

Product / Process Change Notification



N° 2013-053-A

Dear Customer,

Please find attached our INFINEON Technologies PCN:

Standardization of Assembly Bill Of Materials for dedicated CoolMOS™ and OptiMOS™ products in PG-TO252 and PG-TO251 at IFX Malacca, Malaysia

Important information for your attention:

- Please respond to this PCN by indicating your decision on the approval form, sign it and return to your sales partner before **19th september 2013**.
- Infineon aligns with the widely-recognized JEDEC STANDARD "JESD46-C", which stipulates: "Lack of acknowledgement of the PCN within 30 days constitutes acceptance of the change."

Your prompt reply will help Infineon Technologies to assure a smooth and well executed transition. If Infineon does not hear from your side by the due date, we will assume your full acceptance to this proposed change and its implementation.

Your attention and response to this matter is greatly appreciated.

Disclaimer:

If we do not receive any response by the date in the PCN below we consider this as the acceptance of the PCN

Product / Process Change Notification



N° 2013-053-A

SUBJECT OF CHANGE: Standardization of Assembly Bill Of Materials for dedicated CoolMOS™ and OptiMOS™ products in PG-TO252 and PG-TO251 at IFX Malacca, Malaysia

PRODUCTS AFFECTED: CoolMOS™ and OptiMOS™ products assembled at site Infineon Technologies (Malaysia) Sdn. Bhd. in lead-free packages PG-TO252 and PG-TO251.(for details ref. to 1_cip13053_a)
Products assembled at subcon NFME and PSI are not affected by this change.

REASON OF CHANGE: Standardization of assembly materials and fulfilment of the increasing customer requests for eco-friendly products.

DESCRIPTION OF CHANGE:	<u>OLD</u>	<u>NEW</u>
<ul style="list-style-type: none"> Mold compound 	MP8000 EME6300	KMC2110G
<ul style="list-style-type: none"> Marking 	G in front of the date code	H in front of the date code
<ul style="list-style-type: none"> Moisture Packing 	Dry (MSL3) Non Dry (MSL1)	Non Dry (MSL1)

The leadframe base material and the leadframe surface remain the same.

For more details please refer to Customer Information Packages, attachment 1_cip13053_a and 3_cip13053_a

PRODUCT IDENTIFICATION: External traceability
A) Marking "H" in front of date code on package body

B) Introduction of new SP numbers (ordering code)

Internal traceability
Ensured via baunumber, lot number and date code.

TIME SCHEDULE:

- Final qualification report: As per attachment 2_cip13053_a.
- First samples available: Lead-types available
All other types upon request with a lead time of 6 weeks from customer sample order till sample delivery.
- Start of delivery: From mid of November 2013 onwards

Product / Process Change Notification



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ASSESSMENT:

- No change in product specification as defined in already applied datasheets
- No change in quality and reliability
- No change in storage time and storage conditions

DOCUMENTATION:

1_cip13053_a	List of affected products including changes
2_cip13053_a	Final Qualification Report
3_cip13053_a	Customer Information Package (CIP): marking, labelling, leadframe, package
4_cip13053_a	Material Content Data Sheets

PCN N°2013-053-A
Standardization of Assembly Bill Of Materials for dedicated CoolMOSTM
and OptiMOSTM products
in PG-TO252 and PG-TO251 at IFX Malacca, Malaysia



Changes for products

- > **Marking** "H" Marking in front of datecode
- > **Barcode Label** Additional halogen-free logo
- > **Mold Compound** KMC2110G
- > **SP number (ordering code)** Depending on product (as per list below)

