PCN Number:	20200922000.2B	**PCN Date:**	May 12, 2021
Title:	Qualification of TI Malaysia as an additional Assembly and Test site for select devices		
Customer Contact:	PCN Manager	**Dept:**	Quality Services
Proposed 1st Ship Date:	May 02, 2021	**Estimated Sample Availability:**	Date provided at sample request

Change Type:

☒	Assembly Site	☐	Design	☐	Wafer Bump Site
☐	Assembly Process	☐	Data Sheet	☐	Wafer Bump Material
☒	Assembly Materials	☐	Part number change	☐	Wafer Bump Process
☐	Mechanical Specification	☒	Test Site	☐	Wafer Fab Site
☒	Packing/Shipping/Labeling	☐	Test Process	☐	Wafer Fab Materials
				☐	Wafer Fab Process

PCN Details

Description of Change:

Revision B is to announce the addition of new devices that were not included on the original PCN notification. These new devices are highlighted and **bolded** in the device list below. The expected first shipment date for these new devices will be 180 days from this notice (Nov 12, 2021) for these newly added devices only. The proposed 1st ship date of May 02, 2021 still applies for the original set of devices.

Devices in the Product Affected Section with ~~strikethrough~~ has been retracted under PCN rev A and are not affected by this change.

Texas Instruments is pleased to announce the qualification of TI Malaysia as an additional Assembly and Test site for the list of SOIC devices shown below. Material differences between sites as follows.

	TI Taiwan	**TI Malaysia**
Leadframe finish	NiPdAu	NiPdAu (Roughened top side)

Test coverage, insertions, conditions will remain consistent with current testing and verified with test MQ.

Reason for Change:

Continuity of Supply

Anticipated impact on Form, Fit, Function, Quality or Reliability (positive / negative):

None

Anticipated impact on Material Declaration

☒	No Impact to the Material Declaration	☐	Material Declarations or Product Content reports are driven from production data and will be available following the production release. Upon production release the revised reports can be obtained at the site link below http://www.ti.com/quality/docs/materialcontentsearch.tsp

Changes to product identification resulting from this PCN:

Assembly Site	Assembly Site Origin (22L)	Assembly Country Code (23L)	Assembly City
TI Taiwan	TAI	TWN	Chung Ho
TI Malaysia	**MLA**	**MYS**	**Kuala Lumpur**

Sample product shipping label (not actual product label)

Product Affected:

AMC1305M25QDWRQ1	ISO7731QDWRQ1	ISO7742QDWRQ1	ISO7741FEDWQ1
ISO7730FQDWQ1	ISO7741FQDWRQ1	ISO7740FQDWQ1	ISO7741FQDWQ1
ISO7730QDWQ1	ISO7741QDWQ1	ISO7740FQDWRQ1	**ISO7730FQDWRQ1**
ISO7730QDWRQ1	ISO7741QDWRQ1	ISO7740QDWQ1	**ISO7741FEDWRQ1**
ISO7731FQDWQ1	ISO7742FQDWQ1	ISO7740QDWRQ1	~~TPS92691QPWPQ1~~
ISO7731FQDWRQ1	ISO7742FQDWRQ1	ISO7741EDWQ1	~~TPS92691QPWPRQ1~~
ISO7731QDWQ1	ISO7742QDWQ1	ISO7741EDWRQ1	~~TPS92691QPWPTQ1~~

Qualification Data

Automotive New Product Qualification Summary
(As per AEC-Q100 and JEDEC Guidelines)

Approved – 10/13/20

Product Attributes

Attributes	Qual Device: AMC1305M25QDWRQ1	QBS Product/Process Reference: AMC1305M25QDWRQ1	QBS Process Reference: INA215AQDCKRQ1
Automotive Grade Level	Grade 1	Grade 1	Grade 1
Operating Temp Range	-40 to +125 C	-40 to +125 C	-40 to +125 C
Product Function	Signal Chain	Signal Chain	Signal Chain
Die Attributes	-	-	-
Wafer Fab Supplier	AIZU, DMOS5	AIZU, DMOS 5	AIZU
Wafer Diameter (mm)	200	200	200
Wafer Process Technology	High Precision Analog CMOS	High Precision Analog CMOS	High Precision Analog CMOS
Wafer Process ID	50HPA07, 50HPA07ISO-S	50HPA07, 50HPA07ISO-S	50HPA07
Die Revision	BC, D, G	BC, D, G	C
Number of Metal Layers	7, 3	7, 3	3
Metal Composition	AlCu	AlCu	AlCu
Die Passivation Material	Nitride	Nitride	Nitride

