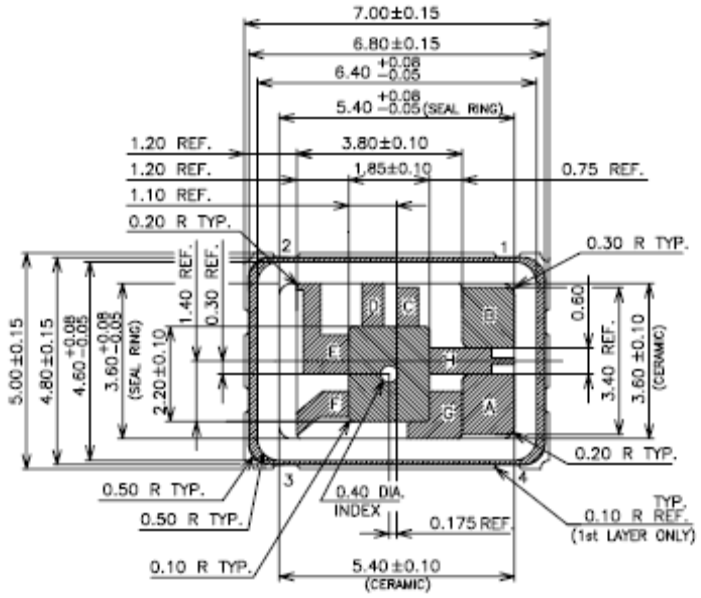
PRODUCT CHANGE NOTIFICATION

Title	Alternate Package for 5 x 7mm CMOS Oscillator
Keywords	Product Change Notification, SM77 series CMOS Oscillators
Article:	Pletronics Inc. is committed to providing the highest quality devices on time to meet our customer's requirements. During the past year market conditions have lead to an increase in the lead times of the suppliers of ceramic packages. In an effort to remain responsive to the needs of our customers Pletronics Inc. would like to add an additional ceramic package type to the Pletronics Product Family. The current ceramic package and the proposed addition are both manufactured by the same company. The manufacturing location, assembly materials, plating thickness and composition remain the same. The changes mainly concern the location and routing of traces in the package. Material and Plating for both packages: **Materials** Pad Plating Material Ni 1.27~8.89um Thickness Au 0.3~1.0um Thickness Ceramic Material

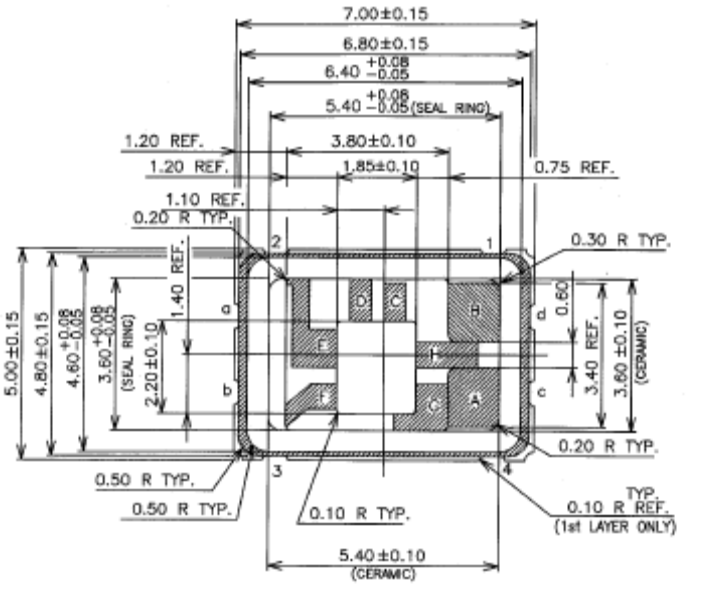
	ELECTRICAL				THERMAL		MECHANICAL	
	Dielectric Constant		Dissipation Factor (x10E-4)		CTE(ppm/K) (RT-400°C)	Thermal Conductivity (W/mK)	Flexural Strength (MPa)	Young's Modulus of Elasticity (GPa)
	1MHz	2 GHz	1MHz	2 GHz				
Al2O3	9.6	_	5	_	6.9	18	460	310

Layer by Layer comparison:

