Product/process change notification

PCN N° 2021-165-A

Dear customer,

Please find attached our Infineon Technologies AG PCN:

Introduction of an additional assembly and final test location at HYME for CoolMOS™, package TO252/251-3

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 **2022-04-15**
- Infineon aligns with the widely recognized JEDEC STANDARD **"JESD46",** which stipulates: **"Lack of acknowledgement of the PCN within 30 days constitutes acceptance of the change."**

Your prompt reply will help Infineon 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.

On 16 April 2020, Infineon acquired Cypress.
We are now in the process of merging and consolidating our tools and processes for PCN, Information Notes, Errata and Product Discontinuance.
For further details, please visit our website:
https://www.infineon.com/cms/en/about-infineon/company/cypress-acquisition/

Infineon Technologies AG
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Chairman of the Supervisory Board: Dr. Wolfgang Eder
Management Board: Dr. Reinhard Ploss (CEO), Dr. Helmut Gassel, Jochen Hanebeck, Constanze Hufenbecher, Dr. Sven Schneider
Registered Office: Neubiberg
Commercial Register: München HRB 126492

Product/process change notification

PCN N° 2021-165-A

▶ Products affected

Please refer to attached affected product list
“PCN_2021-165-A_[*customer-no*].pdf”

▶ Detailed change information

Subject

Introduction of an additional assembly and final test location at HYME for CoolMOS™, package TO252/251-3.

Reason

Expansion of assembly and test location to assure continuity, increase capacity and supply flexibility.

Description

	Old	New
Assembly and test location	■ Tongfu Microelectronics Co Ltd. (TFME), China ■ ASE (Weihai) Inc., China ■ Infineon Technologies (Malaysia) Sdn. Bhd., Melaka, Malaysia	■ In addition: Huayi Microelectronics Co., Ltd (HYME), China
Mold compound	■ CEL 9220 HF13 ■ KMC 2110 G-7 ■ KTMC 5400 GI	■ In addition: EME G700 HF

▶ Product identification

Traceability via baunumber, lotnumber, date code and marking (please refer to 3_cip21165_a).

▶ Impact of change

Based on all assessments, Infineon does not see any negative impact on product quality, function and reliability.

NO change on electrical and thermal performance.
NO impact on device reliability as proven via product qualification.
NO impact on electrical parameters and device process ability at customer end.
NO change in package outer dimensions for DPAK (IPD…, SPD…) and IPAK short lead (IPS…).
IPAK long lead (IPU…, SPU…) package drawing in IFX datasheet was amended for L1min from 1.9 to 0.85mm and L2min from 0.89 to 0.88mm

For detailed information please refer to 3_cip21165_a

Product/process change notification

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▶ Attachments

PCN_2021-165-A_[*customer-no*].pdf	affected product list
2_cip21165_a	qualification test report
3_cip21165_a	information package

▶ Time schedule

■ Final qualification report	2022-01-13 (see 2_cip21165_a)
■ First samples available	on request, March 2022 onwards
■ Intended start of delivery	June 2022 onwards, or earlier upon customer acceptance

If you have any questions, please do not hesitate to contact your local sales office.

3cip PCN_2021-165-A

Introduction of an additional assembly and final test location at HYME for CoolMOS™, package TO252/251-3.

Table of Contents

3cip PCN_2021-165-A
Bill Of Materials Comparison

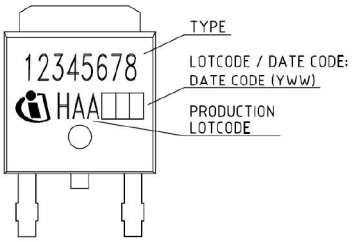
BOM comparison for DPAK and IPAK

	ASEWH	IFX MEL	TFME	HYME
Die attach	Pb95.5Sn2Ag2.5	Pb95.5Sn2Ag2.5	Pb95.5Sn2Ag2.5	Pb95.5Sn2Ag2.5
Leadframe base material	Copper	Copper	Copper	Copper
Bonding wire	Al, 75 to 500um	Al, 75 to 500um	Al, 75 to 500um	Al, 75 to 500um
Molding compound	KTMC 5400 GI	KMC 2110 G-7	CEL 9220 HF13	EME-G700HF
Plating final surface	Sn	Sn	Sn	Sn

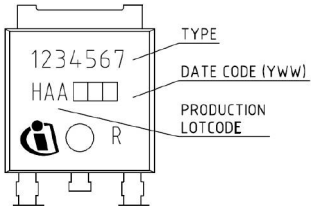
3cip PCN_2021-165-A
Marking Pattern Comparison

