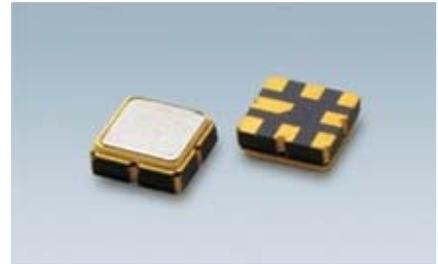
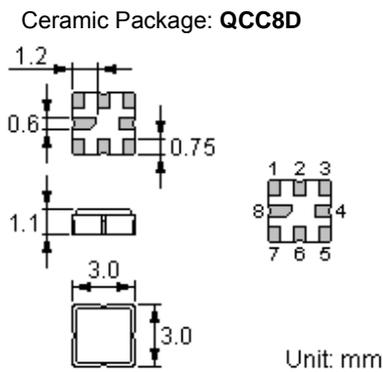


**Features**

- Low-loss RF filter for digital television
- Ceramic Package for **Surface Mounted Technology (SMT)**
- Lead-free Production and **RoHS Compliance**



**Package Dimensions**



**Pin Configuration**

1, 2	Input
5, 6	Output
3, 7	To Be Grounded
4, 8	Case Ground

**Marking**



Top View, Laser Marking

- "ND": Manufacturer's mark
- "F": SAW filter
- "9280": Part number
- ".": Terminal 1
- "\*": Lot number (The code shown below varies in a 4-year cycle)

Code	1	2	3	4	5	6	7	8	9	10	11	12
2011	a	b	c	d	e	f	g	h	i	j	k	m
2012	n	p	q	r	s	t	u	v	w	x	y	z
2013	A	B	C	D	E	F	G	H	J	K	L	M
2014	N	P	Q	R	S	T	U	V	W	X	Y	Z

**Maximum Ratings**

Rating	Value	Unit
Source Power	$P$	0 dBm
DC Voltage	$V_{DC}$	6 V
Operating Temperature Range	$T_A$	-40 ~ +85 °C
Storage Temperature Range	$T_{stg}$	-40 ~ +85 °C

**Electrical Characteristics**

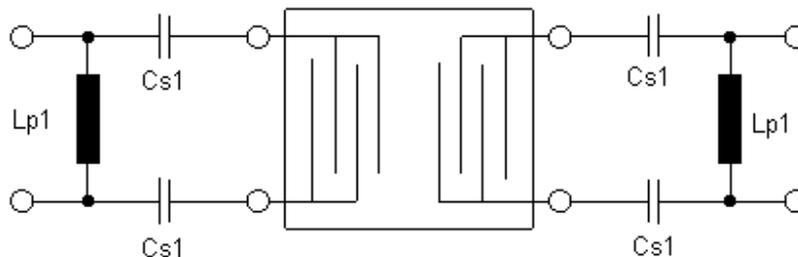
Operating temperature range:  $T = -40\text{ }^{\circ}\text{C} \dots +85\text{ }^{\circ}\text{C}$   
 Terminating source impedance (difference):  $Z_S = 150\ \Omega$  and matching network  
 Terminating load impedance (difference):  $Z_L = 150\ \Omega$  and matching network

Characteristic		Min.	Typ.	Max.	Unit
<b>Nominal frequency</b>	$f_c$	—	1790.48	—	MHz
<b>Maximum insertion attenuation</b> $\alpha_{max}$ 1770.48 ... 1810.48MHz	$IL$	—	4.0	5.0	dB
<b>Amplitude ripple (p-p)</b> 1770.48 ... 1810.48MHz	$\Delta\alpha$	—	1.5	2.0	dB
<b>Pass bandwidth at -1.5dB</b>	$\Delta\alpha$	40	55	-	MHz
<b>Phase error</b> In any 30MHz band 1770.48 ... 1810.48MHz			1.5	3.5	
<b>I/O VSWR</b> 1770.48 ... 1810.48MHz		—	2.1	2.5	
<b>Group delay ripple</b> 1770.48 ... 1810.48MHz			10.0	40.0	ns
<b>Relative attenuation</b> (relative to $\alpha_{max}$ )	$\alpha$				
50.00 ... 1708.42MHz		46.0	51.0		dB
1872.54 ... 1900 MHz		40.0	45.0		dB
1900.00~2000MHz		45.0	50.0		dB
2000~6000 MHz		25.0	--		dB

