

# Material Data Sheet

Date : Jul/22/2010  
 Company : Panasonic Electronic Devices Co., Ltd.  
 Address : 401 Sadamasa-cho, Fukui City, Fukui Japan  
 Department : Circuit Components Business Unit, Environment Management Team  
 Approved by : Hidemitsu Kura  
 Prepared by : Masato Hashimoto  
 Telephone : +81-776-56-8028

Product P/N	ERJ3GEYJ@@V		
Product Classification	Electric/Electronic component(Passive component)		
Product Name	Chip Resistor	Substitute P/N	No
Pb	Pb free	Packaging Material	Not included
			Weight TOTAL(mg)
			2.16112

Part Name	Material Name	Chemical Name	CASNo.	pose of	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	Alumina(Al2O3)	Aluminum oxide ; Alumina; Corundum; Al2O3	1344-28-1		1.7388	1.8	96.6	83.289663	80.457796
	Silica(SiO2)	Silica; Silicon dioxide	7631-86-9		0.0378		2.1		1.749094
	Others (Ceramic)	Magnesium oxide; MgO	1309-48-4		0.018		1		0.832902
		Calcium oxide; CaO	1305-78-8		0.0054		0.3		0.249871
Top Terminal	Ag(silver) and Ag alloy	Silver; Ag	7440-22-4		0.012982	0.0134	96.880595	0.62019	0.600847
	Pd(Palladium) and Pd alloy	Palladium; Pd	7440-05-3		0.000175		1.305971		0.008098
	Lead glass	Lead(II) oxide; Lead monoxide; Lead oxide yellow; Litharge;	1317-36-8		0.000121		0.902985		0.005599
	Others (Glass)	Cupric oxide; CuO	1317-38-0		0.000081		0.604478		0.003748
		Silica; Silicon dioxide	7631-86-9		0.000041		0.305971		0.001898
Bottom Terminal	Ag(silver) and Ag alloy	Silver; Ag	7440-22-4		0.014565	0.01494	97.48996	0.691402	0.674049
	Lead glass	Lead(II) oxide; Lead monoxide; Lead oxide yellow; Litharge;	1317-36-8		0.000225		1.506024		0.010412
	Others (Glass)	Silica; Silicon dioxide	7631-86-9		0.00015		1.004016		0.006941
Resistive Element	Lead glass	Lead(II) oxide; Lead monoxide; Lead oxide yellow; Litharge;	1317-36-8		0.003643	0.00828	43.997584	0.383184	0.168617
	Others (Glass)	Ruthenium(IV) oxide; RuO2	12036-10-1		0.003163		38.200483		0.14636
		Boron oxide; B2O3	1303-86-2		0.001242		15		0.057471
		Other antimony compounds	-		0.000155		1.871981		0.007173
		Manganese dioxide; MnO2	1313-13-9		0.000077		0.929952		0.003563
First Protective Coating	Lead glass	Lead(II) oxide; Lead monoxide; Lead oxide yellow; Litharge;	1317-36-8		0.00816	0.01484	54.986521	0.686776	0.377675
	Others (Glass)	Silica; Silicon dioxide	7631-86-9		0.003799		25.599731		0.175789
		Boron oxide; B2O3	1303-86-2		0.001915		12.904313		0.088612
		Zinc oxide; ZnO	1314-13-2		0.000624		4.204852		0.028874
		Chromium(III) oxide; Pigment green 17 (C.I.); Cr2O3	1308-38-9		0.000342		2.304583		0.015826
Second Protective Coating	Epoxy resin (EP)	Epichlorohydrin, o-cresol, formaldehyde polymer; Formaldehyde	29690-82-2		0.010557	0.0153	69	0.707968	0.488497
	Silica(SiO2)	Silica; Silicon dioxide	7631-86-9		0.003519		23		0.162833
	additives(pigment, dye(black)	Carbon black; C	1333-86-4		0.001224		8		0.056638
Marking 1	Epoxy resin (EP)	Epichlorohydrin, o-cresol, formaldehyde polymer; Formaldehyde	29690-82-2		0.001042	0.00171	60.935672	0.07922	0.048309
	Silica(SiO2)	Silica; Silicon dioxide	7631-86-9		0.000522		30.526316		0.024155
	additives(pigment, dye(white)	Titanium dioxide; Pigment white 6; TiO2	13463-67-7		0.000146		8.538012		0.006756
Side Terminal	Epoxy resin (EP)	Bisphenol A, epichlorohydrin polymer; Epoxy resin; Epon 820;	25068-38-6		0.036743	0.08165	45.000612	3.778182	1.700184
	Ag(silver) and Ag alloy	Silver; Ag	7440-22-4		0.036742		44.999388		1.700184
	additives(pigment, dye(black)	Carbon black; C	1333-86-4		0.008165		10		0.377814
Middle Terminal	Ni(Nickel) and Ni alloy	Nickel; Ni	7440-02-0		0.124	0.124	100	5.737769	5.737769
Outer Terminal	Sn(Tin) and Sn Alloy	Tin; Sn	7440-31-5		0.086999	0.086999	100	4.025646	4.025646