

### Ceramic Resonators (Built-In Capacitors Type)

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

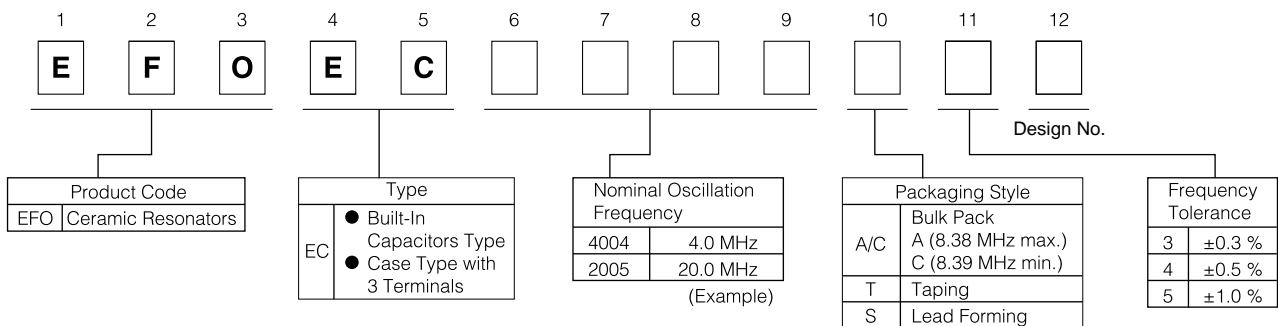
#### ■ Features

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

#### ■ Recommended Applications

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

#### ■ Explanation of Part Numbers



#### ■ Ratings and Characteristics

##### ● Type EC

Part Number		Oscillation Frequency	Loop Gain (G)	Temperature Characteristics
Bulk Pack	Taping			
EFOEC2004A5	EFOEC2004T5	2.00 MHz $\pm 1.0$ %	10 dB	Maximum frequency drift: $\pm 0.1$ %, -10 to 60 °C ( $\pm 0.2$ %, -20 to 80 °C)
EFOEC3584A4	EFOEC3584T4	3.58 MHz $\pm 0.5$ %	10 dB	
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 $\pm 0.5$ %		
EFOEC8004A4	EFOEC8004T4	8.00 MHz $\pm 0.5$ %		
EFOEC1005C4	EFOEC1005T4	10.00 MHz $\pm 0.5$ %	14 dB	
EFOEC2005C4	EFOEC2005T4	20.00 MHz $\pm 0.5$ %	10 dB	
EFOEC3385C4	EFOEC3385T4	33.868 MHz $\pm 0.5$ %	8 dB	

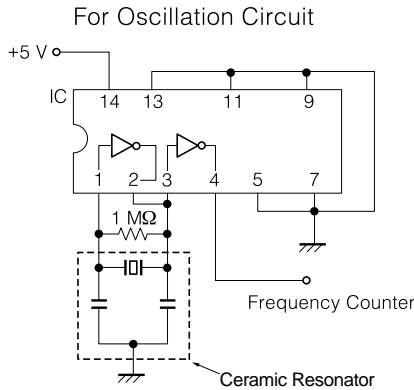
- Operating Temperature Range: -20 to 80 °C
- Frequency Drift: 0.3 % max./10 years

#### Notes:

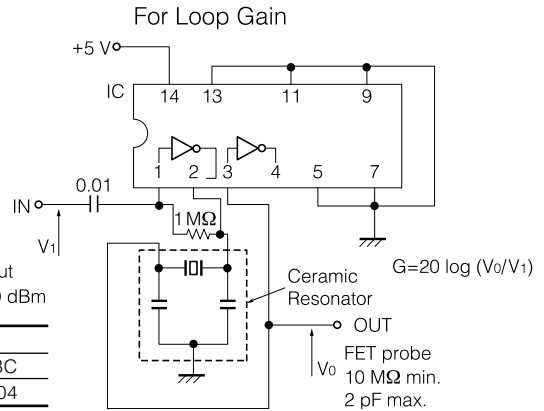
1. Also available are types other than above standard products in the frequency range of 2.0 to 50 MHz. Please contact us for more information.
2. For application in telephone dialer, please contact us.

Design, Specifications are subject to change without notice. Ask factory for technical specifications before purchase and/or use. Whenever a doubt about safety arises from this product, please inform us immediately for technical consultation without fail.

