



## QT8C1\_3UP Series

0.25W - Single Output DC-DC Converter - Fixed Input - Isolated & Unregulated

### DC-DC Converter 0.25 Watt

- ⊕ 14PIN SMD package
- ⊕ No load input current as low as 5 mA
- ⊕ Continuous short circuit protection
- ⊕ High efficiency up to 85%
- ⊕ Unregulated output types
- ⊕ 3kVDC isolation
- ⊕ Operating temperature: 40°C to +105°C
- ⊕ Industry standard pinout
- ⊕ Design refer to IEC62368, UL62368, EN62368

The QT8C1\_3UP series is specially designed for applications where an isolated voltage is required in a distributed power supply system.

These products apply to:

- 1) Where the voltage of the input power supply is fixed (Voltage variation  $\leq \pm 10\%$ )
- 2) Where isolation is necessary between input and output (Isolation voltage  $\leq 3000\text{VDC}$ )
- 3) Where the regulation of the output voltage and the output ripple noise are not demanding.

Such as: pure digital circuits, low frequency analog circuits, and relay-driven circuits.



Common specifications	
Short circuit protection*:	Continuous
Temperature rise at full load:	20°C TYP
Operation temperature range:	-40°C ~ +105°C
Storage temperature range:	-55°C ~ +125°C
Storage humidity range:	< 95% (Non Condensing)
MTBF:	>3,500,000 hours
Case material:	DAP
Cooling:	Free air convection
Dimensions:	12.8x10.8x6.9 mm
Weight:	1.28g

Output specifications					
Item	Test condition	Min	Typ	Max	Units
Voltage tolerance	100% full load			$\pm 5$	%
Line Regulation	For 1.0% of $V_{in}$		1.2		%
Load regulation	• 3.3V (10% To 100% F.L)		15	20	%
	• 5V (10% To 100% F.L)		10	15	%
	• 9V (10% To 100% F.L)		8	10	%
	• 12V (10% To 100% F.L)		7	10	%
	• 15V (10% To 100% F.L)		6	10	%
• 24V (10% To 100% F.L)		5	10	%	
Ripple & Noise	BW=DC To 20MHz@ $V_o$ :3.3V,5V,9V,12V,15V		30	75	mVp-p
Ripple & Noise	20MHz Bandwidth $V_o$ :24V		50	100	mVp-p
Switching Frequency	Full load, nominal input • 3.3V, 5V $V_{in}$ • other $V_{in}$		215/370		KHz
			250		KHz

\* Test ripple and noise by "parallel cable" method. See detailed operation instructions at application notes.

Input specifications					
Item	Test condition	Min	Typ	Max	Units
Voltage range	• $V_o, I_o$ Nom @ $V_{in}$ : 3.3V, 5V		$\pm 10$		%
	• $V_o, I_o$ Nom $V_{in}$ : 9V, 12V, 15V, 24V		$\pm 20$		%
Input filter			Capacitor filter		

Isolation specifications					
Item	Test condition	Min	Typ	Max	Units
Isolation voltage	Tested for 1 minute and 1mA max	3000			VDC
Isolation resistance	Test at 500VDC	1000			MΩ
Isolation capacitance	Input-output, 100KHz/0.1V		20		pF

EMC specifications		
EMI	CE	CISPR32/EN55032 CLASS B (see Fig. 1 for recommended circuit)
EMI	RE	CISPR32/EN55032 CLASS B (see Fig. 1 for recommended circuit)
EMS	ESD	IEC/EN61000-4-2 Air $\pm 8\text{kV}$ , Contact $\pm 4\text{kV}$ perf. Criteria B

**Example SIP4 Case:**  
**QT8C1\_0505S3UP**  
**Q= 0,25 Watt; T8= SMT8; C1= Pinning; 05= 5Vin; 05= 5Vout;**  
**S= Single Output; 3 = 3kVDC Isolation; U= Unregulated Output**  
**P= Short circuit protection**

#### Note:

1. Operation under minimum load will not damage the converter; However, they may not meet all specifications.
2. Max. Capacitive Load is tested at nominal input voltage and full load.
3. Unless otherwise noted, All specifications are measured at  $T_a=25^\circ\text{C}$ , humidity < 75%, nominal input voltage and rated output load.
4. In this datasheet, all test methods are based on our corporate standards.
5. All characteristics are for listed models, and non-standard models may perform differently. Please contact our technical support for more detail.
6. Please contact our technical support for any specific requirement.
7. Specifications of this product are subject to changes without prior notice.

