

**PART INFORMATION**

Mfg Item Number	MPC8378CVRANGA
Mfg Item Name	PBGA-PGE 689 31SQ1.25P1

**SUPPLIER**

Company Name	Freescale Semiconductor Inc
Company Unique ID	14-141-7928
Response Date	2018-04-11
Response Document ID	5355K11235D030A1.28
Contact Name	Freescale Semiconductor Inc
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**DECLARATION**

EU RoHS	Yes
Pb Free	Yes
HalogenFree	Yes
Plating Indicator	e2
EU RoHS Exemption(s)	

**MANUFACTURING**

Mfg Item Number	MPC8378CVRANGA
Mfg Item Name	PBGA-PGE 689 31SQ1.25P1
Version	ALL
Weight	4.743100
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	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.
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
List of Freescale Accepted Exemptions	<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. piezoelectronic 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 PPM	SubPart%	ARTICLEPPM	ARTICLE%
Epoxy Die Attach	0.0167						g				
Epoxy Die Attach		Solvents, additives, and other materials	1,3,5-Triazine-2,4-diamine, 6-[2-(2-methyl-1H-imidazol-1-yl)ethyl]	38668-46-1		0.00014113	g	8451	0.8451	29	0.0029
Epoxy Die Attach		Plastics/polymers	Phenolic Polymer Resin, Epikote 155	9003-95-5		0.00216397	g	129579	12.9579	456	0.0456
Epoxy Die Attach		Plastics/polymers	4,4-Dihydroxydiphenyl	92-88-6		0.00014113	g	8451	0.8451	29	0.0029
Epoxy Die Attach		Metals	Silver, metal	7440-22-4		0.01425377	g	853519	85.3519	3005	0.3005
Solder Balls - Pb Free, SnAg	0.5726						g				
Solder Balls - Pb Free, SnAg		Metals	Silver, metal	7440-22-4		0.020041	g	35000	3.5	4225	0.4225
Solder Balls - Pb Free, SnAg		Metals	Tin, metal	7440-31-5		0.552559	g	965000	96.5	116497	11.6497
Non-Conductive Epoxy/Adhesive	0.1852						g				
Non-Conductive Epoxy/Adhesive		Solvents, additives, and other materials	Carbon Black	1333-86-4		0.001852	g	10000	1	390	0.039
Non-Conductive Epoxy/Adhesive		Solvents, additives, and other materials	Siloxanes and silicones, di-Me, vinyl group-terminated	68083-19-2		0.08334	g	450000	45	17570	1.757
Non-Conductive Epoxy/Adhesive		Glass	Silica, crystalline - quartz (SiO2)	14808-60-7		0.001852	g	10000	1	390	0.039
Non-Conductive Epoxy/Adhesive		Glass	Silica, vitreous	60676-86-0		0.03704	g	200000	20	7809	0.7809
Non-Conductive Epoxy/Adhesive		Glass	Other silica compounds	-		0.03704	g	200000	20	7809	0.7809
Non-Conductive Epoxy/Adhesive		Glass	Dimethyl silicone polymer with silica	67762-90-7		0.014816	g	80000	8	3123	0.3123
Non-Conductive Epoxy/Adhesive		Solvents, additives, and other materials	Dimethyl methyl hydrogen siloxane	68037-59-2		0.00926	g	50000	5	1852	0.1852
Die Encapsulant	1.5119						g				
Die Encapsulant		Plastics/polymers	Other Epoxy resins	-		0.090714	g	60000	6	19125	1.9125
Die Encapsulant		Solvents, additives, and other materials	Carbon Black	1333-86-4		0.015119	g	10000	1	3187	0.3187
Die Encapsulant		Solvents, additives, and other materials	Other inorganic compounds	-		0.030238	g	20000	2	6375	0.6375
Die Encapsulant		Plastics/polymers	Other phenolic resins	-		0.075985	g	50000	5	15937	1.5937
Die Encapsulant		Glass	Silica, vitreous	60676-86-0		1.300234	g	860000	86	274152	27.4152
