



PRODUCT/PROCESS CHANGE NOTIFICATION

PCN IPD/13/7945
Dated 18 Jun 2013

**Capacity expansion, for the product housed in TO-220
package at the Nantong Fujitsu Microelectronics (China)
Subcontractor plant**

Table 1. Change Implementation Schedule

Forecasted implementation date for change	10-Sep-2013
Forecasted availability date of samples for customer	11-Jun-2013
Forecasted date for STMicroelectronics change Qualification Plan results availability	11-Jun-2013
Estimated date of changed product first shipment	17-Sep-2013

Table 2. Change Identification

Product Identification (Product Family/Commercial Product)	see attached list
Type of change	Assembly additional location
Reason for change	To improve service to ST Customers
Description of the change	To respond the ever increasing demand for the products housed in TO-220 package, ST is glad to announce the expansion of capacity at Nantong Fujitsu Microelectronics (China) Subcontractor factory, For the complete list of the part numbers affected by this change, please refer to the attached Products List
Change Product Identification	will be ensured by the first two digits of the traceability code ("GF")
Manufacturing Location(s)	

DOCUMENT APPROVAL

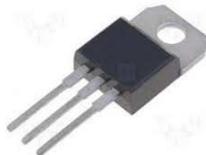
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IPD Group

**Assembly and Testing capacity expansion, for the product housed in
TO-220 package,
at the Nantong Fujitsu Microelectronics (China) Subcontractor plant.**

Packages typology



WHAT:

To respond the ever increasing demand for the products housed in TO-220 package, ST is glad to announce the expansion of capacity at Nantong Fujitsu Microelectronics (China) Subcontractor factory,
For the complete list of the part numbers affected by this change, please refer to the attached Products List

Samples, are available right now upon request for immediate customer qualification, while the full availability of products will be granted from wk 22 2013 onwards,

WHY:

- To improve service to ST Customers

HOW:

By expanding capacity according the ST quality and reliability standard.

The changed here reported will not affect the electrical, dimensional and thermal parameters keeping unchanged all information reported on the relevant product's datasheets.
There are as well no modifications in the packing modes nor in the standard delivery quantities either it may affect ST's Customers assembly methods.

Qualification program and results:

The qualification program consists mainly of comparative electrical characterization and reliability tests. Please refer to Appendix 1 for all the details.

WHEN:

Production start and first shipments will occur as indicated in the table below.

Affected Product Types	Samples	1 st Shipment
PowerMOSFET	Now	Wk22
Power Bipolar	Now	Wk22
Thyristor & Triac	Now	Wk22
Rectifier	Now	Wk22

Marking and traceability:

Unless otherwise stated by customer specific requirement, the traceability of the parts assembled in the Nantong Fujitsu Microelectronics Subcontractor factory, will be ensured by the first two digits of the traceability code (“GF”).

Lack of acknowledgement of the PCN within 30 days will constitute acceptance of the change. After acknowledgement, lack of additional response within the 90 day period will constitute acceptance of the change (Jedec Standard No. 46-C).

In any case, first shipments may start earlier with customer’s written agreement.



Reliability Report
*Assembly and Testing capacity expansion, for the
 product housed in TO-220 package, at the
 NFME (China) Subcontractor plant.*

General Information		Locations	
Product Lines:	ED7K / EZ66	Wafer Diffusion Plants:	<i>ED7K: Global Foundries EZ66: AngMoKio (SINGAPORE)</i>
Product Families:	Power MOSFET	EWS Plants:	<i>ED7K: Global Foundries EZ66: AngMoKio (SINGAPORE)</i>
P/Ns:	STP140NF75 (ED7K) STP10NK60Z (EZ66)	Assembly plant:	<i>NFME CHINA</i>
Product Group:	IMS - IPD	Reliability Lab:	<i>IMS-IPD Catania Reliability Lab.</i>
Product division:	Power Transistor Division		
Package:	TO-220		
Silicon Process techn.:	PowerMOSFET - StripFET™		

DOCUMENT INFORMATION

Version	Date	Pages	Prepared by	Approved by	Comment
1.0	May 2013	8	C. Cappello	G.Falcone	First issue

Note: This report is a summary of the reliability trials performed in good faith by STMicroelectronics in order to evaluate the potential reliability risks during the product life using a set of defined test methods.
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1 APPLICABLE AND REFERENCE DOCUMENTS

Document reference	Short description
JESD47	Stress-Test-Driven Qualification of Integrated Circuits

2 GLOSSARY

DUT	Device Under Test
SS	Sample Size
HF	Halogen Free

3 RELIABILITY EVALUATION OVERVIEW

3.1 Objectives

Qualification of the TO-220 package graded Molding Compound manufactured in the NFME (China) Subcontractor assy plant.

