

PART INFORMATION	
Mfg Item Number	MMA5224NDKGVWR2
Mfg Item Name	QFN 6x6 ASECL
SUPPLIER	
Company Name	Freescale Semiconductor Inc
Company Unique ID	14-141-7928
Response Date	2018-04-13
Response Document ID	00KAK50001S544A1.9
Contact Name	Freescale Semiconductor Inc
Contact Title	Product Technical Support
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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	No
HalogenFree	Yes
Plating Indicator	e3
EU RoHS Exemption(s)	7c-I
MANUFACTURING	
Mfg Item Number	MMA5224NDKGVWR2
Mfg Item Name	QFN 6x6 ASECL
Version	ALL
Weight	0.197200
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	4 - Item(s) does not contain RoHS restricted substances per the definition above except for selected exemptions
Supplier Acceptance	Accepted
Signature	Daniel Binyon
Exemption List Version	2012/51/EU
Exemptions in this part	7c-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
List of Freescale Accepted Exemptions	6(a) : Lead as an alloying element in steel for machining purposes and in galvanized steel containing up to 0.35% lead by weight 6(b) : Lead as an alloying element in aluminium containing up to 0.4% lead by weight 6(c) : Copper alloy containing up to 4% lead by weight 7(a) : Lead in high melting temperature type solders (i.e. lead-based alloys containing 85% by weight or more lead) 7(b) : Lead in solders for servers, storage and storage array systems, network infrastructure equipment for switching, signaling, transmission, and network management for telecommunications 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 7(c)-II : Lead in dielectric ceramic in capacitors for a rated voltage of 125 V AC or 250 V DC or higher 7(c)-III : Lead in dielectric ceramic in capacitors for a rated voltage of less than 125 V AC or 250 V DC 7(c)-IV : Lead in PZT based dielectric ceramic materials for capacitors being part of integrated circuits or discrete semiconductors 15 : Lead in solders to complete a viable electrical connection between semiconductor die and carrier within integrated circuit flip chip packages

