

Ceramic Resonators, Chip Type (Built-In Capacitor Type)

Type: **S** (2 to 13 MHz)

Type: **B** (13.1 to 20 MHz)

Type: **J** (30.1 to 50 MHz)



■ Features

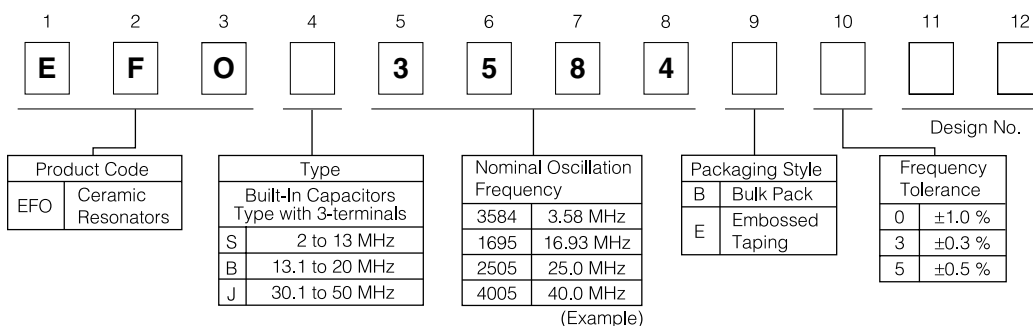
- Encased in ceramic package
- High reliability against soldering heat and mechanical stress
- Moisture-proof sealing
- Low Profile Type (1.8 mm maximum in thickness)
- Designed for reflow soldering
- Flat-bottom plate for better mounting
- Simplifies oscillation circuits

■ Recommended Applications

- Clock generator for microprocessors
- Carrier between telecommunication equipment (Telephone to telephone, personal computer to printer)

■ Safety Precautions (See Page 218 to 219)

■ Explanation of Part Numbers



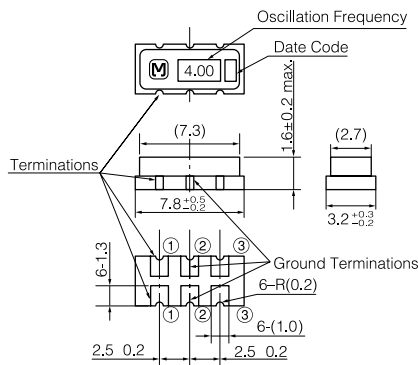
■ Ratings and Characteristics

Part Number		Oscillation Frequency (fo)	Loop Gain (G)	Temperature Characteristics	Built-in Capacitors (Reference)
Bulk Pack	Embossed Taping				
EFOS3584B5	EFOS3584E5	3.58 MHz ±0.5 %	10 dB min.	Maximum frequency drift: ±0.2 %, -20 to 80 °C	33 pF
EFOS4004B5	EFOS4004E5	4.00 MHz ±0.5 %			
EFOS8004B5	EFOS8004E5	8.00 MHz ±0.5 %			
EFOS1005B5	EFOS1005E5	10.00 MHz ±0.5 %	15 dB min.	Maximum frequency drift: ±1.0 %, -20 to 80 °C	33 pF
EFOS1205B5	EFOS1205E5	12.00 MHz ±0.5 %			
EFOB1605B5	EFOB1605E5	16.00 MHz ±0.5 %			
EFOB1695B5	EFOB1695E5	16.93 MHz ±0.5 %	15 dB min.	Maximum frequency drift: ±0.5 %, -20 to 80 °C	33 pF
EFOB2005B5	EFOB2005E5	20.00 MHz ±0.5 %			
EFOJ3205B5	EFOJ3205E5	32.00 MHz ±0.5 %			
EFOJ3385B5	EFOJ3385E5	33.868 MHz ±0.5 %	6 dB min.	Maximum frequency drift: ±0.2 %, -20 to 80 °C	10 pF
EFOJ4005B5	EFOJ4005E5	40.00 MHz ±0.5 %			

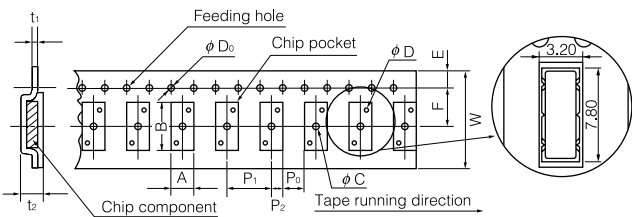
- Operating Temperature Range: -20 to 80 °C

Note:
Also available other types than the above standard products in the frequency range of 3 to 50 MHz.
Please contact us for more information.

