

PART INFORMATION

Mfg Item Number	MMA8453QR1
Mfg Item Name	QFN 16ld COL3*3*1.0 P0.5

SUPPLIER

Company Name	Freescale Semiconductor Inc
Company Unique ID	14-141-7928
Response Date	2015-01-16
Response Document ID	003ZK50008S258A1.22
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	No
HalogenFree	Yes
Plating Indicator	e4
EU RoHS Exemption(s)	7c-l

MANUFACTURING

Mfg Item Number	MMA8453QR1
Mfg Item Name	QFN 16ld COL3*3*1.0 P0.5
Version	ALL
Weight	0.031800
UoM	g
Unit Volume	EACH
J-STD-020 MSL Rating	1
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	<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%
Bonding Wire	0.0002						g				
Bonding Wire		Metals	Gold, metal	7440-57-5		0.0002	g	1000000	100	6289	0.6289
Non-conductive Epoxy	0.0007						g				
Non-conductive Epoxy		Solvents, additives, and other materials	Bisphenol A	80-05-7		0.0000035	g	4996	0.4996	110	0.011
Non-conductive Epoxy		Plastics/polymers	Epikote 862	28064-14-4		0.0000694	g	9915	9.9915	2199	0.2199
Non-conductive Epoxy		Plastics/polymers	4,4'-isopropylidenediphenol-1-chloro-2,3-epoxypropane concentrate	25068-38-6		0.0000035	g	4996	0.4996	110	0.011
Non-conductive Epoxy		Plastics/polymers	Phenol, polymer with formaldehyde	9003-35-4		0.0000694	g	9915	9.9915	2199	0.2199
Non-conductive Epoxy		Glass	Proprietary Material-Other silica compounds	-		0.0001399	g	10983	1.0983	439	0.0439
Non-conductive Epoxy		Plastics/polymers	Proprietary Material-Other Non-halogenated Epoxy resins	-		0.00046919	g	670280	67.028	14754	1.4754
Non-conductive Epoxy		Solvents, additives, and other materials	4,4'-Diaminodiphenylsulfone	80-08-0		0.0000694	g	9915	9.9915	2199	0.2199
Silicon Semiconductor Die	0.0005						g				
Silicon Semiconductor Die		Solvents, additives, and other materials	Other miscellaneous substances (less than 5%)	-		0.00001	g	20000	2	314	0.0314
Silicon Semiconductor Die		Glass	Silicon, doped	-		0.00049	g	980000	98	15408	1.5408
Copper Lead Frame	0.0162						g				
Copper Lead Frame		Metals	Copper, metal	7440-50-8		0.01516389	g	935425	93.5425	476550	47.655
Copper Lead Frame		Metals	Gold, metal	7440-57-5		0.0000259	g	160	0.016	81	0.0081
Copper Lead Frame		Solvents, additives, and other materials	Silicon	7440-21-3		0.00010221	g	6309	0.6309	3214	0.3214
Copper Lead Frame		Metals	Magnesium, metal	7439-95-4		0.00002355	g	1454	0.1454	740	0.074
Copper Lead Frame		Nickel (external applications only)	Nickel	7440-02-0		0.00090435	g	55824	5.5824	28438	2.8438
Copper Lead Frame		Metals	Palladium, metal	7440-05-3		0.00001082	g	668	0.0668	340	0.034
Copper Lead Frame		Metals	Silver, metal	7440-22-4		0.00000259	g	160	0.016	81	0.0081
Die Encapsulant	0.0137						g				
Die Encapsulant		Arsenic/Arsenic Compounds	Arsenic	7440-38-2		0.00000008	g	6	0.0006	2	0.0002
Die Encapsulant		Bismuth/Bismuth Compounds	Bismuth	7440-69-9		0.00013755	g	10040	1.004	4325	0.4325
Die Encapsulant		Plastics/polymers	Proprietary Material-Other Epoxy resins	-		0.00019161	g	75300	7.53	32440	3.244
Die Encapsulant		Solvents, additives, and other materials	Carbon Black	1333-86-4		0.00004126	g	3012	0.3012	1297	0.1297
Die Encapsulant		Lead/Lead Compounds	Lead	7439-92-1		0.00000022	g	16	0.0016	6	0.0006
Die Encapsulant		Solvents, additives, and other materials	Other organic phosphorous compounds	-		0.00004126	g	3012	0.3012	1297	0.1297
Die Encapsulant		Plastics/polymers	Proprietary Material-Other phenolic resins	-		0.0007565	g	55219	5.5219	23789	2.3789
Die Encapsulant		Glass	Silica, vitreous	60676-86-0		0.01189152	g	853395	85.3395	367657	36.7657
Pb Glass Frit Semiconductor Di	0.0005						g				
Pb Glass Frit Semiconductor Di		Lead/Lead Compounds	Lead (II) stannate	12090-00-3	7c-I	0.00000519	g	10381	1.0381	163	0.0163
Pb Glass Frit Semiconductor Di		Glass	Fibrous-glass-wool	65997-17-3		0.00000497	g	9943	0.9943	156	0.0156
Pb Glass Frit Semiconductor Di		Solvents, additives, and other materials	2,2,4-trimethyl-1,3-pentanediol-1-monoisobutyrate	25265-77-4		0.00000497	g	9943	0.9943	156	0.0156
Pb Glass Frit Semiconductor Di		Glass	Silicon, doped	-		0.00048487	g	969733	96.9733	15247	1.5247

LINKS

MCD LINK

Freescale website <http://www.freescale.com>

GENERAL ENVIRONMENTAL COMPLIANCE LINKS

RoHS signed letter http://www.freescale.com/files/abstract/corporate/ehs_epp/ENV_ROHS_Freescale_Response.pdf

China RoHS <http://www.freescale.com/chinarohs>

REACH signed letter http://www.freescale.com/files/abstract/corporate/ehs_epp/ENV_REACH_Freescale_Response.pdf

ELV signed letter http://www.freescale.com/files/abstract/corporate/ehs_epp/ENV_ELV_Freescale_Reponse.pdf

Conflict Minerals statement http://www.freescale.com/files/abstract/corporate/ehs_epp/ENV_CONFLICT_METAL_Freescale_Response.pdf

FREESCALE ENVIRONMENTAL INFORMATION

EPP website <http://www.freescale.com/epp>

FAQ http://www.freescale.com/webapp/sps/site/overview.jsp?code=ENVIRON_FAQ

Technical Service Request https://www.freescale.com/webapp/servicerequest.create_SR.framework?defaultCategory=Hardware Product Support&defaultTopic=Environmentally Preferred Prod

LINKS TO BLANK IPC1752 FORMS

Blank IPC1752 v1.1 Form http://www.freescale.com/files/abstract/corporate/ehs_epp/IPC-1752-2_v1.1_MCD_Template.pdf

IPC1752 XML LINKS

http://www.freescale.com/mcdfs/MMA8453QR1_IPC1752_v11.xml

http://www.freescale.com/mcdfs/MMA8453QR1_IPC1752A.xml