Load Regulation	Full load to no load	All			±0.2	%
Line Regulation	V_{in}=High line to low line, full load	All			±0.2	%
Temperature Coefficient	T_c=-40℃ to 105℃	All			±0.02	%/℃
Output Voltage Ripple and Noise (5Hz to 20MHz bandwidth)						
Peak-to-Peak	Full load, 22uF aluminum solid capacitor and 1uF ceramic capacitors	12Vo 15Vo 24Vo 28Vo 48Vo			150 150 240 240 480	mV
RMS.		12Vo 15Vo 24Vo 28Vo 48Vo			80 80 120 120 220	mV
Output Current Range	V_{in}= 9 to 75V	See Model Number Table				A
Over Current Protection	Hiccup mode. Auto recovery	All	110	150	210	%
Short Circuit Protection		All	Continuous, Auto Recovery			
External Load Capacitance	Full load (resistive)	See Model Number Table				uF
Output Voltage Trim Range	$P_o \leqq$ max. rated power, $I_o \leqq I_{o\_max.}$	All	-20		+15	%
Output Voltage Remote Sense Range	$P_o \leqq$ max. rated power, $I_o \leqq I_{o\_max.}$ % of nominal V_o	All			+15	%
Over Voltage Protection	Limited voltage, % of nominal V_o	All	117	125	140	%

EFFICIENCY

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
100% Load	V_{in}=36V, 48V	See Model Number Table				%

DYNAMIC CHARACTERISTICS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Output Voltage Current Transient						
Error Band	75% to 100% of I_{o_max} step load change d_i/d_t=0.1A/us (within 1% V_{out} nominal)	All			±5	%
Recovery Time					250	us
Turn-On Delay and Rise Time	Full load (Constant resistive load)					
Turn-On Delay Time, From On/Off Control	$V_{on/off}$ to 10%V_{o_set}, Remote on	All		20		ms
Turn-On Delay Time, From Input	$V_{in\_min.}$ to 10%V_{o_set}, Power up	All		20		ms
Output Voltage Rise Time	10%V_{o_set} to 90%V_{o_set}	All		10		ms

ISOLATION CHARACTERISTICS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Isolation Voltage (100% factory Hi-Pot tested @2sec.)	1 Minute; input to output	All			3000 4200	V_{ac} V_{dc}
	1 Minute; input to case (base plate)				2100 3000	V_{ac} V_{dc}
	1 Minute; output to case (base plate)				1500 2100	V_{ac} V_{dc}
Isolation Resistance	Input to output	All	100			MΩ
Isolation Capacitance	Input to output Input to case (base plate) Output to case (base plate)	All		1000 None 1000		pF

FEATURE CHARACTERISTICS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Switching Frequency	Pulse width modulation (PWM), fixed	All	180	200	220	KHz
On/Off Control, Positive Remote On/Off Logic, Refer to -Vin Pin						
Logic Low (Module Off)	$V_{on/off}$ at $I_{on/off}$=1.0mA	All	0		1.0	V
Logic High (Module On)	$V_{on/off}$ at $I_{on/off}$=0.0uA, Pin open=on	All	4.0		75	V
On/Off Control, Negative Remote On/Off Logic, Refer to -Vin Pin						
Logic High (Module Off)	$V_{on/off}$ at $I_{on/off}$=0.0uA, Pin open=off	All	4.0		75	V
Logic Low (Module On)	$V_{on/off}$ at $I_{on/off}$=1.0mA	All	0		1.0	V
On/Off Current (for Both Remote On/Off Logic)	$I_{on/off}$ at $V_{on/off}$=0V	All		0.3	1	mA
Leakage Current (for Both Remote On/Off Logic)	Logic high, $V_{on/off}$=15V	All			30	uA
Off Converter Input Current	Shutdown input idle current	All		5	10	mA
Over Temperature Shutdown	Temperature at the center part of base plate, non-latching	All		110		℃
Over Temperature Recovery				100		

GENERAL SPECIFICATIONS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
MTBF	I_o=100% of $I_{o\_max.}$; MIL-HDBK - 217F_Notice 1, GB, 25℃	36S12 36S15 36S24 36S28 36S48		663 759 750 740 780		K hours
Weight		All		66		grams
Case Material	Plastic, DAP, UL 94V-0					

GENERAL SPECIFICATIONS

Base plate Material	Aluminum
Potting Material	UL 94V-0
Pin Material	Base: Copper Plating: Nickel with Matte Tin
Shock/Vibration	MIL-STD-810F/EN 61373 Compliant
Humidity	95% RH max. Non condensing
Altitude	5000m Operating altitude, 12000m Transport altitude
Thermal Shock	MIL-STD-810F
Fire & Smoke	EN 45545-2 Compliant

EMC SPECIFICATIONS (External components required, please refer to application note.)