Qualification Results

Data Displayed as: Number of lots / Total sample size / Total failed

Type	#	Test Spec	Min Lot Qty	SS/Lot	Test Name / Condition	Duration	Qual Device: AMC1305M25QDWRQ1	QBS Product/ProcessReference: AMC1305M25QDWRQ1	QBS Process Reference: INA215AQDCKRQ1
Test Group A – Accelerated Environment Stress Tests									
PC	A1	JEDEC J-STD-020 JESD22-A113	3	77	Automotive Preconditioning Level 2	Level 2-260C	-	-	3/948/0
PC	A1	JEDEC J-STD-020 JESD22-A113	3	77	Automotive Preconditioning Level 3	Level 3-260C	4/1344/0	3/960/0	-
HAST	A2	JEDEC JESD22-A110	3	77	Biased HAST, 130C/85%RH	96 Hours	3/231/0	3/231/0	3/231/0
HAST	A2	JEDEC JESD22-A110	3	77	Biased HAST, 130C/85%RH	192 Hours	3/231/0	-	-
AC	A3	JEDEC JESD22-A102	3	77	Autoclave 121C	96 Hours	3/231/0	3/231/0	3/231/0
AC	A3	JEDEC JESD22-A102	3	77	Autoclave 121C	192 Hours	3/231/0	-	-
TC	A4	JEDEC JESD22-A104 and Appendix 3	3	77	Temperature Cycle, -65/150C	500 Cycles	3/231/0	3/231/0	3/231/0
TC	A4	JEDEC JESD22-A104 and Appendix 3	3	77	Temperature Cycle, -65/150C	1000 Cycles	3/229/0	-	-
TC-BP	A4	MIL-STD883 Method 2011	1	60	Post TC Bond Pull	Wires	1/30/0	1/30/0	1/30/0
PTC	A5	JEDEC JESD22-A105	1	45	Power Temperature Cycle	1000 Cycles	N/A	-	-
HTSL	A6	JEDEC JESD22-A103	1	45	High Temp Storage Bake 175C	500 Hours	3/231/0	1/45/0	1/45/0
HTSL	A6	JEDEC JESD22-A103	1	45	High Temp Storage Bake 175C	1000 Hours	3/231/0	-	-

Type	#	Test Spec	Min Lot Qty	SS/Lot	Test Name / Condition	Duration	Qual Device: AMC1305M25QDWRQ1	QBS Product/ProcessReference: AMC1305M25QDWRQ1	QBS Process Reference: INA215AQDCKRQ1
Test Group B – Accelerated Lifetime Simulation Tests									
HTOL	B1	JEDEC JESD22-A108	3	77	Life Test, 125C	1000 Hours	-	-	3/231/0
HTOL	B1	JEDEC JESD22-A108	3	77	Life Test, 150C	408 Hours	1/77/0	3/231/0	-
HTOL	B1	JEDEC JESD22-A108	3	77	Life Test, 150C	816 Hours	1/70/0	-	-
ELFR	B2	AEC Q100-008	3	800	Early Life Failure Rate, 125C	48 Hours	-	-	3/2400/0
ELFR	B2	AEC Q100-008	3	800	Early Life Failure Rate, 150C	24 Hours	-	3/2400/0	-
EDR	B3	AEC Q100-005	3	77	NVM Endurance, Data Retention, and Operational Life	-	N/A	-	-
Test Group C – Package Assembly Integrity Tests									
WBS	C1	AEC Q100-001	1	30	Wire Bond Shear (Cpk>1.67)	Wires	3/90/0	3/90/0	1/30/0
WBP	C2	MIL-STD883 Method 2011	1	30	Wire Bond Pull (Cpk>1.67)	Wires	3/90/0	3/90/0	1/30/0
SD	C3	JEDEC JESD22-B102	1	15	Surface Mount Solderability	Pb Free	1/15/0	1/15/0	-
PD	C4	JEDEC JESD22-B100 and B108	3	10	Auto Physical Dimensions	Cpk>1.67	3/30/0	-	-
LI	C6	JEDEC JESD22-B105	1	50	Lead Pull to Destruction	Leads	1/24/0	-	-
Test Group D – Die Fabrication Reliability Tests									
EM	D1	JESD61	-	-	Electromigration	-	Completed Per Process Technology Requirements	-	-
TDDB	D2	JESD35	-	-	Time Dependant Dielectric Breakdown	-	Completed Per Process Technology Requirements	-	-
HCI	D3	JESD60 & 28	-	-	Hot Injection Carrier	-	Completed Per Process Technology Requirements	-	-
NBTI	D4	-	-	-	Negative Bias Temperature Instability	-	Completed Per Process Technology Requirements	-	-
SM	D5	-	-	-	Stress Migration	-	Completed Per Process Technology Requirements	-	-
Test Group E – Electrical Verification Tests									
HBM	E2	AEC Q100-002	1	3	ESD - HBM - Q100	4000 V	1/3/0	1/3/0	-
CDM	E3	AEC Q100-011	1	3	ESD - CDM - Q100	1500 V	1/3/0	1/3/0	-
LU	E4	AEC Q100-004	1	6	Latch-up	Per AEC-Q100-004	1/6/0	1/6/0	-
ED	E5	AEC Q100-009	3	30	Auto Electrical Distributions	Cpk>1.67	1/30/0	3/90/0	-