**RoHS Compliant**

**Electrostatic Sensitive Device**

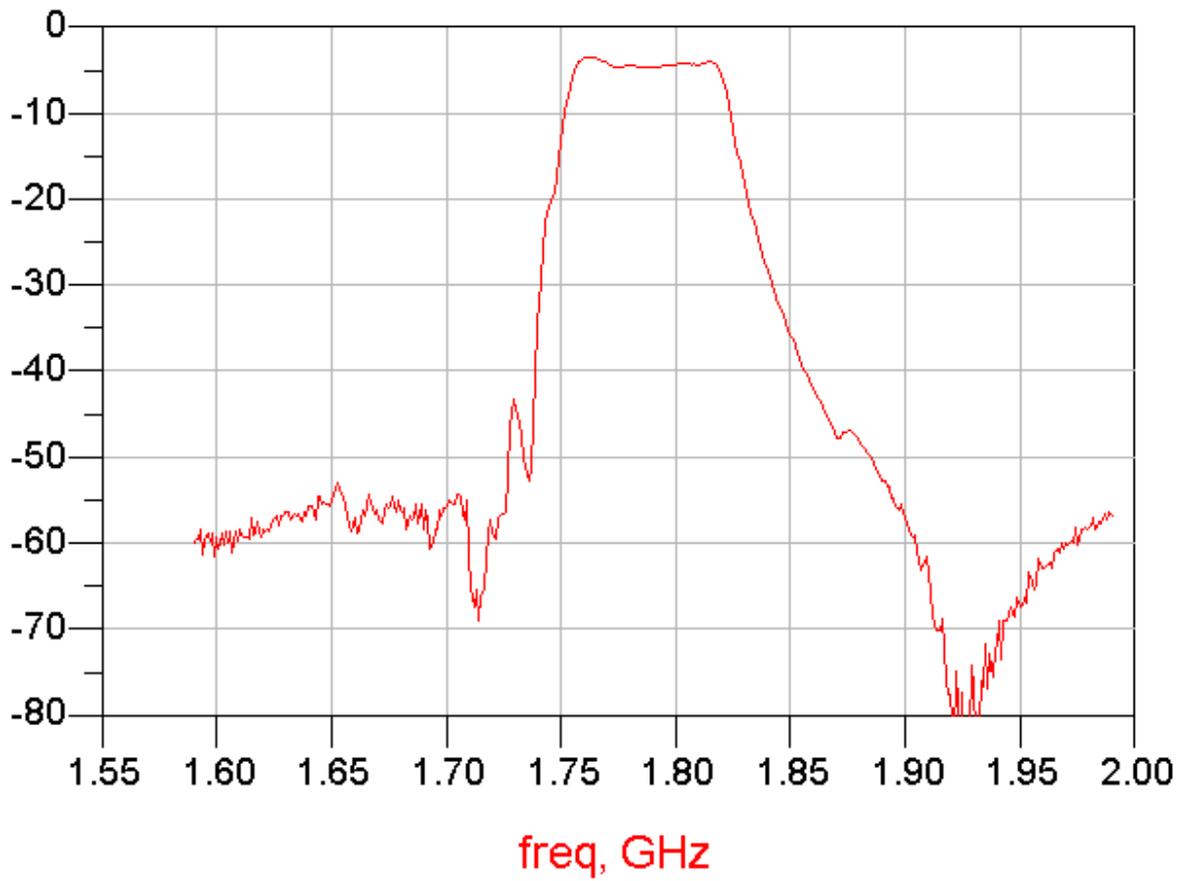
**Matching Network** (Input and output balanced)



**CS1=5.6pF LP1=22nH**

(Notes: Component values may change depending on board layout.)

Typical Frequency Response



**Stability Characteristics**

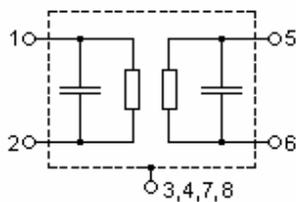
	Test item	Condition of test
1	Mechanical shock	(a) Drops: 3 times on concrete floor (b) Height: 1.0 m
2	Vibration resistance	(a) Frequency of vibration: 10~55Hz (c) Directions: X,Y and Z (b) Amplitude: 1.5 mm (d) Duration: 2 hours
3	Moisture resistance	(a) Condition: 40°C, 90~95% R.H. (c) Wait 4 hours before measurement (b) Duration: 96 hours
4	Climatic sequence	(a) +70°C for 16 hours (c) -25°C for 2 hours (e) Wait 4 hours before measurement (b) +55°C for 24 hours, 90~95% R.H. (d) +40°C for 24 hours, 90~95% R.H.
5	High temperature exposure	(a) Temperature: 70°C (c) Wait 4 hours before measurement (b) Duration: 250 hours
6	Thermal impact	(a) +70°C for 30 minutes ⇒ -25°C for 30 minutes repeated 3 times (b) Wait 4 hours before measurement