EMI	Meets EN 55032 & EN 50155 Compliant (with external filter)		Class A
ESD	EN 61000-4-2	Level 3: Air ±8kV, Contact ±6kV	Perf. Criteria A
Radiated immunity	EN 61000-4-3	Level 3: 80~1000MHz, 20V/m Level 2: 80~1000MHz, 3V/m for EN55035:2017	Perf. Criteria A
Fast Transient	EN 61000-4-4	Level 3: On power input port, ±2kV, external input capacitor required Level 1: On power input port, ±0.5kV, external input capacitor required, for EN 55035:2017	Perf. Criteria A
Surge	EN 61000-4-5	Level 4: Line to earth, ±4kV, Line to line, ±2kV Level 1: Line to earth, ±0.5kV, for EN 55035:2017	Perf. Criteria A
Conducted immunity	EN 61000-4-6	Level 3: 0.15~80MHz, 10V Level 2: 0.15~30MHz, 3V, 30~80MHz, 1V for EN 55035:2017	Perf. Criteria A
Magnetic Immunity	EN 61000-4-8	Level 1: 50Hz, 1A/m for EN 55035:2017	Perf. Criteria A
Interruptions of Voltage Supply	EN 50155	Class S3: 20ms interruptions	Perf. Criteria A
Supply Change Over	EN 50155	Class C2: During a supply break of 30 ms	Perf. Criteria A
Application Note Link			CQB75W8-36S Series App Notes
Packaging Information Link			Packaging Information

Immunity to Environmental Conditions.

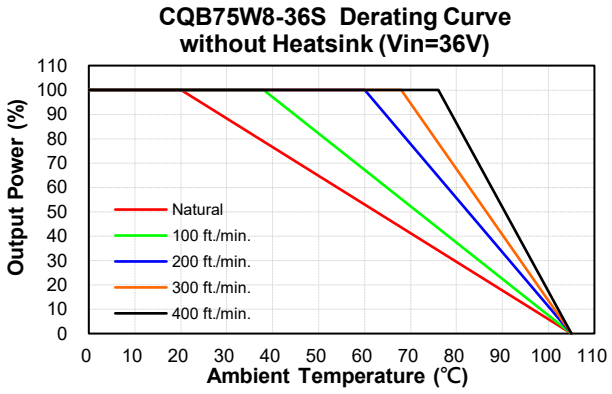
Phenomenon	EN 50155; 2021 Reference Clause(s)	Reference Standard	Test Conditions	Result
Low Temperature Test	13.4.4	EN 60068-2-1	Class OT6 Temperature: -40℃ Duration: 2 hrs	Pass
Dry Heat Test	13.4.5	EN 60068-2-2	Class OT6 & Cycle A Temperature: 85℃ Duration: 6 hrs	Pass
Low Temperature Storage Test	13.4.6	EN 60068-2-1	Temperature: -40℃ Duration: 16 hrs	Pass
Cyclic Damp Heat Test	13.4.8	EN 60068-2-30	Temperature: 25℃ - 55℃ Humidity: 90% RH Duration: 48 hrs	Pass
Functional Random Vibration Test	13.4.10	EN 61373	Frequency range: 5 ~ 150 Hz Vertical: 1.01 m/s^2 Transverse: 0.450 m/s^2 Longitudinal: 0.700 m/s^2 Duration: 10 min / axis	Pass
Simulated Long Life Test at Increased Random Vibration Levels	13.4.10	EN 61373	Frequency range: 5 ~ 150 Hz Vertical: 5.72 m/s^2 Transverse: 2.55 m/s^2 Longitudinal: 3.96 m/s^2 Duration: 5 hrs / axis	Pass
Shock Test	13.4.10	EN 61373	±Vertical: 30 m/s^2 ±Transverse: 30 m/s^2 ±Longitudinal: 50 m/s^2 Duration: 30ms x18 (Each axis 3 shocks)	Pass

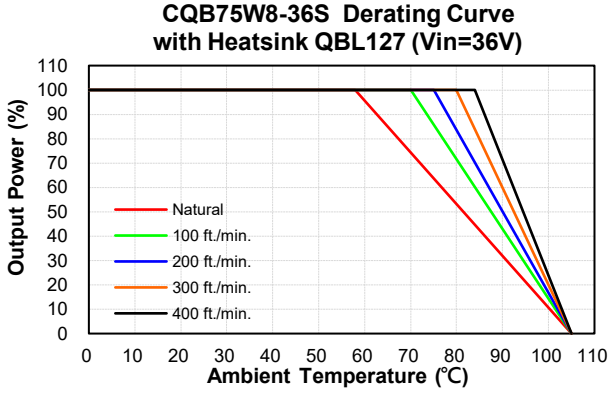
EN45545-2 Fire & Smoke Test Conditions.