Type	Voltage Class	Sales Name	Package	Current SP number	Current OPN	New SP number
PFET4	30V	IPD042P03L3 G	PG-TO252-3	SP000473922	IPD042P03L3GBTMA1	SP001127836
PFET4	30V	IPD068P03L3 G	PG-TO252-3	SP000472988	IPD068P03L3GBTMA1	SP001127838
SFET3	80V	IPD053N08N3 G	PG-TO252-3	SP000395183	IPD053N08N3GBTMA1	SP001127818
SFET3	80V	IPD096N08N3 G	PG-TO252-3	SP000474196	IPD096N08N3GBTMA1	SP001127826
SFET3	80V	IPD135N08N3 G	PG-TO252-3	SP000454266	IPD135N08N3GBTMA1	SP001127822
SFET3	100V	IPD068N10N3 G	PG-TO252-3	SP000469892	IPD068N10N3GBTMA1	SP001127816
SFET3	100V	IPD082N10N3 G	PG-TO252-3	SP000485986	IPD082N10N3GBTMA1	SP001127824
SFET3	100V	IPD122N10N3 G	PG-TO252-3	SP000485966	IPD122N10N3GBTMA1	SP001127828
SFET3	100V	IPD12CN10N G	PG-TO252-3	SP000096476	IPD12CN10NGBUMA1	SP001127806
SFET3	100V	IPD180N10N3 G	PG-TO252-3	SP000482438	IPD180N10N3GBTMA1	SP000900132
SFET3	100V	IPD25CN10N G	PG-TO252-3	SP000096456	IPD25CN10NGBUMA1	SP001127810
SFET3	100V	IPD33CN10N G	PG-TO252-3	SP000096458	IPD33CN10NGBUMA1	SP001127812
SFET3	100V	IPD78CN10N G	PG-TO252-3	SP000096460	IPD78CN10NGBUMA1	SP001127814
SFET3	120V	IPD110N12N3 G	PG-TO252-3	SP000674466	IPD110N12N3GBUMA1	SP001127808
SFET3	150V	IPD200N15N3 G	PG-TO252-3	SP000386665	IPD200N15N3GBTMA1	SP001127820
SFET3	150V	IPD530N15N3 G	PG-TO252-3	SP000521720	IPD530N15N3GBTMA1	SP001127830
SFET3	200V	IPD320N20N3 G	PG-TO252-3	SP000677838	IPD320N20N3GBTMA1	SP001127832
SFET3	250V	IPD600N25N3 G	PG-TO252-3	SP000676404	IPD600N25N3GBTMA1	SP001127834
CE	500V	IPD50R280CE	PG-TO252-3	SP000992082	IPD50R280CEBTMA1	SP001117680
CE	500V	IPD50R380CE	PG-TO252-3	SP000992080	IPD50R380CEBTMA1	SP001117698
CP	500V	IPD50R399CP	PG-TO252-3	SP000307379	IPD50R399CPBTMA1	SP001117700
CE	500V	IPD50R500CE	PG-TO252-3	SP000988424	IPD50R500CEBTMA1	SP001117704
CP	500V	IPD50R520CP	PG-TO252-3	SP000307380	IPD50R520CPBTMA1	SP001117706
CE	500V	IPD50R650CE	PG-TO252-3	SP000992078	IPD50R650CEBTMA1	SP001117708
CP	500V	IPS50R520CP	PG-TO251-3	SP000307420	IPS50R520CPBKMA1	SP001130978
C3	500V	SPD03N50C3	PG-TO252-3	SP000307392	SPD03N50C3BTMA1	SP001117756
C3	500V	SPD04N50C3	PG-TO252-3	SP000313945	SPD04N50C3BTMA1	SP001117762
C3	500V	SPD08N50C3	PG-TO252-3	SP000307395	SPD08N50C3BTMA1	SP001117776
C6	600V	IPD60R380C6	PG-TO252-3	SP000660628	IPD60R380C6BTMA1	SP001117716
CP	600V	IPD60R385CP	PG-TO252-3	SP000307381	IPD60R385CPBTMA1	SP000680638
E6	600V	IPD60R450E6	PG-TO252-3	SP000801092	IPD60R450E6BTMA1	SP001117720
C6	600V	IPD60R520C6	PG-TO252-3	SP000645070	IPD60R520C6BTMA1	SP001117722
CP	600V	IPD60R520CP	PG-TO252-3	SP000405852	IPD60R520CPBTMA1	SP000680640
C6	600V	IPD60R600C6	PG-TO252-3	SP000660622	IPD60R600C6BTMA1	SP001117726
CP	600V	IPD60R600CP	PG-TO252-3	SP000405878	IPD60R600CPBTMA1	SP000680642
E6	600V	IPD60R600E6	PG-TO252-3	SP000797374	IPD60R600E6BTMA1	SP001117094
E6	600V	IPD60R750E6	PG-TO252-3	SP000801094	IPD60R750E6BTMA1	SP001117730
C6	600V	IPD60R950C6	PG-TO252-3	SP000629368	IPD60R950C6BTMA1	SP001117730
C3	600V	SPD03N60C3	PG-TO252-3	SP000308772	SPD03N60C3BTMA1	SP001117760
C3	600V	SPD04N60C3	PG-TO252-3	SP000313944	SPD04N60C3BTMA1	SP001117764
C3	600V	SPD06N60C3	PG-TO252-3	SP000307394	SPD06N60C3BTMA1	SP001117770
C3	600V	SPD07N60C3	PG-TO252-3	SP000313947	SPD07N60C3BTMA1	SP001117774
C3	600V	SPS04N60C3	PG-TO251-3	SP000307419	SPS04N60C3BKMA1	SP001130980
C3	600V	SPS03N60C3	PG-TO251-3	SP000307418	SPS03N60C3BKMA1	SP001130982
C3	600V	SPS01N60C3	PG-TO251-3	SP000307396	SPS01N60C3BKMA1	SP001130984
C3	600V	SPS02N60C3	PG-TO251-3	SP000307410	SPS02N60C3BKMA1	SP001130986
CFD2	650V	IPD65R1K4CFD	PG-TO252-3	SP000953126	IPD65R1K4CFDBTMA1	SP001117732
C6	650V	IPD65R380C6	PG-TO252-3	SP000745022	IPD65R380C6BTMA1	SP001117734
E6	650V	IPD65R380E6	PG-TO252-3	SP000795278	IPD65R380E6BTMA1	SP001117736