Current Package



Alternate Package



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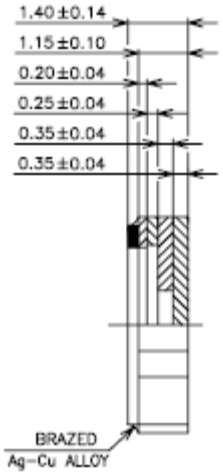
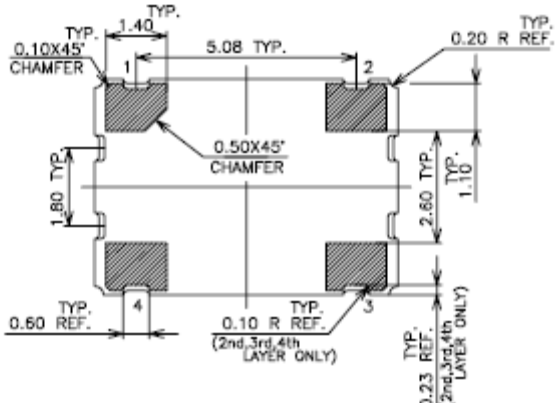
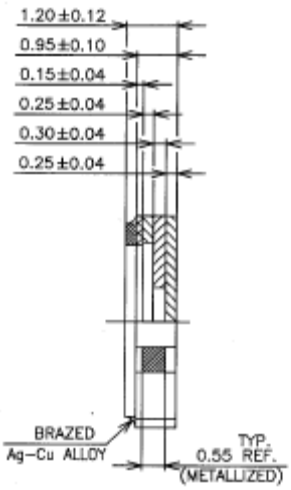
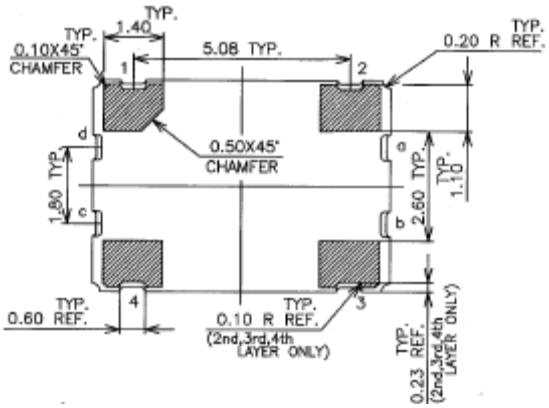




Alternate Package





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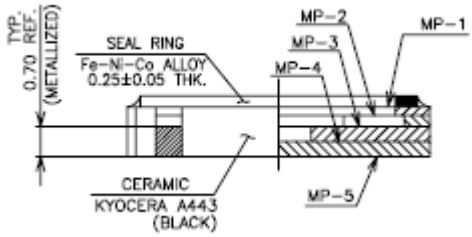
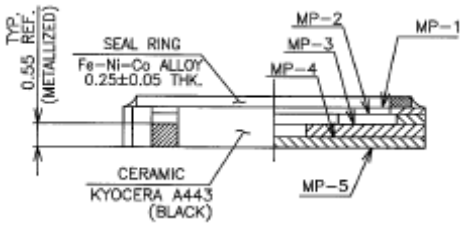
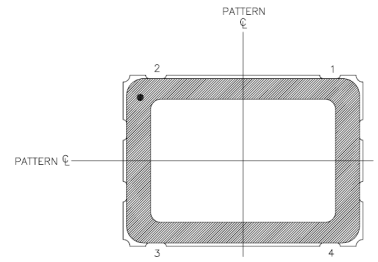
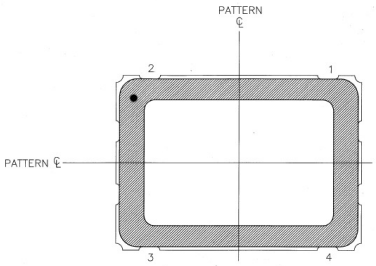


Alternate Package





MP-1



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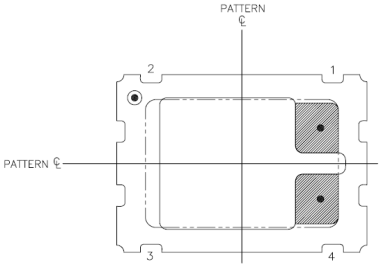

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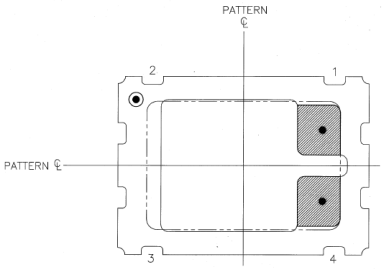

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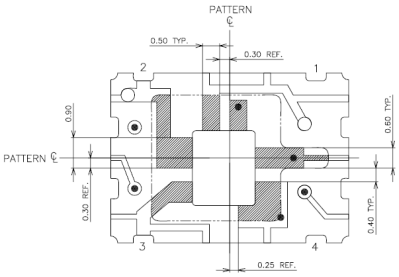
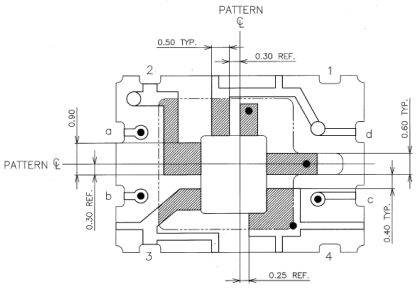


