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## Messrs. Digi-Key Corporation

# APPROVAL SHEET

(KYOCER A CORPOR ATION SAW FILTER SPECIFIC ATION)

Kindly send us back a copy of this specification sheet with your signature. The specification shall be regarded as "APPROVED" unless we receive your disagreement or counterproposal before your placement of initial order for the part number specified.

Part No.:SF16-0908M4UU01

Jan.,17,2011

## 0.History

No	Date	Notes	Approved	Approved	Approved	Prepared
00	Jan.08 ,2011	First Edition	Juliate	k injesti	A Kolimete	H. Graw
					-	

Approved

Approved

QA

Engineering

Approved

Prepared

Production

Engineering

### 1.Scope

This specification shall cover the characteristics of the RF SAW filter.

- 2. Customer's Part No.
- 3.KYOCERA's Part No.

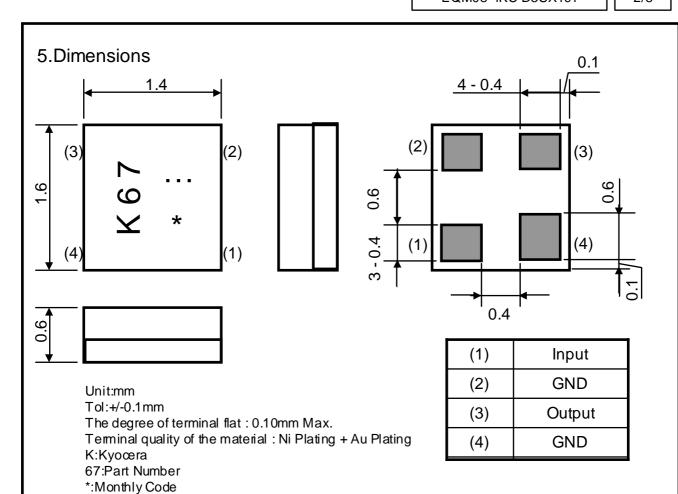
SF16-0908M4UU01

#### 4. Electrical Characteristics

Terminating Source Impedance : 50 ohms , Single-ended Terminating Load Impedance : 50 ohms , Single-ended

Table.1

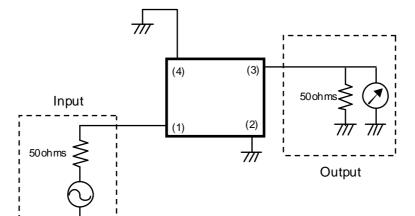
kom o		Francisco Denne			l leit	Spec.			
	lt em s		Frequency Range			Unit	m in.	tvp.	max.
4-1	-1 Norminal Frequency			MHz		908.42	-		
4-2	Maximum Insertion Loss	898.92	to	917.92	MHz	dB		2.3	4.0
4-3	Amplitude Ripple(P-P)	898.92	to	917.92	MHz	dB	-	0.6	2.0
	Input VSWR	898.92	to	917.92	MHz		-	2.2	2.5
4-4	Output VSWR	898.92	to	917.92	MHz		-	2.2	2.5
4-5	Absolute Attenuation	DC	to	827.92	MHz	dB	35	38	-
		853.92	to	872.92	MHz	dB	20	33	-
		943.92	to	962.92	MHz	dB	20	30	-
			to	1200	MHz	dB	35	40	-
		1200	to	2000	MHz	dB	20	29	-
4-6	4-6 Maximum hput Power					dBm	+ 12		
4-7	4-7 Operating Temperature				deg.C	-30 to +85			
4-8	4-8 Storage Temperature				deg.C	-40 to +85			



: Weekly Code(: 1st-10th,: 11th-20th, .21th-31th)

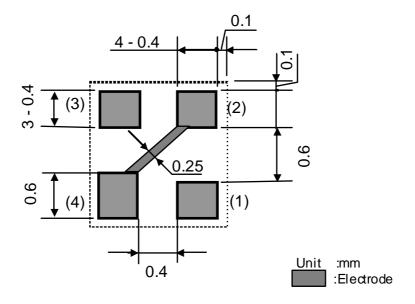
Table 2 Monthly Code Production							
Year	Month	Code	Year	Month	Code		
2011	1	а	2009	1	Α		
2015	2	b	2013	2	В		
	3	С		3	С		
	4	d		4	D		
	5	е		5	Ε		
	6	f		6	F		
	7	g		7	G		
	8	h		8	Н		
	9	j		9	J		
	10	k		10	K		
	11	I		11	L		
	12	m		12	M		
2012	1	n	2010	1	N		
2016	2	р	2014	2	Р		
	3	q		3	Q		
	4	r		4	R		
	5	s		5	S		
	6	t		6	Т		
	7	u		7	U		
	8	V		8	V		
	9	W		9	W		
	10	х		10	Х		
	11	у		11	Υ		
	12	Z		12	Z		

