

## FEATURES

- ◆ Fixed Input Range
- ◆ Short Circuit Protection (automatic recovery)
- ◆ I/O isolation voltage 3000VDC
- ◆ Operating Temperature: -40°C ~ +85°C
- ◆ High efficiency up to 80%
- ◆ High accuracy of pin co-planarity
- ◆ Small SMD package with footprint
- ◆ Available in tape and reel package
- ◆ Single and dual output models
- ◆ Excellent load and line regulation

## MODEL SELECTION

F(E)<sup>①</sup>05<sup>②</sup>05<sup>③</sup>X<sup>④</sup>T<sup>⑤</sup>

- ① Product Series
- ② Input Voltage
- ③ Output Voltage
- ④ Fixed Input
- ⑤ SMD Package

## APPLICATIONS

The QF(E)-XT series are miniature, 0.25W DC/DC converters with high isolation in a SMD package. With a new package design these converters are qualified for the higher temperatures requested by lead-free reflow solder processes. With the small footprint, these converters are the ideal solution for board level power distribution, mainly for applications in the industrial and telecom field. For automated SMD production lines the devices can be supplied in standard tape and reel package.



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## SELECTION GUIDE

Order code	Input		Output		Efficiency (% Typ.)
	Voltage (VDC)		Voltage (VDC)	Current (mA) Max.	
	Nominal	Range			
QF0503XT	5	4.5-5.5	3.3	65	81
QF0505XT	5	4.5-5.5	5	50	83
QF0512XT	5	4.5-5.5	12	21	74
QF0515XT	5	4.5-5.5	15	16.75	76
QE0505XT	5	4.5-5.5	±5	±25	81
QE0512XT	5	4.5-5.5	±12	±13	85
QE0515XT	5	4.5-5.5	±15	±8.5	83
QF1203XT	12	10.8-13.2	3.3	65	86
QF1205XT	12	10.8-13.2	5	50	85
QF1212XT	12	10.8-13.2	12	21	74
QF1215XT	12	10.8-13.2	15	16.75	78
QE1205XT	12	10.8-13.2	±5	±25	80
QE1212XT	12	10.8-13.2	±12	±13	80
QE1215XT	12	10.8-13.2	±15	±8.5	85
QF2403XT*	24	21.6-26.4	3.3	65	81
QF2405XT *	24	21.6-26.4	5	50	85
QF2412XT *	24	21.6-26.4	12	21	83
QF2415XT*	24	21.6-26.4	15	16.75	86
QE2405XT *	24	21.6-26.4	±5	±25	85
QE2412XT *	24	21.6-26.4	±12	±13	74
QE2415XT*	24	21.6-26.4	±15	±8.5	78

\* Desining ...

Case material: non-conductive plastic (UL 91V-0 rated)