- QBS: Qual By Similarity
- Qual Device AMC1305M25QDWRQ1 is qualified at LEVEL3-260C
- Device AMC1305M25QDWRQ1 contains multiple dies.

A1 (PC): Preconditioning:

Performed for THB, Biased HAST, AC, uHAST, TC & PTC samples, as applicable.

Ambient Operating Temperature by Automotive Grade Level:

Grade 0 (or E): -40°C to +150°C

Grade 1 (or Q): -40°C to +125°C

Grade 2 (or T): -40°C to +105°C

Grade 3 (or I) : -40°C to +85°C

E1 (TEST): Electrical test temperatures of Qual samples (High temperature according to Grade level):

Room/Hot/Cold : HTOL, ED

Room/Hot : THB / HAST, TC / PTC, HTSL, ELFR, ESD & LU

Room : AC/uHAST

Green/Pb-free Status:

Qualified Pb-Free(SMT) and Green

Qualification Data

Automotive New Product Qualification Summary
(As per AEC-Q100 and JEDEC Guidelines)

Approved – 9/28/20

Product Attributes

Attributes	Qual Device: TPS92691QPWPQ1	QBS Product Reference: TPS92691QPWPQ1	QBS Process Reference: TLC6C5816QPWPRQ1	QBS Package Reference: THS7530QPWPRQ1	QBS Package Reference: DRV8912PWPQ1
Automotive Grade Level	Grade 1	Grade 1	Grade 1	Grade 1	Grade 1
Operating Temp Range	-40°C to +125°C	-40°C to +125°C	-40°C to +125°C	-40°C to +125°C	-40 to +125 C
Product Function	Power Management	Power Management	Power Management	Signal Chain	Power Management
Die Attributes		-	-	-	
Wafer Fab Supplier	RFAB	RFAB	RFAB/CLARK-BUMP	FFAB	RFAB
Wafer Diameter (mm)	300	300	300	150	300
Wafer Process Technology	Power BiCMOS	Power BiCMOS	Power BiCMOS	BiCOMOS	Power BiCMOS
Wafer Process ID	LBC9	LBC9	LBC9	BiCOM-3	LBC9
Number of Metal Layers	3	3	3	3	3
Metal Composition	AlCu, 2% Cu, 5kA thickness	AlCu, 2% Cu, 5kA thickness	AlCu, 2% Cu, 5kA thickness	TiN(500A)/AlCu0.5%(6kA)/TiN(500A)	AlCu, 2% Cu, 5kA thickness
Die Passivation Material and Thickness	Oxide (6700A) and OxyNitride (8000A)	Oxide (6700A) and OxyNitride (8000A)	Oxide (6700A) and OxyNitride (8000A)	10KA OX/10KA CN	Oxide (6700A) and OxyNitride (8000A)