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Changes for products

- > **Marking** "H" Marking in front of datecode
- > **Barcode Label** Additional halogen-free logo 
- > **Mold Compound** KMC2110G
- > **SP number (ordering code)** Depending on product (as per list below)

Type	Voltage Class	Sales Name	Package	Current SP number	Current OPN	New SP number
CFD2	650V	IPD65R420CFD	PG-TO252-3	SP000891704	IPD65R420CFDBTMA1	SP001117738
C6	650V	IPD65R600C6	PG-TO252-3	SP000745020	IPD65R600C6BTMA1	SP001121530
E6	650V	IPD65R600E6	PG-TO252-3	SP000800216	IPD65R600E6BTMA1	SP001117096
CFD2	650V	IPD65R660CFD	PG-TO252-3	SP000745024	IPD65R660CFDBTMA1	SP001117748
CFD2	650V	IPD65R950CFD	PG-TO252-3	SP000953124	IPD65R950CFDBTMA1	SP001117750
C3	800V	SPD02N80C3	PG-TO252-3	SP000315409	SPD02N80C3BTMA1	SP001117754
C3	800V	SPD04N80C3	PG-TO252-3	SP000315410	SPD04N80C3BTMA1	SP001117768
C3	800V	SPD06N80C3	PG-TO252-3	SP000318350	SPD06N80C3BTMA1	SP001117772
C3	900V	IPD90R1K2C3	PG-TO252-3	SP000413720	IPD90R1K2C3BTMA1	SP001117752

Customer Information Package 3_cip13053_a

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Standardization of Assembly Bill Of Materials for dedicated CoolMOS™ and OptiMOS™ products in PG-TO252 and PG-TO251 at IFX Malacca, Malaysia



Table of Content:

Page 3: Comparison of component marking

Page 4: Example of the new barcode label

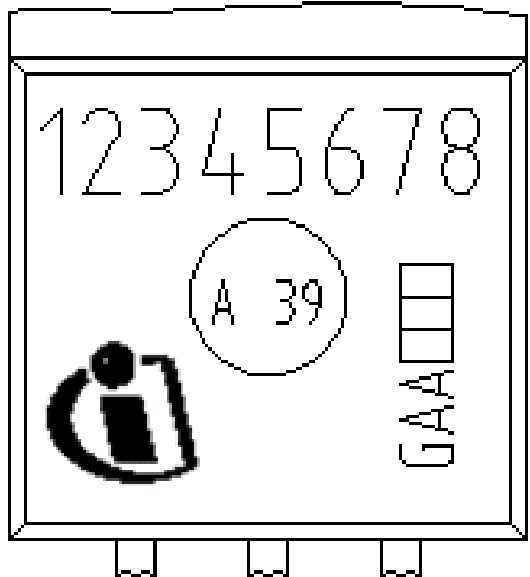
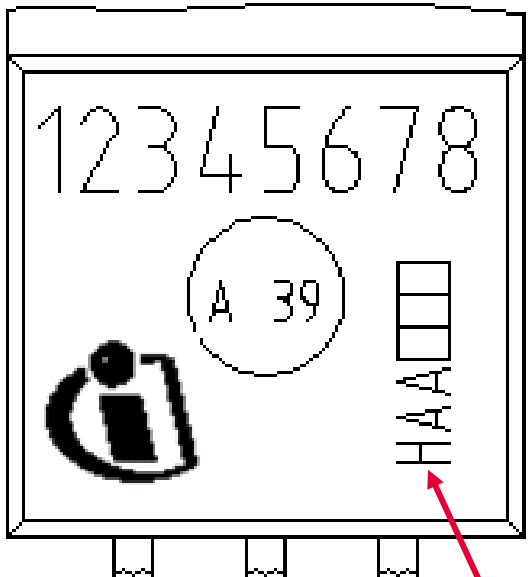
Page 5: Comparison of leadframes