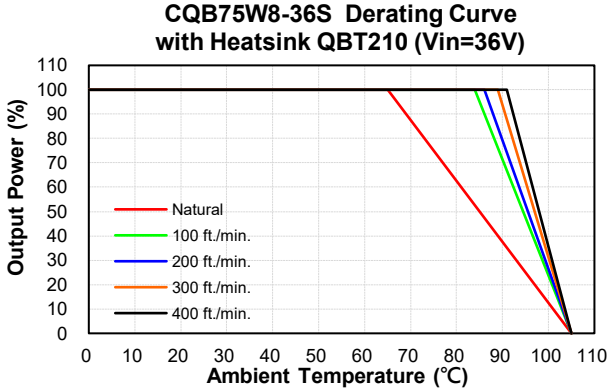
Item		Standard	Hazard Level
R22	Oxygen Index Test	EN 45545-2: 2013+A1:2015 EN ISO 4589-2: 2017	HL1, HL2, HL3
	Smoke Density Test	EN 45545-2: 2013+A1:2015 EN ISO 5659-2: 2017	HL1, HL2, HL3
	Smoke Toxicity Test	EN 45545-2: 2013+A1:2015 NF X70-100-1&2: 2006	HL1, HL2, HL3
R23	Oxygen Index Test	EN 45545-2: 2013+A1:2015 EN ISO 4589-2: 2017	HL1, HL2, HL3
	Smoke Density Test	EN 45545-2: 2013+A1:2015 EN ISO 5659-2: 2017	HL1, HL2, HL3
	Smoke Toxicity Test	EN 45545-2: 2013+A1:2015 NF X70-100-1&2: 2006	HL1, HL2, HL3
R24	Oxygen Index Test	EN 45545-2: 2013 EN ISO 4589-2	HL1, HL2, HL3
R25	Glow - Wire Test	EN 45545-2:2020+A1:2023 EN 60695-2-11:2014	HL1, HL2, HL3
R26	Vertical Flame Test	EN 45545-2: 2013+A1:2015 EN 60695-11-10: 2013	HL1, HL2, HL3

