# Switching Diode

## ■Product lineup

| Category | Application | $V_{RM}$(V) | Surface mounting type | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1208 size | 1608 size | | 2012 size | | | | | | 2916 size | | |
| | | |  |  |  |  |  |  |  |  |  |  |  |
| | | | VMD3 | EMD2 (SOD-523) | EMD3 (SOT-416) | UMD2 (SOD-323) | UMD3 (SOT-323) | UMD4 (SOT-343) | UMD5 (SOT-353) | UMD6 (SOT-363) | SMD3 (SOT-346) | SMD5 (SC-74A) | SMD6 (SOT-457) |
| Switching diode | High-speed | 20 | **DA221M** | | **DA221** | | **DA204U** | | | | **DA204K** | | |
| | | 80～90 | **DAN222M**<br>**DAP222M** | **1SS400** | **DAN222**<br>**DAP222** | **1SS355** | **DAN202U**<br>**DAP202U**<br>**DAN217U**<br>**DA228U** | **DA227** | **UMN1N**<br>**UMP1N** | **UMN11N**<br>**UMP11N**<br>**UMR12N** | **DAN202K**<br>**DAP202K**<br>**DAN217**<br>**DA228K** | **FMN1**<br>**FMP1** | **IMN10**<br>**IMN11**<br>**IMP11** |
| | Low reak | 40 | | | | **1SS380** | | | | | | | |

