

PART INFORMATION	
Mfg Item Number	MRF5S19060NBR1
Mfg Item Name	TO-272 WB-4
SUPPLIER	
Company Name	Freescale Semiconductor Inc
Company Unique ID	14-141-7928
Response Date	2007-07-26
Response Document ID	7518K10874D001A1.4
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	No
Plating Indicator	e3
EU RoHS Exemption(s)	7a
MANUFACTURING	
Mfg Item Number	MRF5S19060NBR1
Mfg Item Name	TO-272 WB-4
Version	ALL
Weight	1.911100
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
Exemptions in this part	7a:Lead in high melting temperature type solders (i.e. lead-based alloys containing 85 % by weight or more lead)
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

SubPart	Weight	SubstanceClass	Substance	CAS	Exemption	SubstanceWeight	UoM	SubPart PPM	SubPart%		REACHPPM	REACH%
Die Encapsulant	0.7936						g					
Die Encapsulant		Solvents, additives, and other materials	Benzophenonetetracarboxylic Acid Dianhydride	2421-28-5		0.059391	g	74838	7.4838		31076	3.1076
Die Encapsulant		Plastics/polymers	Ortho-Cresol, Polymer with 1-Chloro-2,3-Epoxypropane and Formaldehyde	29690-82-2		0.023756	g	29935	2.9935		12430	1.243
Die Encapsulant		Plastics/polymers	Other Epoxy resins	-		0.023756	g	29935	2.9935		12430	1.243
Die Encapsulant		Plastics/polymers	Proprietary Material-Other Epoxy resins	-		0.023756	g	29935	2.9935		12430	1.243
Die Encapsulant		Metals	Magnesium, metal and alloys	7439-95-4		0.001417	g	1785	0.1785		741	0.0741
Die Encapsulant		Metals	Proprietary Material-Other organic silicon compounds	-		0.004254	g	5361	0.5361		2225	0.2225
Die Encapsulant		Solvents, additives, and other materials	Silica, crystalline - quartz (SiO2)	14808-60-7		0.023756	g	29935	2.9935		12430	1.243
Die Encapsulant		Glass	Silica, vitreous	60676-86-0		0.633514	g	798276	79.8276		331495	33.1495
Solder Die Attach	0.0257				7a		g					
Solder Die Attach		Metals	Lead, metallic lead and lead alloys	7439-92-1		0.024543	g	955000	95.5		12842	1.2842
Solder Die Attach		Metals	Silver, metal and alloys	7440-22-4		0.000643	g	25000	2.5		336	0.0336
Solder Die Attach		Metals	Tin, metal and alloys	7440-31-5		0.000514	g	20000	2		268	0.0268
Bonding Wire	0.0195						g					
Bonding Wire		Metals	Aluminum, metal and alloys	7429-90-5		0.0195	g	1000000	100		10203	1.0203
Silicon Semiconductor Die	0.0257						g					
Silicon Semiconductor Die		Solvents, additives, and other materials	Other miscellaneous substances (less than 5%)	-		0.000514	g	20000	2		268	0.0268
Silicon Semiconductor Die		Glass	Silicon, doped	-		0.025186	g	980000	98		13178	1.3178
Lead Frame Plating	0.0102						g					
Lead Frame Plating		Metals	Lead, metallic lead and lead alloys	7439-92-1		0.000001	g	125	0.0125		0	0
Lead Frame Plating		Metals	Tin, metal and alloys	7440-31-5		0.010199	g	999875	99.9875		5336	0.5336
Copper Lead Frame	1.0364						g					
Copper Lead Frame		Metals	Copper, metal and alloys	7440-50-8		1.005236	g	969931	96.9931		526007	52.6007
Copper Lead Frame		Metals	Iron, metal and alloys	7439-89-6		0.012003	g	11581	1.1581		6280	0.628
Copper Lead Frame		Metals	Lead, metallic lead and lead alloys	7439-92-1		0.00021	g	205	0.0203		109	0.0109
Copper Lead Frame		Metals	Nickel, metal and alloys	7440-02-0		0.018951	g	18285	1.8285		9916	0.9916

LINKS	
MCD LINK	
Freescal website	http://www.freescal.com
GENERAL ENVIRONMENTAL COMPLIANCE LINKS	
RoHS signed letter	http://www.freescal.com/files/abstract/corporate/ehs_epp/ENV_ROHS_Freescal_Response.pdf
China RoHS	http://www.freescal.com/chinarohs
REACH signed letter	http://www.freescal.com/files/abstract/corporate/ehs_epp/ENV_REACH_Freescal_Response.pdf
ELV signed letter	http://www.freescal.com/files/abstract/corporate/ehs_epp/ENV_ELV_Freescal_Reponse.pdf
Conflict Minerals statement	http://www.freescal.com/files/abstract/corporate/ehs_epp/ENV_CONFLICT_METAL_Freescal_Response.pdf
FREESCALE ENVIRONMENTAL INFORMATION	
EPP website	http://www.freescal.com/epp
FAQ	http://www.freescal.com/webapp/sps/site/overview.jsp?code=ENVIRON_FAQ
Technical Service Request	https://www.freescal.com/webapp/servicerequest.create_SR.framework?defaultCategory=Hardware Product Support&defaultTopic=Environmentally Preferred Prod
LINKS TO BLANK IPC1752 FORMS	
Blank IPC1752 v0.9 Form	http://www.freescal.com/files/abstract/corporate/ehs_epp/IPC-1752-2_v0.9_MCD_Template.pdf
Blank IPC1752 v1.1 Form	http://www.freescal.com/files/abstract/corporate/ehs_epp/IPC-1752-2_v1.1_MCD_Template.pdf

IPC1752 XML LINKS

http://www.freescale.com/mcds/MRF5S19060NBR1_IPC1752_v09.xml

http://www.freescale.com/mcds/MRF5S19060NBR1_IPC1752_v11.xml

http://www.freescale.com/mcds/MRF5S19060NBR1_IPC1752A.xml