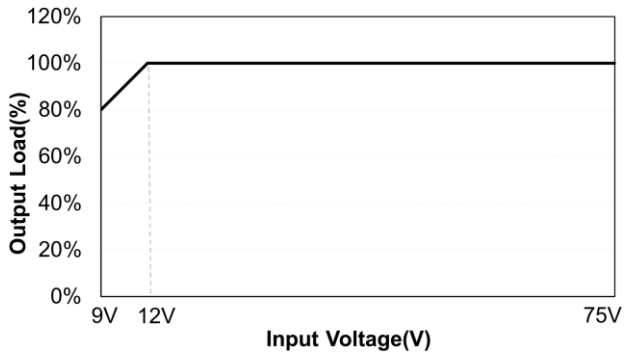
CHARACTERISTIC CURVE

Power Derating Curve



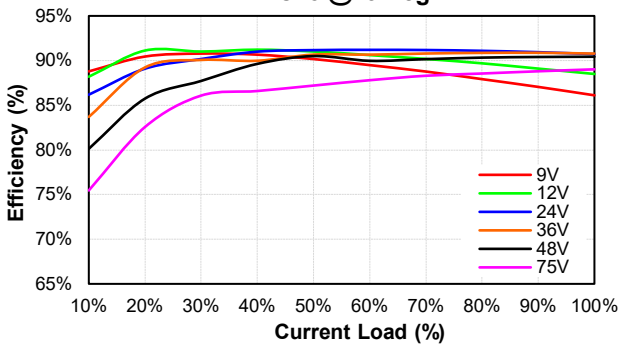




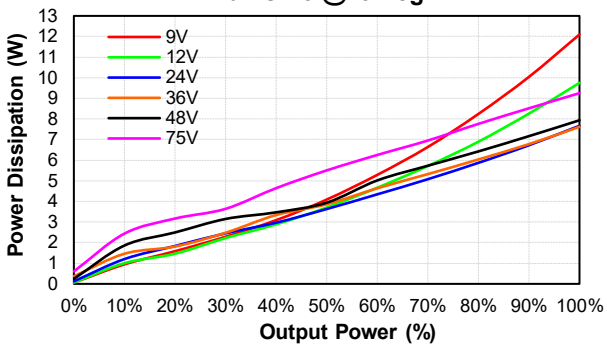


Performance Data

CQB75W8-36S12
Eff Vs Io @25 Deg. C



CQB75W8-36S12
Pd Vs Po @25 Deg. C



CQB75W8-36S15
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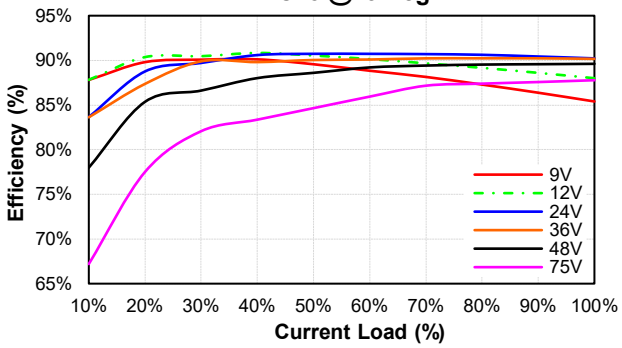

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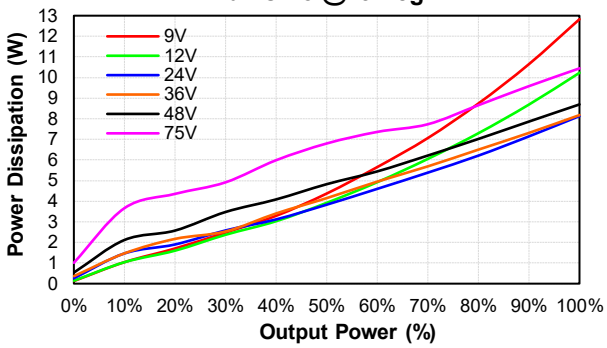

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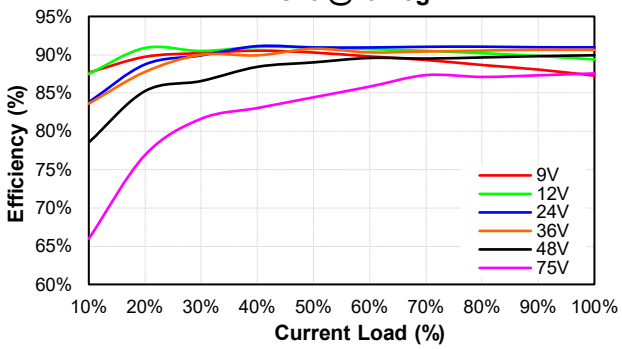

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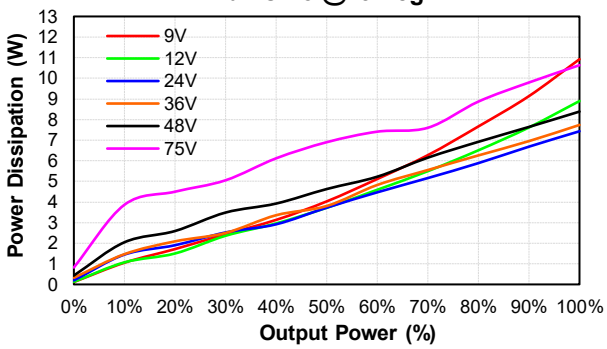
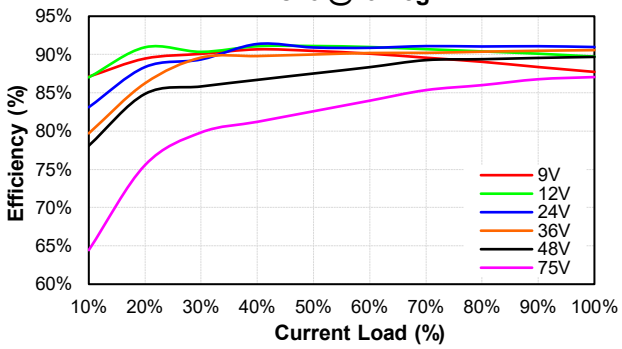
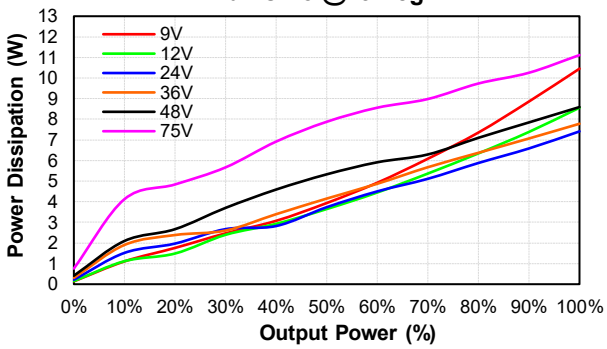


