ON Semiconductor®

Final Product/Process Change Notification

Document #:FPCN22761XA
Issue Date:09 Mar 2020

NOTE: *For the period of 10/1/2019 through 1/10/2020, due to a data irregularity in the customer impact lists, some indirect sales customers may not have received product change, product discontinuance, or product bulletin notices as expected through email. Although these notifications were published on our public portal (https://www.onsemi.com/PowerSolutions/pcnPub.do), ON Semiconductor is taking the action to redistribute affected notices, with revised implementation dates conforming to external standards and ON Semiconductor's customer notification policies. This issue has been resolved. Questions related to this issue can be directed to PCN.Support@onsemi.com*

Title of Change:	Redistribution of FPCN22761X - TO-220 NON-JEDEC POD parts dual source from ON Semiconductor Suzhou, China (ONSZ) to HuaShan.
Proposed First Ship date:	16 Jun 2020 or earlier if approved by customer
Contact Information:	Contact your local ON Semiconductor Sales Office or Lisa.Wang@onsemi.com
PCN Samples Contact:	Contact your local ON Semiconductor Sales Office or <PCN.samples@onsemi.com>. Sample requests are to be submitted no later than 30 days from the date of first notification, Initial PCN or Final PCN, for this change. Samples delivery timing will be subject to request date, sample quantity and special customer packing/label requirements.
Additional Reliability Data:	Contact your local ON Semiconductor Sales Office or Lake.Wang@onsemi.com
Type of Notification:	This is a Final Product/Process Change Notification (FPCN) sent to customers. FPCNs are issued 90 days prior to implementation of the change. ON Semiconductor will consider this change accepted, unless an inquiry is made in writing within 30 days of delivery of this notice. To do so, contact PCN.Support@onsemi.com
Marking of Parts/ Traceability of Change:	Plant code in marking with "SH" is from HuaShan
Change Category:	Assembly Change, Test Change
Change Sub-Category(s):	Manufacturing Site Addition

Sites Affected:

ON Semiconductor Sites	**External Foundry/Subcon Sites**
None	SHANTOU HUASHAN Electronic Devices Co., Ltd., China

Description and Purpose:

This notification announces to customers of ON Semiconductor's plan to dual source TO-220 Non-Jedec parts from ON Semiconductor Suzhou, China to HUASHAN on the list of affected parts below. This is for capacity expansion in ON Semiconductor Suzhou, China TO220 JEDEC parts.

At the end of the FPCN approval cycle, these products will be from ON Semiconductor Suzhou, China and HUASHAN, China.

HUASHAN is currently running production for TO-220 package. Qualification tests are designed to show that the reliability of the transferred devices will continue to meet or exceed ON Semiconductor standards.

	Before Change Description	**After Change Description**	
LeadFrame	KFC - 1/2H, 12SnOFC Cu base, dual gauge stamped frame	KFC - 1/2H, 12SnOFC Cu base, dual gauge stamped frame	KFC - 1/2H Cu base, dual gauge stamped frame
Mold Compound	Samsung: SG8200DL, SI7200DX2 (KCC: KTMC-1050GFB after FPCN22647XJ approved)	Samsung: SG8200DL, SI7200DX2 (KCC: KTMC-1050GFB after FPCN22647XJ approved)	KCC: KTMC-1050GFB
Assembly &Test Site	ON Semiconductor Suzhou, China	ON Semiconductor Suzhou, China	HUASHAN

	From	To
Product marking change	1st line Plant code "1" ON Suzhou	1st line Plant code "1" ON Suzhou ; "SH" HUASHAN

Reliability Data Summary:

