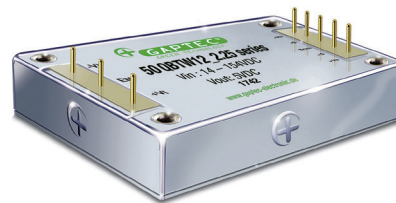


50QBTW12_2.25 Series

50W - Single Output - Wide Input - Isolated & Regulated
 DC-DC Converter



DC-DC Converter

50 Watt

- ⊕ High efficiency
- ⊕ Fixed switching frequency provides predictable EMI
- ⊕ No life-span constrained capacitor inside
- ⊕ 4:1 & 8:1 & 12:1 Ultra-Wide input range
- ⊕ Isolation 2250V Input-to-output (optional 3000V)
- ⊕ Fully protected: OVP, OTP, OCP and UVLO
- ⊕ Output voltage trim range of -10%, +10%
- ⊕ Single, dual, & multiple outputs available
- ⊕ RoHS compliant



Common specifications

Short circuit protection:	Hiccup, continuous, automatic recovery
Cooling:	Free air convection
Operation case temperature:	-45°C~+115°C
Storage temperature range:	-55°C~+125°C
Over temperature protection:	120°C TYP, auto recovery
Storage humidity range:	95% MAX, non-condensing
Switching frequency:	V _{NOM} : 220kHz MIN, 330kHz MAX
Case material:	Aluminium
MTBF (BellCore-TR-332 @50°C G.B):	TBD (M HR)
Weight:	TBD (g)
Dimensions:	39.7 x 60 x 12.9mm

Input specifications

Item	Test condition	Min	Typ	Max	Units
Transient input voltage ranges (100ms max)	• 50QBTW4_24xx • 50QBTW4_48xx • 50QBTW12_72xx			50 80 160	VDC
Operating input voltage ranges	• 50QBTW4_24xx • 50QBTW4_48xx • 50QBTW12_72xx	9 9 14	18 28 54	36 75 154	VDC
Under voltage lockout - Start-up voltage -	• 50QBTW4_24xx • 50QBTW4_48xx • 50QBTW12_72xx			9 9 14	VDC
Under voltage lockout - Shutdown voltage -	• 50QBTW4_24xx • 50QBTW4_48xx • 50QBTW12_72xx		7 7 12		VDC
Input current	See model selection guide Standby mode (OFF, UVLO) 5mA				
Enable function input	<u>Positive logic</u> • ON • OFF <u>Negative logic</u> • ON • OFF		Open or 8 ~ 20 VDC Short or 0 ~ 1.2 VDC Short or 0 ~ 1.2 VDC Open or 8 ~ 20 VDC		

Isolation specifications

Item	Test condition	Min	Typ	Max	Units
Isolation voltage	Tested for 1 minute Additional option for 50QBTW12_7205S3:	2250 3000			VDC
Isolation resistance	500VDC, 70% RH	100			MΩ
Isolation capacitance			1500		pF

The 50QBTW12_2.25 converter series is composed of isolated, board-mountable, fixed switching frequency dc-dc converters that use synchronous rectification to achieve extremely high power conversion efficiency. These DC-DC converter modules use advanced power processing, control and packaging technologies to enhance the performance, flexibility, reliability and cost effectiveness of mature power components. Each module is six-sided metal case enclosed to provide protection from the harsh environments seen in many industrial and transportation applications.