- QBS: Qual By Similarity
- Qual Device TPS92691Q is qualified at LEVEL3-260C

Qualification Results

Data Displayed as: Number of lots / Total sample size / Total failed

Type	#	Test Spec	Min Lot Qty	SS/ Lot	Test Name / Condition	Duration	Qual Device: TPS92691QPWPQ1	QBS Product Reference: TPS92691Q	QBS Process Reference: TLC6C5816QPWPRQ1	QBS Package Reference: THS7530QPWPRQ1	QBS Package Reference: DRV8912PWPQ1
Test Group A – Accelerated Environment Stress Tests											
PC	A1	JEDEC J-STD-020 JESD22-A113	3	77	Automotive Preconditioning	Level 2-260C	-	-	-	3/1140/0	-
PC	A1	JEDEC J-STD-020 JESD22-A113	3	77	Automotive Preconditioning	Level 3-260C	1/231/0	1/231/0	3/924/0	-	3/751/0
HAST	A2	JEDEC JESD22-A110	3	77	Biased HAST, 130C/85%RH	96 Hours	1/77/0	1/77/0	3/231/0	3/231/0	2/154/0
AC	A3	JEDEC JESD22-A102	3	77	Autoclave 121C	96 Hours	1/77/0	1/77/0	3/231/0	3/231/0	3/231/0
TC	A4	JEDEC JESD22-A104 and Appendix 3	3	77	Temperature Cycle, -65/150C	500 Cycles	1/77/0	1/77/0	3/231/0	3/231/0	3/231/0
TC-WBP	A4	MIL-STD883 Method 2011	1	30	Post Temp. Cycle Bond Pull	per MIL-STD 883 Method 2011	1/30/0	1/30/0	1/30/0	1/30/0	1/30/0
PTC	A5	JEDEC JESD22-A105	1	45	Power Temperature Cycle, -40/125C	1000 Hours	-	-	-	1/45/0	1/45/0
HTSL	A6	JEDEC JESD22-A103	1	45	High Temp. Storage Bake, 175C	500 Hours	-	1/77/0	-	1/45/0	-
HTSL	A6	JEDEC JESD22-A103	1	45	High Temp. Storage Bake, 150C	1000 Hours	-	-	3/135/0	-	3/135/0
HTSL	A6	JEDEC JESD22-A103	1	45	High Temp. Storage Bake, 150C	2000 Hours	-	-	3/135/0	-	
Test Group B – Accelerated Lifetime Simulation Tests											
HTOL	B1	JEDEC JESD22-A108	3	77	Life Test, 105C	1000 Hours	-	-	-	-	-
HTOL	B1	JEDEC JESD22-A108	3	77	Life Test, 125C	1000 Hours	-	3/231/0	-	3/229/0	3/231/0
HTOL	B1	JEDEC JESD22-A108	3	77	Life Test, 140C	480 Hours	-	-	3/231/0	-	-
HTOL	B1	JEDEC JESD22-A108-	3	77	Life Test, 150C	408 Hours	1/77/0	-	-	-	-
ELFR	B2	AEC Q100-008	3	800	Early Life Failure Rate, 150C	24 Hours	-	-	3/2400/0	-	-
ELFR	B2	AEC Q100-008	3	800	Early Life Failure Rate, 125C	48 Hours	-	-	-	3/2398/0	-
EDR	B3	AEC Q100-005	3	77	NVM Endurance, Data Retention, and Operational Life	-	-	-	-	-	-
Test Group C – Package Assembly Integrity Tests											
WBS	C1	AEC Q100-001	1	30	Bond Shear (Cpk>1.33, Ppk>1.67)	Wires	-	1/30/0	3/90/0	1/30/0	-
WBP	C2	MIL-STD883 Method 2011	1	30	Bond Pull (Cpk>1.33, Ppk>1.67)	Wires	-	1/30/0	3/90/0	1/30/0	-
SD	C3	JEDEC JESD22-B102	1	15	Surface Mount Solderabilty >95% Lead Coverage	Pb Free	-	1/15/0	1/15/0	-	1/15/0
SD	C3	JEDEC JESD22-B102	1	15	Surface Mount Solderabilty >95% Lead Coverage	Pb	-	1/15/0	1/15/0	-	1/15/0
PD	C4	JEDEC JESD22-B100 and B108	3	10	Physical Dimensions (Cpk>1.33 Ppk>1.67)	–	1/10/0	3/30/0	3/30/0	-	4/30/0
SBS	C5	AEC Q100-010	3	50	Solder Ball Shear (Cpk>1.67)	Post HTSL/Bump	-	-	-	-	-
LI	C6	JEDEC JESD22-B105	1	50	Lead Integrity	Leads	-	-	-	-	-
Test Group D – Die Fabrication Reliability Tests											
EM	D1	JESD61	-	-	Electromigration	-	-	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	-	-
TDDB	D2	JESD35	-	-	Time Dependant Dielectric Breakdown	-	-	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	-	-
HCI	D3	JESD60 & 28	-	-	Hot Injection Carrier	-	-	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	-	-
NBTI	D4	-	-	-	Negative Bias Temperature Instability	-	-	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	-	-
SM	D5	-	-	-	Stress Migration	-	-	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	-	-
Test Group E – Electrical Verification Tests											
HBM	E2	AEC Q100-002	1	3	ESD – HBM	2000 V	-	-	1/3/0	1/3/0	-
HBM	E2	AEC Q100-002	1	3	ESD – HBM	4000 V	-	1/3/0	1/3/0	-	1/3/0
CDM	E3	AEC Q100-011	1	3	ESD - CDM	1000 V	1/3/0	1/3/0	1/3/0	-	1/3/0
CDM	E3	AEC Q100-011	1	3	ESD - CDM	1500 V	-	-	1/3/0	1/3/0	1/3/0
LU	E4	AEC Q100-004	1	6	Latch-up., 125C	(Per AEC Q100-004)	-	1/6/0	1/6/0	1/6/0	1/6/0
ED	E5	AEC Q100-009	3	30	Electrical Distributions	Cpk>1.67 Room, hot, and cold test	-	3/90/0	3/90/0	3/90/0	3/90/0

