

**NEW** **SSM6N57NU** **New product**

Small-signal MOSFET 2 in 1

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## Description

|                                       |                |
|---------------------------------------|----------------|
| <b>Polarity</b>                       | N-ch×2         |
| <b>Internal Connection</b>            | Independent    |
| <b>RoHS Compatible Product(s) (#)</b> | Available      |
| <b>Assembly bases</b>                 | Japan,Malaysia |

## Properties

### Package Information

|                             |                                                                                     |
|-----------------------------|-------------------------------------------------------------------------------------|
| <b>Package Image</b>        |  |
| <b>Toshiba Package Name</b> | UDFN6                                                                               |
| <b>Pins</b>                 | 6                                                                                   |
| <b>Mounting</b>             | Surface Mount                                                                       |

### Absolute Maximum Ratings

| Characteristics           | Symbol    | Rating | Unit |
|---------------------------|-----------|--------|------|
| Drain current (Q1)        | $I_D$     | 4      | A    |
| Drain current (Q2)        | $I_D$     | 4      | A    |
| Drain-Source voltage (Q1) | $V_{DSS}$ | 30     | V    |
| Drain-Source voltage (Q2) | $V_{DSS}$ | 30     | V    |
| Gate-Source voltage (Q1)  | $V_{GSS}$ | +/-12  | V    |
| Gate-Source voltage (Q2)  | $V_{GSS}$ | +/-12  | V    |

### Electrical Characteristics

| Characteristics                       | Symbol       | Condition       | Value | Unit     |
|---------------------------------------|--------------|-----------------|-------|----------|
| Drain-Source on-resistance (Q1) (Max) | $R_{DS(ON)}$ | $ V_{GS} =1.8V$ | 0.082 | $\Omega$ |
| Drain-Source                          |              |                 |       |          |

|                                              |              |                 |        |          |
|----------------------------------------------|--------------|-----------------|--------|----------|
| on-resistance<br>(Q1) (Max)                  | $R_{DS(ON)}$ | $ V_{GS} =2.5V$ | 0.053  | $\Omega$ |
| Drain-Source<br>on-resistance<br>(Q1) (Max)  | $R_{DS(ON)}$ | $ V_{GS} =4.5V$ | 0.0391 | $\Omega$ |
| Drain-Source<br>on-resistance<br>(Q1) (Typ.) | $R_{DS(ON)}$ | $ V_{GS} =1.8V$ | 0.046  | $\Omega$ |
| Drain-Source<br>on-resistance<br>(Q1) (Typ.) | $R_{DS(ON)}$ | $ V_{GS} =2.5V$ | 0.037  | $\Omega$ |
| Drain-Source<br>on-resistance<br>(Q1) (Typ.) | $R_{DS(ON)}$ | $ V_{GS} =4.5V$ | 0.03   | $\Omega$ |
| Drain-Source<br>on-resistance<br>(Q2) (Max)  | $R_{DS(ON)}$ | $ V_{GS} =1.8V$ | 0.082  | $\Omega$ |
| Drain-Source<br>on-resistance<br>(Q2) (Max)  | $R_{DS(ON)}$ | $ V_{GS} =2.5V$ | 0.053  | $\Omega$ |
| Drain-Source<br>on-resistance<br>(Q2) (Max)  | $R_{DS(ON)}$ | $ V_{GS} =4.5V$ | 0.0391 | $\Omega$ |
| Drain-Source<br>on-resistance<br>(Q2) (Typ.) | $R_{DS(ON)}$ | $ V_{GS} =1.8V$ | 0.046  | $\Omega$ |
| Drain-Source<br>on-resistance<br>(Q2) (Typ.) | $R_{DS(ON)}$ | $ V_{GS} =2.5V$ | 0.037  | $\Omega$ |
| Drain-Source<br>on-resistance<br>(Q2) (Typ.) | $R_{DS(ON)}$ | $ V_{GS} =4.5V$ | 0.03   | $\Omega$ |
| Gate threshold<br>voltage (Q1)<br>(Max)      | $V_{th}$     | -               | 1.0    | V        |
| Gate threshold<br>voltage (Q1)<br>(Min)      | $V_{th}$     | -               | 0.4    | V        |
| Gate threshold<br>voltage (Q2)<br>(Max)      | $V_{th}$     | -               | 1.0    | V        |
| Gate threshold                               |              |                 |        |          |

|                       |          |   |     |   |
|-----------------------|----------|---|-----|---|
| voltage (Q2)<br>(Min) | $V_{th}$ | - | 0.4 | V |
|-----------------------|----------|---|-----|---|

## Document

### Catalog

[General-Purpose Small Signal Surface-Mount Devices Product Guide](#)  
[May,2011]

 (PDF: 2608KB)

## Links

▶ [Part Naming Conventions](#)

### Inquiries on our product

▶ [Contact Us](#)

For product delivery, additional characters will be added to the part numbers shown on this website. For details, please ask your local distributor, or send an inquiry accessed from "Contact Us" on this website.