## ■Surface mounting type

| Application | Part no. | | Absolute maximum ratings (Ta=25℃) ※1 | | | | | Electrical characteristics (Ta=25℃) ※1 | | | | | | | Package | Equivalent circuit diagram |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | $V_F$(V)Max. | | $I_R$(μA)Max. | | trr(ns)Max. | | | | |
| | Part no. | Taping code | $V_{RM}$ (V) | $V_R$ (V) | $I_{FM}$ (mA) | $I_O$ (mA) | Isurge (mA) | | $I_F$(mA) | | $V_R$(V) | | $V_R$(V) | $I_F$(mA) | | |
| High-Speed | **1SS400** | TE61 | 90 | 80 | 225 | 100 | 500(1s) | 1.2 | 100 | 0.1 | 80 | 4 | 6 | 10 | EMD2 |  |
| | **1SS355** | TE-17 | 90 | 80 | 225 | 100 | 500(1s) | 1.2 | 100 | 0.1 | 80 | 4 | 6 | 10 | UMD2 | |
| NEW | **DAN222M** | T2L | 80 | 80 | 300 | 100 | 4000(1μs) | 1.2 | 100 | 0.1 | 70 | 4 | 6 | 5 | VMD3 |  |
| | **DAN222** | TL | 80 | 80 | 300 | 100 | 4000(1μs) | 1.2 | 100 | 0.1 | 70 | 4 | 6 | 5 | EMD3 | |
| | **DAN202U** | T106 | 80 | 80 | 300 | 100 | 4000(1μs) | 1.2 | 100 | 0.1 | 70 | 4 | 6 | 5 | UMD3 | |
| | **DAN202K** | T146 | 80 | 80 | 300 | 100 | 4000(1μs) | 1.2 | 100 | 0.1 | 70 | 4 | 6 | 5 | SMD3 | |
| NEW | **DAP222M** | T2L | 80 | 80 | 300 | 100 | 4000(1μs) | 1.2 | 100 | 0.1 | 70 | 4 | 6 | 5 | VMD3 |  |
| | **DAP222** | TL | 80 | 80 | 300 | 100 | 4000(1μs) | 1.2 | 100 | 0.1 | 70 | 4 | 6 | 5 | EMD3 | |
| | **DAP202U** | T106 | 80 | 80 | 300 | 100 | 4000(1μs) | 1.2 | 100 | 0.1 | 70 | 4 | 6 | 5 | UMD3 | |
| | **DAP202K** | T146 | 80 | 80 | 300 | 100 | 4000(1μs) | 1.2 | 100 | 0.1 | 70 | 4 | 6 | 5 | SMD3 | |
| NEW | **DA221M** | T2L | 20 | 20 | 200 | 100 | 300(1μs) | 1.0 | 10 | 0.1 | 15 | — | — | — | VMD3 |  |
| | **DA221** | TL | 20 | 20 | 200 | 100 | 300(1μs) | 1.0 | 10 | 0.1 | 15 | — | — | — | EMD3 | |
| | **DA204U** | T106 | 20 | 20 | 200 | 100 | 300(1μs) | 1.0 | 10 | 0.1 | 15 | — | — | — | UMD3 | |
| | **DAN217U** | T106 | 80 | 80 | 300 | 100 | 4000(1μs) | 1.2 | 100 | 0.2 | 70 | 4 | 6 | 5 | UMD3 | |
| | **DA228U** | T106 | 80 | 80 | 200 | 100 | 300(1μs) | 1.2 | 100 | 0.1 | 80 | — | — | — | UMD3 | |
| | **DAN217** | T146 | 80 | 80 | 300 | 100 | 4000(1μs) | 1.2 | 100 | 0.1 | 70 | 4 | 6 | 5 | SMD3 | |
| | **DA228K** | T146 | 80 | 80 | 200 | 100 | 300(1μs) | 1.2 | 100 | 0.1 | 80 | — | — | — | SMD3 | |
| | **DA204K** | T146 | 20 | 20 | 200 | 100 | 300(1μs) | 1.0 | 10 | 0.1 | 15 | — | — | — | SMD3 | |
| | **UMN1N** | TR | 80 | 80 | 80 | 25 | 250(1μs) | 0.9 | 5 | 0.1 | 70 | 4 | 6 | 5 | UMD5 |  |
| | **FMN1** | T148 | 80 | 80 | 80 | 25 | 250(1μs) | 0.9 | 5 | 0.1 | 70 | 4 | 6 | 5 | SMD5 | |
| | **UMP1N** | TR | 80 | 80 | 80 | 25 | 250(1μs) | 0.9 | 5 | 0.1 | 70 | 4 | 6 | 5 | UMD5 |  |
| | **FMP1** | T148 | 80 | 80 | 80 | 25 | 250(1μs) | 0.9 | 5 | 0.1 | 70 | 4 | 6 | 5 | SMD5 | |
| | **UMN11N** | TN | 80 | 80 | 300 | 100 | 4000(1μs) | 0.9 | 100 | 0.1 | 70 | 4 | 6 | 5 | UMD6 |  |
| | **IMN11** | T110 | 80 | 80 | 300 | 100 | 4000(1μs) | 0.9 | 100 | 0.1 | 70 | 4 | 6 | 5 | SMD6 | |
| | **UMP11N** | TN | 80 | 80 | 300 | 100 | 4000(1μs) | 1.2 | 100 | 0.1 | 70 | 4 | 6 | 5 | UMD6 |  |
| | **IMP11** | T110 | 80 | 80 | 300 | 100 | 4000(1μs) | 1.2 | 100 | 0.1 | 70 | 4 | 6 | 5 | SMD6 | |
| | **UMR12N** | TN | 80 | 80 | 200 | 100 | 300(1μs) | 1.2 | 100 | 0.1 | 80 | — | — | — | UMD6 |  |
| | **DA227** | TL | 80 | 80 | 300 | 100 | 4000(1μs) | 1.2 | 100 | 0.1 | 70 | 4 | 6 | 5 | UMD4 |  |
| | **IMN10** | T108 | 80 | 80 | 300 | 100 | 4000(1μs) | 1.2 | 100 | 0.1 | 70 | 4 | 6 | 5 | SMD6 |  |
| Low reak | **1SS380** | TE-17 | 40 | 35 | 225 | 100 | 400(1s) | 1.2 | 100 | 0.01 | 20 | — | — | — | UMD2 |  |

Note : ※1Value/element.