## QT8C1\_3UP Series

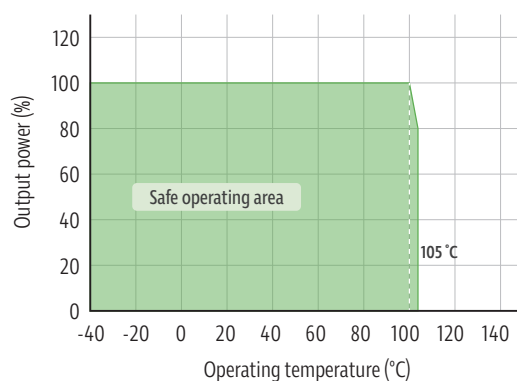
0.25W - Single Output DC-DC Converter - Fixed Input - Isolated & Unregulated

### Product Selection Guide

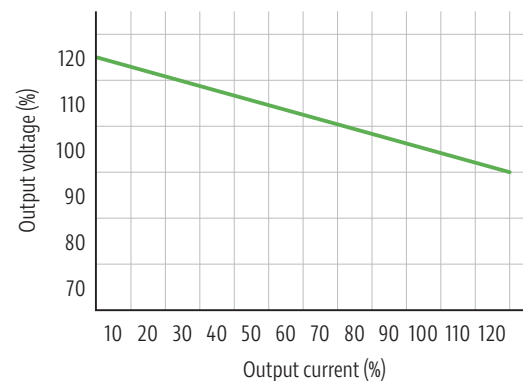
Part Number	Output Voltage [VDC]	Output Voltage [VDC]	Output Current [mA, max/min]	Max. capacitive load [ $\mu$ F]	Efficiency [%, typ.]
QT8C1_0303S3UP	3.3	3.3	72	2400	73
QT8C1_0305S3UP	3.3	5	82	2400	73
QT8C1_0309S3UP	3.3	9	84	1000	73
QT8C1_0312S3UP	3.3	12	84	680	74
QT8C1_0315S3UP	3.3	15	84	330	77
QT8C1_0324S3UP	3.3	24	85	220	74
QT8C1_0503S3UP	05	3.3	72	2400	73
QT8C1_0505S3UP	05	5	82	2400	73
QT8C1_0509S3UP	05	9	84	1000	73
QT8C1_0512S3UP	05	12	84	680	74
QT8C1_0515S3UP	05	15	84	330	77
QT8C1_0524S3UP	05	24	85	220	74
QT8C1_0903S3UP	09	3.3	72	2400	73
QT8C1_0905S3UP	09	5	82	2400	73
QT8C1_0909S3UP	09	9	84	1000	73
QT8C1_0912S3UP	09	12	84	680	74
QT8C1_0915S3UP	09	15	84	330	77
QT8C1_0924S3UP	09	24	85	220	74
QT8C1_1203S3UP	12	3.3	72	2400	73
QT8C1_1205S3UP	12	5	82	2400	73
QT8C1_1209S3UP	12	9	84	1000	73
QT8C1_1212S3UP	12	12	84	680	74
QT8C1_1215S3UP	12	15	84	330	77
QT8C1_1224S3UP	12	24	85	220	74
QT8C1_1503S3UP	15	3.3	72	2400	73
QT8C1_1505S3UP	15	5	82	2400	73
QT8C1_1509S3UP	15	9	84	1000	73
QT8C1_1512S3UP	15	12	84	680	74
QT8C1_1515S3UP	15	15	84	330	77
QT8C1_1524S3UP	15	24	85	220	74
QT8C1_2403S3UP	24	3.3	72	2400	73
QT8C1_2405S3UP	24	5	82	2400	73
QT8C1_2409S3UP	24	9	84	1000	73
QT8C1_2412S3UP	24	12	84	680	74
QT8C1_2415S3UP	24	15	84	330	77
QT8C1_2424S3UP	24	24	85	220	74

### Typical characteristics

Temperature derating graph



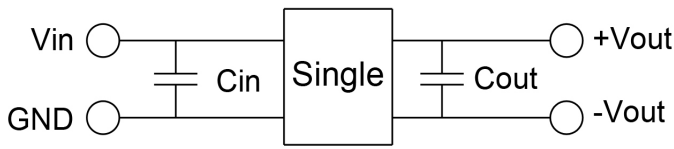
Tolerance envelope graph



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## Recommended Test Circuit



Vin	Cin	Single Vout	Cout
3.3Vdc	4.7μF/25V	3.3VDC	10μF/16V
5Vdc	4.7μF/25V	5VDC	10μF/16V
9Vdc	4.7μF/25V	9VDC	2.2μF/25V
12Vdc	2.2μF/25V	12VDC	2.2μF/25V
15Vdc	2.2μF/25V	15VDC	1μF/25V
24Vdc	1μF/50V	24VDC	1μF/50V

## EMC typical recommended circuit

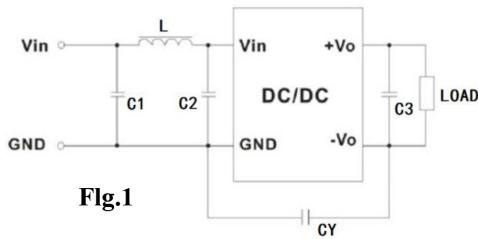


Fig.1

EMC recommended circuit value table		
EMI	C1	4.7μF/50V
	C2	4.7μF/50V
	CY	1nF/4kV
	C3	Recommended Test Circuit
	L	6.8μH

## Mechanical dimensions



SUGGESTED PAD LAYOUT

Vin	Cin
1	-Vin
2	+Vin
4	-Vout
5	+Vout
8	NC
Other	NO PIN

Unit:mm Unless otherwise specified, all tolerances are ±0.25