QV DEVICE NAME: FDP22N50N
RMS: U57354
PACKAGE: TO220

Test	Specification	Condition	Interval	Lot Results
HTRB	JESD22-A108	Tj = max rate Tj for 1,008 hours, 80% BV	1,008 hrs	0/77
HTGB	JESD22-A108	Ti= Maximum rated junction temperature, Vgss Bias = 100% of max rated	1,008 hrs	0/77
HTSL	JESD22-A103	Ta = Max rate storage temp for device	1,008 hrs	0/77
IOL	MIL-STD-750, M1037 AEC-Q101	Ta=+25°C, delta Tj=100°C max, Ton=Toff=3.5mins	8572 cyc	0/77
TC	JESD22-A104	Ta= -55°C to +150°C	1,000 cyc	0/77
H3TRB	JESD22-A101	Temp = 85C, RH=85%, bias = 80% of rated V or 100V max	1008hrs	0/77
UHAST	JESD22-A118	Temp = 130C, RH=85%, ~ 18.8 psig	96hr	0/77
RSH	JESD22-B106	Ta=265C 10 sec dwell, electrical test before and after	10s	0/77
SD	J-STD-002	Ta=245C 5 sec dwell	10s	0/77
Tri-Temp		Characterization of all 48A parameters		0/30
Thermal resistance	JESD24-3, 24-4, 24-6 as appropriate	Measure TR to assure specification compliance and provide process change comparison data.		0/10
PD		Per Case Outline		0/30
BPS	MIL- STD883 Method 2011	Per ass'y spec		0/10
BS	AEC-Q101-003	Per ass'y spec		0/10
DSS	MIL-STD883 Method 2019	Per ass'y spec		0/10

QV DEVICE NAME: FQP12P20
RMS: U57531
PACKAGE: TO220

Test	Specification	Condition	Interval	Lot Results
HTRB	JESD22-A108	Tj = max rate Tj for 1,008 hours, 80% BV	1,008 hrs	0/77
HTGB	JESD22-A108	Ti= Maximum rated junction temperature, Vgss Bias = 100% of max rated	1,008 hrs	0/77
HTSL	JESD22-A103	Ta = Max rate storage temp for device	1,008 hrs	0/77
IOL	MIL-STD-750, M1037 AEC-Q101	Ta=+25°C, delta Tj=100°C max, Ton=Toff=3.5mins	8572 cyc	0/77
TC	JESD22-A104	Ta= -55°C to +150°C	1,000 cyc	0/77
H3TRB	JESD22-A101	Temp = 85C, RH=85%, bias = 80% of rated V or 100V max	1008hrs	0/77
UHAST	JESD22-A118	Temp = 130C, RH=85%, ~ 18.8 psig	96hr	0/77
RSH	JESD22-B106	Ta=265C 10 sec dwell, electrical test before and after	10s	0/77
SD	J-STD-002	Ta=245C 5 sec dwell	10s	0/77
Tri-Temp		Characterization of all 48A parameters		0/30
Thermal resistance	JESD24-3, 24-4, 24-6 as appropriate	Measure TR to assure specification compliance and provide process change comparison data.		0/10

PD		Per Case Outline		0/30
BPS	MIL- STD883 Method 2011	Per ass'y spec		0/10
BS	AEC-Q101-003	Per ass'y spec		0/10
DSS	MIL-STD883 Method 2019	Per ass'y spec		0/10

QV DEVICE NAME: FQP13N50
RMS: U57532
PACKAGE: TO220

Test	Specification	Condition	Interval	Lot Results
HTRB	JESD22-A108	Tj = max rate Tj for 1,008 hours, 80% BV	1,008 hrs	0/77
HTGB	JESD22-A108	Ti= Maximum rated junction temperature, Vgss Bias = 100% of max rated	1,008 hrs	0/77
HTSL	JESD22-A103	Ta = Max rate storage temp for device	1,008 hrs	0/77
IOL	MIL-STD-750, M1037 AEC-Q101	Ta=+25°C, delta Tj=100°C max, Ton=Toff=3.5mins	8572 cyc	0/77
TC	JESD22-A104	Ta= -55°C to +150°C	1,000 cyc	0/77
H3TRB	JESD22-A101	Temp = 85C, RH=85%, bias = 80% of rated V or 100V max	1008hrs	0/77
UHAST	JESD22-A118	Temp = 130C, RH=85%, ~ 18.8 psig	96hr	0/77
RSH	JESD22-B106	Ta=265C 10 sec dwell, electrical test before and after	10s	0/77
SD	J-STD-002	Ta=245C 5 sec dwell	10s	0/77
Tri-Temp		Characterization of all 48A parameters		0/30
Thermal resistance	JESD24-3, 24-4, 24-6 as appropriate	Measure TR to assure specification compliance and provide process change comparison data.		0/10
PD		Per Case Outline		0/30
BPS	MIL- STD883 Method 2011	Per ass'y spec		0/10
BS	AEC-Q101-003	Per ass'y spec		0/10
DSS	MIL-STD883 Method 2019	Per ass'y spec		0/10