### 6.Measurement Circuit

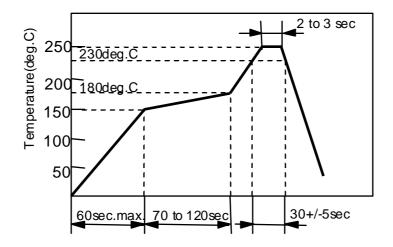


- (1) : Input (3) : Output (2),(4) : Ground

### 7.Recommendable Land Pattern



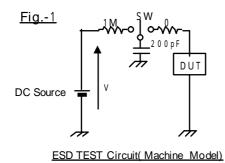
### 8. Recommendable Reflow Soldering Profile



IR REFLOW SOLDERING
Temperature measurement point is surface of glass epoxy circuit board of 0.8mm thickness.

### 9. Environmental Characteristics

bene					
Item	Condition				
Humidity	Subject the filter to 60+/-2 deg.C and 90%RH to 95%RH				
	for 100 hours. Then, release the filter into the room				
	conditions for 2 hours minimum to the measurement.				
	It shall fulfill the specifications in Table 1.				
High Temperature	Subject the filter to 85+/-2 deg.C for 100 Hours.				
Storage	Then, release the filter into the room conditions				
	for 2 hours minimum to the measurement.				
	It shall fulfill the specifications in Table 1.				
Low Temperature	Subject the filter to -40+/-2 deg.C for 100Hours.				
Storage	Then, release the filter into the room conditions				
	for 2 hours minimum to the measurement.				
	It shall fulfill the specifications in Table 1.				
Resistance to	Expose filter to increasing temperature with				
Reflow Solder Heat	a minimum total exposure above 230 deg.C of 30+/-5				
	seconds and must include 2-3 seconds at peak				
	temperature of 250 deg.C, twice.				
	Then, release the filter into the room conditions				
	for 2 hours minimum to the measurement.				
	It shall fulfill the specifications in Table 1.				
Temperature Cycle	10 Cycles (1 cycles:-40 deg.C for 30minutes then				
	25 deg.C for 15minutes then 85 deg.C for 30minutes.)				
	An examination is done under the evaluation circuit board				
	mounting condition.				
	Then, release the filter into the room conditions				
	for 2 hours minimum to the measurement.				
	It shall fulfill the specifications in Table 1.				
Vibration	Subject the filter to vibration for 2hour each				
	In the X,Y and Z axes with the amplitude of 1.5mm,				
	10 to 55 Hz/min.				
	It shall fulfill the specifications in Table 1.				
Mechanical Shock1	Subject the filter to 3 shocks in each direction				
	of six mutually perpendicular planes (a total of				
	18 shocks). Each shock shall be a sine wave shaped				
	with a magnitude of 100 G and a duration of 6 mseconds.				
	It shall fulfill the specifications in Table 1.				
Mechanical Shock2	Drop the filter randomly onto a concrete floor				
	from the Height of 1m, 3 times.				
	It shall fulfill the specifications in Table 1.				
ESD	A direct current voltage is increased to DEVICE mounted on the				
	evaluation circuit board. The failure rate which occurred by the direct				
	current voltage is investigated. A direct current voltage begins from 39V.				
	As for the voltage, it increses with step of E12 series. A failure voltage				
	is prescribed in the direct current voltage that an accumulate trouble rate				
	is 0.1%.It is judged with the trouble when increase in the insertion loss				
	occurs beyond 0.3dB before and after the examination. A failure voltage				
	is more than 50V. (Fig1)				



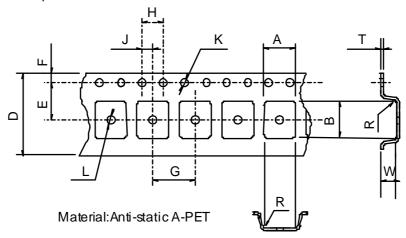
### 10. Taping Specification

10-1.Tape

10-1-1. Tape Material

Polycarbonate(EC-AP), or PS materials (conductivity type).