■ Dimensions in mm (not to scale)
● Bulk
[Type S] EFOS□□□□B□



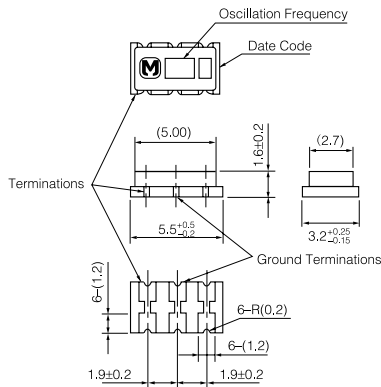
● Embossed Taping
EFOS□□□□E□



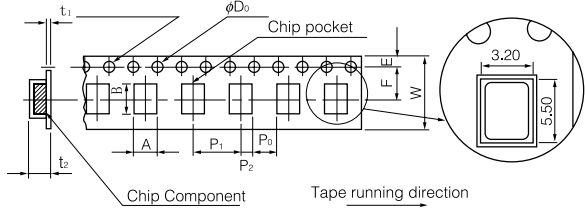
Dim.	A	B	W	F	E	P ₁
(mm)	3.7	8.3	16.0±0.3	7.5±0.1	1.75±0.10	8.0±0.1

Dim.	P ₂	P ₀	ϕD_0	t ₁	t ₂	ϕC	ϕD
(mm)	2.0±0.1	4.0±0.1	1.5 ^{+0.1} ₀	0.6 max.	3.0 max.	1.55	1.0

[Type B] EFOB□□□□B□



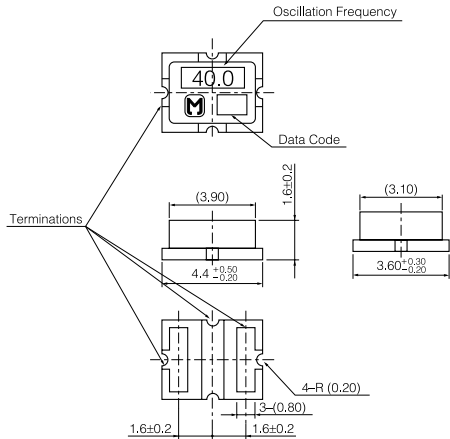
EFOB□□□□E□



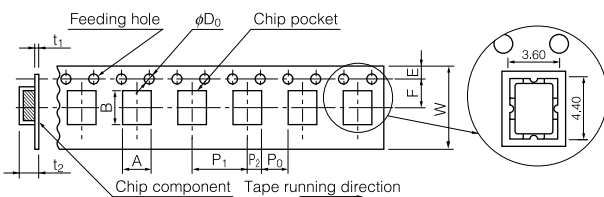
Dim.	A	B	W	F	E	P ₁
(mm)	3.7	6.0	12.0±0.3	5.5±0.1	1.75±0.10	8.0±0.1

Dim.	P ₂	P ₀	ϕD_0	t ₁	t ₂
(mm)	2.0±0.1	4.0±0.1	1.5 ^{+0.1} ₀	0.6 max.	3.0 max.

[Type J] EFOJ□□□□B□



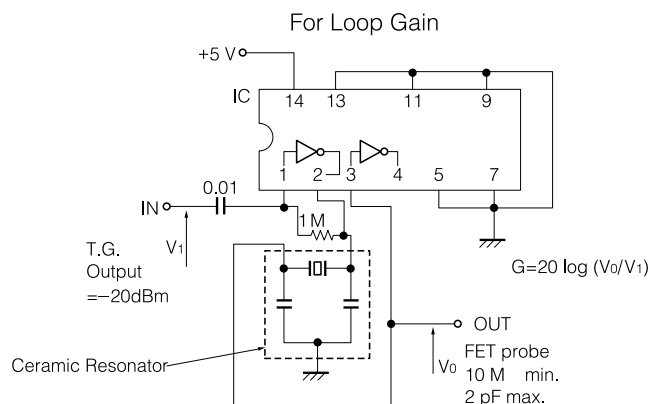
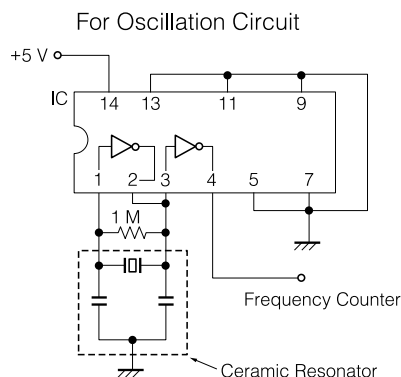
EFOJ□□□□E□