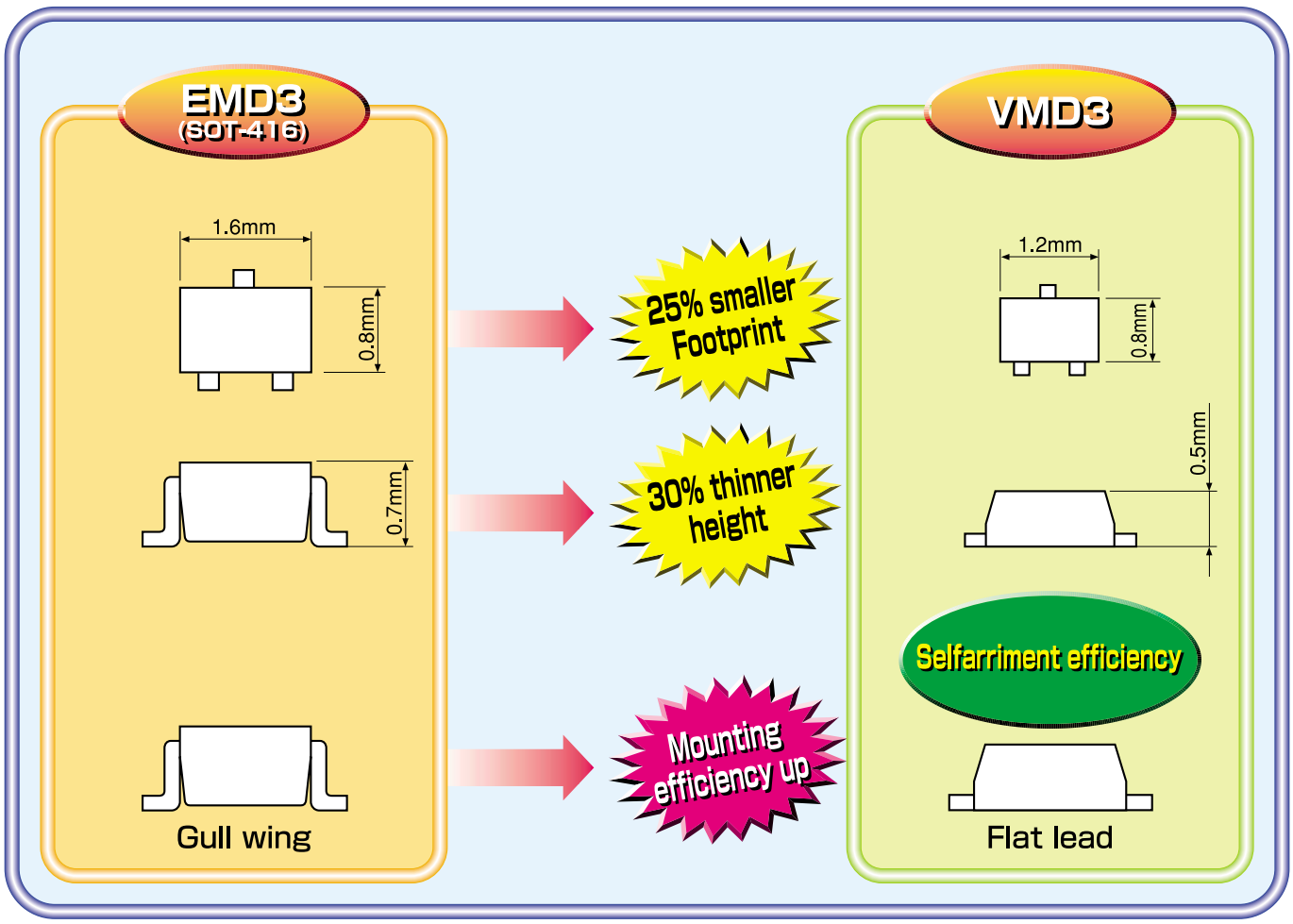
# Super small switching diode

## Application

- Cellular Phones
- Digital camera
- Digital video camera
- PC, PDA

## Merit

1. 25% smaller Footprint
2. 30% thinner height
3. Mounting efficiency up
   (soldering operation)



# Silicon diode (Epitaxial Planer Type)

## DAN222M

**APPLICATION**
High speed switching

**Mass per piece**
1.3mg/pcs

**Absolute maximum ratings** (Ta=25℃)

| Characteristic | Symbol | Limits |
|---|---|---|
| Reverse voltage (repetitive peak) | $V_{RM}$ | 80V |
| Reverse voltage (DC) | $V_R$ | 80V |
| Average rectified forward current | Io | 100mA |
| Peak forward current | $I_{FM}$ | 300mA |
| Surge current (1 μsec) | Isurge | 4A |
| Power dissipation | Pd | 150mW / Total※1 |
| Junction temperature | Tj | 150℃ |
| Storage temperature | Tstg | −55～150℃ |
| Rated frequency | f | 100MHz |

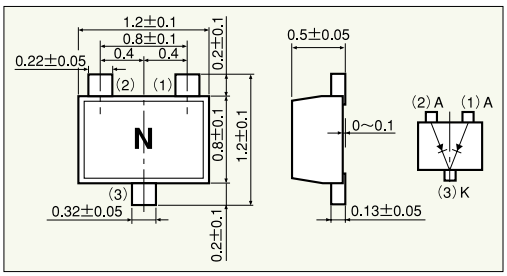
※1 Pd=120mW when only 1 circuit is operating. CONDITION=Each terminal mounted on a recommended land pattern.