Output specifications

Item	Test condition	Min	Typ	Max	Units
Output voltage accuracy	V _{NOM} 50% Load			±1.5	%
Line regulation	Low line to high line			±0.3	%
Load regulation	10% to 100% load			±0.5	%
Minimum load	• Single output • Dual output	0 10			%
Ripple&Noise	20MHz Bandwidth and with 1uF MLCC. Output Capacitor each output		1.5		%
Temperature drift				±0.04	%/°C
Transient recovery time	25% load step change		800		μs
Transient peak deviation	ΔIo/Δt=2.5A/us		±2		%Vo
Start-up time	When use enable function		20		msec
Trimming output voltage	V _{NOM} 10% Load		±10%		VDC
Over voltage protection	V _{NOM} 10% Load		120		%
Output power protection	V _{NOM}		120		%

Example:

50QBTW12_7205S2.25

50= 50Watt; QB= Quarter Brick; TW= series; W12= ultra wide input (12:1) 14-154Vin; 5Vout; S= single output; 2.25=2250VDC

Note:

- Min. load shouldn't be less than 5%, otherwise ripple maybe increase dramatically. Operation under minimum load will not damage the converter, however, they may not meet all specification listed.
- All specifications are measured at TA=25°C, humidity<75%, nominal input voltage and rated output load unless otherwise specified.
- It is recommended to protect the input by fuses or other protection devices.
- In this datasheet, all the test methods of indications are based on corporate standards.
- All characteristics are for listed model, non-standard models may perform differently, please contact our technical person for more detail.
- Specifications subject to change without prior notice.

50QBTW12_2.25 Series

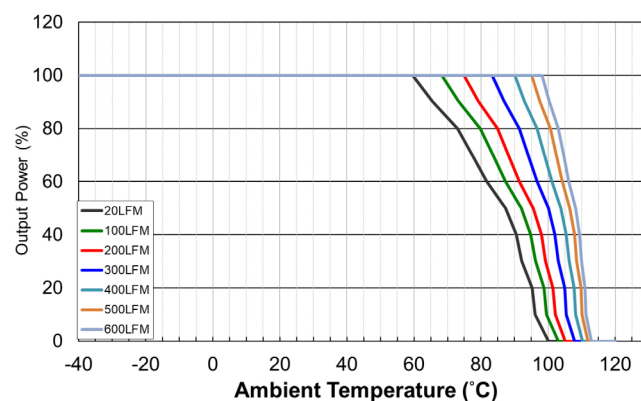
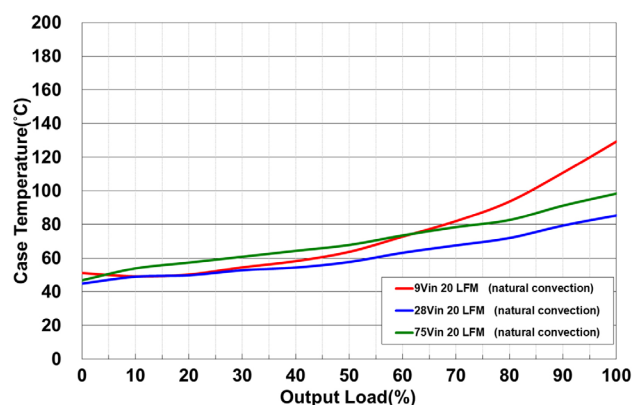
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DC-DC Converter

Part Number	Input Voltage [VDC]		Output Voltage [VDC]	Output Current [A, Typ.]	Output Power [W, Typ.]	Efficiency [%, Typ.]
	Nominal	Range				
50QBTW4_2405S2.25	18	9-36	5	10	100	91
50QBTW4_2412S2.25	18	9-36	12	4.2	100	90
50QBTW4_2415S2.25	18	9-36	15	3.3	100	90
50QBTW4_2424S2.25	18	9-36	24	2.1	100	90
50QBTW4_2412D2.25	18	9-36	±12	2.1	100	90
50QBTW4_2415D2.25	18	9-36	±15	1.7	100	90
50QBTW4_2424D2.25	18	9-36	±24	1	100	90
50QBTW4_4805S2.25	28	9-75	5	10	50	90
50QBTW4_4812S2.25	28	9-75	12	4.2	50	89
50QBTW4_4815S2.25	28	9-75	15	3.3	50	89
50QBTW4_4824S2.25	28	9-75	24	2.1	50	89
50QBTW4_4812D2.25	28	9-75	±12	2.1	50	89
50QBTW4_4815D2.25	28	9-75	±15	1.7	50	89
50QBTW4_4824D2.25	28	9-75	±24	1	50	89
50QBTW12_7205S2.25	54	14-154	5	10	50	90
50QBTW12_7212S2.25	54	14-154	12	4.2	50	89
50QBTW12_7215S2.25	54	14-154	15	3.3	50	89
50QBTW12_7224S2.25	54	14-154	24	2.1	50	89
50QBTW12_7212D2.25	54	14-154	±12	2.1	50	89
50QBTW12_7215D2.25	54	14-154	±15	1.7	50	89
50QBTW12_7224D2.25	54	14-154	±24	1	50	89