MP-3



MP-3

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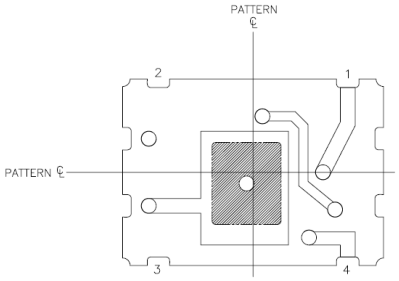

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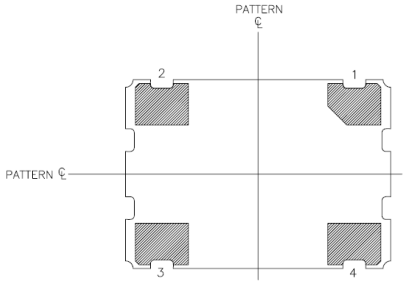
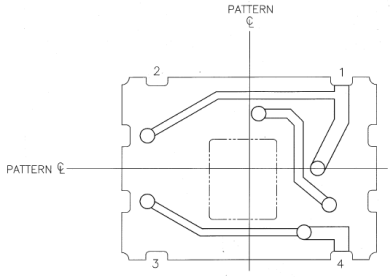
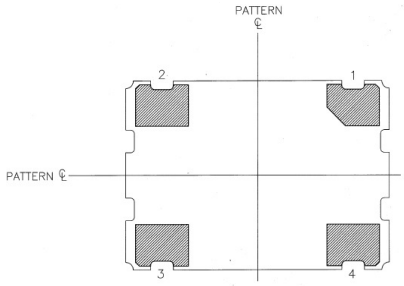


MP-5

Alternate Package



MP-4



MP-5

Environmental Reliability Testing

Bond Strength

Test: Bond Strength
MIL-STD-883
Standard M2011 Test Condition C
Date: 9/6/2010 Qualification Status PASSED

Device Information:

Lot	DUT #	Part #	Date Code
Lot 1	1 to 5	SM77	0HB-SFLT
Lot 2	6 to 10	SM77	0HG-SFLT
Lot 3	11 to 15	SM77	0J6-SFLT

* Test equipment : Mark-10 EG
* Gold wire(diameter) : 1mil, degree of purity: 99.99%

Unit : gf

Lot no.	DUT	Wire pull test					
		P1	P2	P3	P4	P5	P6
0HB-SFLT	1	7.2	8.1	9.4	8.4	9.2	9.1
	2	9.4	9.6	8.7	9.4	8.6	8.4
	3	8.5	8.1	9.2	8.7	8.4	9
	4	9.1	9.6	9.1	8.5	9.3	9.5
	5	10.2	8.1	8.9	8.4	9.3	9.2
0HG-SFLT	6	8	8.8	8.1	8.6	9.4	10.1
	7	9.2	9.7	9.4	8.1	8.3	9.5
	8	10.2	10.6	10.4	9.8	10.3	10.5
	9	9.1	9.6	9.4	8.6	8.2	9.3
	10	9.5	9	9.3	10.5	8.7	9.1
0J6-SFLT	11	10	10.7	10.5	9.8	11	10.3
	12	10.8	10.9	10.4	10.6	9.7	10
	13	9.8	9.5	8.7	9.6	9.4	9.7
	14	10.8	10.3	10.7	9.9	9.7	10
	15	9.6	9.1	9.4	9.6	9.4	9.3

Failure category a-1 unless otherwise noted

Die Shear Test

Test: Die Shear
Standard MIL-STD 883 method 2019
Date: 9/6/2010 Qualification Status PASSED

Device Information:

Lot	DUT #	Part #	Date Code
Lot 1	1 to 5	SM77	0HB-SFLT
Lot 2	6 to 10	SM77	0HG-SFLT
Lot 3	11 to 15	SM77	0J6-SFLT

Die Dimensions	
mm	**in**
0.75	0.02953
0.69	0.02717
Area in sq in	8.02E-04

Failure Criteria (in Kg f)	
0.3	`@ x1.0
0.4	`@ x 1.25
0.65	`@ x 2.0

Lot no.	DUT	Value(Kg f)
0HB-SFLT	1	1.841
	2	1.963
	3	2.108
	4	2.388
	5	2.169
0HG-SFLT	6	2.517
	7	1.912
	8	1.964
	9	2.149
	10	2.354
0J6-SFLT	11	2.451
	12	2.228
	13	2.415
	14	2.465
	15	2.129