TO252-3 *(symbolic drawings)*

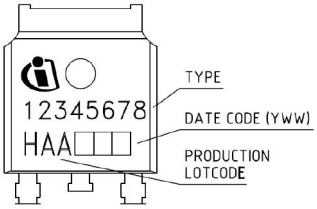
ASEWH



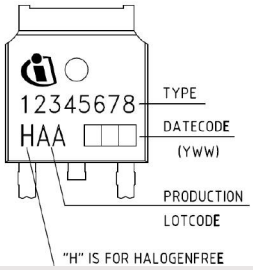
IFX Melaka



TFME

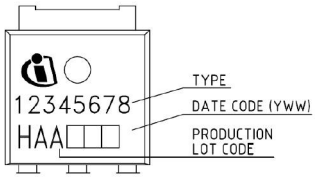


HYME

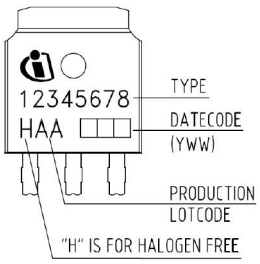


TO251-3 Short Lead *(symbolic drawings)*

TFME

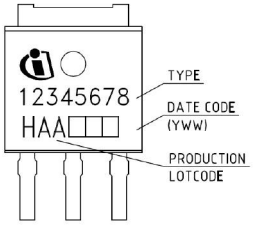


HYME

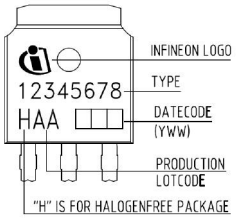


TO251-3 Long Lead *(symbolic drawings)*

TFME

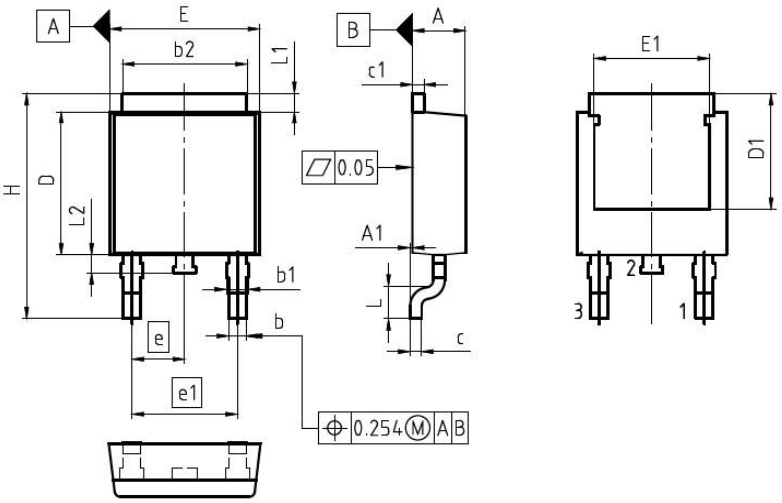


HYME



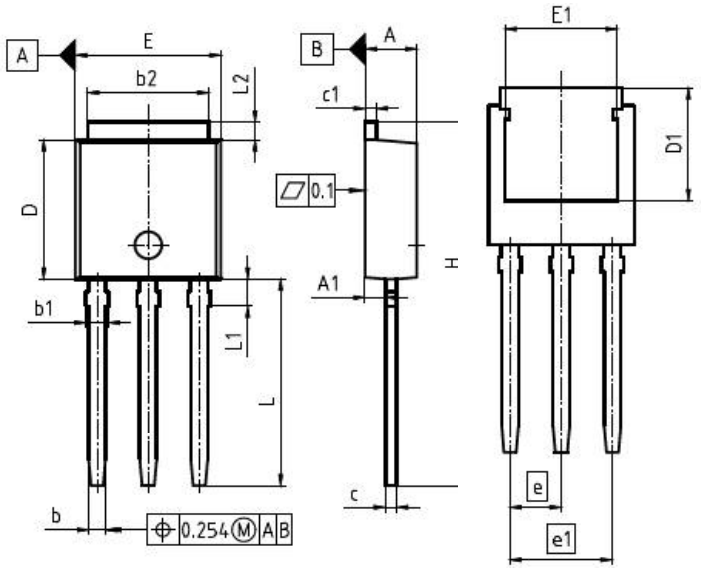
3cip PCN_2021-165-A
DPAK (TO252-3) POD Comparison