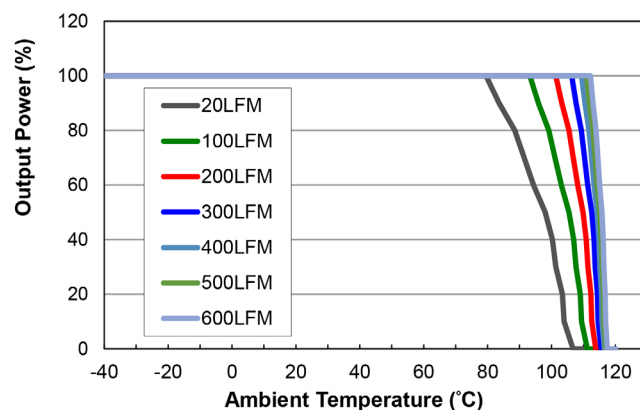
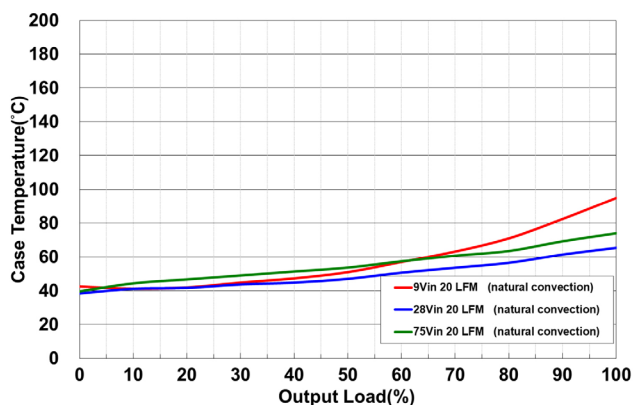
For 3KV Isolation: e.g. 50QBTW12_7224D3

