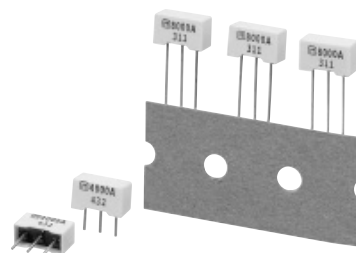


Ceramic Resonators (Built-In Capacitor Type)

Type: **EC** (2.0 to 50.0 MHz)

Ceramic Resonator, Built-In Capacitor Type, includes two capacitors constructing "Colpitts oscillation circuits".



■ Features

- Wide range of oscillation frequency: 2.0 to 50 MHz
- No need for capacitors in oscillation circuit
- High accuracy, high stability
Initial frequency tolerance: ± 0.3 to 0.5 %
- Excellent temperature characteristics (Nominal Freq.: 3.58 to 50 MHz)
Frequency drift: ± 0.1 % max. -10 to 60 °C
- Saves height on P.C. board (Height: 5 mm max.)
- Taped version is available for automatic insertion
- RoHS compliant

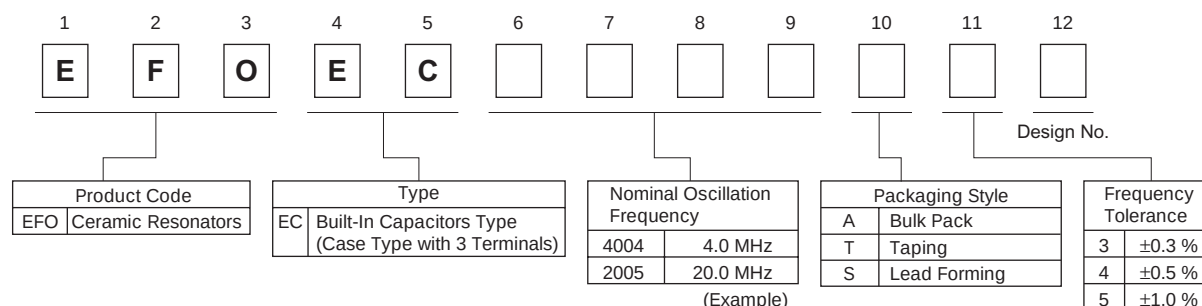
■ Recommended Applications

- Clock pulse generator for micro-processors
- Carrier between telecommunication equipment (telephone to telephone, personal computer to printer)

■ Handling Precautions (See Page 187 to 188)

■ Packaging Specifications See Page 208

■ Explanation of Part Numbers



■ Ratings and Characteristics

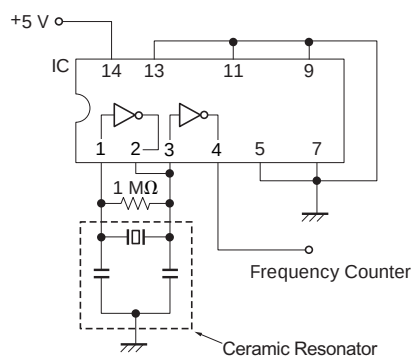
Part Number		Oscillation Frequency	Loop Gain (G)	Temperature Characteristics
Bulk Pack	Taping			
EFOEC2004A5	EFOEC2004T5	2.00 MHz $\pm$ 1.0 %	14 dB	Maximum Frequency drift: $\pm$ 0.6 %, -10 to 60 °C ($\pm$ 1.0 %, -20 to 80 °C)
EFOEC3584A4	EFOEC3584T4	3.58 MHz $\pm$ 0.5 %	12 dB	Maximum frequency drift $\pm$ 0.1 %, -10 to 60 °C ($\pm$ 0.2 %, -20 to 80 °C)
EFOEC4004A4	EFOEC4004T4	4.00 MHz $\pm$ 0.5 %		
EFOEC4194A4	EFOEC4194T4	4.19 MHz $\pm$ 0.5 %		
EFOEC5004A4	EFOEC5004T4	5.00 MHz $\pm$ 0.5 %		
EFOEC6004A4	EFOEC6004T4	6.00 MHz $\pm$ 0.5 %	10 dB	
EFOEC8004A4	EFOEC8004T4	8.00 MHz $\pm$ 0.5 %		
EFOEC1005A4	EFOEC1005T4	10.00 MHz $\pm$ 0.5 %	6 dB	
EFOEC2005A4	EFOEC2005T4	20.00 MHz $\pm$ 0.5 %	14 dB	
EFOEC3385A4	EFOEC3385T4	33.868 MHz $\pm$ 0.5 %	8 dB	

- Operating Temperature Range: -20 to 80 °C
- Frequency Drift: 0.3 % max./10 years

Note : If customer used other frequency, please ask us separately.

