

PART INFORMATION	
Mfg Item Number	MPC8321VRADD
Mfg Item Name	TEPBGA PGE 516 27*27 P1
SUPPLIER	
Company Name	Freescale Semiconductor Inc
Company Unique ID	14-141-7928
Response Date	2017-09-12
Response Document ID	5193K11138D042A1.36
Contact Name	Freescale Semiconductor Inc
Contact Title	Product Technical Support
Contact Phone	1-800-521-6274
Contact Email	support@freescale.com
Authorized Representative	Daniel Binyon
Representative Title	EPP Customer Response
Representative Phone	512-895-3406
Representative Email	eppanlst@freescale.com
URL for Additional Information	www.freescale.com
DECLARATION	
EU RoHS	Yes
Pb Free	Yes
HalogenFree	Yes
Plating Indicator	e2
EU RoHS Exemption(s)	
MANUFACTURING	
Mfg Item Number	MPC8321VRADD
Mfg Item Name	TEPBGA PGE 516 27*27 P1
Version	ALL
Weight	4.374400
UoM	g
Unit Volume	EACH
J-STD-020 MSL Rating	3
Peak Processing Temperature	260 C
Max Time at Peak Temperature	40 seconds
Number of Processing Cycles	3

RoHS	
RoHS Directive	2011/65/EU
RoHS Definition	RoHS Definition: Quantity limit of 0.1% by mass (1000 PPM) of homogeneous material for: Lead (Pb), Mercury, Hexavalent Chromium, Polybrominated Biphenyls (PBB), Polybrominated Diphenyl Ethers (PBDE) and quantity limit of 0.01% by mass (100 PPM) of homogeneous material of Cadmium
RoHS Legal Definition	<p>Please indicate whether any homogeneous material (as defined by the RoHS Directive, EU 2011/65/EU and implemented by the laws of the European Union member states) of the part(s) identified on this form contains lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls and/or polybrominated diphenyl ethers (each a RoHS restricted substance) in excess of the applicable quantity limit identified below. If a homogeneous material within the part(s) contains a RoHS restricted substance in excess of an applicable quantity limit, please indicate below which, if any, RoHS exemption you believe may apply. If the part is an assembly with lower level components, the declaration shall encompass all such components. Supplier certifies that it gathered the information it provides in this form using appropriate methods to ensure its accuracy and that such information is true and correct to the best of its knowledge and belief, as of the date that Supplier completes this form. Supplier acknowledges that Company will rely on this certification in determining the compliance of its products with European Union member state laws that implement the RoHS Directive. Company acknowledges that Supplier may have relied on information provided by others in completing this form, and that Supplier may not have independently verified such information. However, in situations where Supplier has not independently verified information provided by others, Supplier agrees that, at a minimum, its suppliers have provided certifications regarding their contributions to the part(s), and those certifications are at least as comprehensive as the certification in this paragraph. If the Company and the Supplier enter into a written agreement with respect to the identified part(s), the terms and conditions of that agreement, including any warranty rights and/or remedies provided as part of that agreement, will be the sole and exclusive source of the Suppliers liability and the Companys remedies for issues that arise regarding information the Supplier provides in this form. In the absence of such written agreement, the warranty rights and/or remedies of Suppliers Standard Terms and Conditions of Sale applicable to such part(s) shall apply.</p>
RoHS Declaration	1 - Item(s) do not contain RoHS restricted substances per the definition above
Supplier Acceptance	Accepted
Signature	Daniel Binyon
Exemption List Version	2012/51/EU
<p>List of Freescale Accepted Exemptions</p> <p>6(a) : Lead as an alloying element in steel for machining purposes and in galvanized steel containing up to 0.35% lead by weight</p> <p>6(b) : Lead as an alloying element in aluminium containing up to 0.4% lead by weight</p> <p>6(c) : Copper alloy containing up to 4% lead by weight</p> <p>7(a) : Lead in high melting temperature type solders (i.e. lead-based alloys containing 85% by weight or more lead)</p> <p>7(b) : Lead in solders for servers, storage and storage array systems, network infrastructure equipment for switching, signaling, transmission, and network management for telecommunications</p> <p>7(c)-I : Electrical and electronic components containing lead in a glass or ceramic other than dielectric ceramic in capacitors, e.g. piezoelectric devices, or in a glass or ceramic matrix compound</p> <p>7(c)-II : Lead in dielectric ceramic in capacitors for a rated voltage of 125 V AC or 250 V DC or higher</p> <p>7(c)-III : Lead in dielectric ceramic in capacitors for a rated voltage of less than 125 V AC or 250 V DC</p> <p>7(c)-IV : Lead in PZT based dielectric ceramic materials for capacitors being part of integrated circuits or discrete semiconductors</p> <p>15 : Lead in solders to complete a viable electrical connection between semiconductor die and carrier within integrated circuit flip chip packages</p>	

