

Dear Customers,

Material Data Sheet

Date: May 16, 2017  
 Company: Automotive & Industrial Systems Company, Panasonic Corporation  
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 Department: Device Solutions Business Division, Environment Management Section  
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Product ID No.	E2610001-0001		
Product Classification	Electronic/Electronic components(Passive components)		
Product Name	Chip resistor array	Substrate P/N	No
File No.	File Name	File Path/Reference	Not included
Weight (Total)	9.6614		

Part Name	Material Name	Chemical Name	CAS No.	Remark	Weight of each chemical material in a part (mg)	Weight of a part (mg)	Rate of each chemical material in a part (%)	Rate of each chemical material in a 1000 parts (mg)	Rate of each part in a 1000 parts (%)	
Substrate	Ceramics	Aluminum oxide /Aluminum Oxide/Al <sub>2</sub> O <sub>3</sub>	1344-28-1		0.346046	0.531	66.0	34.6046	5.207385	
		Quartz /SiO <sub>2</sub>	14808-60-7		0.179151					
		Magnesium oxide /MgO	1308-48-4		0.085511					
		Calcium oxide /CaO	1305-78-8		0.025593					
Top Terminal	Other special metals	Silver /Ag	7440-22-4		0.318733	0.331	96.3	3.18733	3.299243	
		Lead(II) oxide /Lead oxide (PbO), C.I. Pigment Yellow 46; Lead monoxide; Lead(2+) oxide	1319-36-8		0.004965					
		Other special metals	Silver /Ag	7440-22-4						0.003972
Bottom Terminal	Other special metals	Silver /Ag	7440-22-4		0.130305	0.198	97.0	1.30305	1.398338	
		Lead(II) oxide /Lead oxide (PbO), C.I. Pigment Yellow 46; Lead monoxide; Lead(2+) oxide	1319-36-8		0.000997					
		Other special metals	Silver /Ag	7440-22-4						0.003911
Resistive Element	Glass	Lead(II) oxide /Lead oxide (PbO), C.I. Pigment Yellow 46; Lead monoxide; Lead(2+) oxide	1319-36-8		0.000188	0.0276	38.202897	0.285695	0.199336	
		Bismuth(III) oxide /Bi <sub>2</sub> O <sub>3</sub>	13036-10-1		0.010544					
		Boron oxide /B <sub>2</sub> O <sub>3</sub>	1303-86-2		0.000114					
		Other antimony compounds			0.000511					
		Manganese dioxide /MnO <sub>2</sub>	1313-13-9		0.000527					
		Lead(II) oxide /Lead oxide (PbO), C.I. Pigment Yellow 46; Lead monoxide; Lead(2+) oxide	1317-36-8		0.012142					
		Other antimony compounds			0.000188					
		Other antimony compounds			0.000114					
		Other antimony compounds			0.000511					
		Other antimony compounds			0.000527					
First Protective Coating	Glass	Lead(II) oxide /Lead oxide (PbO), C.I. Pigment Yellow 46; Lead monoxide; Lead(2+) oxide	1317-36-8		0.018918	0.0344	54.994384	0.356079	0.195811	
		Silica /Silicon dioxide	7631-86-9		0.000807					
		Boron oxide /B <sub>2</sub> O <sub>3</sub>	1303-86-2		0.004183					
		Zinc oxide /ZnO	1314-13-2		0.001445					
		Chromium(III) oxide /Chromite green; Cr <sub>2</sub> O <sub>3</sub>	1308-38-0		0.000792					
Second Protective Coating	Glass	Lead(II) oxide /Lead oxide (PbO), C.I. Pigment Yellow 46; Lead monoxide; Lead(2+) oxide	1319-36-8		0.048372	0.094	46.3	0.972946	0.474707	
		Bismuth(III) oxide /Bismuth oxide; Bi <sub>2</sub> O <sub>3</sub>	13036-10-1		0.048372					
		Iron(III) oxide /Iron oxide; Fe <sub>2</sub> O <sub>3</sub>	1344-76-5		0.014044					
		Other antimony compounds			0.000511					
		Other antimony compounds			0.000527					
		Other antimony compounds			0.000511					
		Other antimony compounds			0.000527					
		Other antimony compounds			0.000511					
		Other antimony compounds			0.000527					
		Other antimony compounds			0.000511					
Marking 1	Other (Powder, etc)	Carbon black /C	1313-86-4		0.002914	0.0024	3.3	0.002914	0.002914	
		Ceramics	Silica /Silicon dioxide	7631-86-9						0.002914
		Other (Powder, etc)	Epichlorohydrin, o-cresol, formaldehyde polymer; Formaldehyde polymer with (chloromethyl)acetate and 2-methylphenol	2590-82-2						0.001464
		Other (Powder, etc)	Titanium monoxide /Titanium white 6; TiO <sub>2</sub>	1346-02-0						0.000504
Middle Terminal	Other (Powder, etc)	Nickel and Nickel alloys	7440-02-0		0.151	0.252	100	2.608116	2.608116	
		Other (Powder, etc)	Tin /Sn	7440-31-5						0.191
Outer Terminal	Other nonferrous metals	Nickel and Nickel alloys	7440-02-0		0.151	0.252	100	2.608116	2.608116	
		Other nonferrous metals	Tin /Sn	7440-31-5						0.191

EU RoHS exemption 7B(1)  
 Electrical and electronic components containing lead in a glass or ceramic other than dielectric ceramic in capacitor, e.g. piezoelectric devices, or in a glass or ceramic matrix compound