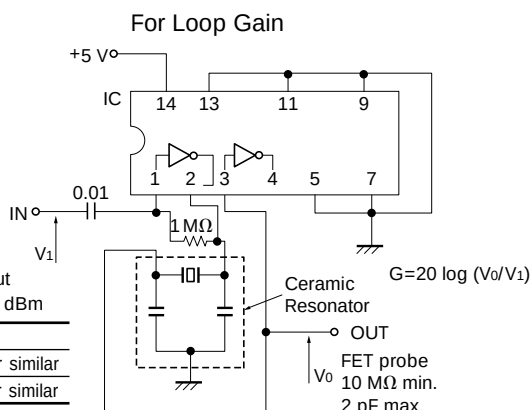
■ Test Circuit Diagram

For Oscillation Circuit



Frequency	IC
2.00 to 12.9 MHz	μPD 4069UBC or similar
13 to 50 MHz	μPD 74HCU04 or similar

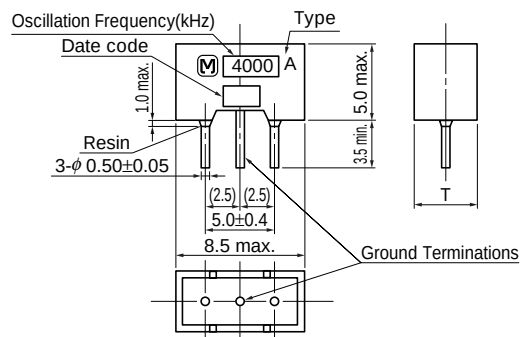
T.G.
Output

 V_1 

■ Dimensions in mm (not to scale)

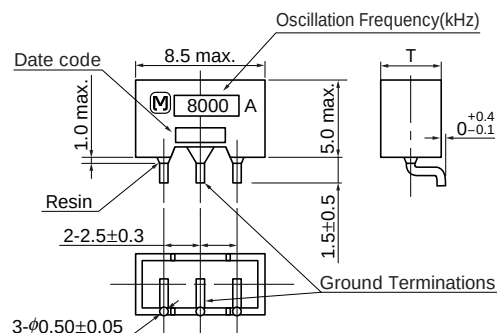
Bulk Pack

EFOEC□□□□A□



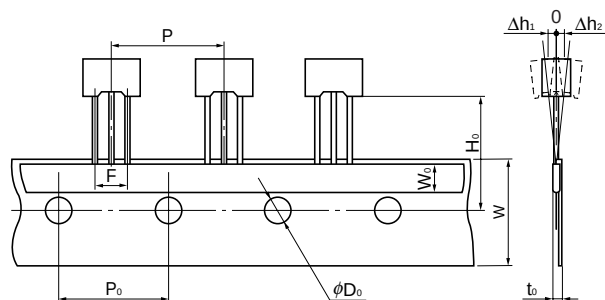
Lead Forming

EFOEC□□□□S□

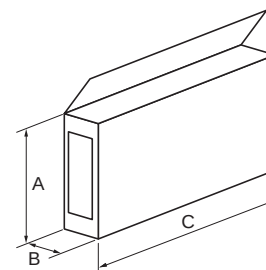


■ Dimensions for Taping in mm (not to scale)

EFOEC□□□□T□



Dimensions	
P	12.7±1.0
P ₀	12.7±0.3
W	18.0±1.0
W ₀	6.0 min.
H ₀	18.5±0.5
ϕD ₀	4.0±0.2
F	5.0±0.4
t ₀	1.5 max.
Δh ₁ , Δh ₂	2.0 max.

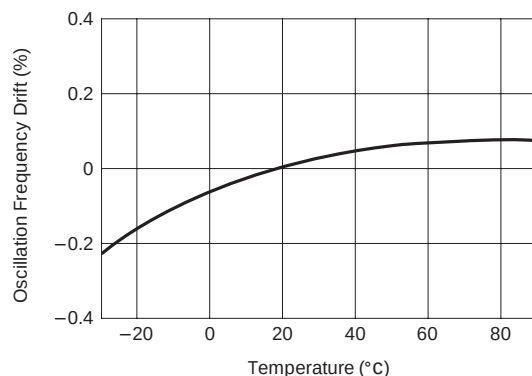


Dimensions*	
A	160 to 170
B	40 to 45
C	330

*Tolerance: ± 3 mm

■ Typical Characteristics (EFOEC4004A4)

Temperature Characteristics



● Standard Packing Quantity

Taping Pack	Bulk Pack
1000 pcs./box	4000 pcs./box