Page 6: Comparison of package outer dimensions PG-TO252

Page 7: Comparison of package outer dimensions PG-TO251

Comparison of component marking

→ H instead of G in front of date code

Current	New
 <p>The diagram shows a component marking layout. At the top, the numbers 1 through 8 are arranged horizontally. Below them, on the left, is a circular icon containing the letter 'i'. To the right of the icon is a circle containing the text 'A 39'. Further right is a vertical stack of four small squares. Below these squares, the letters 'GAA' are printed vertically.</p>	 <p>The diagram shows a component marking layout, similar to the current one. It features the same top numbers, 'i' icon, 'A 39' circle, and vertical stack of squares. However, the letters 'HAA' are printed vertically below the squares. A red arrow points from the bottom right towards the 'H'.</p>

Example of the new Barcode Label:

→ Introduction of Halogen-free logo

Infineon



OptiMOS
IPD060N03L G

(1P): SP000236948



(1T): 1EYWWXXXMXX



GOHW0106081209

(9D): 0808



(Q): 2500



(X): 99908205



(13D):08080810

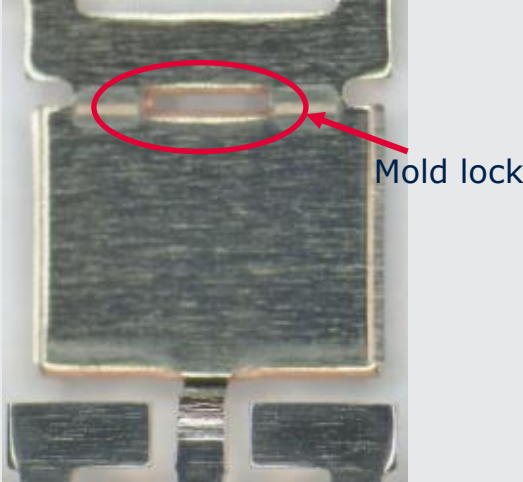


Level/Temp: 1/260

Diffused in MALAYSIA, Assembled in MALAYSIA



Comparison current to new leadframe for PG-TO252

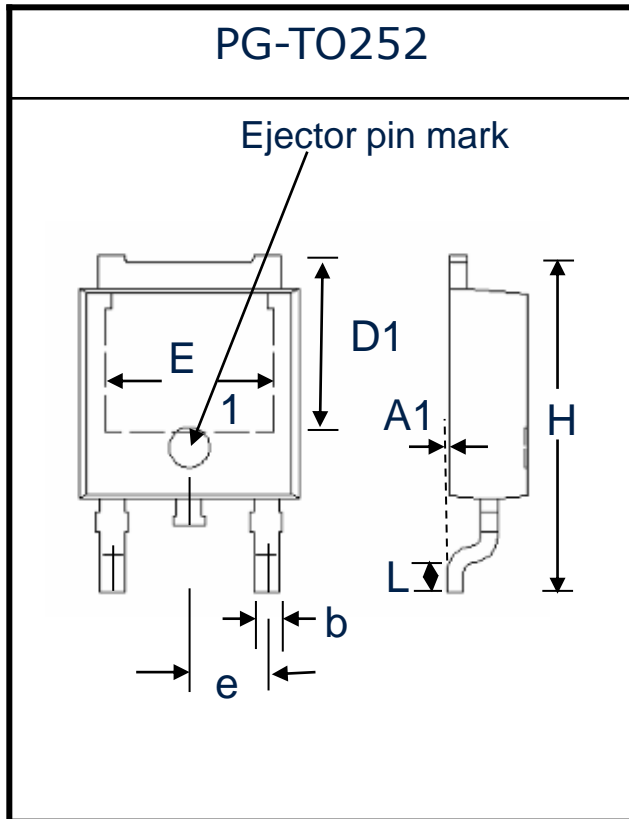
- Base- and Surface- materials remain the same
- Leadframe will be standardized