	IFX Datasheet		ASEWH		Melaka		TFME		HYME	
	TO252-3		TO252-3		TO252-3		TO252-3		TO252-3	
	mm		mm		mm		mm		mm	
	min	max	min	max	min	max	min	max	min	max
A	2.16	2.41	2.18	2.39	2.20	2.35	2.20	2.38	2.20	2.4
A1	0	0.15	0	0.13	0	0.15	0.00	0.10	0	0.15
b	0.64	0.89	0.65	0.88	0.65	0.85	0.72	0.85	0.68	0.89
b1	0.65	1.15	0.76	1.12	0.65	1.15	0.72	0.90	0.73	1.00
b2	4.95	5.50	4.95	5.46	5.3	5.5	5.13	5.46	5.2	5.5
c	0.46	0.61	0.46	0.61	0.46	0.58	0.47	0.60	0.46	0.6
c1	0.40	0.98	0.40	0.60	0.46	0.58	0.47	0.60	0.46	0.6
D	5.97	6.22	5.97	6.22	6.02	6.22	6.00	6.20	5.98	6.22
D1	5.02	5.84	5.21	5.84	5.09	5.39	5.25	5.50	5.02	5.84
E	6.35	6.73	6.35	6.73	6.45	6.65	6.50	6.70	6.40	6.73
E1	4.32	5.50	4.32	5.50	4.90	5.10	5.20	5.50	4.70	5.21
e	2.29		2.29		2.29		2.28		2.29	
e1	4.57		4.57		4.57		4.56		4.57	
N	3		3		3		3		3	
H	9.40	10.48	9.94	10.34	9.48	10.48	9.80	10.40	9.4	10.48
L	1.18	1.78	1.50	1.78	1.2	1.4	1.40	1.70	1.38	1.70
L1	0.89	1.27	0.89	1.27	0.9	1.1	0.90	1.25	0.90	1.25
L2	0.51	1.02	0.51	1.02	0.65	0.95	0.60	1.00	0.60	1.00



3cip PCN_2021-165-A
IPAK long lead (TO251-3) POD Comparison

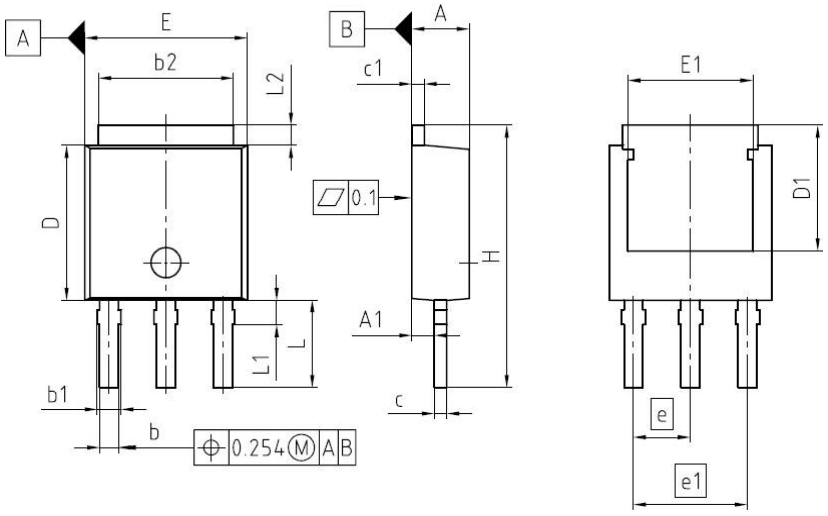
	IFX Datasheet		TFME		HYME	
	Industrial grade		Industrial grade		Industrial grade	
	min	max	min	max	min	max
A	2.16	2.41	2.16	2.41	2.2	2.4
A1	0.9	1.14	0.9	1.1	0.9	1.14
b	0.64	0.89	0.77	0.89	0.64	0.89
b1	0.65	1.15	0.77	1.1	0.65	1.15
b2	4.95	5.5	5.23	5.43	5.2	5.5
c	0.46	0.6	0.47	0.6	0.46	0.6
c1	0.46	0.89	0.47	0.6	0.46	0.6
D	5.97	6.22	6	6.2	5.98	6.22
D1	5.04	5.77	5.04	5.77	5.04	5.77
E	6.35	6.73	6.5	6.7	6.35	6.73
E1	4.7	5.21	4.7	5.21	4.7	5.21
e	2.29		2.28		2.29	
e1	4.58		4.58		4.58	
N	3		3		3	
H	15.74	17.24	15.9	17.05	16.01	17.15
L	8.89	9.65	9	9.6	9.15	9.65
L1	0.85	2.29	1.9	2.1	0.85	1.25
L2	0.88	1.37	0.9	1.25	0.88	1.28