**ELECTRICAL CHARACTERISTIC** (Ta=25℃)

| Characteristic | Symbol | Test condition | Max | Unit |
|---|---|---|---|---|
| Forward voltage | $V_F$ | $I_F$=100mA | 1.2 | V |
| Reverse current | $I_R$ | $V_R$=70V | 0.1 | μA |
| Capacitance between terminal | Ct | $V_R$=6V f=1.0MHz | 3.5 | pF |
| Reverse recovery time | trr | $V_R$=6V $I_F$=5mA RL=50Ω (See figure1) | 4.0 | ns |

Note : ※1Value/element.

**DIMENSION** (UNIT:mm)




# Silicon diode (Epitaxial Planer Type)

## DAP222M

**APPLICATION**
High speed switching

**Mass per piece**
1.3mg/pcs

**Absolute maximum ratings** (Ta=25℃)

| Characteristic | Symbol | Limits |
|---|---|---|
| Reverse voltage (repetitive peak) | $V_{RM}$ | 80V |
| Reverse voltage (DC) | $V_R$ | 80V |
| Average rectified forward current | Io | 100mA |
| Peak forward current | $I_{FM}$ | 300mA |
| Surge current (1 μsec) | Isurge | 4A |
| Power dissipation | Pd | 150mW / Total※1 |
| Junction temperature | Tj | 150℃ |
| Storage temperature | Tstg | −55～150℃ |
| Rated frequency | f | 100MHz |

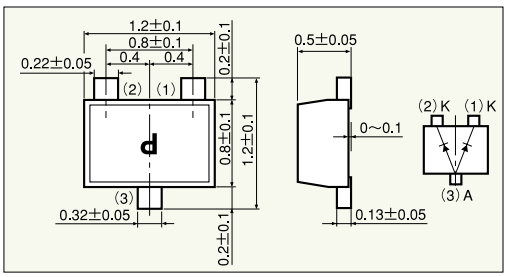
※1 Pd=120mW when only 1 circuit is operating. CONDITION=Each terminal mounted on a recommended land pattern.

**ELECTRICAL CHARACTERISTIC** (Ta=25℃)

| Characteristic | Symbol | Test condition | Max | Unit |
|---|---|---|---|---|
| Forward voltage | $V_F$ | $I_F$=100mA | 1.2 | V |
| Reverse current | $I_R$ | $V_R$=70V | 0.1 | μA |
| Capacitance between terminal | Ct | $V_R$=6V f=1.0MHz | 3.5 | pF |
| Reverse recovery time | trr | $V_R$=6V $I_F$=5mA RL=50Ω (See figure1) | 4.0 | ns |

Note : ※1Value/element.

**DIMENSION** (UNIT:mm)




# Silicon diode (Epitaxial Planer Type)

## DA221M

**APPLICATION**
Bias, Rectifier

**Mass per piece**
1.3mg/pcs

**Absolute maximum ratings** (Ta=25℃)

| Characteristic | Symbol | Limits |
|---|---|---|
| Reverse voltage (repetitive peak) | $V_{RM}$ | 20V |
| Reverse voltage (DC) | $V_R$ | 20V |
| Average rectified forward current | Io | 100mA |
| Peak forward current | $I_{FM}$ | 200mA |
| Surge current (1 μsec) | Isurge | 300mA |
| Power dissipation | Pd | 150mW / Total※1 |
| Junction temperature | Tj | 150℃ |
| Storage temperature | Tstg | −55～150℃ |
| Rated frequency | f | 100MHz |

※1 Pd=120mW when only 1 circuit is operating. CONDITION=Each terminal mounted on a recommended land pattern.

**ELECTRICAL CHARACTERISTIC** (Ta=25℃)

| Characteristic | Symbol | Test condition | Max | Unit |
|---|---|---|---|---|
| Forward voltage | $V_F$ | $I_F$=10mA | 1.0 | V |
| Reverse current | $I_R$ | $V_R$=15V | 0.1 | μA |
| Capacitance between terminal | Ct | $V_R$=6V f=1.0MHz | 4.0 | pF |

$V_F$, $I_R$ : Between no.1pin and no.3pin.
Between no.2pin and no.3pin.
Ct : Between no.1pin and no.2pin.

**DIMENSION** (UNIT:mm)