IFX Malacca current		IFX Malacca new
3I Single Gauge Fully pre-plated NiNiP with mold lock	3I Dual Gauge Fully pre-plated NiNiP without mold lock	3I Single Gauge Fully pre-plated NiNiP without mold lock
		

Comparison of Package Outer Dimensions for PG-TO252

→ No changes between current and new, all POD shown are within the already applied Infineon specification.

Dent marks such as ejector pins are slightly different in dimension and position due to the different moulding equipment used.



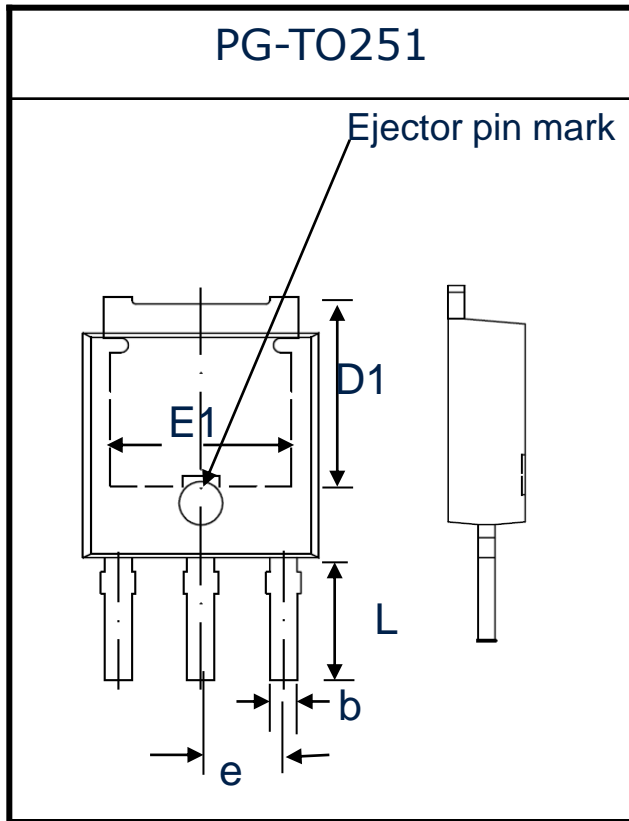
Reference	IFX Malacca Current		IFX Malacca New	
	Min	Max	Min	Max
D1	5.04	5.44	5.04	5.44
E1	4.90	5.10	4.90	5.10
L	0.51	0.61	0.51	0.61
b	0.65	0.85	0.65	0.85
e	2.28BSC		2.28BSC	
A1	0	0.15	0	0.15

Note : Units are in mm

Comparison of Package Outer Dimensions for PG-TO251

→ Lead length (L) standardized from max 3.6mm to max 3.5mm

Dent marks such as ejector pins are slightly different in dimension and position due to the different moulding equipment used.



Reference	IFX Malacca Current		IFX Malacca New	
	Min	Max	Min	Max
D1	5.04	5.44	5.04	5.44
E1	4.90	5.10	4.90	5.10
L	3.4	3.6	3.3	3.5
b	0.65	0.85	0.65	0.85
e	2.28BSC		2.28BSC	
A1	0	0.15	0	0.15

Note : Units are in mm



ENERGY EFFICIENCY MOBILITY SECURITY

Innovative semiconductor solutions for energy efficiency, mobility and security.