## MATERIAL COMPOSITION

Homogeneous Material	Weight	SubstanceClass	Substance	CAS	Exemption	SubstanceWeight	UoM	SubPart	SubPart%	ARTICLEPPM	ARTICLE%
Epoxy Die Attach	0.01	Solvents, additives, and other materials	1,3,5-Triazine-2,4-diamine, 6-(2-(2-methyl-1H-imidazol-1-yl)ethyl)	38668-46-1		0.00008451	g	8451	0.8451	19	0.0019
Epoxy Die Attach		Plastics/polymers	Phenolic Polymer Resin, Epikote 155	9003-36-5		0.00129579	g	129579	12.9579	296	0.0296
Epoxy Die Attach		Plastics/polymers	4,4'-Dihydroxydiphenyl	92-88-6		0.00008451	g	8451	0.8451	19	0.0019
Epoxy Die Attach		Metals	Silver, metal	7440-22-4		0.00853519	g	853519	85.3519	1951	0.1951
Silicon Semiconductor Die	0.04	Solvents, additives, and other materials	Other miscellaneous substances (less than 5%)	-		0.0008	g	20000	2	182	0.0182
Silicon Semiconductor Die		Glass	Silicon, doped	-		0.0392	g	980000	98	8961	0.8961
Solder Balls - Pb Free, Sn/Ag	0.4272	Metals	Silver, metal	7440-22-4		0.014952	g	35000	3.5	3418	0.3418
Solder Balls - Pb Free, Sn/Ag		Metals	Tin, metal	7440-31-5		0.412248	g	965000	96.5	94241	0.94241
Bonding Wire, Copper	0.025	Metals	Copper, metal	7440-50-8		0.02425	g	970000	97	5543	0.5543
Bonding Wire, Copper		Solvents, additives, and other materials	Other miscellaneous substances (less than 5%)	-		0.00075	g	30000	3	171	0.0171
Organic Substrate, Halogen-free	2.0583	Solvents, additives, and other materials	Acrylonitrile/Butadiene copolymer, carboxyl terminated (2674)	68891-46-3		0.00663596	g	3224	0.3224	1516	0.1516
Organic Substrate, Halogen-free		Metals	Barium sulfate	7727-43-7		0.06157816	g	29917	2.9917	14076	1.4076
Organic Substrate, Halogen-free		Metals	Copper, metal	7440-50-8		1.274133	g	619022	61.9022	291283	29.1283
Organic Substrate, Halogen-free		Plastics/polymers	4,4'-dihydroxy-3,3',5,5'-tetramethylbiphenyl diglycidyl ether	85954-11-6		0.0353019	g	17151	1.7151	8070	0.807
Organic Substrate, Halogen-free		Plastics/polymers	Phenolic Polymer Resin, Epikote 155	9003-36-5		0.33496774	g	162740	16.274	76574	7.6574
Organic Substrate, Halogen-free		Metals	Gold, metal	7440-57-5		0.00239174	g	1162	0.1162	546	0.0546
Organic Substrate, Halogen-free		Solvents, additives, and other materials	Silicon	7440-21-3		0.00079656	g	387	0.0387	182	0.0182
Organic Substrate, Halogen-free		Nickel (external applications only)	Nickel	7440-02-0		0.02425912	g	11786	1.1786	5545	0.5545
Organic Substrate, Halogen-free		Glass	Fibrous-glass-wool	65997-17-3		0.24020155	g	116699	11.6699	54910	5.491
Organic Substrate, Halogen-free		Plastics/polymers	Other acrylic resins	-		0.04682015	g	22747	2.2747	10703	1.0703
Organic Substrate, Halogen-free		Plastics/polymers	Other acrylic/epoxy resin mixture	-		0.03121412	g	15165	1.5165	7136	0.7136
Die Encapsulant, Halogen-free	1.8139	Solvents, additives, and other materials	Acrylonitrile/Butadiene copolymer, carboxyl terminated (2674)	68891-46-3		0.00090695	g	500	0.05	207	0.0207
Die Encapsulant, Halogen-free		Metals	Proprietary Material-Other aluminum compounds	-		0.018139	g	10000	1	4146	0.4146
Die Encapsulant, Halogen-free		Plastics/polymers	Other Epoxy resins	-		0.0453475	g	25000	2.5	10366	1.0366
Die Encapsulant, Halogen-free		Plastics/polymers	Proprietary Material-Other Epoxy resins	-		0.0453475	g	25000	2.5	10366	1.0366
Die Encapsulant, Halogen-free		Solvents, additives, and other materials	Carbon Black	1333-86-4		0.0090695	g	5000	0.5	2073	0.2073
Die Encapsulant, Halogen-free		Plastics/polymers	Proprietary Material-Other phenolic resins	-		0.072556	g	40000	4	16586	1.6586
Die Encapsulant, Halogen-free		Glass	Silicon dioxide	7631-96-9		0.36278	g	200000	20	82932	8.2932
Die Encapsulant, Halogen-free		Glass	Silica, vitreous	60676-86-0		1.25975355	g	694500	69.45	287983	28.7983

