

# SAFETY DATA SHEET

No. R-180110-001

Date : Jan 10, 2018

## SECTION 1. ----- CHEMICAL IDENTIFICATION -----

Product name: MLCC (Multi-Layer Ceramic Capacitor)  
 Product code: **NPO, X7R, X5R, Y5V SERIES**  
 Manufacturer's name : Yageo Corporation Nantze Branch  
 Address : No.16, West 3rd St, N.E.P.Z., Kaohsiung 81170, Taiwan,R.O.C.  
 TEL: 886-7-9618999 FAX :886-7-9616898

## SECTION 2. ----- COMPOSITION/INFORMATION ON INGREDIENTS -----

### NPO(NME) SERIES

	Material	wt%	CAS No
Ceramic substrate	TiO <sub>2</sub>	88-93	13463-67-7
	Others	0.8-1.0	-
Inner electrode	Silver	2.0-7.5	7440-22-4
	Palladium	0.25-2.8	7440-05-3
Termination electrode	Silver	2.2-21	7440-22-4
Under plating	Nickel	0.2-3	7440-02-0
Surface plating	Tin	0.65-6	7440-31-5

### NPO SERIES

	Material	wt%	CAS No
Ceramic substrate	CaZrO <sub>3</sub>	64-90	12013-47-7
Inner electrode	Nickel	3.2-8.4	7440-02-0
Termination electrode	Copper	4.3-19.8	7440-50-8
Under plating	Nickel	0.4-2	7440-02-0
Surface plating	Tin	1.2-6.5	7440-31-5

### X7R / X5R SERIES

	Material	wt%	CAS No
Ceramic substrate	BaTiO <sub>3</sub>	45-94	12047-27-7
Inner electrode	Nickel	1.6-13.8	7440-02-0
Termination electrode	Copper	2.95-25.5	7440-50-8
Under plating	Nickel	0.075-5.5	7440-02-0
Surface plating	Tin	0.26-19	7440-31-5

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**Y5V SERIES**

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	<b>Material</b>	<b>wt%</b>	<b>CAS No</b>
<b>Ceramic substrate</b>	BaTiO <sub>3</sub>	45-85	12047-27-7
<b>Inner electrode</b>	Nickel	7.3-13.8	7440-02-0
<b>Under plating</b>	Copper	4.1-18.5	7440-50-8
<b>Termination plating</b>	Nickel	0.11-7.5	7440-02-0
<b>Surface plating</b>	Tin	0.4-18.5	7440-31-5

**SECTION 3. ----- HAZARDS IDENTIFICATION -----**

Hazardous product for human health if swallowed

**SECTION 4. ----- FIRST-AID MEASURES -----**

Main effect : Risk of stomachache

Eye contact : No irritation in human.

Skin contact : No irritation in human.

Ingestion : If swallowed, wash out mouth with water provided person is conscious.

First aid : Consult with a physician in all cases.and take to hospital.

**SECTION 5. ----- FIRE FIGHTING MEASURES -----**

Common extinguishing means : In case of fire in close proximity,all means of extinguishing are acceptable,e.g. foam,dry chemical, carbon dioxide,water.

Inappropriate extinguishing means : No restriction

Specific hazards : Non-combustible if temperature is lower than 1200 degree C.

Protective measure in case of intervention : The product does not require any apacial precaution

Extinguishing instruction : Keep person removing from an upwind of fire.

**SECTION 6. ----- ACCIDENTAL RELEASE MEASURES -----**

Sweep up, place in a bag and collect for waste disposal.

Prevent discharge into the environment(sewers,river,soil,- - -)

**SECTION 7. ----- HANDLING AND STORAGE -----**

Handling : Keep in a above environment , and original packing ,closed to be free of chlorine and bromide material contaminant .

Storage : Keep storage place temperature from 20 to 40 degree C,humidity from 45 to 75% RH .

**SECTION 8. ----- EXPOSURE CONTROLS/PERSONAL PROTECTION -----**

Engineering control : Premises ventilation

Authorized limit values : Not applicable

Respiratory protection : Not applicable

Hand protection : Not applicable

Eye protection : Not applicable

Skin protection : Not applicable  
Other precaution : Not applicable

**SECTION 9. ----- PHYSICAL AND CHEMICAL PROPERTIES -----**

Physical state : Solid  
Appearance : Gray brown / Silver metal  
Order : None  
PH value : Not applicable  
Decomposition temperature : Not applicable  
Flash point : Not applicable  
Boiling point : Not applicable  
Melting point : About 1200 degree C  
Flammable limits(LEL) : Not applicable  
Flammable limits(UEL) : Not applicable  
The energy storage capacity of watt-hours equal or less than 0.3Wh

**SECTION 10. ----- STABILITY AND REACTIVITY -----**

Stability : Stable on normal temperature and pressure  
Condition to avoid : High temperature and humidity  
Hazardous reaction with : Not applicable  
Hazardous decomposition Products : Not applicable

**SECTION 11. ----- TOXICOLOGICAL INFORMATION -----**

Acute effects : Not applicable  
Toxicity : Not traceable

**SECTION 12. ----- ECOLOGICAL INFORMATION -----**

Biological oxygen demand : Not applicable  
Chemical oxygen demand : Not applicable  
Biological /Chemical oxygen demand ratio : Not applicable  
Biochemical factor : Not applicable  
Ecotoxicity : Not applicable

**SECTION 13. ----- DISPOSAL CONSIDERATIONS -----**

Installed or dump in a incinerator equipped in accordance with all federal, state ,  
local and national environmental regulations.

**SECTION 14. ----- TRANSPORT INFORMATION -----**

No classification assigned.  
Not subject to Transport-regulation Dangerous Substances under IATA Dangerous  
Goods Regulations.

**SECTION 15. ----- REGULATORY INFORMATION -----**

Designation according to Sony SS-00259 ,EU WEEE/ROHS and customer 's related  
standard.  
No classification assigned.

**SECTION 16. ----- OTHER INFORMATION -----**

These data are based on our present knowledge. However, they shall not constitute a guarantee for any specific product feature and shall not establish a legally valid contractual relationship.

Person responsible for SDS :

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