Final Qualification Report

Date: 2013-07-12

PCN 2013-053-A

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Reason for choosing following test vehicle:

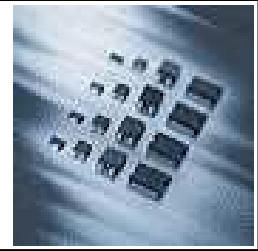
SPD07N60C3 EHAT technology, big chip
 SPD02N60C3 EHAT technology, smal chip
 IPD90R1K2C3 EHC3 technology, big chip
 IPD60R380C6 EHC5 technology, big chip
 IPD600N25N3 G SFET3_HV technology big chip
 IPD068N10N3 G SFET3_HV technology big chip
 IPD042P03L3 G PFET4 technology big chip

Extension of qualification: All CoolMOS™ C3, S5, CP, C6, E6, P6 products in TO252 produced at Infineon Technologies Malacca, Malaysia
 All OptiMOS™3 (SFET3 80V - 250V) and OptiMOS™P3 products in TO252 produced at Infineon Technologies Malacca, Malaysia

Assessment of Q-Results PASS

Reference Product				SPD07N60C3	SPD02N60C3	IPD90R1K2C3	IPD60R380C6	IPD600N25N3 G	IPD068N10N3 G	IPD042P03L3 G
Chip type				L5523	L5923	L5236	L5154	L9179	L9167	L8064
Wafer Technology				EHAT_8	EHAT_8	EHC3_8	EHC5CC_600	SFET3_HV	SFET3_HV	PFET4
Wafer Technology Location				Kulim	Kulim	Villach	Villach	Regensburg	Kulim	Villach
Chip sizes (mm ²)				9	3	9	9	11	11	10
IFX Package type				PG-TO252	PG-TO252	PG-TO252	PG-TO252	PG-TO252	PG-TO252	PG-TO252
Assembly line location				Mal	Mal	Mal	Mal	Mal	Mal	Mal
Test description	Abbr.	Condition	Readout							
Pre-Conditioning J-STD020 / JESD22 A113	PC	MSL 1 and 3 x reflow at 260°C		MSL1, 260°C	MSL1, 260°C	MSL1, 260°C	MSL1, 260°C	MSL1, 260°C	MSL1, 260°C	MSL1, 260°C
Temperature Cycling JESD22 A104	TC*	-55°C - +150°C	0 c PC 500 c 1000 c	0 / 77 0 / 77 0 / 77 0 / 77	0 / 77 0 / 77 0 / 77 0 / 77	0 / 77 0 / 77 0 / 77 0 / 77	0 / 77 0 / 77 0 / 77 0 / 77	0 / 77 0 / 77 0 / 77 0 / 77	0 / 77 0 / 77 0 / 77 0 / 77	0 / 77 0 / 77 0 / 77 0 / 77
Autoclave JESD22 A102	AC*	121°C / 100% rh	0h PC 96h	0 / 77 0 / 77 0 / 77	0 / 77 0 / 77 0 / 77	0 / 77 0 / 77 0 / 77	0 / 77 0 / 77 0 / 77	0 / 77 0 / 77 0 / 77	0 / 77 0 / 77 0 / 77	0 / 77 0 / 77 0 / 77
High Humidity High Temp. Reverse Bias JESD22 A101	H3TRB*	85°C / 85%rh V = 80V or 80% VDS	0 h PC 500 h 1000 h	0 / 77 0 / 77 0 / 77 0 / 77	0 / 77 0 / 77 0 / 77 0 / 77	0 / 77 0 / 77 0 / 77 0 / 77	0 / 77 0 / 77 0 / 77 0 / 77	0 / 77 0 / 77 0 / 77 0 / 77	0 / 77 0 / 77 0 / 77 0 / 77	0 / 77 0 / 77 0 / 77 0 / 77
High Temperature Reverse Bias JESD22 A108 (Q101)	HTRB*	Ta ≥ Tjmax V ≥ 80% rated voltage	0 h PC 500 h 1000 h	0 / 77 0 / 77 0 / 77 0 / 77	referenced acc. Jeduc to SPD07N60C3	0 / 77 0 / 77 0 / 77 0 / 77	0 / 77 0 / 77 0 / 77 0 / 77	0 / 77 0 / 77 0 / 77 0 / 77	0 / 77 0 / 77 0 / 77 0 / 77	0 / 77 0 / 77 0 / 77 0 / 77
High Temperature Gate stress JESD22 A108	HTGS*	Ta ≥ Tjmax V ≥ 80% rated voltage	0 h PC 500 h 1000 h	0 / 77 0 / 77 0 / 77 0 / 77	referenced acc. Jeduc to SPD07N60C3	0 / 77 0 / 77 0 / 77 0 / 77	0 / 77 0 / 77 0 / 77 0 / 77	0 / 77 0 / 77 0 / 77 0 / 77	0 / 77 0 / 77 0 / 77 0 / 77	0 / 77 0 / 77 0 / 77 0 / 77
Intermitted Operational Life Test MIL-STD 750/Meth.1037	IOL*	Delta T=100K for 15 000c	0 c PC 7500 c 15000 c	referenced acc. Jeduc to SPD02N60C3 and IPD042P03L3G	0 / 77 0 / 77 0 / 77 0 / 77	referenced acc. Jeduc to SPD02N60C3 and IPD042P03L3G	referenced acc. Jeduc to SPD02N60C3 and IPD042P03L3G	referenced acc. Jeduc to SPD02N60C3 and IPD042P03L3G	referenced acc. Jeduc to SPD02N60C3 and IPD042P03L3G	0 / 77 0 / 77 0 / 77 0 / 77
Wave solder simulation for SMD devices JESD22 A111	WS	MSL 1 wavesoldering (T=260°C / 1 x 10Sec) Temperature Cycling (-55°C - +150°C)	before after	0 / 77 0 / 77	0 / 77 0 / 77	0 / 77 0 / 77	0 / 77 0 / 77	0 / 77 0 / 77	0 / 77 0 / 77	0 / 77 0 / 77