QV DEVICE NAME: FDP047N10
RMS: V57533/V62042
PACKAGE: TO220

Test	Specification	Condition	Interval	Lot Results
HTRB	JESD22-A108	Tj = max rate Tj for 1,008 hours, 80% BV	1,008 hrs	0/77
HTGB	JESD22-A108	Ti= Maximum rated junction temperature, Vgss Bias = 100% of max rated	1,008 hrs	0/77
HTSL	JESD22-A103	Ta = Max rate storage temp for device	1,008 hrs	0/77
IOL	MIL-STD-750, M1037 AEC-Q101	Ta=+25°C, delta Tj=100°C max, Ton=Toff=3.5mins	8572 cyc	0/77
TC	JESD22-A104	Ta= -55°C to +150°C	1,000 cyc	0/77
H3TRB	JESD22-A101	Temp = 85C, RH=85%, bias = 80% of rated V or 100V max	1008hrs	0/77
UHAST	JESD22-A118	Temp = 130C, RH=85%, ~ 18.8 psig	96hr	0/77
RSH	JESD22-B106	Ta=265C 10 sec dwell, electrical test before and after	10s	0/77
SD	J-STD-002	Ta=245C 5 sec dwell	10s	0/77
Tri-Temp		Characterization of all 48A parameters		0/30
Thermal resistance	JESD24-3, 24-4, 24-6 as appropriate	Measure TR to assure specification compliance and provide process change comparison data.		0/10

PD		Per Case Outline		0/30
BPS	MIL- STD883 Method 2011	Per ass'y spec		0/10
BS	AEC-Q101-003	Per ass'y spec		0/10
DSS	MIL-STD883 Method 2019	Per ass'y spec		0/10

QV DEVICE NAME: FCP36N60N
RMS: V57534/V62043
PACKAGE: TO220

Test	Specification	Condition	Interval	Lot Results
HTRB	JESD22-A108	Tj = max rate Tj for 1,008 hours, 80% BV	1,008 hrs	0/77
HTGB	JESD22-A108	Ti= Maximum rated junction temperature, Vgss Bias = 100% of max rated	1,008 hrs	0/77
HTSL	JESD22-A103	Ta = Max rate storage temp for device	1,008 hrs	0/77
IOL	MIL-STD-750, M1037 AEC-Q101	Ta=+25°C, delta Tj=100°C max, Ton=Toff=3.5mins	8572 cyc	0/77
TC	JESD22-A104	Ta= -55°C to +150°C	1,000 cyc	0/77
H3TRB	JESD22-A101	Temp = 85C, RH=85%, bias = 80% of rated V or 100V max	1008hrs	0/77
UHAST	JESD22-A118	Temp = 130C, RH=85%, ~ 18.8 psig	96hr	0/77
RSH	JESD22-B106	Ta=265C 10 sec dwell, electrical test before and after	10s	0/77
SD	J-STD-002	Ta=245C 5 sec dwell	10s	0/77
Tri-Temp		Characterization of all 48A parameters		0/30
Thermal resistance	JESD24-3, 24-4, 24-6 as appropriate	Measure TR to assure specification compliance and provide process change comparison data.		0/10
PD		Per Case Outline		0/30
BPS	MIL- STD883 Method 2011	Per ass'y spec		0/10
BS	AEC-Q101-003	Per ass'y spec		0/10
DSS	MIL-STD883 Method 2019	Per ass'y spec		0/10

Electrical Characteristics Summary:

Electrical characteristics are not impacted

List of Affected Parts:

Note: *Only the standard (off the shelf) part numbers are listed in the parts list. Any custom parts affected by this PCN are shown in the customer specific PCN addendum in the PCN email notification, or on the* ***PCN Customized Portal.***