A1 (PC): Preconditioning:
Performed for THB, Biased HAST, AC, uHAST &TC samples, as applicable.
Ambient Operating Temperature by Automotive Grade Level:
Grade 0 (or E): -40°C to +150°C
Grade 1 (or Q): -40°C to +125°C
Grade 2 (or T): -40°C to +105°C
Grade 3 (or I) : -40°C to +85°C
E1 (TEST): Electrical test temperatures of Qual samples (High temperature according to Grade level):
Room/Hot/Cold: HTOL, ED
Room/Hot : THB / HAST, TC / PTC, HTSL, ELFR, ESD & LU
Room: AC/Uhast
Green/Pb-free Status:
Qualified Pb-Free(SMT) and Green

Qualification Data

Automotive New Product Qualification Summary
(As per AEC-Q100 and JEDEC Guidelines)

Approved – 08/14/20

Product Attributes

Attributes	Qual Device: ISO7741FEDWQ1	QBS Product Reference: .ISO7741FEDWRQ1
Automotive Grade Level	Grade 0	Grade 0
Operating Temp Range	-40 to +150 C	-40 to +150 C
Product Function	Interface	Interface
Die Attributes	-	-
Wafer Fab Supplier	MH8	MH8
Wafer Diameter (mm)	200	200
Wafer Process Technology	Power BiCMOS	Power BiCMOS
Wafer Process ID	LBC8LVISO.1	LBC8LVISO.1
Die Revision	A	A
Number of Metal Layers	7	7
Metal Composition	AlCu	AlCu
Die Passivation Material and Thickness	-	-

- QBS: Qual By Similarity
- Qual Device ISO7741FEDWQ1 is qualified at LEVEL2-260C
- Device ISO7741FEDWQ1 contains multiple dies.