3.2 Conclusion

Qualification Plan requirements have been fulfilled without exception. It is stressed that reliability tests have shown that the devices behave correctly against environmental tests (no failure). Moreover, the stability of electrical parameters during the accelerated tests demonstrates the ruggedness of the products and safe operation, which is consequently expected during their lifetime.



4 DEVICE CHARACTERISTICS

4.1 Device description

N-channel Power MOSFET

4.2 Construction note

D.U.T.: STP140NF75

LINE: ED7K

PACKAGE: TO-220

Wafer/Die fab. information	
Wafer fab manufacturing location	Global Foundries (Singapore)
Technology	Power MOSFET - StripFET™
Die finishing back side	Ti/Ni/Ag
Die size	4610 x 6350 μm ²
Metal	Al/Si/Cu
Passivation type	None

Wafer Testing (EWS) information	
Electrical testing manufacturing location	Global Foundries (Singapore)
Test program	WPIS

Assembly information	
Assembly site	NFME (China)
Package description	TO-220
Molding compound	HF Epoxy Resin
Frame material	Copper
Die attach process	Soft Solder
Die attach material	Pb/Ag/Sn
Wire bonding process	Ultrasonic
Wires bonding materials	Al 5 mils Gate Al 15 mils Source
Lead finishing/bump solder material	Pure Tin

Final testing information	
Testing location	NFME (China)
Tester	TESEC



D.U.T.: STP10NK60Z

LINE: EZ66

PACKAGE: TO-220

Wafer/Die fab. information	
Wafer fab manufacturing location	AngMoKio (Singapore)
Technology	Power MOSFET - StripFET™
Die finishing back side	Ti/Ni/Au
Die size	4950 x 3810 μm^2
Metal	Al/Si
Passivation type	Nitride

Wafer Testing (EWS) information	
Electrical testing manufacturing location	AngMoKio (Singapore)
Test program	WPIS

Assembly information	
Assembly site	NFME (China)
Package description	TO-220
Molding compound	HF Epoxy Resin
Frame material	Copper
Die attach process	Soft Solder
Die attach material	Pb/Ag/Sn
Wire bonding process	Ultrasonic
Wires bonding materials	Al 5 mils Gate Al 10 mils Source
Lead finishing/bump solder material	Pure Tin

Final testing information	
Testing location	NFME (China)
Tester	TESEC



5 TESTS RESULTS SUMMARY

5.1 Test vehicle

Lot #	Process/ Package	Product Line	Comments
1	STP140NF75	ED7K	Power MOSFET
2	STP10NK60Z	EZ66	Power MOSFET

5.2 Reliability test plan summary

Lot. 1 - D.U.T.: STP140NF75 LINE: ED7K PACKAGE: TO-220

Test	PC	Std ref.	Conditions	SS	Steps	Failure/SS
						Lot 1
HTRB	N	JESD22 A-108	T.A.=175°C Vdss=60V	77	168 H	0/77
					500 H	
					1000 H	
HTGB	N	JESD22 A-108	TA = 150°C Vgss= 20V	77	168 H	0/77
					500 H	
					1000 H	
HTSL	N	JESD22 A-103	TA = 175°C	77	168 H	0/77
					500 H	
					1000 H	
H3TRB	N	JESD22 A-101	Ta=85°C Rh=85%, Vdss=50V	77	168 H	0/77
					500 H	
					1000 H	
TC	N	JESD22 A-104	TA=-65°C TO 150°C (1 HOUR/CYCLE)	77	100 cy	0/77
					200 cy	
					500 cy	
AC	N	JESD22 A-102	TA=121°C – PA=2 ATM	77	96 H	0/77
TF	N	Mil-Std 750D Method 1037	ΔTc=105°C	77	5 Kcy	0/77
					10 Kcy	



Lot. 2 - D.U.T.: STP10NK60Z LINE: EZ66 PACKAGE: TO-220

Test	PC	Std ref.	Conditions	SS	Steps	Failure/SS
						Lot 2
HTRB	N	JESD22 A-108	T.A.=150°C Vdss=480V	77	168 H	0/77
					500 H	
					1000 H	
HTGB	N	JESD22 A-108	TA = 150°C Vgss= 30V	77	168 H	0/77
					500 H	
					1000 H	
HTSL	N	JESD22 A-103	TA = 150°C	77	168 H	0/77
					500 H	
					1000 H	
H3TRB	N	JESD22 A-101	Ta=85°C Rh=85%, Vdss=100V	77	168 H	0/77
					500 H	
					1000 H	
TC	N	JESD22 A-104	TA=-65°C TO 150°C (1 HOUR/CYCLE)	77	100 cy	0/77
					200 cy	
					500 cy	
AC	N	JESD22 A-102	TA=121°C – PA=2 ATM	77	96 H	0/77
TF	N	Mil-Std 750D Method 1037	$\Delta T_c=105^\circ C$	77	5 Kcy	0/77
					10 Kcy	