Leak Test

Test: Leak Check Gross and Fine
Standard MIL-STD-883 Method 1014 Cond. A1, C1
Date: 9/6/2010 Qualification Status PASSED

Device Information:

Lot	DUT #	Part #	Date Code
Lot 1	1 to 15	SM77	0HB-SFLT
Lot 2	16 to 30	SM77	0HG-SFLT
Lot 3	31 to 45	SM77	0J6-SFLT

Fine Leak

Test Conditions

He Bombing Soak time : 7200sec(2hrs), Bombing pressure : 75psi

Unit atm.cc/sec

Lot no.	DUT	Leak Rate
Lot 1	1	1.40E-09
	2	1.30E-09
	3	1.50E-09
	4	1.30E-09
	5	1.20E-09
	6	1.20E-09
	7	1.20E-09
	8	1.30E-09
Lot 2	1	1.20E-09
	2	1.30E-09
	3	1.40E-09
	4	1.10E-09
	5	1.40E-09
	6	1.20E-09
	7	1.40E-09
	8	1.20E-09
Lot 3	1	1.10E-09
	2	1.40E-09
	3	1.10E-09
	4	1.30E-09
	5	1.10E-09
	6	1.30E-09
	7	1.20E-09
	8	1.30E-09

Reject Criteria >5.00E-8 atm.cc/sec

Gross Leak

Test Conditions

Bombing Soak time : 7200sec(2hrs), Bombing pressure : 75psi

Test solution, FC-40 temp: 125℃±5C

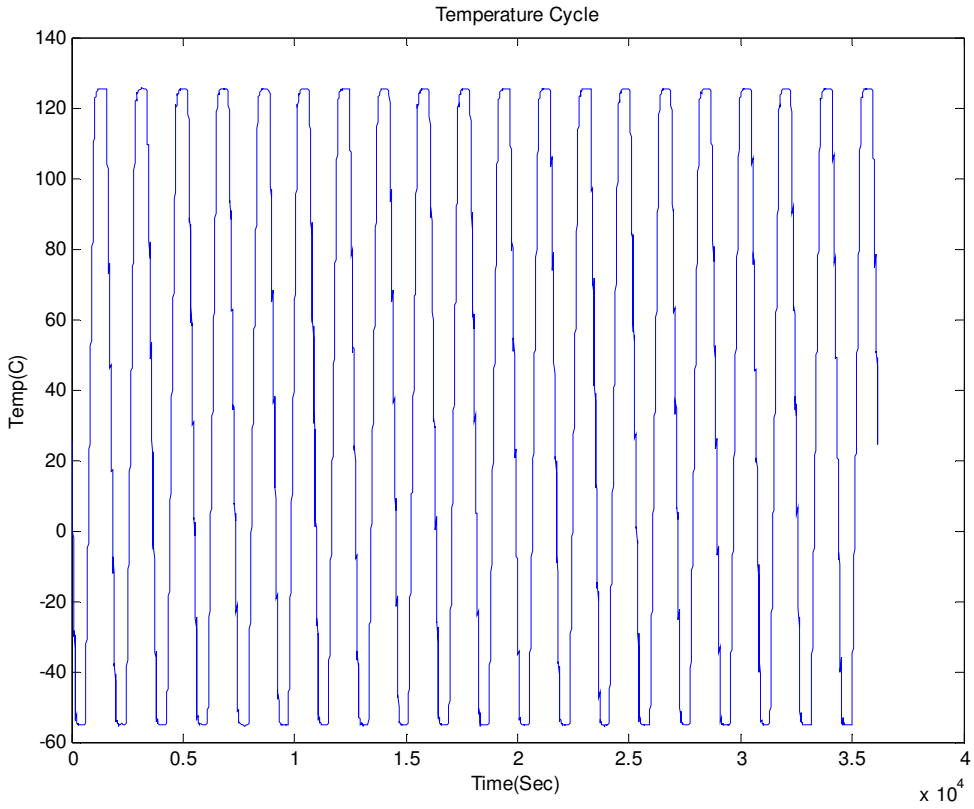
Lot no.	DUT	Result
Lot 1	1	Pass
	2	Pass
	3	Pass
	4	Pass
	5	Pass

	6	Pass
	7	Pass
	8	Pass
Lot 2	1	Pass
	2	Pass
	3	Pass
	4	Pass
	5	Pass
	6	Pass
	7	Pass
	8	Pass
Lot 3	1	Pass
	2	Pass
	3	Pass
	4	Pass
	5	Pass
	6	Pass
	7	Pass
	8	Pass

Thermal Cycle Air to Air

- -55 C to 125 C (dry)
- 2 Cycles Per Hour (CPH)
- Soak 5 to 10 Mins. at Tmin and Tmax
- 20 Cycles Total

Thermocouple Profile



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Created By	Pletronics Engineering