

Ceramic Resonators, Chip Type (For General Purpose)

- Type: **P** (2 to 13 MHz)
 Type: **D** (13.1 to 20 MHz)
 Type: **L** (30.1 to 50 MHz)

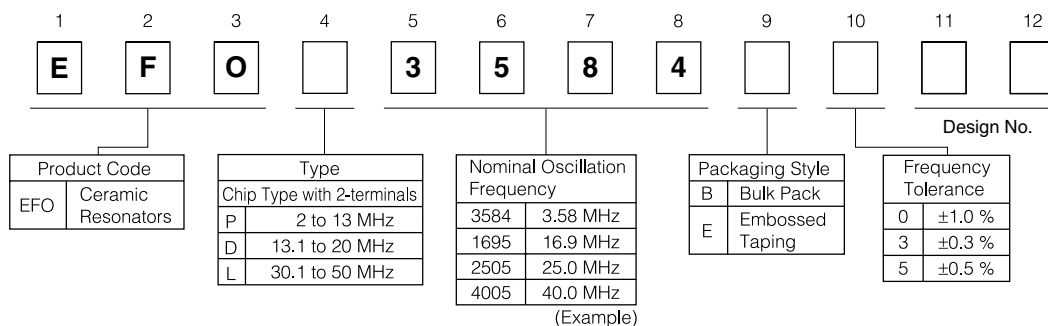


■ Features

- 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 mountings

■ Safety Precautions (See Page 218 to 219)

■ Explanation of Part Numbers



■ Ratings and Characteristics

Part Number		Oscillation Frequency (fo)	Loop Gain (G)	Temperature Characteristics
Bulk Pack	Embossed Taping			
EFOP3584B5	EFOP3584E5	3.58 MHz ±0.5 %	10 dB min.	Maximum frequency drift: ±0.3 %, -20 to 80 °C
EFOP4004B5	EFOP4004E5	4.00 MHz ±0.5 %		
EFOP8004B5	EFOP8004E5	8.00 MHz ±0.5 %		
EFOP1005B5	EFOP1005E5	10.00 MHz ±0.5 %	15 dB min.	Maximum frequency drift: ±1.0 %, -20 to 80 °C
EFOP1205B5	EFOP1205E5	12.00 MHz ±0.5 %		
EFOD1605B5	EFOD1605E5	16.00 MHz ±0.5 %	15 dB min.	Maximum frequency drift: ±1.0 %, -20 to 80 °C
EFOD1695B5	EFOD1695E5	16.93 MHz ±0.5 %		
EFOD2005B5	EFOD2005E5	20.00 MHz ±0.5 %		
EFOL3205B5	EFOL3205E5	32.00 MHz ±0.5 %	6 dB min.	Maximum frequency drift: ±0.3 %, -20 to 80 °C
EFOL3385B5	EFOL3385E5	33.868 MHz ±0.5 %		
EFOL4005B5	EFOL4005E5	40.00 MHz ±0.5 %		

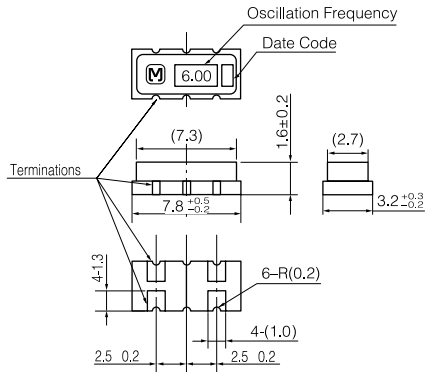
- Operating Temperature Range: -20 to 80 °C

Note:
 Also available other types than the above standard products in the frequency range of 3 to 50.0 MHz.
 Please contact us for more information.

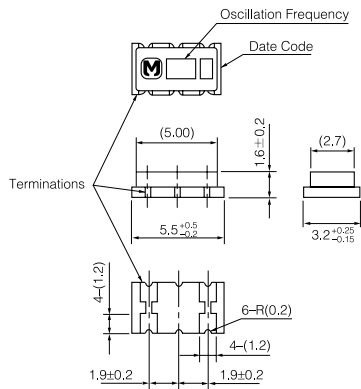
■ Dimensions in mm (not to scale)