Typical characteristics

Derating curves - without additional heatsink



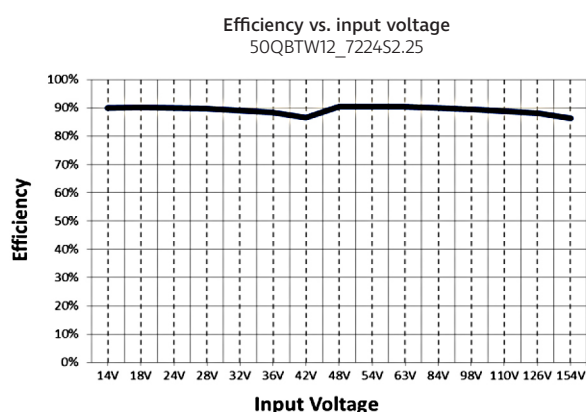
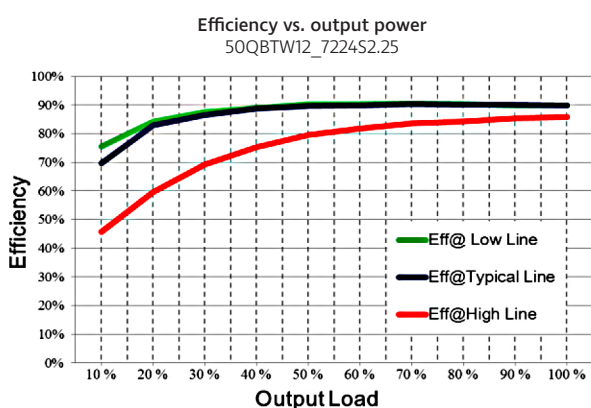
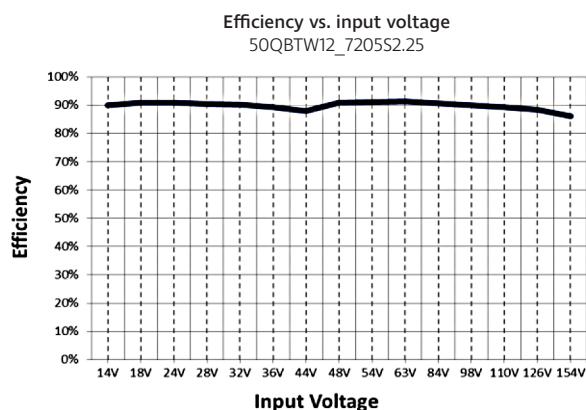
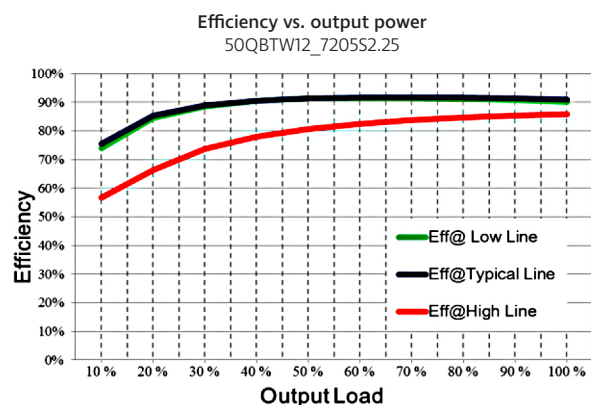
Derating curves - with additional heatsink
(Heat Sink dimension: 50mm x 37mm x 15.4mm with 10 fins of 0.8mm thickness)



50QBTW12_2.25 Series

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DC-DC Converter

Efficiency



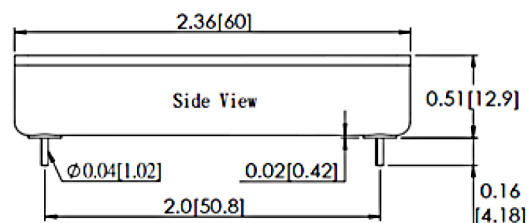
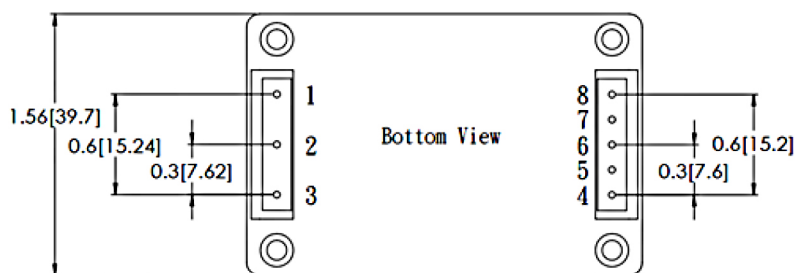
Mechanical dimensions

Pin connections for 50QBTW12_48xx
and 50QBTW12_72xx:

Pin	Single	Dual
1	-Vin	-Vin
2	Enable	Enable
3	+Vin	+Vin
4	+Vout	+Vout
5	NA	NA
6	Trim	Common
7	NA	NA
8	-Vout	-Vout

Pin connections for 50QBTW12_24xx:

Pin	Single	Dual
1	-Vin	-Vin
2	Enable	Enable
3	+Vin	+Vin
4	+Vout	+Vout
5	+Sense	NA
6	Trim	Common
7	-Sense	NA
8	-Vout	-Vout



Note:

All pins are 0.040" (1.02mm)
Pins Material: Copper Alloy
Pins Plating: Gold
All dimensions in inches [mm]
Tolerances: .XX±0.02 [.X±0.5mm]