6 ANNEXES 6.0

6.1 Tests Description

Test name	Description	Purpose
HTRB High Temperature Reverse Bias HTGB High Temperature Forward (Gate) Bias	The device is stressed in static configuration, trying to satisfy as much as possible the following conditions: <ul style="list-style-type: none">• low power dissipation;• max. supply voltage compatible with diffusion process and internal circuitry limitations;	To determine the effects of bias conditions and temperature on solid state devices over time. It simulates the devices' operating condition in an accelerated way. To maximize the electrical field across either reverse-biased junctions or dielectric layers, in order to investigate the failure modes linked to mobile contamination, oxide ageing, layout sensitivity to surface effects.
HTSL High Temperature Storage Life	The device is stored in unbiased condition at the max. temperature allowed by the package materials, sometimes higher than the max. operative temperature.	To investigate the failure mechanisms activated by high temperature, typically wire-bonds solder joint ageing, data retention faults, metal stress-voiding.
AC Auto Clave (Pressure Pot)	The device is stored in saturated steam, at fixed and controlled conditions of pressure and temperature.	To investigate corrosion phenomena affecting die or package materials, related to chemical contamination and package hermeticity.
TC Temperature Cycling	The device is submitted to cycled temperature excursions, between a hot and a cold chamber in air atmosphere.	To investigate failure modes related to the thermo-mechanical stress induced by the different thermal expansion of the materials interacting in the die-package system. Typical failure modes are linked to metal displacement, dielectric cracking, molding compound delamination, wire-bonds failure, die-attach layer degradation.
H3TRB Temperature Humidity Bias	The device is biased in static configuration minimizing its internal power dissipation, and stored at controlled conditions of ambient temperature and relative humidity.	To evaluate the package moisture resistance with electrical field applied, both electrolytic and galvanic corrosion are put in evidence.
TF / IOL Thermal Fatigue / Intermittent Operating Life	The device is submitted to cycled temperature excursions generated by power cycles (ON/OFF) at T ambient.	To investigate failure modes related to the thermo-mechanical stress induced by the different thermal expansion of the materials interacting in the die-package system. Typical failure modes are linked to metal displacement, dielectric cracking, molding compound delamination, wire-bonds failure, die-attach layer degradation.

**Qualification of
Rectifiers in TO-220AB package:
Additional Assembly and Test Location in China**

General Information		Locations	
Product Line	Rectifiers (BU78)	Wafer fab	STM Singapore STM Tours (France)
Product Description	Bipolar, Turboswitch and Power Schottky in TO-220AB package: Additional assembly and test location in China	Assembly plant	Subcontractor (China)
Product Group	IPD	Reliability Lab	STM Tours (France)
Product division	ASD & IPAD		
Package	TO-220AB (3 leads)		
Maturity level step	Qualified		

DOCUMENT INFORMATION

Version	Date	Pages	Prepared by	Comment
1.0	18-Feb-2013	9	I. BALLON	First issue Qualification of Rectifiers (Bipolar, Turboswitch and Power Schottky in TO-220AB package: Additional assembly and test location in China

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1 APPLICABLE AND REFERENCE DOCUMENTS

Document reference	Short description
JESD47	Stress-Test-Driven Qualification of Integrated Circuits
SOP 2614	Reliability requirements for product qualification
0061692	Reliability tests and criteria for qualifications
FMEA	8419012
RER	1242001

2 GLOSSARY

DUT	Device Under Test
PCB	Printed Circuit Board
SS	Sample Size
HTRB	High Temperature Reverse Bias
TC	Temperature Cycling
PCT	Pressure Pot 2 bars
THB	Temperature Humidity Bias
IOLT	Intermittent Operational Life
RSH	Resistance to Solder Heat
SD	Solderability

3 RELIABILITY EVALUATION OVERVIEW

3.1 Objectives

The objective of this report is to qualify new subcontractor for TO-220AB (3 leads) package for Rectifiers devices

The product series currently involved in this qualification are listed below.

Product sub-Family	Commercial product
Rectifiers	STPSxxxCT STTHxxxCT

Specific devices not expressly listed in the above table are included in this change.

The reliability methodology used follows the JESD47-E: « Stress Test Driven Qualification Methodology ».

The following reliability tests ensuing are:

- HTRB to evaluate the risk of contamination.
- THB to verify there is no apparition of corrosion and risk of moisture penetration.
- TC,RSH and IOLT to ensure the mechanical robustness of the products.
- Solderability to verify good wettability on leads

3.2 Conclusion

Qualification Plan requirements have been fulfilled without exception. Reliability tests have shown that the devices behave correctly against environmental tests (no failure). Moreover, the stability of electrical parameters during the accelerated tests demonstrates the robustness of the products and safe operation, which is consequently expected during their lifetime.

4 DEVICE CHARACTERISTICS

4.1 Device description

- Rectifiers (Bipolar, Turboswitch, Power Schottky) in TO-220AB (3 leads) package: Additional assembly and test location in China.

4.2 Construction note

Rectifiers (STPSxxxCT-STTHxxxCT) in TO-220AB package	
Wafer/Die fab. information	
Wafer fab manufacturing location	STMicroelectronics Singapore STMicroelectronics Tours (France)
Wafer Testing (EWS) information	
Electrical testing manufacturing location	STMicroelectronics Singapore STMicroelectronics Tours (France)
Assembly information	
Assembly site	Subcontractor (China)
Package description	TO-220AB (3leads)
Molding compound	Epoxy resin
Lead finishing process	Electroplating
Lead finishing material	Matte Tin (Sn 100%)
Final testing information	
Testing location	Subcontractor (China)

5 TESTS RESULTS SUMMARY

5.1 Test vehicles

Lot #	Product	Back End	Package	Product Family
1	STTH16L06CT	Subcontractor (China)	TO-220AB (3 leads)	Turboswitch
2	STTH2002CT			Bipolar
3	STPS40M100CT			Power Schottky
4	STPS40SM100CT			
5				



5.2 Test plan and results summary

Die Oriented Tests

Test	PC	Std ref.	Conditions	SS	Steps	Failure/SS				Note
						Lot 1	Lot 2			
HTRB	N	JESD22 A-108	Tj, Vr = 0.8xVrrm	154	168 H	0/77	0/77			
					500 H	0/77	0/77			
					1000 H	0/77	0/77			

Package Oriented Tests

Test	PC	Std ref.	Conditions	SS	Steps	Failure/SS				Note
						Lot 3				
THB	N	JESD22 A-101	Ta = 85°C, RH = 85%, Vr = 0.8xVrrm or 100V max	25	168 H	0/25				
					500 H	0/25				
					1000 H	0/25				
TC	N	JESD22 A-104	Ta = -65°C to 150°C 2 cycles/hour	50	100 cy	0/25	0/25			
					500 cy	0/25	0/25			
PCT	N	JESD22 A-102	121°C, RH=100%, P=2 bars	77	96hrs	0/77				
IOLT	N	MIL-STD 750 Method 1037	Delta Tc=85°C, Pon=3.5min Poff=3.5min	25	8572cy	0/25				
RSH	N	JESD22B- 106	2 dipping at 260°C 10s On / 15s Off	12		0/12				
SD	N	J-STD-002	245°C SnAgCu bath Dry aging	20	Visual inspection	0/10	0/10			
			245°C SnAgCu bath Wet aging	20	Visual inspection	0/10	0/10			
						Lot 4	Lot 5			
			220°C SnPb bath Dry aging	20	Visual inspection	0/10	0/10			
			220°C SnPb bath Wet aging	20	Visual inspection	0/10	0/10			

6 ANNEXES

6.1 Device details

6.1.1 Pin connection

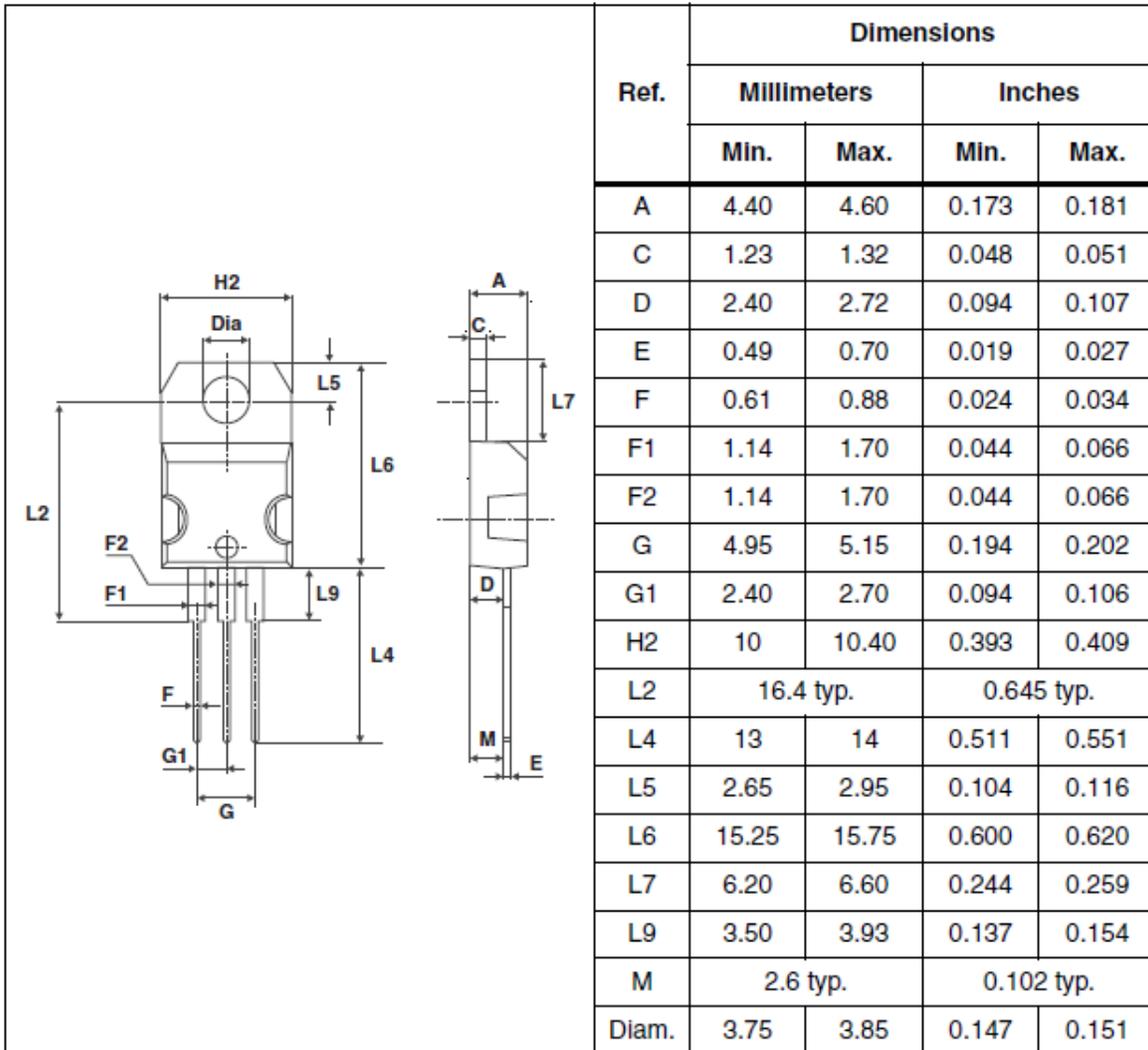
Package	Pin connection
TO-220AB	

6.1.2 Bonding diagram

Package	Bonding diagrams
TO-220AB	

6.1.3 Package outline/Mechanical data

- TO-220AB (3 leads)



6.2 Tests description

Test name	Description	Purpose
Die Oriented		
HTRB High Temperature Reverse Bias	The device is stressed in static configuration, trying to satisfy as much as possible the following conditions: low power dissipation; max. supply voltage compatible with diffusion process and internal circuitry limitations;	To determine the effects of bias conditions and temperature on solid state devices over time. It simulates the devices' operating condition in an accelerated way. To maximize the electrical field across either reverse-biased junctions or dielectric layers, in order to investigate the failure modes linked to mobile contamination, oxide ageing, layout sensitivity to surface effects.
Package Oriented		
TC Temperature Cycling	The device is submitted to cycled temperature excursions, between a hot and a cold chamber in air atmosphere.	To investigate failure modes related to the thermo-mechanical stress induced by the different thermal expansion of the materials interacting in the die-package system. Typical failure modes are linked to metal displacement, dielectric cracking, molding compound delamination, wire-bonds failure, die-attach layer degradation.
THB Temperature Humidity Bias	The device is biased in static configuration minimizing its internal power dissipation, and stored at controlled conditions of ambient temperature and relative humidity.	To evaluate the package moisture resistance with electrical field applied, both electrolytic and galvanic corrosion are put in evidence.
PCT Pressure Pot	The device is stored in saturated steam, at fixed and controlled conditions of pressure and temperature.	To investigate corrosion phenomena affecting die or package materials, related to chemical contamination and package hermeticity.
IOLT	All test samples shall be subjected to the specified number of cycles. When stabilized after initial warm-up cycles, a cycle shall consist of an "on" period, when power is applied suddenly, not gradually, to the device for the time necessary to achieve a delta case temperature (delta is the high minus the low mounting surface temperatures) of +85°C (+60°C for thyristors), followed by an off period, when the power is suddenly removed, for cooling the case through a similar delta temperature. Auxiliary (forced) cooling is permitted during the off period only. Heat sinks are not intended to be used in this test, however, small heat sinks may be used when it is otherwise difficult to control case temperature of test samples, such as with small package types (e.g., TO39).	The purpose of this test is to determine compliance with the specified numbers of cycles for devices subjected to the specified conditions. It accelerates the stresses on all bonds and interfaces between the chip and mounting face of devices subjected to repeated turn on and off of equipment and is therefore most appropriate for case mount style (e.g., stud, flange, and disc) devices.



Test name	Description	Purpose
RSH	The device is submitted to a dipping in a solder bath at 260°C with a dwell time of 10s. Only for through hole mounted devices.	This test is used to determine whether solid state devices can withstand the effects of the temperature to which they will be subjected during soldering of their leads. The heat is conducted through the leads into the device package from solder heat at the reverse side of the board. This procedure does not simulate wave soldering or reflow heat exposure on the same side of the board as the package body.
SD	The device is aged in a wet and dry bath of solder. A preconditioning test is included in this test method, which degrades the termination finish to provide a guard band against marginal finish.	To test whether the packaging materials and processes used during the manufacturing operations process produce a component that can be successfully soldered to the next level assembly using tin lead eutectic solder

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Public Products List

PCN Title : Capacity expansion, for the product housed in TO-220 package at the Nantong Fujitsu Microelectronics (China) Subcontractor plant
PCN Reference : IPD/13/7945
PCN Created on : 13-JUN-2013

Subject : Public Products List

Dear Customer,

Please find below the Standard Public Products List impacted by the change:

ST COMMERCIAL PRODUCT

2N6111	2ST31A	ACS120-7ST
ACST1010-7T	ACST1035-7T	ACST1210-7T
ACST1235-7T	ACST610-8T	ACST830-8T
BD239C	BD241C	BD243C
BD244C	BD534	BD535
BD536	BD711	BD910
BD911	BD912	BDW93C
BDW94C	BDX33C	BDX34C
BDX53B	BDX53C	BDX54B
BDX54C	BTB04-600SL	BU505
BUL1102E	BUL128	BUL128D-B
BUL129D	BUL138	BUL216
BUL381D	BUL38D	BUL39D
BUL416T	BUL49D	BUL58D
BUL59	BUL654	BUL7216
BUL741	BUL742C	BUL743
BUL89	BUL98	BULB128-1
BUT11A	D44H11	D44H8
D45H11	D45H8	FERD30M45CT
IRF630	MJE2955T	MJE3055T
ST13005	ST13005N	ST13007
ST13007D	ST13009	ST901T
STB10NK60Z-1	STB11NM60-1	STB4NK60Z-1
STB5NK50Z-1	STB6NK60Z-1	STB70NF03L-1
STB7NK80Z-1	STB80NF55L-08-1	STB9NK70Z-1
STGP10NB60S	STGP10NB60SD	STGP10NC60HD
STGP10NC60KD	STGP10NC60S	STGP14NC60KD
STGP19NC60HD	STGP19NC60KD	STGP19NC60S
STGP19NC60SD	STGP19NC60WD	STGP20H60DF
STGP20NC60V	STGP20V60DF	STGP30H60DF
STGP30NC60S	STGP30NC60W	STGP30V60DF
STGP35HF60W	STGP3NC120HD	STGP40V60F
STGP6NC60HD	STGP7NC60HD	STGP8NC60KD
STGPL6NC60D	STGPL6NC60DI	STI10N62K3
STI10NM60N	STI11NM80	STI12N65M5



Public Products List

PCN Title : Capacity expansion, for the product housed in TO-220 package at the Nantong Fujitsu Microelectronics (China) Subcontractor plant
PCN Reference : IPD/13/7945
PCN Created on : 13-JUN-2013

Subject : Public Products List (Contd.)

ST COMMERCIAL PRODUCT

STI13005-H	STI13NM60N	STI14NM50N
STI18N65M5	STI20N65M5	STI21N65M5
STI22NM60N	STI24N60M2	STI24NM60N
STI260N6F6	STI300N4F6	STI32N65M5
STI34N65M5	STI35N65M5	STI360N4F6
STI400N4F6	STI42N65M5	STI4N62K3
STI55NF03L	STI57N65M5	STI6N62K3
STI8N65M5	STL128D	STL128DN
STP03D200	STP100N10F7	STP100NF04
STP105N3LL	STP10N60M2	STP10N62K3
STP10N65K3	STP10NK60Z	STP10NK70Z
STP10NK80Z	STP10NM50N	STP10NM60N
STP10NM60ND	STP10NM65N	STP10P6F6
STP110N10F7	STP110N55F6	STP11N52K3
STP11N65M5	STP11NK40Z	STP11NK50Z
STP11NM50N	STP11NM60	STP11NM60FD
STP11NM60ND	STP11NM65N	STP11NM80
STP120NF10	STP12N120K5	STP12N65M5
STP12NK30Z	STP12NK80Z	STP12NM50
STP130N10F3	STP13N60M2	STP13N80K5
STP13N95K3	STP13NK60Z	STP13NM60N
STP13NM60ND	STP140NF55	STP140NF75
STP141NF55	STP14NF10	STP14NF12
STP14NK50Z	STP14NM50N	STP150N10F7
STP150NF55	STP15N65M5	STP15N80K5
STP15NK50Z	STP15NM60ND	STP15NM65N
STP160N75F3	STP165N10F4	STP16N65M5
STP16NF06	STP16NF06L	STP16NK60Z
STP17N62K3	STP17NF25	STP180N10F3
STP180N55F3	STP18N55M5	STP18N65M5
STP18NM60N	STP18NM60ND	STP18NM80
STP19NF20	STP19NM50N	STP1N105K3
STP200NF03	STP200NF04	STP200NF04L
STP20N65M5	STP20N95K5	STP20NF06L
STP20NF20	STP20NK50Z	



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ST COMMERCIAL PRODUCT

STP20NM50	STP20NM50FD	STP20NM60
STP20NM60FD	STP210N75F6	STP21N65M5
STP21N90K5	STP21NM60ND	STP22NM60N
STP23NM50N	STP23NM60ND	STP24N60M2
STP24NF10	STP24NM60N	STP25N80K5
STP25NM60ND	STP260N6F6	STP26NM60N
STP270N8F7	STP27N3LH5	STP28NM50N
STP28NM60ND	STP2N62K3	STP2NK100Z
STP2NK90Z	STP30N65M5	STP30NF10
STP30NF20	STP310N10F7	STP31N65M5
STP32N65M5	STP32NM50N	STP34N65M5
STP34NM60N	STP34NM60ND	STP35N65M5
STP35NF10	STP360N4F6	STP36N55M5
STP36NF06	STP38N65M5	STP3LN62K3
STP3N150	STP3N62K3	STP3NK100Z
STP3NK60Z	STP3NK80Z	STP3NK90Z
STP400N4F6	STP40NF03L	STP40NF10
STP40NF10L	STP40NF12	STP40NF20
STP42N65M5	STP45N65M5	STP45NF06
STP45NF3LL	STP4N150	STP4N52K3
STP4N62K3	STP4NK50ZD	STP4NK60Z
STP4NK80Z	STP50NF25	STP52N25M5
STP55NF06	STP55NF06L	STP57N65M5
STP5N52K3	STP5N62K3	STP5N95K3
STP5N95K5	STP5NK100Z	STP5NK50Z
STP5NK52ZD	STP5NK60Z	STP5NK65Z
STP5NK80Z	STP60N3LH5	STP60NF03L
STP60NF06	STP60NF06L	STP60NF10
STP62NS04Z	STP65NF06	STP6N120K3
STP6N52K3	STP6N62K3	STP6N95K5
STP6NK60Z	STP6NK90Z	STP70NF03L
STP75N3LLH6	STP75N75F4	STP75NF20
STP75NF75	STP75NS04Z	STP77N6F6
STP7N52DK3	STP7N52K3	STP7N80K5
STP7N95K3	STP7NK40Z	



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Subject : Public Products List (Contd.)

ST COMMERCIAL PRODUCT

STP7NK80Z	STP7NM60N	STP7NM80
STP80N20M5	STP80N6F6	STP80N70F4
STP80N70F6	STP80NF06	STP80NF10
STP80NF12	STP80NF55-06	STP80NF55-08
STP80NF55L-06	STP80NF70	STP80PF55
STP85N3LH5	STP8N65M5	STP8N80K5
STP8NK100Z	STP8NK80Z	STP8NM50N
STP8NM60ND	STP90N55F4	STP90NF03L
STP95N3LLH6	STP95N4F3	STP9N60M2
STP9NK50Z	STP9NK60Z	STP9NK65Z
STP9NK70Z	STP9NK90Z	STP9NM40N
STP9NM60N	STPLED525	STPLED624
STPLED625	STPLED625H	STPLED656
STPS10120CT	STPS10150CT	STPS1045D
STPS10L25D	STPS10L40CT	STPS10L45CT
STPS10L60D	STPS10M80CR	STPS10M80CT
STPS10SM80CR	STPS10SM80CT	STPS1545CR
STPS1545CT	STPS1545D	STPS15L25D
STPS15M80CR	STPS15M80CT	STPS15SM80CR
STPS15SM80CT	STPS16150CT	STPS16170CR
STPS20100CT	STPS20120CR	STPS20120CT
STPS20120CTN	STPS20120D	STPS20150CR
STPS20150CT	STPS20170CT	STPS20200CT
STPS20200CTN	STPS2030CT	STPS2045CT
STPS2060CT	STPS20H100CR	STPS20H100CT
STPS20L15D	STPS20L25CT	STPS20L45CT
STPS20L60CT	STPS20M100SR	STPS20M100ST
STPS20M120SR	STPS20M120STN	STPS20M60CR
STPS20M60CT	STPS20M60D	STPS20M60SR
STPS20M60ST	STPS20M80CR	STPS20M80CT
STPS20S100CR	STPS20S100CT	STPS20SM100SR
STPS20SM100ST	STPS20SM120SR	STPS20SM120STN
STPS20SM60CR	STPS20SM60CT	STPS20SM60D
STPS20SM60SR	STPS20SM60ST	STPS20SM80CR
STPS20SM80CT	STPS2545CT	



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ST COMMERCIAL PRODUCT

STPS30100ST	STPS30120CR	STPS30120CT
STPS30120CTN	STPS30150CT	STPS3030CR
STPS3030CT	STPS3045CR	STPS3045CT
STPS30H100CR	STPS30H100CT	STPS30H100CTN
STPS30H60CR	STPS30H60CT	STPS30L120CR
STPS30L120CT	STPS30L30CT	STPS30L45CR
STPS30L45CT	STPS30L60CR	STPS30L60CT
STPS30L60CTN	STPS30M100SR	STPS30M100ST
STPS30M120SR	STPS30M120STN	STPS30M60CR
STPS30M60CT	STPS30M60D	STPS30M60SR
STPS30M60ST	STPS30M80CR	STPS30M80CT
STPS30SM100SR	STPS30SM100ST	STPS30SM120SR
STPS30SM120STN	STPS30SM60CR	STPS30SM60CT
STPS30SM60D	STPS30SM60SR	STPS30SM60ST
STPS30SM80CR	STPS30SM80CT	STPS40120CT
STPS40150CT	STPS40170CT	STPS4030CT
STPS40L15CT	STPS40L45CT	STPS40M100CR
STPS40M100CT	STPS40M120CR	STPS40M120CT
STPS40M120CTN	STPS40M60CR	STPS40M60CT
STPS40M80CR	STPS40M80CT	STPS40SM100CR
STPS40SM100CT	STPS40SM120CR	STPS40SM120CT
STPS40SM120CTN	STPS40SM60CR	STPS40SM60CT
STPS40SM80CR	STPS40SM80CT	STPS41H100CR
STPS41H100CT	STPS41L60CT	STPS60150CT
STPS60170CT	STPS60H100CT	STPS61L45CT
STPS61L60CT	STPS745D	STPS8H100D
STPSC1006D	STPSC10H065D	STPSC1206D
STPSC20H065CT	STPSC406D	STPSC4H065D
STPSC606D	STPSC6H065D	STPSC806D
STPSC8H065D	STTH1002CR	STTH1002CT
STTH10LCD06CT	STTH1202D	STTH1210D
STTH1212D	STTH12R06D	STTH1502D
STTH15L06D	STTH15R06D	STTH1602CT
STTH16L06CT	STTH16R04CT	STTH2002CR
STTH2002CT	STTH2002D	



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PCN Reference : IPD/13/7945

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Subject : Public Products List (Contd.)

ST COMMERCIAL PRODUCT

STTH2003CR	STTH2003CT	STTH20L03CT
STTH20R04D	STTH3002CT	STTH3010D
STTH3012D	STTH30R04D	STTH512D
STTH5L06D	STTH5R06D	STTH602CT
STTH802D	STTH803D	STTH810D
STTH812D	STTH8L06D	STTH8R03D
STTH8R04D	STTH8R06D	STTH8R06R
STTH8S06D	TIP102	TIP105
TIP107	TIP112	TIP115
TIP117	TIP120	TIP121
TIP122	TIP125	TIP126
TIP127	TIP132	TIP137
TIP142T	TIP147T	TIP29A
TIP29C	TIP31A	TIP31C
TIP32A	TIP32C	TIP41C
TIP42A	TIP42C	TIP47
TIP50	TN22-1500T	TR136
TR236	TS1220-600T	TS420-600T
TS820-600T	TYN612MRG	

BD242C
STI76NF75
STPS10H100CT
BUL1203E
MQT-F
STTH506D
STP80NF03L-04
STTH806D
BULB39D-1
MQT-G
BD242B

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