

# SPECIFICATION

- Supplier : Samsung electro-mechanics
- Product : Thick - Film chip RESISTOR

- Samsung P/N: **RC2012F\*\*\*CS**
- Description : **2012, ±1%, (1Ω~1MΩ), 1/8W**

## A. Samsung Part Number

RC 2012
F
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CS

①   ②
③
④
⑤

① Code designation	Samsung Thick - Film Chip Resistor		
② Dimension	2012 (mm code)	L : 2.0 ± 0.2 mm	W : 1.25 ± 0.15 mm T : 0.5 ± 0.1 mm
③ Resistancs tolerance	±1 %		
④ Nominal resistance value	※ 3digits · Left 2 digits : Resistance value, Right 1 digits : Exponential number of 10. ex) 101 : $10 \times 10^1 = 10 \times 10 = 100\Omega$ ※ 4digits · Left 3 digits : Resistance value, Right 1 digits : Exponential number of 10. ex) 4222 : $422 \times 10^2 = 422 \times 100 = 42.2k\Omega$ Read alphabet "R" as decimal point      "000" : Jumper(0Ω) ex) 3R7 : 3.7 = 3.7Ω / 88R7 : 88.7 = 88.7Ω		
⑤ Packing code	7" Reel packaging		

## B. Samsung Reliability Test and Judgement condition

	Judgement		Test condition	
	Resistor	Jumper	Resistor	Jumper
<b>Direct Current Resistance</b>	Within the regulated resistance tolerance.	50mΩ Max	Voltage apply Within 5 sec	
<b>Short-time Overload</b>	Less than ±(1%+0.1Ω)of the initial value No evidence of mechanical damage	50mΩ Max	Apply 2.5 times rated voltage for 5sec	Max Surge Current
<b>Intermittent Overload</b>	Less than ±(3%+0.1Ω)of the initial value No evidence of mechanical damage	50mΩ Max	2.5 times of rated voltage. 1 sec On, 25 sec Off / 10,000cycles	Max Surge Current
<b>Dielectric Withstanding Voltage</b>	No evidence of mechanical damage		Apply Voltage for 1minute 0603:50v	
<b>Insulation Resistance</b>	Over 1,000MΩ		1005,1608:100v Other: 500v	
<b>Temperature Characteristic</b>	■ J-Grade $1\Omega \leq R < 10\Omega$ : +300/-200ppm/°C $10\Omega \leq R \leq 1M\Omega$ : ±100ppm/°C (0603±250ppm) $1M\Omega < R \leq 10M\Omega$ : ±300ppm/°C ■ F-Grade $10\Omega \leq R \leq 1M\Omega$ : ±100ppm/°C (0603±250ppm)		Test Temperature(°C) 20°C → -55°C / 20°C → 125°C $T.C.R(ppm/°C) = \frac{R - R_0}{R_0} \times \frac{1}{T - T_0} \times 10^6$	
<b>Solderability</b>	Coverage: 95% ≤ each termination.		Solder Temp : 245 °C Dipping time : 3 sec	

T<sub>0</sub> : 20 ± 2°C, R<sub>0</sub> : Resistance at T<sub>0</sub> (Ω)

T : Test temperature, R : Resistance at T (Ω)

	<b>Judgement</b>		<b>Test condition</b>
<b>Bending test</b>	Less than $\pm(0.5\%+0.05\Omega)$ of the initial value No evidence of mechanical damage	50m $\Omega$ Max	3mm of bending shall be applied for 5sec.
<b>Adhesive strength of termination</b>	No mechanical damage or sign of disconnection		Test strength : 5N Test time: Applying pressure for 10seconds
<b>Resistance to soldering heat</b>	Less than $\pm(1\%+0.05\Omega)$ of the initial value No evidence of mechanical damage	50m $\Omega$ Max	260 $\pm$ 5 $^{\circ}$ C , 10 sec
<b>Anti-Vibration test</b>	Less than $\pm(1\%+0.05\Omega)$ of the initial value No evidence of mechanical damage	50m $\Omega$ Max	Test amplitude : 1.5mm Frequency 10Hz-55Hz-10Hz / 2hr in x,y,z direction.
<b>Temperature cycle</b>	Less than $\pm(1\%+0.1\Omega)$ of the initial value No evidence of mechanical damage	50m $\Omega$ Max	100cycles, -55 $^{\circ}$ C/30min $\leftrightarrow$ 125 $^{\circ}$ C/30min sweep time:5min
<b>Load life</b>	Less than $\pm(3\%+0.1\Omega)$ of the initial value No evidence of mechanical damage	50m $\Omega$ Max	Test voltage: rated voltage / 70 $\pm$ 2 $^{\circ}$ C 1,000hours(90min:On , 30min:Off)
<b>Low Temp. Exposure</b>	Less than $\pm(3\%+0.1\Omega)$ of the initial value No evidence of mechanical damage	50m $\Omega$ Max	Dwell in -55 $^{\circ}$ C chamber without loading for 1,000hours
<b>High Temp Exposure</b>	Less than $\pm(3\%+0.1\Omega)$ of the initial value No evidence of mechanical damage	50m $\Omega$ Max	Dwell in 125 $^{\circ}$ C or 155 $^{\circ}$ C chamber without loading for 1,000hours
<b>Moisture Resistance</b>	Less than $\pm(3\%+0.1\Omega)$ of the initial value No evidence of mechanical damage	50m $\Omega$ Max	Test voltage: rated voltage / 40 $\pm$ 2 $^{\circ}$ C 1,000hours(90min:On,30min:Off) / 90~95% RH

### C. Recommended Soldering method :

Reflow ( Reflow Peak Temperature : 260+0/-5 $^{\circ}$ C, 10sec. Max )

\* For the more detail Specification, Please refer to the samsung chip RESISTOR catalogue.