## Test Circuit Diagram



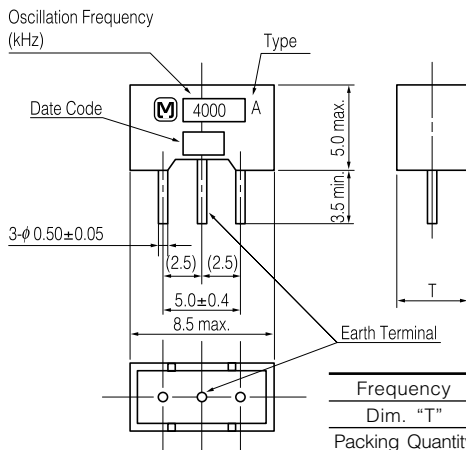
Frequency	IC
2.00 to 8.38 MHz	μPD 4069UBC
8.39 to 45 MHz	μPD 74HCU04



## Dimensions in mm (not to scale)

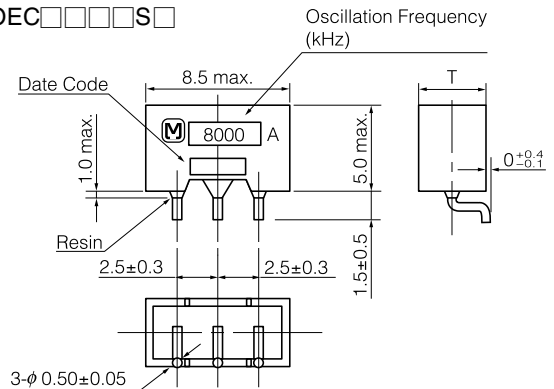
### Bulk Pack

EFOEC□□□□□<sup>A</sup>□<sub>C</sub>



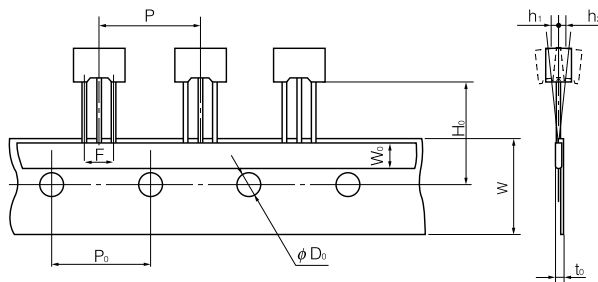
### Lead Forming

EFOEC□□□□□S□

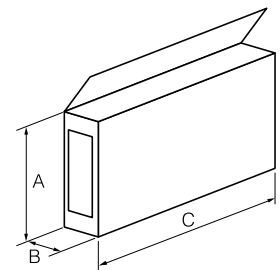


## Dimensions for Taping in mm (not to scale)

EFOEC□□□□□T4



Dimensions	
P	12.7±1.0
P <sub>0</sub>	12.7±0.3
W	18.0±1.0
W <sub>0</sub>	6.0 min.
H <sub>0</sub>	18.5±0.5
φD <sub>0</sub>	φ4.0±0.2
F	5.0±0.4
t <sub>0</sub>	1.5 max.
Δh <sub>1</sub> , Δh <sub>2</sub>	2.0 max.

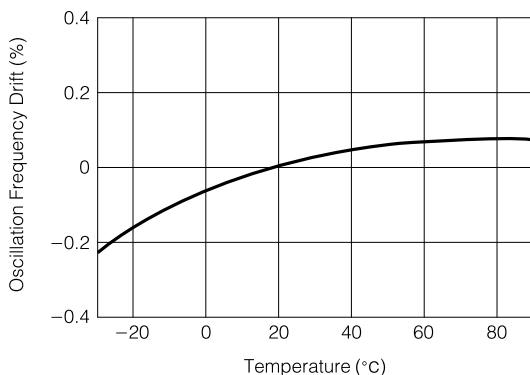


Dimensions*	
A	160–170
B	40–45
C	330

\*Tolerance: ±3 mm

## Typical Characteristics (EFOEC4004A4)

### Temperature Characteristics



## Standard Packing Quantity

Frequency Range	Packing Quantity
2.0 to 8.38 MHz	1000 pcs./box
8.39 to 19.9 MHz	800 pcs./box
20.0 to 50 MHz	1000 pcs./box