### Note

The Part Number column shows representative part numbers only, which may not be available for sale in the precise form shown. Each Part Number constitutes a product family which may contain multiple associated product configurations.

(#) Under the RoHS Compatible Product(s) column, "Available" means at least one RoHS-Compatible product is available for sale in the corresponding product family. "None" means no RoHS Compatible product is available in that product family. For Toshiba's definitions of concepts related to the RoHS Directive and RoHS Compatibility, please click [here](#) .

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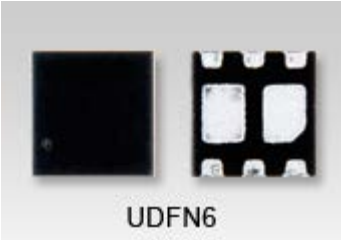
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N-ch Dual MOSFETs for Smartphone Charging Circuits: SSM6N57NU, SSM6N55NU

As the battery capacity of smartphones increases, devices supporting high-current charging by using cradles in addition to USB terminals are increasing. These products use the latest UMOS VII(H) process for N-channel dual MOSFETs that are suitable for diverse charging circuits, and are contained within a small 2.0mm × 2.0mm × 0.75mm package (UDFN6). They are ideal as charging switches for smartphones.



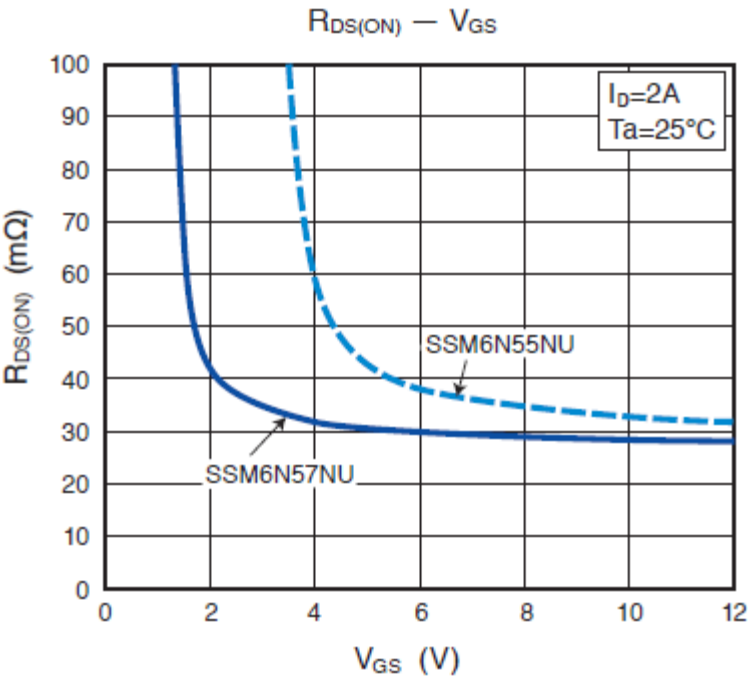
Features

- ▶ Charging switches for mobile equipment

Main Specifications of N-ch Dual MOSFETs for Smartphone Charging Circuits: SSM6N57NU, SSM6N55NU

| Part number | Polarity | V <sub>DSS</sub><br>(V) | V <sub>GSS</sub><br>(V) | I <sub>D</sub><br>(A) | R <sub>DS(ON)</sub> typ. (mΩ) |                            |                            |                           | C <sub>iss</sub><br>(pF) | Features                |
|-------------|----------|-------------------------|-------------------------|-----------------------|-------------------------------|----------------------------|----------------------------|---------------------------|--------------------------|-------------------------|
|             |          |                         |                         |                       | V <sub>GS</sub> =<br>1.8 V    | V <sub>GS</sub> =<br>2.5 V | V <sub>GS</sub> =<br>4.5 V | V <sub>GS</sub> =<br>10 V |                          |                         |
| SSM6N57NU   | Nch Dual | 30                      | ±12                     | 4                     | 46                            | 37                         | 30                         | -                         | 310                      | Low R <sub>DS(ON)</sub> |
| SSM6N55NU   | Nch Dual | 30                      | ±20                     | 4                     | -                             | -                          | 48                         | 33                        | 270                      | High voltage            |