● Bulk

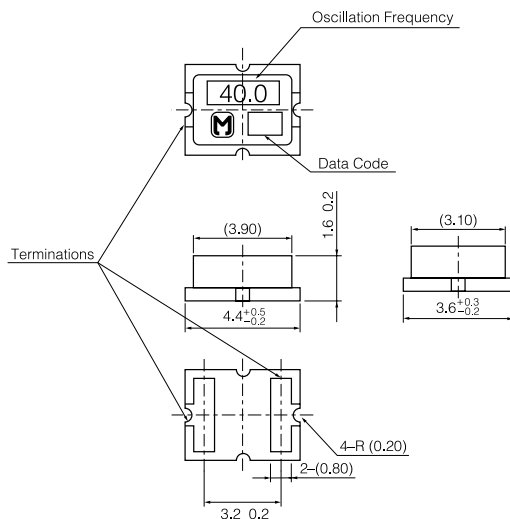
[Type P] EFOP□□□□B□



[Type D] EFOD□□□□B□

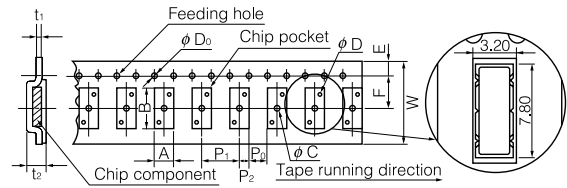


[Type L] EFOL□□□□B□



● Embossed Taping

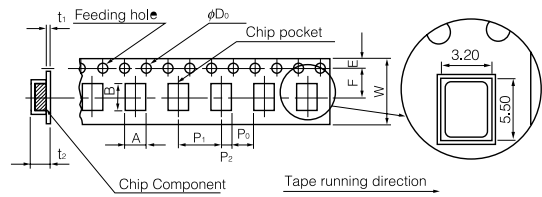
EFOP□□□□E□



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

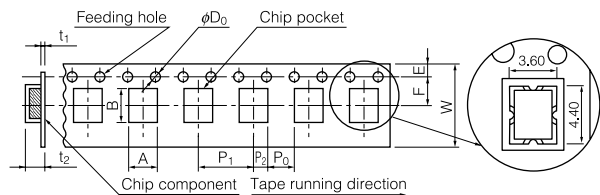
EFOD□□□□E□



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.

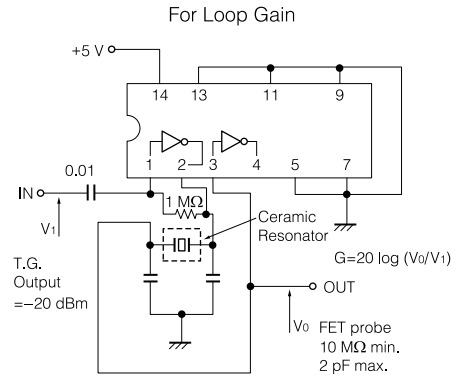
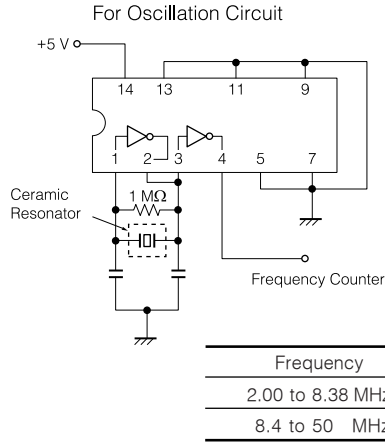
EFOL□□□□E□



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

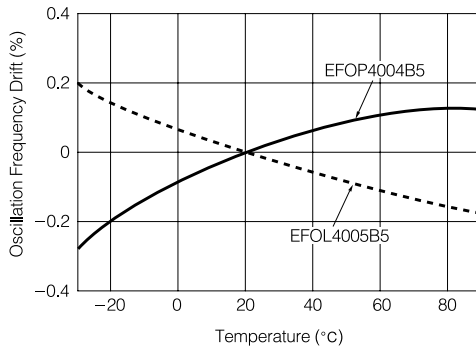
Dim.	P ₂	P ₀	φD ₀	t ₁	t ₂
(mm)	2.0±0.1	4.0±0.1	1.5 ^{+0.1} ₀	0.6 max.	3.0 max.

Test Circuits Diagram



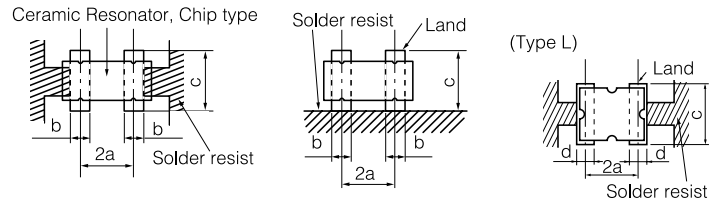
Typical Characteristics

Temperature Characteristics



Recommended Land Dimensions

(Type P/D/L)



	Type P	Type D	Type L
a	2.5	1.9	1.7
b	0.9 to 1.2	1.2	0.8 to 1.0
c	3.8 to 4.7	4.2	4.2 to 5.1
d	—	—	1.0 to 1.2

(mm)

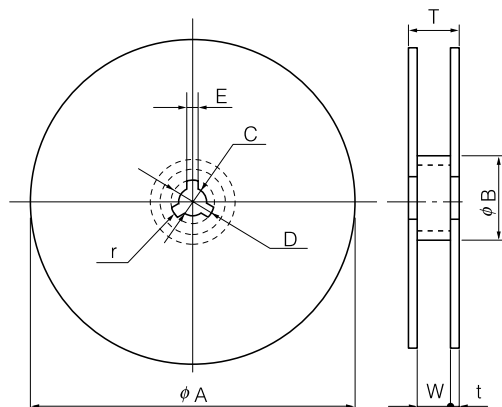
Packaging Specifications

Supplied in bulk or taped & reel packing style

Standard Packing Quantity

Type	Embossed Taping	Bulk
P	2500 pcs./reel	500 pcs./bag
D, L	1000 pcs./reel	500 pcs./bag

Dimensions for Reel in mm (not to scale)



[Type P]

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 D/L]

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	