Qualification Results

Data Displayed as: Number of lots / Total sample size / Total failed

Type	#	Test Spec	Min Lot Qty	SS/ Lot	Test Name / Condition	Duration	Qual Device: ISO7741FEDWQ1	QBS Product Reference: .ISO7741FEDWRQ1
Test Group A – Accelerated Environment Stress Tests								
PC	A1	JEDEC J-STD-020 JESD22-A113	3	77	Preconditioning	Level 2-260C	No Fails	No Fails
HAST	A2	JEDEC JESD22-A110	3	77	Biased HAST, 130C/85%RH	96 Hours	3/231/0	3/231/0
AC	A3	JEDEC JESD22-A102	3	77	Autoclave 121C	96 Hours	3/231/0	3/231/0
TC	A4	JEDEC JESD22-A104 and Appendix 3	3	77	Temperature Cycle, -55/150C	2000 Cycles	3/231/0	-
TC-BP	A4	MIL-STD883 Method 2011	1	30	Post Temp Cycle Bond Pull	Wires	1/30/0	-
PTC	A5	JEDEC JESD22-A105	1	45	Power Temperature Cycle	1000 Cycles	N/A	-
HTSL	A6	JEDEC JESD22-A103	1	45	High Temp Storage Bake 175C	1000 Hours	1/45/0	-
Test Group B – Accelerated Lifetime Simulation Tests								
HTOL	B1	JEDEC JESD22-A108	3	77	Life Test, 150C	1000 Hours	3/231/0	3/231/0

Type	#	Test Spec	Min Lot Qty	SS/ Lot	Test Name / Condition	Duration	Qual Device: ISO7741FEDWQ1	QBS Product Reference: .ISO7741FEDWRQ1
ELFR	B2	AEC Q100-008	3	800	Early Life Failure Rate, 150C	48 Hours	2/1600/0	3/2400/0
EDR	B3	AEC Q100-005	3	77	NVM Endurance, Data Retention, and Operational Life	-	N/A	-
Test Group C – Package Assembly Integrity Tests								
WBS	C1	AEC Q100-001	1	30	Wire Bond Shear, Cpk >1.67	Wires	3/90/0	1/30/0
WBP	C2	MIL-STD883 Method 2011	1	30	Bond Pull, Cpk >1.67	Wires	3/90/0	1/30/0
SD	C3	JEDEC JESD22-B102	1	15	Surface Mount Solderability	Pb Free Solder	1/15/0	-
SD	C3	JEDEC JESD22-B102	1	15	Surface Mount Solderability	Pb Solder	1/15/0	-
PD	C4	JEDEC JESD22-B100 and B108	3	10	Physical Dimensions	Cpk>1.67	3/30/0	-
Test Group D – Die Fabrication Reliability Tests								
EM	D1	JESD61	-	-	Electromigration	-	Completed Per Process Technology Requirements	-
TDDB	D2	JESD35	-	-	Time Dependant Dielectric Breakdown	-	Completed Per Process Technology Requirements	-
HCI	D3	JESD60 & 28	-	-	Hot Injection Carrier	-	Completed Per Process Technology Requirements	-
NBTI	D4	-	-	-	Negative Bias Temperature Instability	-	Completed Per Process Technology Requirements	-
SM	D5	-	-	-	Stress Migration	-	Completed Per Process Technology Requirements	-
Test Group E – Electrical Verification Tests								
HBM	E2	AEC Q100-002	1	3	ESD - HBM	6000 V	-	1/3/0
CDM	E3	AEC Q100-011	1	3	ESD - CDM	1500 V	-	1/3/0
LU	E4	AEC Q100-004	1	6	Latch-up	Per AEC Q100-004	-	1/6/0
ED	E5	AEC Q100-009	3	30	Electrical Distributions	Cpk > 1.67	3/90/0	-

A1 (PC): Preconditioning:

Performed for THB, Biased HAST, AC, uHAST, TC & PTC samples, as applicable.
Ambient Operating Temperature by Automotive Grade Level:
Grade 0 (or E): -40°C to +150°C
Grade 1 (or Q): -40°C to +125°C
Grade 2 (or T): -40°C to +105°C
Grade 3 (or I) : -40°C to +85°C

E1 (TEST): Electrical test temperatures of Qual samples (High temperature according to Grade level):
Room/Hot/Cold : HTOL, ED
Room/Hot : THB / HAST, TC / PTC, HTSL, ELFR, ESD & LU
Room : AC/uHAST
Green/Pb-free Status:
Qualified Pb-Free(SMT) and Green

For questions regarding this notice, e-mails can be sent to the contacts shown below or your local Field Sales Representative.

Location	E-Mail
USA	PCNAmericasContact@list.ti.com
Europe	PCNEuropeContact@list.ti.com
Asia Pacific	PCNAsiaContact@list.ti.com
WW PCN Team	PCN_ww_admin_team@list.ti.com

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