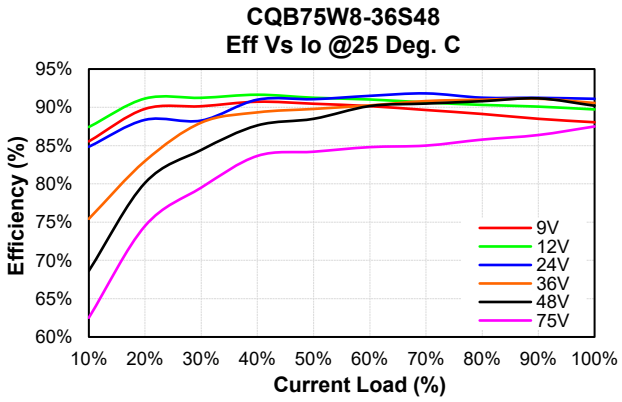
CQB75W8-36S28
Eff Vs Io @25 Deg. C

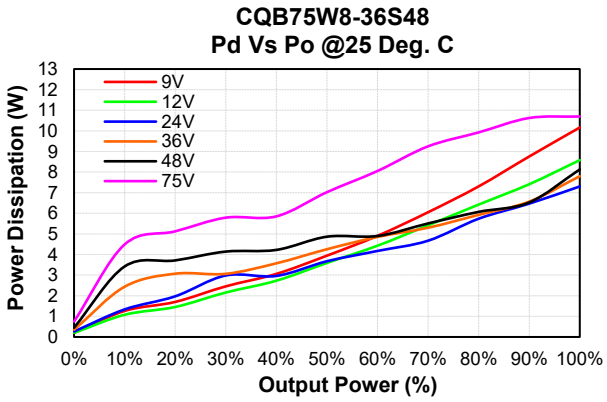


CQB75W8-36S28
Pd Vs Po @25 Deg. C

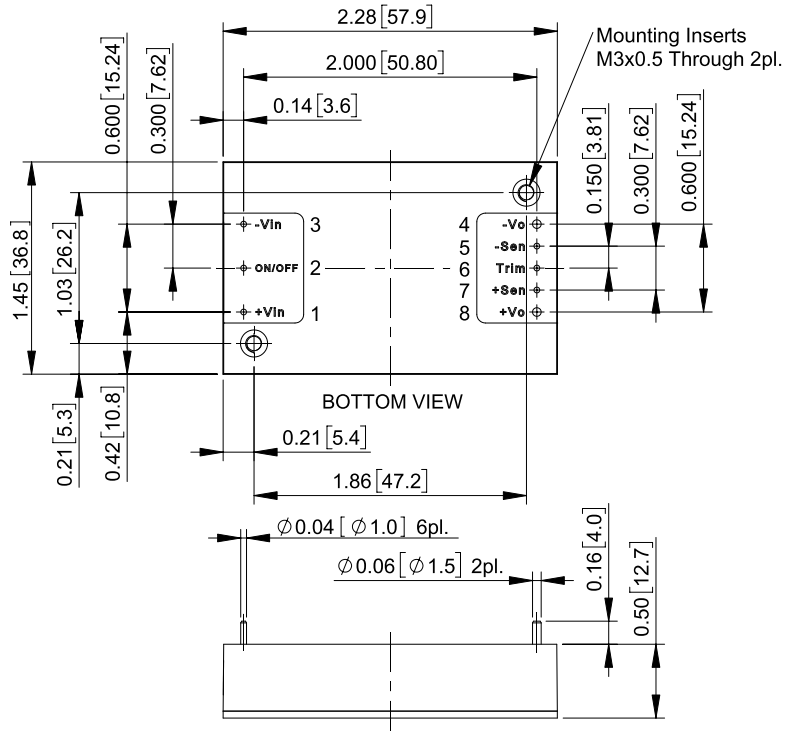


CQB75W8 Series





MECHANICAL SPECIFICATION



All Dimensions in Inches[mm]
Tolerance Inches: x.xx=±0.02, x.xxx=±0.010
Millimeters: x.x=±0.5, x.xx=±0.25

Pin Connection

Pin	Function
1	+V Input
2	On/Off
3	-V Input
4	-V Output
5	-Sense
6	Trim
7	+Sense
8	+V Output

Note:Pin Size is ∅0.04±0.004 Inch [∅1.0±0.1 mm]
Pin Size is ∅0.06±0.004 Inch [∅1.5±0.1 mm]

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