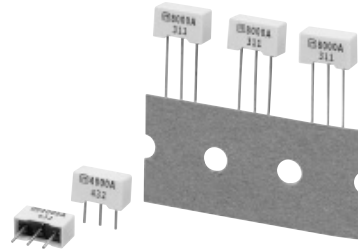


Ceramic Resonators (Built-In Capacitor Type)

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

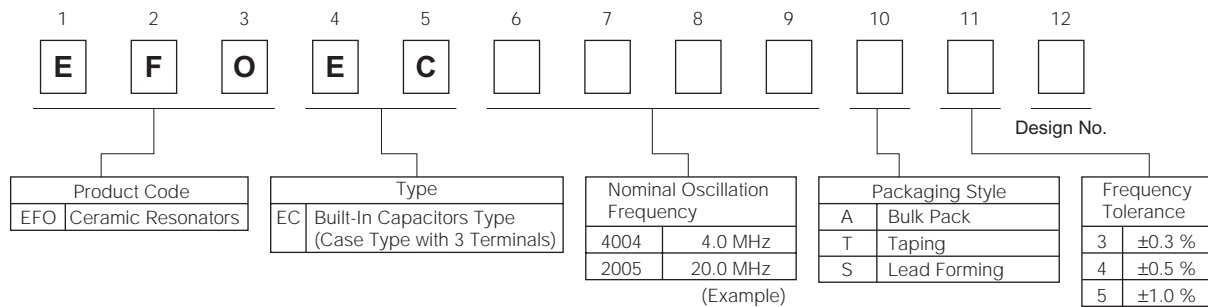
- Clock pulse generator for micro-processors
- Carrier between telecommunication equipment (telephone to telephone, personal computer to printer)

■ Handling Precautions (See Page 187 to 188)

■ Packaging Specifications

See Page 208

■ Explanation of Part Numbers



■ Ratings and Characteristics

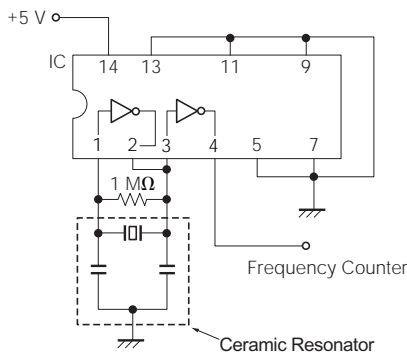
| Part Number | | Oscillation Frequency | Loop Gain (G) | Temperature Characteristics |
|-------------|-------------|------------------------|---------------|---|
| Bulk Pack | Taping | | | |
| EFOEC2004A5 | EFOEC2004T5 | 2.00 MHz ± 1.0 % | 14 dB | Maximum frequency drift: ± 0.6 %, -10 to 60 °C (± 1.0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

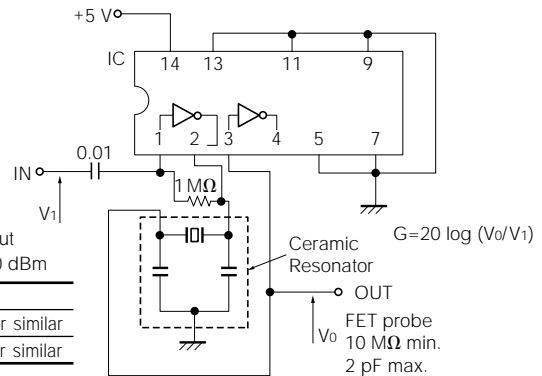
Test Circuit Diagram

For Oscillation Circuit



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

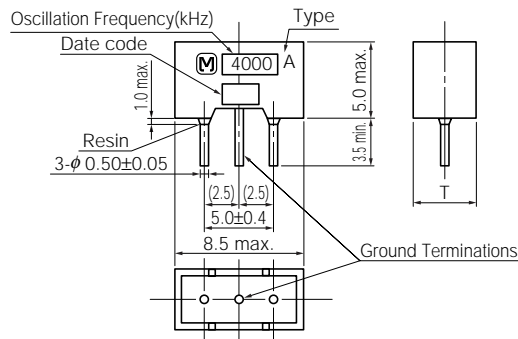
For Loop Gain



Dimensions in mm (not to scale)

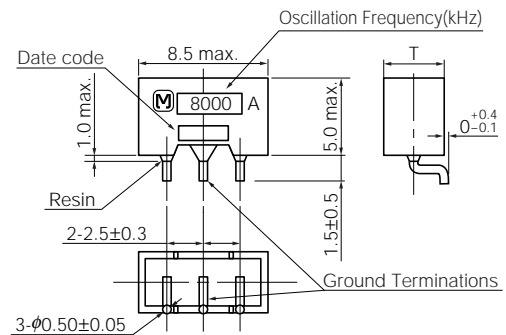
Bulk Pack

EFOEC□□□□A□



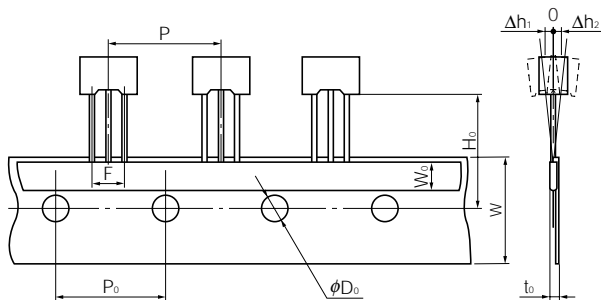
Lead Forming

EFOEC□□□□S□

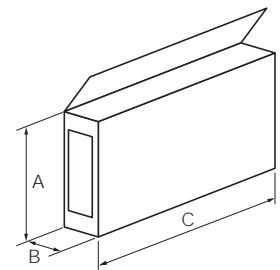


Dimensions for Taping in mm (not to scale)

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. |

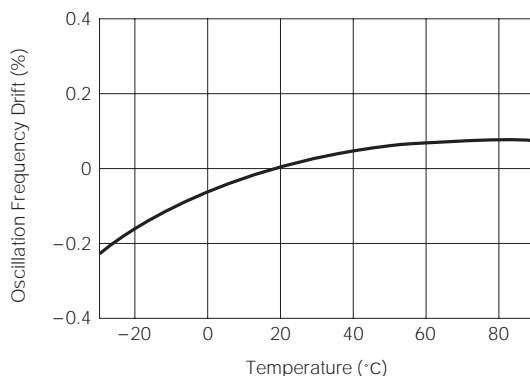


| Dimensions* | |
|-------------|------------|
| A | 160 to 170 |
| B | 40 to 45 |
| C | 330 |

*Tolerance: ±3 mm

Typical Characteristics (EFOEC4004A4)

Temperature Characteristics



Standard Packing Quantity

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