**Requirements:** The SAW filter shall remain within the electrical specifications after tests.

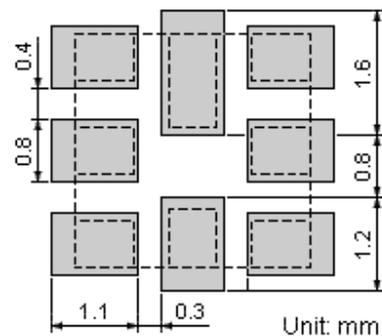
**Remarks**

- SAW devices should not be used in any type of fluid such as water, oil, organic solvent, etc.
- Be certain not to apply voltage exceeding the rated voltage of components.
- Do not operate outside the recommended operating temperature range of components.
- Sudden change of temperature shall be avoided, deterioration of the characteristics can occur.
- Be careful of soldering temperature and duration of components when soldering.
- Do not place soldering iron on the body of components.
- Be careful not to subject the terminals or leads of components to excessive force.
- SAW devices are electrostatic sensitive. Please avoid static voltage during operation and storage.
- Ultrasonic cleaning shall be avoided. Ultrasonic vibration may cause destruction of components.

**Equivalent LC Model**

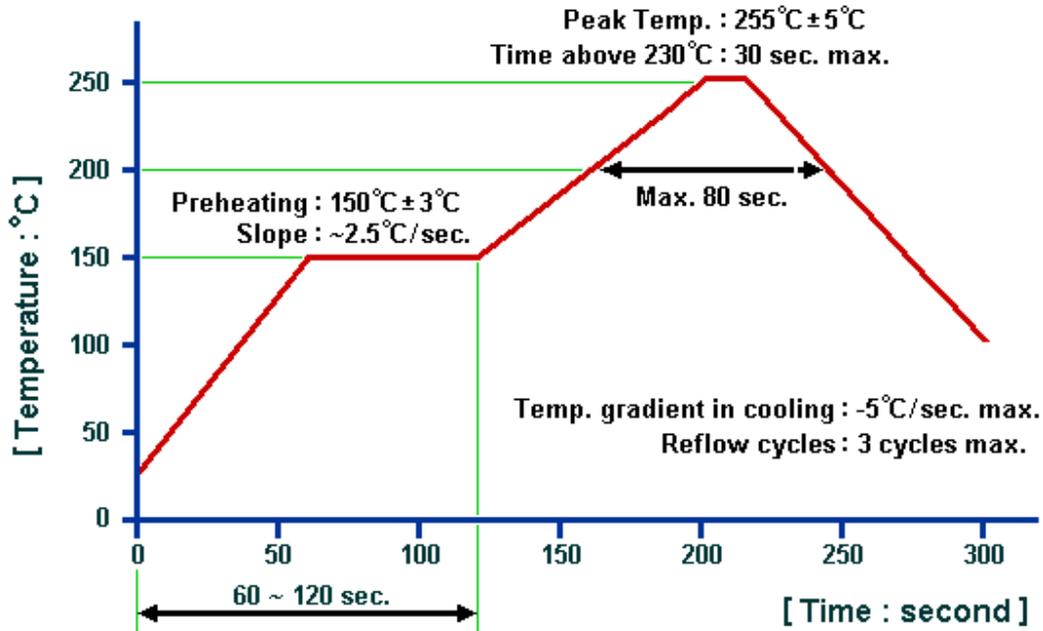


**Recommended Land Pattern**





**Recommended Soldering Profile**



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1. The specifications of this device are subject to change or obsolescence without notice.
2. Typically, equipment utilizing this device requires emissions testing and government approval, which is the responsibility of the equipment manufacturer.
3. Our liability is only assumed for the Surface Acoustic Wave (SAW) component(s) per se, not for applications, processes and circuits implemented within components or assemblies.
4. For questions on technology, prices and delivery, please contact our sales offices or e-mail [winnsky@winnsky.com](mailto:winnsky@winnsky.com)