10-1-2. Tape Dimensions



Part	А	В	D	Е	F
Dimension	1.85+/-0.1	1.90+/-0.1	8.0+/-0.2	3.5+/-0.05	1.75+/-0.1
Part	G	Н	J	K	L
Dimension	4.0+/-0.1	4.0+/-0.1	2.0+/-0.05	1.5+/-0.1	1.1+/-0.1
Part	R	W	T		
Dimension	0.3 MAX	0.95+/-0.2	0.25+/-0.05		Unit[mm]

\* W Dimension is depth of pockets.

10-2. Taping

10-2-1. Taping Quantity

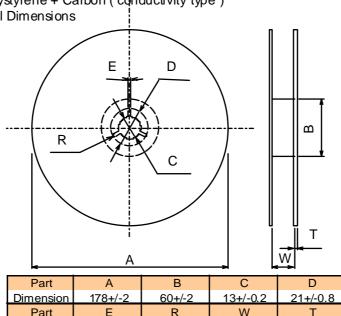
One reel of tape shall pack 3,000 filters maximum.

No filter shall be missing and contained continuously in pocket.

10-2-2. Reel Material

Polystyrene + Carbon (conductivity type)

10-2-3. Reel Dimensions

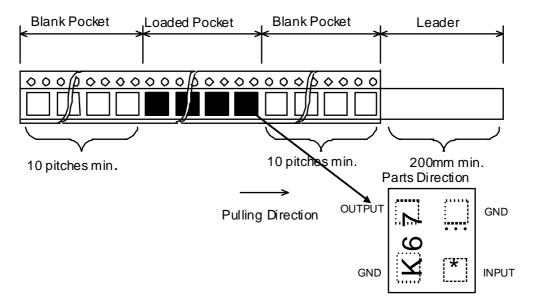


Part	Α	В	С	D
Dimension	178+/-2	60+/-2	13+/-0.2	21+/-0.8
Part	Е	R	W	Т
Dimension	2+/-0.5	R 1	9.5+/-1	2.0+/-0.2

Unit[mm]

#### 10-2-4 Leader and blank pocket

Package shall consist of Leader and Blank Pocket as follows.



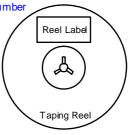
#### 10-2-5 Reel Label

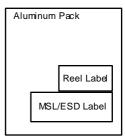
The following contents are indicated in a reel.

#### Reel Label (EIAJ-C3 Label)



- (a) Customer Parts Number
- (b) Quantity(c) Parts Name
- (d) Lot number
- (e) Shipping date





#### 10-2-6 Packing case Label

During transportation, after packing into an aluminum bag for every reel so that a damage and moisture absorption may not be given to a product, it puts into a packing box. The following contents are indicated in a packing case.



- (a) Customer name
- (b) Parts name
- (c) Customer Parts number
- (d) Lot number
- (e) Quantity

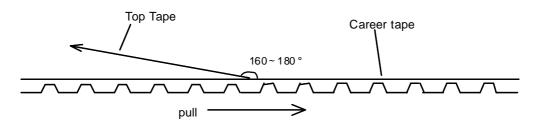
(f)

(f) Shipping date

#### 10-2-7 Taping flaking off strength Test

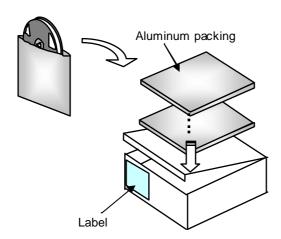
Test Condition: 120mm/min 160-180deg

Range of strength: 0.098 - 0.98 N



#### 10-2-8 Packing form

The reel is packed in aluminum, and it is packed to the box.





### 11. Precaution in handling

Please handle with below condition.

- 1. Calculated shelf life in sealed bag: 6 months at 40 and 90% relative humidity (RH).
- 2. After bag is opened, devices should be mounted within 168 hours of factory conditions 30 /60% RH. Exposed over 168 hours parts are recommended to make pre treatment of 60 1 hour baking just before

use. (In case left further longer since unpacked, please check solderability before use.)

- 3. Expiration date: 6 months form sealing date, which is imprinted on the adjacent bar code label.
- 4. This components are static sensitivity parts. Please handle with care.
- 5. On circuit design, it is strongly recommended to put DC cut capacitor for this SAW filter.
- 6. This component can not be used in resin molding.