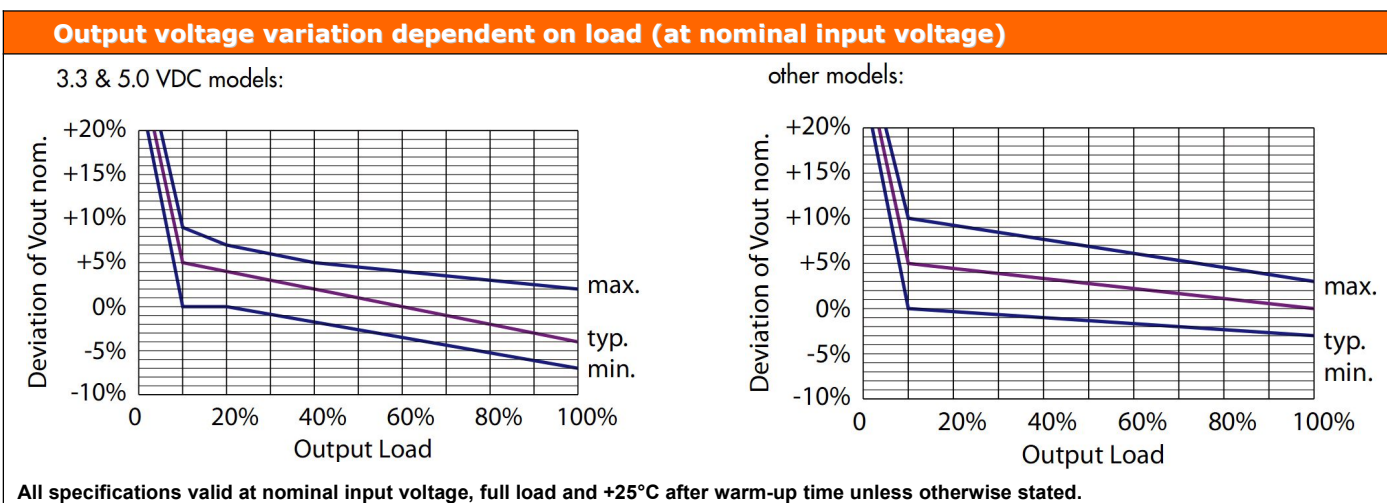
Weight: 2.0g (0.07oz)

## Input Specifications

Parameter	Conditions	Max.
Input current at full load	5 Vin models:	7.5mA/65mA typ.
	12Vin models:	3.75mA/27.5mA typ.
	24Vin models:	2mA/13.75mA typ.
Surge voltage (1sec. max.)	5 Vin models:	2.25V max.
	12 Vin models:	4.5V max.
	24 Vin models:	7.5V max.
Reverse voltage protection		0.075A max.
Input filter	internal capacitor	

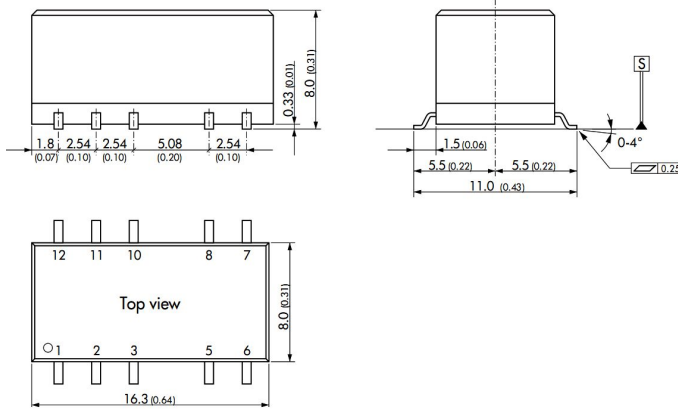
Output Specifications		
Parameter	Conditions	
Voltage set accuracy	see graphs below	
Regulation	- Input variation	1.2 % / 1 % change $V_{in}$
	- Load variation	see graphs below
Voltage balance (dual output models, balanced load)	$\pm 1.0\%$ max.	
Temperature coefficient	0.1 %/K	
Ripple and noise (20 MHz Bandwidth)	100 mVp-p max.	
Temperature coefficient	$\pm 0.02\%/K$ max.	
Short circuit protection	limited 0.5 sec. max.	
Capacitive load	3.3 VDC output models:	33 $\mu$ F max.
	5 VDC output models:	33 $\mu$ F max.
	12 VDC output models:	4.7 $\mu$ F max.
	15 VDC output models:	2.2 $\mu$ F max.
	$\pm 5$ VDC output models:	10 $\mu$ F max.
	$\pm 12$ VDC output models:	2.2 $\mu$ F max.
	$\pm 15$ VDC output models:	2.2 $\mu$ F max.