Due to HYME, the package dimension in the IFX datasheet was amended for L1min from 1.9 to 0.85mm and L2min from 0.89 to 0.88mm

3cip PCN_2021-165-A
IPAK short lead (TO251-3) POD Comparison

	IFX Datasheet		TFME		HYME	
	Industrial grade		Industrial grade		Industrial grade	
	min	max	min	max	min	max
A	2.20	2.35	2.20	2.35	2.20	2.35
A1	0.80	1.14	0.90	1.10	0.90	1.14
b	0.64	0.89	0.66	0.79	0.64	0.89
b1	0.65	1.15	0.87	0.90	0.65	1.15
b2	5.20	5.50	5.23	5.43	5.20	5.50
c	0.46	0.59	0.46	0.59	0.46	0.59
c1	0.46	0.59	0.46	0.59	0.46	0.60
D	6.00	6.22	6.00	6.22	6.00	6.22
D1	5.04	5.56	5.20	5.55	5.20	5.55
E	6.45	6.70	6.50	6.70	6.45	6.70
E1	4.60	5.21	4.60	4.95	4.70	5.21
e	2.29		2.25		2.29	
e1	4.58		4.58		4.58	
N	3		3		3	
H	9.90	11.07	9.90	10.87	10.20	11.07
L	3.00	3.60	3.00	3.40	3.30	3.60
L1	0.80	1.20	0.80	1.20	0.85	1.20
L2	0.90	1.25	0.90	1.25	0.90	1.25



Part of your life. Part of tomorrow.

RESTRICTED

Qualification Test Report

PCN N° 2021-165-A **Date: 2022-01-13**

Introduction of an additional assembly and final test location at HYME for CoolMOS™, package TO252/251-3

Reason for choosing the following test vehicles:

IPD60R3K3C6	C6 technology in DPAK, small chip size, SMD precon
IPD50R520CP	CP technology in DPAK, medium chip size, SMD precon
IPU95R450P7	P7 technology in IPAK, big chip size, THD
IPD60R180P7	P7 technology in DPAK, big chip size, SMD precon
IPD65R660CFD	CFD technology in DPAK, medium chip size, SMD precon

Scope of qualification: All CoolMOS™ products in TO252/251-3 assembled at HYME

Assessment of Q-Results: pass industrial grade according to JEDEC

Stress test	Abbreviation	Test conditions	Readout	IPD60R3K3C6	IPD50R520CP	IPU95R450P7	IPD60R180P7	IPD65R660CFD
				fails / stressed	fails / stressed	fails / stressed	fails / stressed	fails / stressed
MSL Preconditioning JESD22-A113	**PC**	MSL 1		0 / 462	0 / 385	n.a.	0 / 462	0 / 462
Temperature Cycling JESD22-A104	**TC***	-55°C - +150°C	1000 cyc	0 / 77	0 / 77	0 / 77	0 / 77	0 / 77
Unbiased Temperature/Humidity JESD22-A118	**UHAST***	Ta = 130°C, RH = 85%	96 h	0 / 77	0 / 77	0 / 77	0 / 77	0 / 77
High Humidity High Temp. Reverse Bias JESD22-A101	**H3TRB***	T = 85°C RH = 85% V = 100 V	1000 h	0 / 77	0 / 77	0 / 77	0 / 77	0 / 77
High Temperature Reverse Bias JESD22-A108	**HTRB***	Ta ≥ 150°C V ≥ 80% Vdss max	1000 h	0 / 77	0 / 77	0 / 77	0 / 77	0 / 77
High Temperature Gate stress JESD22-A108	**HTGS***	Ta = 150°C Vg = ±20 V	1000 h	0 / 77	-	-	0 / 77	0 / 77
Intermitted Operational Life Test MIL-STD 750/Meth.1037	**IOL***	Delta T = 100 K	15000 cyc	0 / 77	0 / 77	-	0 / 77	0 / 77
Resistance to Solder Heat JESD22 B106	**RSH**	3x Solder dipping @ 270°C, 7s (for Pb free)		-	-	0 / 22	-	-
Lead Solderability MIL-STD-202 Method 208, JESD22-B102E	**SD**	92°C** / 100% rh 5s / 1 x [SD] @ 245°C 8 hrs steam aging	visual inspection	0 / 15	0 / 15	0 / 15	-	-
Wave solder simulation for SMD devices JESD22 A111	**WS**	T=260°C / 1 x 10Sec and Temperature Cycling -55°C - +150°C 100 cycles	WS + 100 cyc	-	0 / 30	-	0 / 30	-
Electrical Parameter Assessment JESD86	**ED**	Ta = -55°C/25°C/150°C		0 / 30	0 / 30	0 / 30	0 / 30	0 / 30