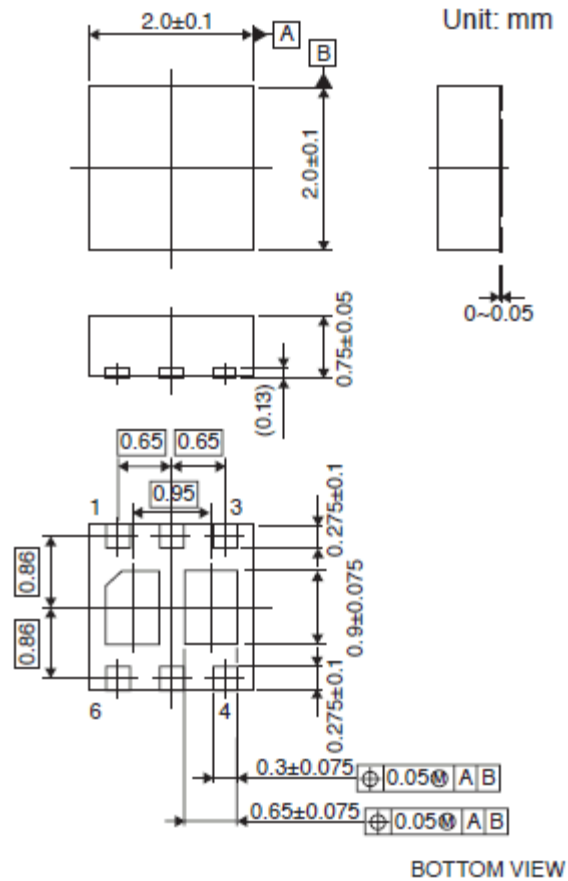
Characteristic Curves (R<sub>DS(ON)</sub>-V<sub>GS</sub>)



## Uses

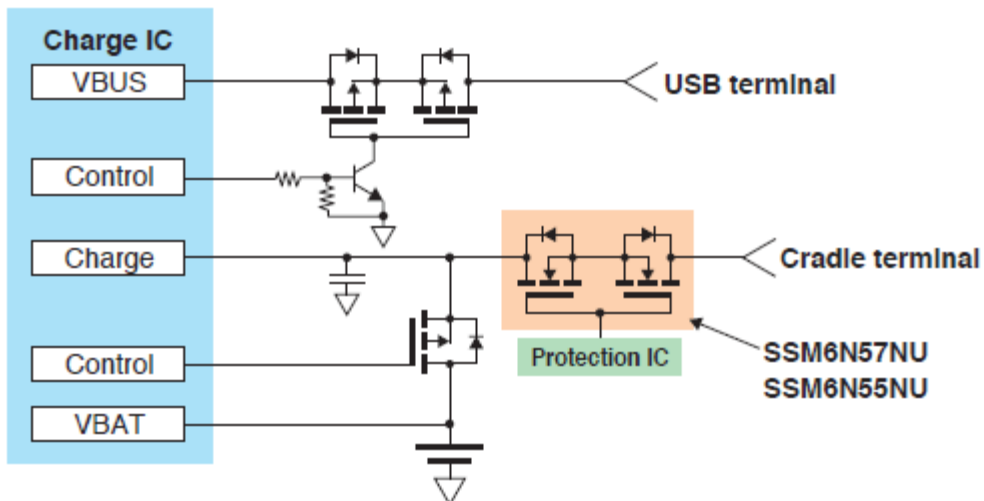
- ▶ Charging switches for smartphones, mobile phones, DSCs, laptop PCs, and other mobile equipment
- ▶ Wireless charging devices

## Outline Drawing



## Circuit Example

### Smartphone charging switch





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- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



#### Как с нами связаться

**Телефон:** 8 (812) 309 58 32 (многоканальный)

**Факс:** 8 (812) 320-02-42

**Электронная почта:** [org@eplast1.ru](mailto:org@eplast1.ru)

**Адрес:** 198099, г. Санкт-Петербург, ул. Калинина, дом 2, корпус 4, литера А.