

Product name FA-238 24.000000 MHz 9.0 +20.0-20.0

Product Number / Ordering code Q22FA23801867xx

Please refer to the 5.Packing information about xx (last 2 digits)

Pb free / Complies with EU RoHS directive

Reference weight Typ. 16 mg

1.Absolute maximum ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions / Remarks
Storage temperature	T_stg	-40	-	+125	°C	Storage as single product
Operating temperature	T_use	-40	-	+105	°C	

2.Specifications(characteristics)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions / Remarks
Nominal frequency	f_nom	—	24.000000	—	MHz	Fundamental
Frequency tolerance	f_tol	-20	-	+20	x 10 ⁻⁶	@+25°C
Frequency Stability over temperature	f_tem	-30	-	+30	x 10 ⁻⁶	-40°C to +85°C
Operating temperature	T_use	-40	-	+85	°C	
Level of drive	DL	10	100	200	μW	
Load capacitance	CL	—	9	—	pF	
Motional resistance (ESR)	R1	-	-	60	Ω	
Motional capacitance	C1	-	2.97	-	fF	
Motional inductance	L1	-	14.79	-	mH	
Shunt capacitance	C0	-	1.07	-	pF	
Frequency aging	f_age	-5	—	+5	x10 ⁻⁶ /yea	@+25°C, First year

3.External dimensions

(Unit: mm)

**4.Footprint(Recommended)**

(Unit: mm)

**5.Packing information**

[1] Product number last 2 digits code (xx) description

The recommended code is "17"

Q22FA23801867xx

Code	Condition	Code	Condition
01	Any Q'ty vinyl bag(Tape cut)	14	1000pcs / Reel
11	Any Q'ty / Reel	15	2000pcs / Reel
12	250pcs / Reel	00	3000pcs / Reel
13	500pcs / Reel	17	4000pcs / Reel

(1) Tape dimensions TE0804L

Material of the Top Tape : PET+PE

[illegible]

Material of the Reel : PS

The technical drawing consists of three views of a mechanical component:

- Front View (Top Left):** A circular view showing a central hub with four spokes. The outer diameter is $\Phi 180.00^{+0}_{-3}$. The inner hole has a diameter of $H\Phi 3$. One spoke has a width labeled G . The distance from the center to the outer edge along a spoke is 160 .
- Side View (Top Right):** A longitudinal section showing the thickness of the part. The total thickness is 11.40 ± 1 . The distance from the top surface to the start of the main body is 9.00 ± 0.3 . The main body has a length of 60.00 .
- End View (Bottom Right):** A circular cross-section at the bottom of the part. It shows two concentric circles with diameters $\Phi 21 \pm 0.8$ (outer) and $\Phi 13 \pm 0.2$ (inner). The distance between the top surfaces of these two sections is $2.00^{+0.3}_0$.

6.Reflow profile

Reflow condition

Pre Heating Temperature

$T_{p1} \sim T_{p2} = +170^{\circ}\text{C}$

Heating Temperature

$T_{Mlt} = +220^{\circ}\text{C}$

Peek Temperature

$T_{Max.} = +260^{\circ}\text{C}$

Point of measuring

In case of Solderability
Terminal.

In case of Resistance to soldering heat
Surface.

Temperature

$T_{Max.}$

T_{Mlt}

T_{p2}

T_{p1}



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