*** PC is done only for SMD Packages before UHAST, TC, IOL, HTGS, HTRB and H3TRB stress tests**
**** depends on the altitude of the test location**

PCN 2021-165-A

Introduction of an additional assembly and final test location at HYME for Coolmos TM, package TO252/251-3

Affected products sold to FUTURE ELECTRONICS INC. (4000624)

Sales name	SP number	OPN	Package	Customer part number
IPD60R180P7	SP001606052	IPD60R180P7ATMA1	PG-TO252-3	IPD60R180P7ATMA1
IPD60R1K4C6	SP001292870	IPD60R1K4C6ATMA1	PG-TO252-3	IPD60R1K4C6ATMA1
IPD60R380C6	SP001117716	IPD60R380C6ATMA1	PG-TO252-3	IPD60R380C6ATMA1
IPD60R380P6	SP001135814	IPD60R380P6ATMA1	PG-TO252-3	IPD60R380P6ATMA1
IPD60R385CP	SP000680638	IPD60R385CPATMA1	PG-TO252-3	IPD60R385CPATMA1
IPD60R600C6	SP001117726	IPD60R600C6ATMA1	PG-TO252-3	IPD60R600C6ATMA1
IPD60R600P6	SP001178242	IPD60R600P6ATMA1	PG-TO252-3	IPD60R600P6ATMA1
IPD60R600P7	SP001606046	IPD60R600P7ATMA1	PG-TO252-3	IPD60R600P7ATMA1
IPD60R950C6	SP001117730	IPD60R950C6ATMA1	PG-TO252-3	IPD60R950C6ATMA1
IPD65R420CFD	SP001117738	IPD65R420CFDATMA1	PG-TO252-3	IPD65R420CFDATMA1
IPD80R1K0CE	SP001130974	IPD80R1K0CEATMA1	PG-TO252-3	IPD80R1K0CEATMA1
IPD80R280P7	SP001422596	IPD80R280P7ATMA1	PG-TO252-3	IPD80R280P7ATMA1
IPD80R2K0P7	SP001634906	IPD80R2K0P7ATMA1	PG-TO252-3	IPD80R2K0P7ATMA1
IPD80R2K8CE	SP001130970	IPD80R2K8CEATMA1	PG-TO252-3	IPD80R2K8CEATMA1
IPD80R360P7	SP001633516	IPD80R360P7ATMA1	PG-TO252-3	IPD80R360P7ATMA1
IPD80R450P7	SP001422626	IPD80R450P7ATMA1	PG-TO252-3	IPD80R450P7ATMA1
IPD80R600P7	SP001644246	IPD80R600P7ATMA1	PG-TO252-3	IPD80R600P7ATMA1
IPD80R750P7	SP001644282	IPD80R750P7ATMA1	PG-TO252-3	IPD80R750P7ATMA1
IPD80R900P7	SP001633484	IPD80R900P7ATMA1	PG-TO252-3	IPD80R900P7ATMA1
IPD90R1K2C3	SP001117752	IPD90R1K2C3ATMA1	PG-TO252-3	IPD90R1K2C3ATMA1
IPD95R750P7	SP001792316	IPD95R750P7ATMA1	PG-TO252-3	IPD95R750P7ATMA1
IPU80R1K4P7	SP001422742	IPU80R1K4P7AKMA1	PG-TO251-3	IPU80R1K4P7AKMA1
SPD02N80C3	SP001117754	SPD02N80C3ATMA1	PG-TO252-3	SPD02N80C3ATMA1
SPD04N60C3	SP001117764	SPD04N60C3ATMA1	PG-TO252-3	SPD04N60C3ATMA1
SPD04N80C3	SP001117768	SPD04N80C3ATMA1	PG-TO252-3	SPD04N80C3ATMA1
SPD06N80C3	SP001117772	SPD06N80C3ATMA1	PG-TO252-3	SPD06N80C3ATMA1
SPD07N60C3	SP001117774	SPD07N60C3ATMA1	PG-TO252-3	SPD07N60C3ATMA1