

## DETAILED SPECIFICATION FOR A SURFACE MOUNT 455 KHZ CERAMIC FILTER

### 1.0 PURPOSE

This specification show cover the characteristics of a surface mount 455 KHz ceramic filter, which mainly used for FM broadcast receiver.

### 2.0 MODEL NAME

- 2.1 Part No. : LTUPC455BA  
 2.2 Specification No. : 2.832.905  
 2.3 Revision No. : 1  
 2.4 Date : October 22, 2009

### 3.0 ABSOLUTE MAXIMUM RATINGS

"Absolute Maximum Ratings" are those values beyond which the life of the device cannot be guaranteed. They are not meant to imply that the device can or should be operated at these limited.

No.	Parameter	Rating	Unit
3.1	Withstanding Voltage	50	VDC
3.2	Ambient Operating Temperature Range	-20 ~ +80	°C
3.3	Lead Temperature for Soldering 1/16" from Body for 10sec	260	°C
3.4	Storage Temperature Range	-40 ~ +85	°C
3.5	Power Dissipation (Ta = 25°C)	100	mW
3.6	Isolation Resistance	100	MΩ

### 4.0 ELECTRICAL CHARACTERISTICS Ta = 25°C

No.	Parameter	Minimum	Typical	Maximum	Unit
4.1	Center Frequency Fo	NS	455	NS	KHz
4.2	Initial Tolerance	-	-	±1.5	KHz
4.3	6dB bandwidth	±15.0	-	-	KHz
4.4	40dB Bandwidth	-	-	±30.0	KHz
4.5	Insertion Loss	-	-	4.0	dB
4.6	Ripple in Pass band	-	-	2.0	dB
4.7	Stop Band Attenuation (Fo±100KHz)	25	-	-	dB
4.8	Temperature Characteristics over -20°C ~ +70°C	-	-	±50	ppm/°C
4.9	I/O Impedance	-	1.0	-	KΩ

NS = Not Specified

### 5.0 TEST CIRCUIT

- 5.1 Measurement Condition:  
 The reference temperature shall be 25°C ± 2°C. The measurement shall be performed at the temperature range of 5°C to 35°C unless otherwise the result is doubtful.
- 5.2 Test Circuit and Equipment:  
 Oscillating frequency shall be measured by the standard test circuit as shown in Figure 2.  
 Resonant impedance shall be measured by HP87510A Network Analyzer.

## 6.0 PHYSICAL CHARACTERISTICS

No.	Item	Condition of Test	Requirements
6.1	Random Drop	The Filter shall be measured after 3 times random drops from the height of 30cm on concrete floor.	No visible damage and the measured values shall meet Table 1.
6.2	Vibration	The Filter shall be measured after being applied vibration of amplitude of 1.5mm with 10 to 55Hz bands of vibration frequency to each of 3 perpendicular directions for 1 hour.	The measured values shall meet Table 1.
6.3	Resistance to Soldering Heat	Lead terminals are immersed up to 1.5mm from the Filter's body in solder bath of $350^{\circ}\text{C} \pm 10^{\circ}\text{C}$ for $3 \pm 0.5$ seconds or $260^{\circ}\text{C} \pm 5^{\circ}\text{C}$ for $10 \pm 1$ seconds, and then the Filter shall be measured after being placed in natural condition for 1 hour.	The measured values shall meet Table 1.
6.4	Solderability	Lead terminals are immersed in resin for 5 seconds and then immersed in soldering bath of $235^{\circ}\text{C} \pm 5^{\circ}\text{C}$ for $2 \pm 0.5$ seconds.	95% min. lead terminals shall be wet with solder.
6.6	Washability	Ultrasonic wash not available	