General Specifications		
Parameter	Conditions	
Temperature ranges	- Operating	- 40 °C ~ + 85 °C (no derating)
	- Case temperature	+95°C max.
	- Storage	- 55 °C ~ + 125 °C
Load derating	(convection cooling)	4%/K above +75°C
Humidity (non condensing)		95 % rel. H max.
Reliability, calculated MTBF (MIL-HDBK-217F ground benign)		>2Mio h
Isolation voltage (60 sec)	- Input/Output	3000 VDC
Isolation capacity	- Input/Output(100kHz, 1V)	60 pF typ.
Isolation resistance	- Input/Output (500 VDC)	>1 GOhm
Switching frequency		50 to 150 kHz (depending on load)



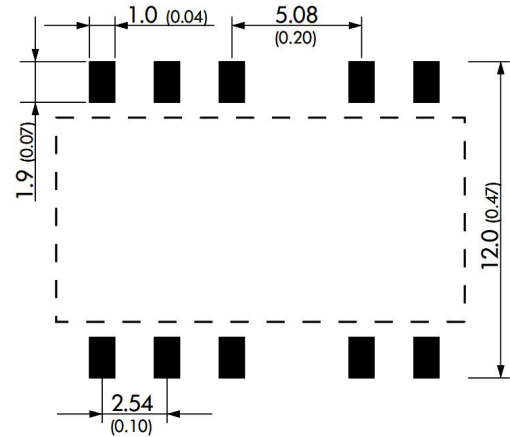
### OUTLINE DIMENSIONS & FOOTPRINT DETAILS

#### MECHANICAL DIMENSIONS



Note:  
 Unit:mm[inch]  
 Pin section tolerances:±0.10mm[±0.004inch]  
 General tolerances:±0.25mm[±0.010inch]

#### SOLDER PAD DIMENSION



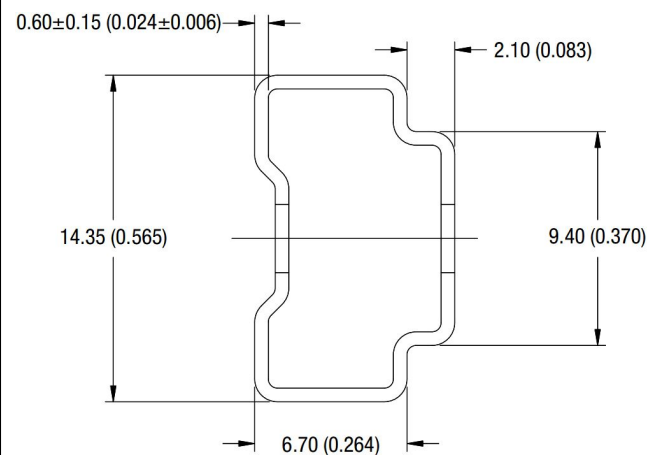
Dimensions in [mm], ( ) = Inch  
 Pin pitch tolerances: ±0.13 (±0.005)  
 Other tolerances: ±0.25 (±0.01)

#### FOOTPRINT DETAILS

Pin	Single	Dual
1	-Vin(GND)	-Vin(GND)
2	+Vin	+Vin
3	No con.	No con.
5	-Vout	Common
6	No con.	-Vout
7	No con.	No con.
8	+Vout	+Vout
10	No con.	No con.
11	No con.	No con.
12	No con.	No con.

No con.=Pin to be isolated from circuitry

#### TUBE OUTLINE DIMENSIONS



Unless otherwise stated all dimensions in mm±0.5 (inches ±0.02).  
 Tube length : 475±2.0 (18.70±0.07). Tube Quantity : 25

Specifications can be changed any time without notice.

No parallel connection or plug and play.

Note:

1. The load shouldn't be less than 10%, otherwise ripple will increase dramatically.
2. Operation under 10% load will not damage the converter; However, they may not meet all specification listed.
3. All specifications measured at Ta=25°C, humidity<75%, nominal input voltage and rated output load unless otherwise specified.
4. In this datasheet, all the test methods of indications are based on corporate standards.
5. Only typical models listed, other models may be different, please contact our technical person for more details.