Dim.	A	B	W	F	E	P ₁
(mm)	4.1	4.9	12.0±0.3	5.5±0.1	1.75±0.10	8.0±0.1

Dim.	P ₂	P ₀	ϕD_0	t ₁	t ₂
(mm)	2.0±0.1	4.0±0.1	1.5 ^{+0.1} ₀	0.6 max.	3.0 max.

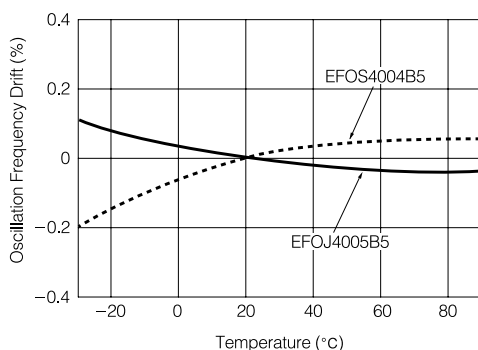
Test Circuits Diagram



Frequency	IC
2.00 to 8.38 MHz	μPD 4069UBC
8.4 to 50 MHz	μPD 74HCU04

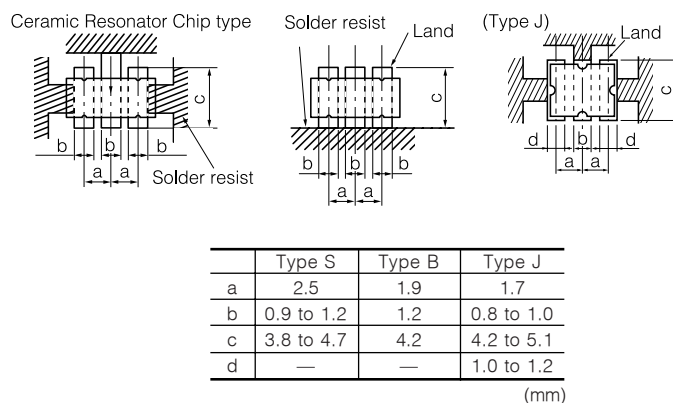
Typical Characteristics

Temperature Characteristics



Recommended Land Dimensions

(Type S,B,J)



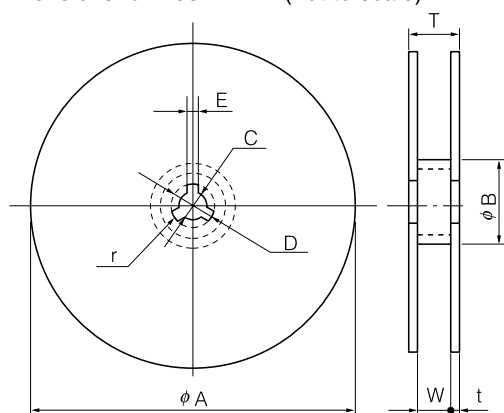
Packaging Specifications

Supplied in bulk or taped & reel packing style

Standard Packing Quantity

Type	Embossed Taping	Bulk
S	2500 pcs./reel	500 pcs./bag
B,J	1000 pcs./reel	500 pcs./bag

Dimensions for Reel in mm (not to scale)



[Type S]

Dim.	ϕA	ϕB	C	D	E
(mm)	330±5	80 min.	13.0±0.5	21.0±0.8	2.0±0.5
Dim.	W	T	t	r	
(mm)	16.4 ^{+2.0} ₀	22.4 max.	3 max.	1.0	

[Type B,J]

Dim.	ϕA	ϕB	C	D	E
(mm)	180±5	60 min.	13.0±0.5	21.0±0.8	2.0±0.5
Dim.	W	T	t	r	
(mm)	12.4 ^{+2.0} ₀	18.4 max.	3 max.	1.0	