* PC is done only for SMD Packages before AC, TC, IOL, HTGS, HTRB, H3TRB stress tests and before wavesolder simulation



Material Content Data Sheet								
Sales Product Name				Issued		26. June 2013		
MA#								
Package		PG-TO252-3-313, PG-TO251-3-342		Weight:		316.60 mg		
Construction Element	Material group	Materials	CAS if applicable	Weight [mg]	Average mass [%]	Sum [%]	Average mass [ppm]	Sum [ppm]
chip	inorganic material	silicon	7440-21-3	0.570	0.18	0.18	1801	1801
leadframe	non noble metal	iron	7439-89-6	0.147	0.05		465	
	inorganic material	phosphorus	7723-14-0	0.044	0.01		140	
	non noble metal	copper	7440-50-8	147.096	46.46	46.52	464612	465217
wire	non noble metal	aluminium	7429-90-5	0.547	0.17	0.17	1727	1727
encapsulation	organic material	carbon black	1333-86-4	1.431	0.45		4519	
	plastics	epoxy resin	-	25.035	7.91		79074	
	inorganic material	silicondioxide	60676-86-0	116.590	36.83	45.19	368257	451850
leadfinish	non noble metal	tin	7440-31-5	3.740	1.18	1.18	11813	11813
plating	inorganic material	phosphorus	7723-14-0	0.003			11	
	non noble metal	nickel	7440-02-0	1.421	0.45	0.45	4487	4498
solder	noble metal	silver	7440-22-4	0.019	0.01		61	
	non noble metal	tin	7440-31-5	0.015			49	
	non noble metal	lead	7439-92-1	0.738	0.23	0.24	2332	2442
heatspreader	non noble metal	iron	7439-89-6	0.019	0.01		61	
	inorganic material	phosphorus	7723-14-0	0.006			18	
	non noble metal	copper	7440-50-8	19.177	6.06	6.07	60573	60652
deviation	< 10%	Sum in total:				100.00		1000000

Important Remarks:

1. Infineon Technologies AG provides full material declaration based on information provided by third parties and has taken and continues to take reasonable steps to provide representative and accurate information.
2. Infineon Technologies AG and Infineon Technologies AG suppliers consider certain information to be proprietary, and thus CAS numbers and other limited information may not be available for release.
3. All statements are based on our present knowledge, are provided 'as is' and may be subject to change at any time due to technical requirements and development without notification.

Company	Infineon Technologies AG
Address	81726 München
Internet	www.infineon.com

Product / Process Change Notification



CUSTOMER APPROVAL FORM

N° 2013-053-A

Standardization of Assembly Bill Of Materials for dedicated CoolMOS™ and OptiMOS™ products in PG-TO252 and PG-TO251 at IFX Malacca, Malaysia

Please list product(s) affected in your application(s):

Please check the appropriate box below:

We agree with this proposed change and its schedule.

We have objections:

We need more information:

We need samples:

Sender

Company:

Name:

Address/Location :

E-Mail:

Telefon:

Fax:

Signature

Date:

Please return to : your Sales partner

Company: Infineon

Name:

Address/Location :

E-mail:

Telefon:

Fax: