

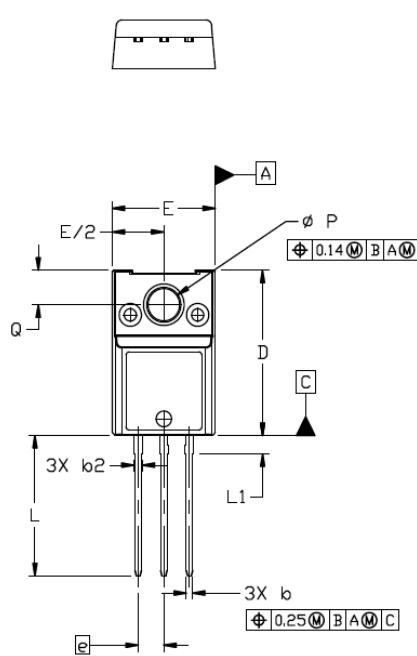


|  |  |                                    |
|--|--|------------------------------------|
| <b>Title of Change:</b>                          | Qualification of Shantou Huashan Electronic Devices Co., Ltd., China (SHEDCL) for the Assembly and Test of MOSFET products packaged in TO220F  |                                    |
| <b>Proposed First Ship date:</b>                 | 14 Aug 2020 or earlier if approved by customer   |                                    |
| <b>Contact Information:</b>                      | Contact your local ON Semiconductor Sales Office or Yuna.Im@onsemi.com   |                                    |
| <b>PCN Samples Contact:</b>                      | 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.  |                                    |
| <b>Type of Notification:</b>                     | This is an Initial Product/Process Change Notification (IPCN) sent to customers. An IPCN is an advance notification about an upcoming change and contains general information regarding the change details and devices affected. It also contains the preliminary reliability qualification plan. The completed qualification and characterization data will be included in the Final Product/Process Change Notification (FPCN). This IPCN notification will be followed by a Final Product/Process Change Notification (FPCN) at least 90 days prior to implementation of the change. In case of questions, contact <PCN.Support@onsemi.com> |                                    |
| <b>Marking of Parts/ Traceability of Change:</b> | Product from SHEDCL will be marked with site code prior to date code.  |                                    |
| <b>Change Category:</b>                          | Assembly Change  |                                    |
| <b>Change Sub-Category(s):</b>                   | Manufacturing Site Transfer  |                                    |
| <b>Sites Affected:</b>                           |  |                                    |
| <b>ON Semiconductor Sites</b>                    | <b>External Foundry/Subcon Sites</b>   |                                    |
| None   | SHANTOU HUASHAN Electronic Devices Co., Ltd., China  |                                    |
|  | Tak Cheong Electronics Shanwei, China  |                                    |
| <b>Description and Purpose:</b>                  |  |                                    |
|  | <b>Before Change Description</b>   | <b>After Change Description</b>    |
| LeadFrame  | TO220FP 3L BARE Cu 1X20 STAMPED  | TO-220F 3L Bare Cu 1x20 STAMPED    |
| Die Attach                                       | SOLDER PbSn5Ag2.5  | SOLDER Pb93.5Sn5Ag1.5              |
| Mold Compound                                    | SG8300HK   | KTMC-3097GXA(green)                |
| Assembly Site                                    | Tak Cheong Electronics Shanwei   | Shantou Huashan Electronic Devices |
|  | <b>From</b>  | <b>To</b>                          |
| Product marking change                           | C  | SH                                 |

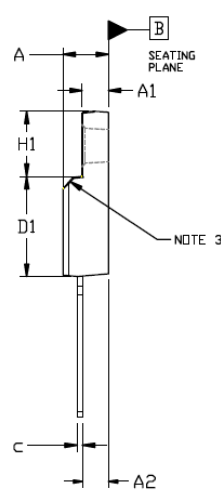


TO-220 FULLPACK, 3-LEAD  
CASE 221BN  
ISSUE O

DATE 12 DEC 2018



- NOTES:
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
  2. CONTROLLING DIMENSION: MILLIMETERS
  3. CONTOUR UNCONTROLLED IN THIS AREA.
  4. DIMENSIONS EXCLUDE BURRS, MOLD FLASH, AND TIE BAR PROTRUSIONS.



| DIM | MILLIMETERS |       |       |
|-----|-------------|-------|-------|
|     | MIN.        | NOM.  | MAX.  |
| A   | 4.60        | 4.70  | 4.80  |
| A1  | 2.50        | 2.60  | 2.70  |
| A2  | 2.47        | 2.57  | 2.67  |
| b   | 0.56        | 0.63  | 0.69  |
| b2  | ---         | ---   | 0.90  |
| c   | 0.46        | 0.53  | 0.59  |
| D   | 15.80       | 16.00 | 16.20 |
| D1  | 9.58        | 9.68  | 9.78  |
| E   | 10.00       | 10.20 | 10.40 |
| e   | 2.54 BSC    |       |       |
| H1  | 6.32 REF    |       |       |
| L   | 13.45       | 13.60 | 13.75 |
| L1  | 1.70        | 1.80  | 1.90  |
| P   | 3.00        | 3.10  | 3.20  |
| Q   | 3.25        | 3.35  | 3.45  |

Qualification Plan:

QV DEVICE NAME FDPF035N06B-F152  
RMS: 64693  
PACKAGE: TO220F

| Test  | Specification                   | Condition                                    | Interval |
|-------|---------------------------------|--|----------|
| HTRB  | JESD22-A108                     | Ta=150°C, 80% max rated V                    | 1008 hrs |
| HTGB  | JESD22-A108                     | Ta=150°C, 100% max rated Vgss                | 1008 hrs |
| HTSL  | JESD22-A103                     | Ta=150°C                                     | 1008 hrs |
| IOL   | MIL-STD-750 (M1037)<br>AEC-Q101 | Ta=+25°C, delta Tj=100°C<br>On/off = 3.5 min | 8572 cyc |
| TC    | JESD22-A104                     | Ta= -55°C to +150°C                          | 1000 cyc |
| H3TRB | JESD22-A101                     | 85°C, 85% RH, bias                           | 1008 hrs |
| uHAST | JESD22-A118                     | 130°C, 85% RH, 18.8psig, unbiased            | 96 hrs   |
| RSH   | JESD22- B106                    | Ta = 265°C, 10 sec                           |          |
| SD    | JSTD002                         | Ta = 245°C, 5 sec                            |          |
| PD    | JESD22-B100B                    | POD or Case Outline                          |          |



**QV DEVICE NAME : FCPF190N65FL1**

**RMS: 64690**

**PACKAGE: TO220F**

| Test  | Specification                   | Condition                                    | Interval |
|-------|---------------------------------|--|----------|
| HTRB  | JESD22-A108                     | Ta=150°C, 80% max rated V                    | 1008 hrs |
| HTGB  | JESD22-A108                     | Ta=150°C, 100% max rated Vgss                | 1008 hrs |
| HTSL  | JESD22-A103                     | Ta=150°C                                     | 1008 hrs |
| IOL   | MIL-STD-750 (M1037)<br>AEC-Q101 | Ta=+25°C, delta Tj=100°C<br>On/off = 3.5 min | 8572 cyc |
| TC    | JESD22-A104                     | Ta= -55°C to +150°C                          | 1000 cyc |
| H3TRB | JESD22-A101                     | 85°C, 85% RH, bias                           | 1008 hrs |
| uHAST | JESD22-A118                     | 130°C, 85% RH, 18.8psig, unbiased            | 96 hrs   |
| RSH   | JESD22- B106                    | Ta = 265°C, 10 sec                           |          |
| SD    | JSTD002                         | Ta = 245°C, 5 sec                            |          |
| PD    | JESD22-B100B                    | POD or Case Outline                          |          |

**QV DEVICE NAME : FCPF165N65S3L1**

**RMS: 64691**

**PACKAGE: TO220F**

| Test  | Specification                   | Condition                                    | Interval |
|-------|---------------------------------|--|----------|
| HTRB  | JESD22-A108                     | Ta=150°C, 80% max rated V                    | 1008 hrs |
| HTGB  | JESD22-A108                     | Ta=150°C, 100% max rated Vgss                | 1008 hrs |
| HTSL  | JESD22-A103                     | Ta=150°C                                     | 1008 hrs |
| IOL   | MIL-STD-750 (M1037)<br>AEC-Q101 | Ta=+25°C, delta Tj=100°C<br>On/off = 3.5 min | 8572 cyc |
| TC    | JESD22-A104                     | Ta= -55°C to +150°C                          | 1000 cyc |
| H3TRB | JESD22-A101                     | 85°C, 85% RH, bias                           | 1008 hrs |
| uHAST | JESD22-A118                     | 130°C, 85% RH, 18.8psig, unbiased            | 96 hrs   |
| RSH   | JESD22- B106                    | Ta = 265°C, 10 sec                           |          |
| SD    | JSTD002                         | Ta = 245°C, 5 sec                            |          |
| PD    | JESD22-B100B                    | POD or Case Outline                          |          |

Estimated date for qualification completion: 1 May 2020



**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 |
|------------------|-----------------------|
| FDPF035N06B-F152 | FDPF035N06B-F152      |
| FDPF041N06BL1    | FDPF035N06B-F152      |
| FCPF600N60ZL1    | FCPF190N65FL1         |
| FCPF190N60E-F152 | FCPF190N65FL1         |
| FCPF190N60-F152  | FCPF190N65FL1         |
| FCPF260N60E-F152 | FCPF190N65FL1         |
| FCPF380N60E-F152 | FCPF190N65FL1         |
| FCPF380N60-F152  | FCPF190N65FL1         |
| FCPF190N65FL1    | FCPF190N65FL1         |
| FCPF260N65FL1    | FCPF190N65FL1         |
| FCPF380N65FL1    | FCPF190N65FL1         |
| FCPF400N80ZL1    | FCPF190N65FL1         |
| FCPF165N65S3ROL  | FCPF165N65S3L1        |
| FCPF190N65S3ROL  | FCPF165N65S3L1        |
| FCPF250N65S3L1   | FCPF165N65S3L1        |
| FCPF250N65S3ROL  | FCPF165N65S3L1        |
| FCPF360N65S3ROL  | FCPF165N65S3L1        |
| FCPF600N65S3ROL  | FCPF165N65S3L1        |
| FCPF165N65S3L1   | FCPF165N65S3L1        |
| FCPF190N65S3L1   | FCPF165N65S3L1        |

Japanese translation of the notification starts here.  
通知の日本語訳はここから始まります。

*Note: The Japanese version is for reference only. In case of any differences between the English and Japanese version, the English version shall control.*

注：日本語版は参照用です。英語版と日本語版の違いがある場合は、英語版が優先されます。



## 初回製品 / プロセス変更通知

文書番号# : IPCN23009X

発行日: 14 Feb 2020

|                |  |                                    |
|----------------|--|------------------------------------|
| 変更件名:          | TO220F パッケージの MOSFET 製品の組立および検査工場として Shantou Huashan Electronic Devices Co., Ltd. (SHEDCL、中国) の認定  |                                    |
| 初回出荷予定日:       | 14 August 2020 (またはお客様からの承認が得られた場合はそれ以前)   |                                    |
| 連絡先情報:         | 現地のオン・セミコンダクター営業所または <Yuna.lm@onsemi.com> にお問い合わせください。   |                                    |
| サンプル:          | 現地のオン・セミコンダクター営業所または <PCN.Samples@onsemi.com> にお問い合わせください。サンプルは、この変更の初回通知、初回 PCN の日付から 30 日以内に要求してください。サンプル納入時は、依頼日、数量、特別梱包材/ラベル条件によって異なります。   |                                    |
| 通知種別:          | これは、お客様宛の初回製品 / プロセス変更通知 (IPCN) です。IPCN は、近日中に実施される変更に関する事前通知であり、変更の詳細および影響を受けるデバイスについての一般情報が記載されます。また、暫定的な信頼性認証計画も記載されます。最終的な認定データおよび特性データは最終製品 / プロセス変更通知 (FPCN) に含まれます。この IPCN は、変更実施から少なくとも 90 日前に発行される最終製品 / プロセス変更通知 (FPCN) に先だって通知されます。ご不明な点がありましたら、<PCN.Support@onsemi.com> にお問い合わせください。 |                                    |
| 変更部品の識別:       | SHEDCL からの製品には日付コードの前にサイトコードが表示されます。   |                                    |
| 変更カテゴリ:        | アセンブリの変更   |                                    |
| 変更サブカテゴリ:      | 製造拠点の移管  |                                    |
| 影響を受ける拠点:      |  |                                    |
| オン・セミコンダクター拠点: | 外部製造工場 / 下請業者拠点:   |                                    |
| なし             | SHANTOU HUASHAN Electronic Devices Co., Ltd., China  |                                    |
|                | Tak Cheong Electronics Shanwei, China  |                                    |
| 説明および目的:       |  |                                    |
|                | 変更前の表記   | 変更後の表記                             |
| リードフレーム        | TO220FP 3L BARE Cu 1X20 STAMPED  | TO-220F 3L Bare Cu 1x20 STAMPED    |
| ダイ接着剤          | SOLDER PbSn5Ag2.5  | SOLDER Pb93.5Sn5Ag1.5              |
| モールド・コンパウンド    | SG8300HK   | KTMC-3097GXA(green)                |
| 組み立て拠点         | Tak Cheong Electronics Shanwei   | Shantou Huashan Electronic Devices |
|                | 変更前  | 変更後                                |
| 製品マーキング変更      | C  | SH                                 |



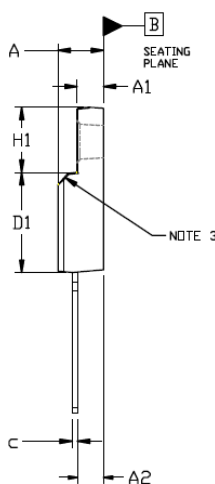
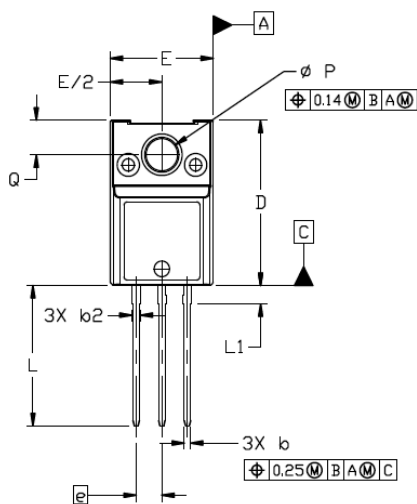
TO-220 FULLPACK, 3-LEAD  
CASE 221BN  
ISSUE O

DATE 12 DEC 2018



NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS
3. CONTOUR UNCONTROLLED IN THIS AREA.
4. DIMENSIONS EXCLUDE BURRS, MOLD FLASH, AND TIE BAR PROTRUSIONS.



| DIM | MILLIMETERS |       |       |
|-----|-------------|-------|-------|
|     | MIN.        | NDM.  | MAX.  |
| A   | 4.60        | 4.70  | 4.80  |
| A1  | 2.50        | 2.60  | 2.70  |
| A2  | 2.47        | 2.57  | 2.67  |
| b   | 0.56        | 0.63  | 0.69  |
| b2  | ---         | ---   | 0.90  |
| c   | 0.46        | 0.53  | 0.59  |
| D   | 15.80       | 16.00 | 16.20 |
| D1  | 9.58        | 9.68  | 9.78  |
| E   | 10.00       | 10.20 | 10.40 |
| e   | 2.54 BSC    |       |       |
| H1  | 6.32 REF    |       |       |
| L   | 13.45       | 13.60 | 13.75 |
| L1  | 1.70        | 1.80  | 1.90  |
| P   | 3.00        | 3.10  | 3.20  |
| Q   | 3.25        | 3.35  | 3.45  |

認定計画:

デバイス名: FDPF035N06B-F152

RMS: 64693

パッケージ: TO220F

| テスト   | 規格                              | 条件   | 間隔       |
|-------|---------------------------------|--|----------|
| HTRB  | JESD22-A108                     | Ta=150°C, 80% max rated V                    | 1008 hrs |
| HTGB  | JESD22-A108                     | Ta=150°C, 100% max rated Vgss                | 1008 hrs |
| HTSL  | JESD22-A103                     | Ta=150°C                                     | 1008 hrs |
| IOL   | MIL-STD-750 (M1037)<br>AEC-Q101 | Ta=+25°C, delta Tj=100°C<br>On/off = 3.5 min | 8572 cyc |
| TC    | JESD22-A104                     | Ta= -55°C to +150°C                          | 1000 cyc |
| H3TRB | JESD22-A101                     | 85°C, 85% RH, bias                           | 1008 hrs |
| uHAST | JESD22-A118                     | 130°C, 85% RH, 18.8psig, unbiased            | 96 hrs   |
| RSH   | JESD22- B106                    | Ta = 265°C, 10 sec                           |          |
| SD    | JSTD002                         | Ta = 245°C, 5 sec                            |          |
| PD    | JESD22-B100B                    | POD or Case Outline                          |          |



デバイス名: FCPF190N65FL1

RMS: 64690

パッケージ: TO220F

| テス    | 規格                              | 条件   | 間隔       |
|-------|---------------------------------|--|----------|
| HTRB  | JESD22-A108                     | Ta=150°C, 80% max rated V                    | 1008 hrs |
| HTGB  | JESD22-A108                     | Ta=150°C, 100% max rated Vgss                | 1008 hrs |
| HTSL  | JESD22-A103                     | Ta=150°C                                     | 1008 hrs |
| IOL   | MIL-STD-750 (M1037)<br>AEC-Q101 | Ta=+25°C, delta Tj=100°C<br>On/off = 3.5 min | 8572 cyc |
| TC    | JESD22-A104                     | Ta= -55°C to +150°C                          | 1000 cyc |
| H3TRB | JESD22-A101                     | 85°C, 85% RH, bias                           | 1008 hrs |
| uHAST | JESD22-A118                     | 130°C, 85% RH, 18.8psig, unbiased            | 96 hrs   |
| RSH   | JESD22- B106                    | Ta = 265°C, 10 sec                           |          |
| SD    | JSTD002                         | Ta = 245°C, 5 sec                            |          |
| PD    | JESD22-B100B                    | POD or Case Outline                          |          |

デバイス名: FCPF165N65S3L1

RMS: 64691

パッケージ: TO220F

| テス    | 規格                              | 条件   | 間隔       |
|-------|---------------------------------|--|----------|
| HTRB  | JESD22-A108                     | Ta=150°C, 80% max rated V                    | 1008 hrs |
| HTGB  | JESD22-A108                     | Ta=150°C, 100% max rated Vgss                | 1008 hrs |
| HTSL  | JESD22-A103                     | Ta=150°C                                     | 1008 hrs |
| IOL   | MIL-STD-750 (M1037)<br>AEC-Q101 | Ta=+25°C, delta Tj=100°C<br>On/off = 3.5 min | 8572 cyc |
| TC    | JESD22-A104                     | Ta= -55°C to +150°C                          | 1000 cyc |
| H3TRB | JESD22-A101                     | 85°C, 85% RH, bias                           | 1008 hrs |
| uHAST | JESD22-A118                     | 130°C, 85% RH, 18.8psig, unbiased            | 96 hrs   |
| RSH   | JESD22- B106                    | Ta = 265°C, 10 sec                           |          |
| SD    | JSTD002                         | Ta = 245°C, 5 sec                            |          |
| PD    | JESD22-B100B                    | POD or Case Outline                          |          |

認定完了予定日 : 1 May 2020





## 影響を受ける部品の一覧:

注: 部品一覧には標準部品番号 (既製品) のみが記載されています。本 PCN の影響を受けるカスタム部品番号は、PCN メールで提供される顧客個別の付録、または PCN カスタマイズポータルに記載されています。

| 部品番号             | 認定試験用ピークル        |
|------------------|------------------|
| FDPF035N06B-F152 | FDPF035N06B-F152 |
| FDPF041N06BL1    | FDPF035N06B-F152 |
| FCPF600N60ZL1    | FCPF190N65FL1    |
| FCPF190N60E-F152 | FCPF190N65FL1    |
| FCPF190N60-F152  | FCPF190N65FL1    |
| FCPF260N60E-F152 | FCPF190N65FL1    |
| FCPF380N60E-F152 | FCPF190N65FL1    |
| FCPF380N60-F152  | FCPF190N65FL1    |
| FCPF190N65FL1    | FCPF190N65FL1    |
| FCPF260N65FL1    | FCPF190N65FL1    |
| FCPF380N65FL1    | FCPF190N65FL1    |
| FCPF400N80ZL1    | FCPF190N65FL1    |
| FCPF165N65S3ROL  | FCPF165N65S3L1   |
| FCPF190N65S3ROL  | FCPF165N65S3L1   |
| FCPF250N65S3L1   | FCPF165N65S3L1   |
| FCPF250N65S3ROL  | FCPF165N65S3L1   |
| FCPF360N65S3ROL  | FCPF165N65S3L1   |
| FCPF600N65S3ROL  | FCPF165N65S3L1   |
| FCPF165N65S3L1   | FCPF165N65S3L1   |
| FCPF190N65S3L1   | FCPF165N65S3L1   |



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**Appendix A: Changed Products**

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| Product          | Customer Part Number | Qualification Vehicle | New Part Number | Replacement Supplier |
|------------------|----------------------|-----------------------|-----------------|----------------------|
| FCPF190N65S3L1   |                      | FCPF165N65S3L1        |                 |                      |
| FCPF165N65S3L1   |                      | FCPF165N65S3L1        |                 |                      |
| FCPF190N65S3R0L  |                      | FCPF165N65S3L1        |                 |                      |
| FCPF165N65S3R0L  |                      | FCPF165N65S3L1        |                 |                      |
| FCPF400N80ZL1    |                      | FCPF190N65FL1         |                 |                      |
| FCPF380N65FL1    |                      | FCPF190N65FL1         |                 |                      |
| FCPF190N65FL1    |                      | FCPF190N65FL1         |                 |                      |
| FCPF380N60-F152  |                      | FCPF190N65FL1         |                 |                      |
| FCPF260N60E-F152 | FCPF260N60E-F152     | FCPF190N65FL1         |                 |                      |
| FDPF041N06BL1    |                      | FDPF035N06B-F152      |                 |                      |