

## Material Data Sheet

Date: 2/18/2009

Company name: Panasonic Electronic Devices Co., Ltd

Address: 401 Sadamasa-cho, Fukui City, Fukui 910-8502, Japan

Department name: Circuit Component BU, Environmental Management Team

Responsible person: Hidemitsu Kura

Person in charge: Senior Coordinator Masato Hashimoto

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Product P/N	ERJ2RKF@@@X			
Product Classification	Electric/electronic component/Passive component			Product Weight(mg) 0.63141
Product Name	Chip Resistor	Substitute P/N	Included	
Pb	Pb free	Packaging Material	Not included	

Part Name	P/N Classification	Material Name	Chemical Name	CASNo.	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 product(wt%)	Rate of each part in a product(wt%)
substrate	Raw material	Alumina(Al2O3)	Aluminum oxide ; Alumina; Corundum; Al2O3	1344-28-1	0.44436	0.46	96.6	72.851707	70.374709
	Raw material	Silica(SiO2)	Silica; Silicon dioxide	7631-86-9	0.00966		2.1		1.52991
	Raw material	Others (Ceramic)	Magnesium oxide; MgO	1309-48-4	0.0046		1		0.728529
	Raw material		Calcium oxide; CaO	1305-78-8	0.00138		0.3		0.218559
top terminal	Raw material	Ag(silver) and Ag alloy	Silver; Ag	7440-22-4	0.00562	0.00616	91.233765	0.975753	0.89023
	Raw material	Pd(Palladium) and Pd alloy	Palladium; Pd	7440-05-3	0.000407		6.607143		0.064459
	Raw material	Lead glass	Lead(II) oxide; Lead monoxide; Lead oxide yellow; Litharge; PbO	1317-36-8	0.00008		1.298702		0.01267
	Raw material	Others (Glass)	Silica; Silicon dioxide	7631-86-9	0.000053		0.86039		0.008394
bottom terminal	Raw material	Ag(silver) and Ag alloy	Silver; Ag	7440-22-4	0.00778	0.00798	97.493733	1.263997	1.232322
	Raw material	Lead glass	Lead(II) oxide; Lead monoxide; Lead oxide yellow; Litharge; PbO	1317-36-8	0.00012		1.50376		0.019005
	Raw material	Others (Glass)	Silica; Silicon dioxide	7631-86-9	0.00008		1.002507		0.01267
Resistive element	Raw material	Others (Glass)	Ruthenium(IV) oxide; RuO2	12036-10-1	0.002521	0.00588	42.874149	0.931567	0.399582
	Raw material	Lead glass	Lead(II) oxide; Lead monoxide; Lead oxide yellow; Litharge; PbO	1317-36-8	0.001623		27.602041		0.257044
	Raw material	Others (Glass)	Silica; Silicon dioxide	7631-86-9	0.001176		20		0.18625
	Raw material		Boron oxide; B2O3	1303-86-2	0.000418		7.108844		0.066201
	Raw material		Manganese dioxide; MnO2	1313-13-9	0.000142		2.414966		0.02249
First protective coating	Raw material	Lead glass	Lead(II) oxide; Lead monoxide; Lead oxide yellow; Litharge; PbO	1317-36-8	0.003232	0.00588	54.965984	0.931567	0.512187
	Raw material	Others (Glass)	Silica; Silicon dioxide	7631-86-9	0.001506		25.612245		0.238514
	Raw material		Boron oxide; B2O3	1303-86-2	0.000759		12.908164		0.120208
	Raw material		Zinc oxide; ZnO	1314-13-2	0.000247		4.200681		0.039119
	Raw material		Chromium(III) oxide; Pigment green 17 (C.I.); Cr2O3	1308-38-9	0.000136		2.312926		0.021539
Second protective coating	Raw material	Epoxy resin (EP)	Epichlorohydrin, o-cresol, formaldehyde polymer; Formaldehyde, polymer with	29690-82-2	0.006423	0.00931	68.990332	1.474637	1.017406
	Raw material	Silica(SiO2)	Silica; Silicon dioxide	7631-86-9	0.002142		23.007519		0.339241
	Raw material	additives(pigment,dye(black))	Carbon black; C	1333-86-4	0.000745		8.002149		0.11799
side terminal	Raw material	Epoxy resin (EP)	Bisphenol A, epichlorohydrin polymer; Epoxy resin; Epon 820; Araldite GY 2	25068-38-6	0.02394	0.0532	45	8.425589	3.791515
	Raw material	Ag(silver) and Ag alloy	Silver; Ag	7440-22-4	0.02394		45		3.791515
	Raw material	additives(pigment,dye(black))	Carbon black; C	1333-86-4	0.00532		10		0.842559
middle terminal	Raw material	Ni(Nickel) and Ni alloy	Nickel; Ni	7440-02-0	0.043	0.043	100	6.810155	6.810155
outer terminal	Raw material	Sn(Tin)and Sn Alloy	Tin; Sn	7440-31-5	0.04	0.04	100	6.335028	6.335028