## 7.0 ENVIRONMENTAL CHARACTERISTICS

No.	Item	Condition of Test	Requirements
7.1	High Temperature	After being placed in a chamber with $+85^{\circ}\text{C} \pm 2^{\circ}\text{C}$ for $96 \pm 4$ hours and then being placed in natural condition for 1 hour. The Filter shall be measured.	The measured values shall meet Table 1.
7.2	Low Temperature	After being placed in a chamber with $-20^{\circ}\text{C} \pm 2^{\circ}\text{C}$ for $96 \pm 4$ hours and then being placed in natural condition for 1 hour. The Filter shall be measured.	The measured values shall meet Table 1.
7.3	Humidity	After being placed in a chamber with 90 to 95% R.H. at $+40^{\circ}\text{C} \pm 2^{\circ}\text{C}$ for $96 \pm 4$ hours and then being placed in natural condition for 1 hour. The Filter shall be measured.	The measured values shall meet Table 1.
7.4	Heat Shock	After being kept at room temperature, the Filter shall be placed at temperature of $-20^{\circ}\text{C}$ for 30 minutes, then the Filter shall be immediately placed at temperature of $80^{\circ}\text{C}$ , after 30 minutes at temperature of $80^{\circ}\text{C}$ , the Filter shall be returned to $-20^{\circ}\text{C}$ again. After 5 times above cycles, the Filter shall be returned to room temperature, after 1 hour in natural condition, the Filter shall be measured.	The measured values shall meet Table 1.
7.5	Temperature Characteristic	From temperature range of $-20^{\circ}\text{C}$ to $+85^{\circ}\text{C}$	FTC < 50 ppm/ $^{\circ}\text{C}$

TABLE 1  
MEASURING REQUIREMENTS

Measurements	Requirements	Unit
Center Frequency	$455 \pm 2.0$ max	KHz
6dB Bandwidth	$\pm 15.0$ min	KHz
Insertion Loss	5.0 max	dB
Ripple	2.5 max	dB

#### 8.0 OUTLINE DIMENSIONS

- 8.1 Appearance: No visible damage and dirt.
- 8.2 Dimensions: See Figure 1
- 8.3 Packing and reeling dimensions: See Figure 3 and Figure 4.
- 8.4 Construction: Leads are soldered on electrode and body is molded by resin.

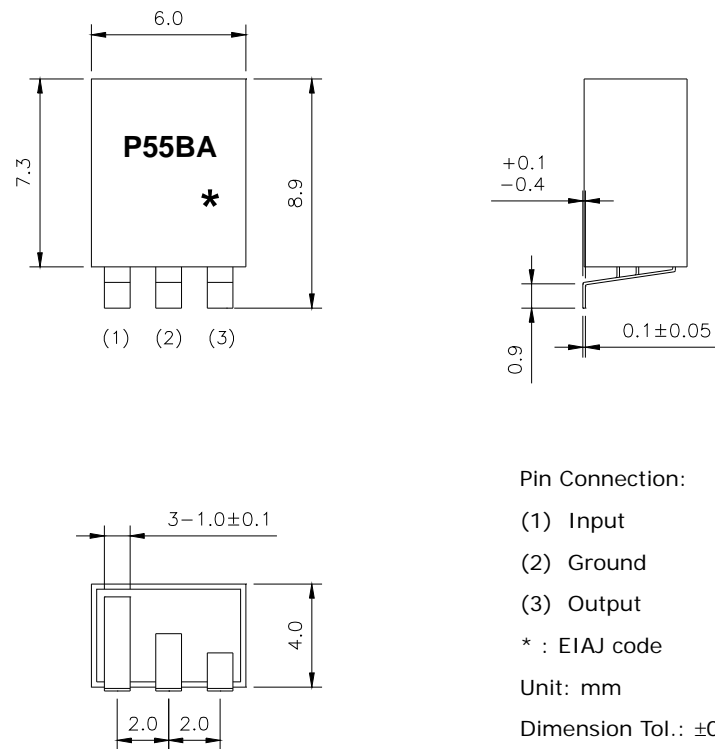
#### 9.0 REVIEW OF SPECIFICATIONS

When something gets doubtful with this specification, we shall jointly work to get an agreement.