MATERIAL COMPOSITION

Homogeneous Material	Weight	SubstanceClass	Substance	CAS	Exemption	SubstanceWeight	UoM	SubPart PPM	SubPart%		ARTICLEPPM	ARTICLE%
Lead Frame Plating	0.0016						g					
Lead Frame Plating		Lead/Lead Compounds	Lead	7439-92-1		0.00000032	g	200	0.02		1	0.0001
Lead Frame Plating		Metals	Tin, metal	7440-31-5		0.00159968	g	999800	99.98		8111	0.8111
Epoxy Die Attach	0.0001						g					
Epoxy Die Attach		Solvents, additives, and other materials	Proprietary Material-Other acrylates	-		0.00001249	g	124900	12.49		63	0.0063
Epoxy Die Attach		Plastics/polymers	Proprietary Material-Other Epoxy resins	-		0.00000025	g	24980	2.498		12	0.0012
Epoxy Die Attach		Solvents, additives, and other materials	Other organic Silicon Compounds	-		0.00000012	g	11990	1.199		6	0.0006
Epoxy Die Attach		Metals	Silver, metal	7440-22-4		0.00007801	g	780176	78.0176		395	0.0395
Epoxy Die Attach		Plastics/polymers	Proprietary Material-acrylonitrile/butadiene copolymer, carboxyl terminated	-		0.00000058	g	57954	5.7954		29	0.0029
Bonding Wire	0.0002						g					
Bonding Wire		Metals	Gold, metal	7440-57-5		0.0002	g	1000000	100		1014	0.1014
Die Encapsulant, Halogen-free	0.1282						g					
Die Encapsulant, Halogen-free		Plastics/polymers	Proprietary Material-Other Epoxy resins	-		0.003205	g	25000	7.5		16252	1.6252
Die Encapsulant, Halogen-free		Solvents, additives, and other materials	Carbon Black	1333-86-4		0.000641	g	5000	0.5		3250	0.325
Die Encapsulant, Halogen-free		Plastics/polymers	Proprietary Material-Other phenolic resins	-		0.009615	g	75000	7.5		48757	4.8757
Die Encapsulant, Halogen-free		Glass	Silicon dioxide	7631-86-9		0.012179	g	95000	9.5		61759	6.1759
Die Encapsulant, Halogen-free		Glass	Silica, vitreous	60676-86-0		0.10256	g	800000	80		520097	52.0097
Non-Conductive Epoxy/Adhesive	0.0001						g					
Non-Conductive Epoxy/Adhesive		Plastics/polymers	Polytetrafluoroethylene	9002-84-0		0.000045	g	450000	45		228	0.0228
Non-Conductive Epoxy/Adhesive		Glass	Silicon dioxide	7631-86-9		0.000003	g	30000	3		15	0.0015
Non-Conductive Epoxy/Adhesive		Metals	Titanium (IV) Oxide	13463-67-7		0.000007	g	70000	7		35	0.0035
Non-Conductive Epoxy/Adhesive		Solvents, additives, and other materials	Other miscellaneous substances (less than 5%).	-		0.000005	g	50000	5		25	0.0025
Non-Conductive Epoxy/Adhesive		Solvents, additives, and other materials	Proprietary Material-Other Bismaleimides	-		0.000002	g	200000	20		101	0.0101
Non-Conductive Epoxy/Adhesive		Plastics/polymers	Proprietary Material-Other non-halogenated polymers	-		0.000002	g	200000	20		101	0.0101
Pb Glass Fit Semiconductor Di	0.0059				7c-I		g					
Pb Glass Fit Semiconductor Di		Lead/Lead Compounds	Lead (II) titanate	12060-00-3		0.00006125	g	10381	1.0381		310	0.031
Pb Glass Fit Semiconductor Di		Glass	Fibrous-glass-wool	65997-17-3		0.00005866	g	9943	0.9943		297	0.0297
Pb Glass Fit Semiconductor Di		Solvents, additives, and other materials	2,2,4-trimethyl-1,3-pentanediol-1-monoisobutyrate	25265-77-4		0.00005866	g	9943	0.9943		297	0.0297
Pb Glass Fit Semiconductor Di		Glass	Silicon, doped	-		0.00572143	g	969733	96.9733		29013	2.9013
Copper Lead Frame	0.0564						g					
Copper Lead Frame		Metals	Copper, metal	7440-50-8		0.0530477	g	940562	94.0562		269004	26.9004
Copper Lead Frame		Solvents, additives, and other materials	Silicon	7440-21-3		0.0004089	g	7250	0.725		2073	0.2073
Copper Lead Frame		Metals	Iron, metal	7439-89-6		0.0000705	g	1250	0.125		357	0.0357
Copper Lead Frame		Lead/Lead Compounds	Lead	7439-92-1		0.00001765	g	313	0.0313		89	0.0089
Copper Lead Frame		Metals	Magnesium, metal	7439-95-4		0.0000987	g	1750	0.175		500	0.05
Copper Lead Frame		Metals	Manganese, metal	7439-96-5		0.00003525	g	625	0.0625		178	0.0178
Copper Lead Frame		Nickel (external applications only)	Nickel	7440-02-0		0.0018048	g	32000	3.2		9152	0.9152
Copper Lead Frame		Metals	Silver, metal	7440-22-4		0.000564	g	10000	1		2860	0.286
Copper Lead Frame		Metals	Zinc, metal	7440-66-6		0.0003525	g	6250	0.625		1787	0.1787
Silicon Semiconductor Die	0.0047						g					
Silicon Semiconductor Die		Solvents, additives, and other materials	Other miscellaneous substances (less than 5%).	-		0.000094	g	20000	2		476	0.0476
Silicon Semiconductor Die		Glass	Silicon, doped	-		0.004606	g	980000	98		23356	2.3356

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

IPC1752 XML LINKS

http://www.freescale.com/mcds/MMA5224NDKGVWR2_IPC1752_v11.xml

http://www.freescale.com/mcds/MMA5224NDKGVWR2_IPC1752A.xml