Part Number	Qualification Vehicle
FQP12P20	FQP12P20

FQP13N10	FQP13N50
FQP13N50	FQP13N50
FQP16N25	FQP13N50
FQP17N40	FQP13N50
FQP17P06	FQP12P20
FQP17P10	FQP12P20
FQP19N20	FQP13N50
FQP20N06	FQP13N50
FQP20N06L	FQP13N50
FQP22N30	FQP13N50
FQP27N25	FQP13N50
FQP2P40-F080	FQP12P20
FQP30N06	FQP13N50
IRF530A	FDP22N50N
IRL640A	FDP22N50N
FCP36N60N	FCP36N60N
FDP023N08B-F102	FDP047N10
FDP025N06	FDP047N10
FDP030N06	FDP047N10
FDP032N08	FDP047N10
FDP047N10	FDP047N10
FDP054N10	FDP047N10
FQP32N20C	FDP22N50N
FQP34N20	FQP13N50
FQP3N30	FQP13N50
FQP3N80C	FDP22N50N
FQP3P20	FQP12P20
FQP3P50	FQP12P20
FQP44N10	FQP13N50
FQP47P06	FQP12P20
FQP4N20L	FQP13N50
FQP4N80	FQP13N50
FQP4N90C	FDP22N50N
FQP4P40	FQP12P20

FQP50N06L	FQP13N50
FQP55N10	FQP13N50
FQP65N06	FQP13N50
FQP6N40C	FDP22N50N
FQP6N90C	FDP22N50N
FQP7N20	FQP13N50
FQP7P06	FQP12P20
FQP85N06	FQP13N50
FQP8N80C	FDP22N50N
FQP8N90C	FDP22N50N
FDP18N20F	FDP22N50N
FDP18N50	FDP22N50N
FDP20N50	FDP22N50N
FDP20N50F	FDP22N50N
FDP22N50N	FDP22N50N
FDP26N40	FDP22N50N
FQP10N20C	FDP22N50N
FQP11P06	FQP12P20
FQP12N60C	FDP22N50N
FQP12P10	FQP12P20
FQP2N40-F080	FQP13N50
FQP2N90	FQP13N50
FQP30N06L	FQP13N50
FQP8P10	FQP12P20
FQP9N90C	FDP22N50N
FQP9P25	FQP12P20
SFP9530	FDP22N50N

Appendix A: Changed Products

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Product	Customer Part Number	Qualification Vehicle	New Part Number	Replacement Supplier
FQP12P10		FQP12P20		
FQP12N60C		FDP22N50N		
FQP11P06		FQP12P20		
FQP10N20C		FDP22N50N		
FDP26N40		FDP22N50N		
FDP22N50N		FDP22N50N		
FDP20N50F		FDP22N50N		
FDP20N50		FDP22N50N		
FDP18N50		FDP22N50N		
FDP18N20F		FDP22N50N		
FQP8N80C		FDP22N50N		
FQP85N06		FQP13N50		
FQP7P06		FQP12P20		
FQP7N20		FQP13N50		
FQP6N90C		FDP22N50N		
FQP6N40C		FDP22N50N		
FQP65N06		FQP13N50		
FQP55N10		FQP13N50		
FQP50N06L		FQP13N50		
FQP4P40		FQP12P20		
FQP4N90C		FDP22N50N		
FQP4N80		FQP13N50		
FQP4N20L		FQP13N50		
FQP47P06		FQP12P20		
FQP44N10		FQP13N50		
FQP3P50		FQP12P20		
FQP3P20		FQP12P20		
FQP3N80C		FDP22N50N		
FQP3N30		FQP13N50		
FQP34N20		FQP13N50		
FQP32N20C		FDP22N50N		
FDP054N10		FDP047N10		
FDP047N10		FDP047N10		
FDP032N08		FDP047N10		
FDP030N06		FDP047N10		
FDP025N06		FDP047N10		
FDP023N08B-F102		FDP047N10		
FCP36N60N		FCP36N60N		
IRL640A		FDP22N50N		
IRF530A		FDP22N50N		
FQP9P25		FQP12P20		
FQP9N90C		FDP22N50N		

Appendix A: Changed Products

DIKG : DIGI-KEY

Product	Customer Part Number	Qualification Vehicle	New Part Number	Replacement Supplier
FQP8P10		FQP12P20		
FQP30N06L		FQP13N50		
FQP30N06		FQP13N50		
FQP2P40-F080		FQP12P20		
FQP2N90		FQP13N50		
FQP2N40-F080		FQP13N50		
FQP27N25		FQP13N50		
FQP22N30		FQP13N50		
FQP20N06L		FQP13N50		
FQP20N06		FQP13N50		
FQP19N20		FQP13N50		
FQP17P10		FQP12P20		
FQP17P06		FQP12P20		
FQP17N40		FQP13N50		
FQP16N25		FQP13N50		
FQP13N50		FQP13N50		
FQP13N10		FQP13N50		
FQP12P20		FQP12P20		