Heat Spreader	0.9						g				
Heat Spreader		Metals	Copper, metal	7440-50-8		0.888984	g	987760	98.776	187426	18.7426
Heat Spreader		Metals	Cupric oxide	1317-38-0		0.0306	g	3400	0.34	645	0.0645
Heat Spreader		Plastics/polymers	Epoxy resin, EPON Resin 8091	25928-94-3		0.007425	g	8250	0.825	1565	0.1565
Heat Spreader		Solvents, additives, and other materials	Carbon Black	1333-86-4		0.000333	g	370	0.037	70	0.007
Heat Spreader		Glass	Silica, amorphous synthetic	112926-00-8		0.000198	g	220	0.022	41	0.0041
Organic Substrate	1.49						g				
Organic Substrate		Solvents, additives, and other materials	Other acrylates	-		0.0190495	g	12755	1.2755	4006	0.4006
Organic Substrate		Metals	Aluminum Oxides (Al2O3)	1344-29-1		0.0793425	g	53250	5.325	16727	1.6727
Organic Substrate		Metals	Barium	7440-39-3		0.01708434	g	11466	1.1466	3601	0.3601
Organic Substrate		Metals	Copper, metal	7440-50-8		0.09339599	g	666691	66.6691	209434	20.9434
Organic Substrate		Plastics/polymers	2,2'-(1-methylethylidene)bis[4,1-phenyleneoxymethylene]bisoxirane	1675-54-3		0.0044684	g	2716	0.2716	853	0.0853
Organic Substrate		Metals	Gold, metal	7440-57-5		0.00185207	g	1243	0.1243	390	0.039
Organic Substrate		Nickel (external applications only)	Nickel	7440-02-0		0.01279314	g	8586	0.8586	2697	0.2697
Organic Substrate		Solvents, additives, and other materials	Other organic Silicon Compounds	-		0.00051852	g	348	0.0348	109	0.0109
Organic Substrate		Glass	Fibrous-glass-wool	65997-17-3		0.17097005	g	114745	11.4745	36046	3.6046
Organic Substrate		Glass	Silicon dioxide	7631-86-9		0.09760245	g	65505	6.5505	20577	2.0577
Organic Substrate		Solvents, additives, and other materials	Proprietary Material-Other miscellaneous substances	-		0.01981104	g	13296	1.3296	4176	0.4176
Organic Substrate		Plastics/polymers	Other Non-halogenated Epoxy resins	-		0.07360451	g	49399	4.9399	15518	1.5518
Bonding Wire, PoCu	0.0167						g				
Bonding Wire, PoCu		Metals	Aluminum, metal	7429-90-5		0.00000017	g	10	0.001	0	0
Bonding Wire, PoCu		Metals	Copper, metal	7440-50-8		0.01634871	g	978965	97.8965	3446	0.3446
Bonding Wire, PoCu		Metals	Iron, metal	7439-89-6		0.00000017	g	10	0.001	0	0
Bonding Wire, PoCu		Metals	Palladium, metal	7440-05-3		0.00030057	g	21000	2.1	73	0.0073
Bonding Wire, PoCu		Metals	Silver, metal	7440-22-4		0.00000025	g	15	0.0015	0	0
Silicon Semiconductor Die	0.05						g				
Silicon Semiconductor Die		Solvents, additives, and other materials	Other miscellaneous substances (less than 5%)	-		0.001	g	20000	2	210	0.021
Silicon Semiconductor Die		Glass	Silicon, doped	-		0.049	g	980000	98	10330	1.033

## LINKS

MCD LINK	
NXP website	<a href="http://www.nxp.com">http://www.nxp.com</a>
GENERAL ENVIRONMENTAL COMPLIANCE LINKS	
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>
NXP ENVIRONMENTAL INFORMATION	
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/MPC8378CVRANGA\\_IPC1752\\_v11.xml](http://www.freescale.com/mcds/MPC8378CVRANGA_IPC1752_v11.xml)

[http://www.freescale.com/mcds/MPC8378CVRANGA\\_IPC1752A.xml](http://www.freescale.com/mcds/MPC8378CVRANGA_IPC1752A.xml)