**LINKS**

MCD LINK	
NXP website	<a href="http://www.nxp.com">http://www.nxp.com</a>
<b>GENERAL ENVIRONMENTAL COMPLIANCE LINKS</b>	
RoHS signed letter	<a href="http://www.nxp.com/files/corporate/doc/support_info/NXP-ROHS-DECLARATION.pdf">http://www.nxp.com/files/corporate/doc/support_info/NXP-ROHS-DECLARATION.pdf</a>
China RoHS	<a href="http://www.nxp.com/about/corporate-responsibility/environmental-compliance-organization/china-rohs:ENV_CHINA_ROHS_STRATEGY">http://www.nxp.com/about/corporate-responsibility/environmental-compliance-organization/china-rohs:ENV_CHINA_ROHS_STRATEGY</a>
REACH signed letter	<a href="http://www.nxp.com/files/corporate/doc/support_info/NXP-REACH-STATEMENT.pdf">http://www.nxp.com/files/corporate/doc/support_info/NXP-REACH-STATEMENT.pdf</a>
ELV signed letter	<a href="http://www.nxp.com/files/corporate/doc/support_info/NXP-ELV-STATEMENT.pdf">http://www.nxp.com/files/corporate/doc/support_info/NXP-ELV-STATEMENT.pdf</a>
Conflict Minerals statement	<a href="http://www.nxp.com/files/corporate/doc/support_info/NXP-STATEMENT-CONFLICT-MINERALS.pdf">http://www.nxp.com/files/corporate/doc/support_info/NXP-STATEMENT-CONFLICT-MINERALS.pdf</a>
<b>NXP ENVIRONMENTAL INFORMATION</b>	
Environmental Compliance website	<a href="http://www.nxp.com/about/corporate-responsibility/environmental-compliance-organization:ABUENVPRFPRDX">http://www.nxp.com/about/corporate-responsibility/environmental-compliance-organization:ABUENVPRFPRDX</a>
FAQ	<a href="http://www.nxp.com/about/corporate-responsibility/environmental-compliance-organization/eco-product-faqs:ENVIRON_FAQ">http://www.nxp.com/about/corporate-responsibility/environmental-compliance-organization/eco-product-faqs:ENVIRON_FAQ</a>
Technical Service Request	<a href="http://www.nxp.com/support/sales-and-support:SUPPORTHOME">http://www.nxp.com/support/sales-and-support:SUPPORTHOME</a>
LINKS TO BLANK IPC1752 FORMS	
Blank IPC1752 v1.1 Form	<a href="http://www.NXP.com/files/abstract/corporate/ehs_epp/IPC-1752-2_v1.1_MCD_Template.pdf">http://www.NXP.com/files/abstract/corporate/ehs_epp/IPC-1752-2_v1.1_MCD_Template.pdf</a>

IPC1752 XML LINKS

[http://www.freescale.com/mcds/MPC8321VRADD\\_C\\_IPC1752\\_v11.xml](http://www.freescale.com/mcds/MPC8321VRADD_C_IPC1752_v11.xml)

[http://www.freescale.com/mcds/MPC8321VRADD\\_C\\_IPC1752A.xml](http://www.freescale.com/mcds/MPC8321VRADD_C_IPC1752A.xml)