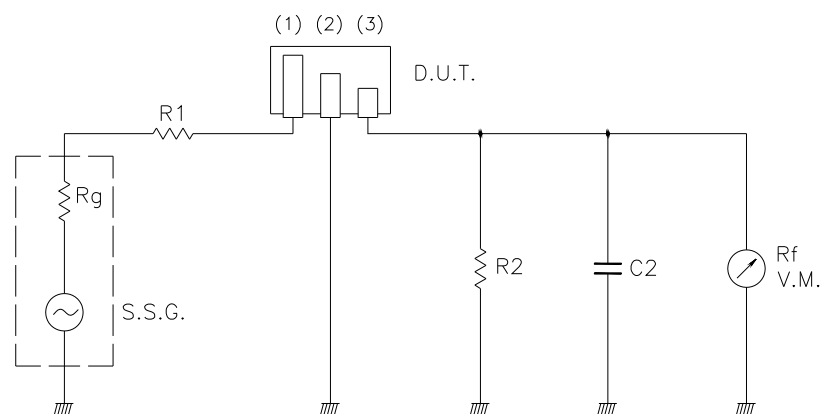
#### APPENDIX: EIAJ CODE

Year\Month	1	2	3	4	5	6	7	8	9	10	11	12
2009	A	B	C	D	E	F	G	H	J	K	L	M
2010	N	P	Q	R	S	T	U	V	W	X	Y	Z

**FIGURE 1**  
**OUTLINE DIMENSIONS**

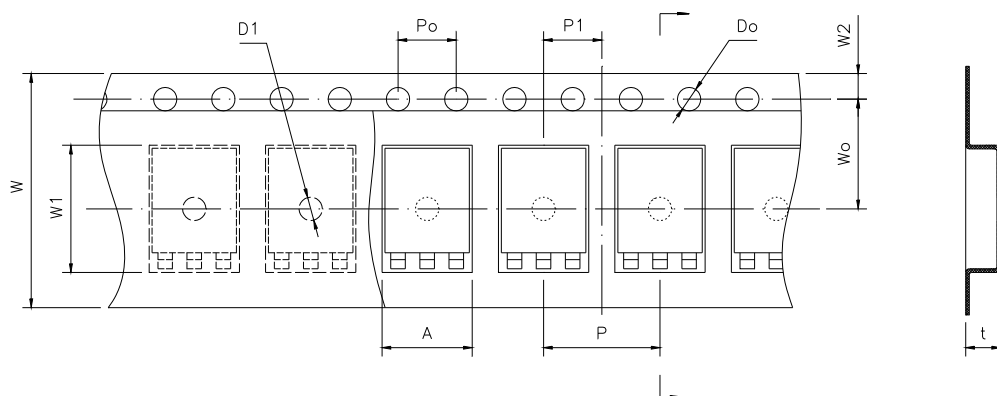


**FIGURE 2**  
**TEST CIRCUIT**



$$R_g + R_1 = R_2 = 1.0k\Omega$$

**FIGURE 3**  
**TAPING DIMENSIONS**



**DIMENSIONS**

Item	Code	Dimension	Tolerance	Remark
Pitch of components	P	12.0	$\pm 0.1$	
Pitch of sprocket hole (1)	Po	4.0	$\pm 0.1$	
Length from hole center to component center	P1	6.0	$\pm 0.1$	
Width of carrier tape	W	16.0	$\pm 0.1$	
Width of adhesive tape	Wo	7.5	$\pm 0.2$	
Height of component cavity	W1	10.7	$\pm 0.2$	
Width of component cavity	A	6.8	$\pm 0.2$	
Gap of hold down tape and carrier tape	W2	1.75	$\pm 0.1$	
Diameter of sprocket hole	Do	$\varnothing 1.5$	$+ 0.1$	
Diameter of component hole	D1	$\varnothing 1.5$	$+ 0.1$	
Total tape thickness	t	4.7	$\pm 0.2$	

**FIGURE 4**  
**REELING DIMENSIONS**

