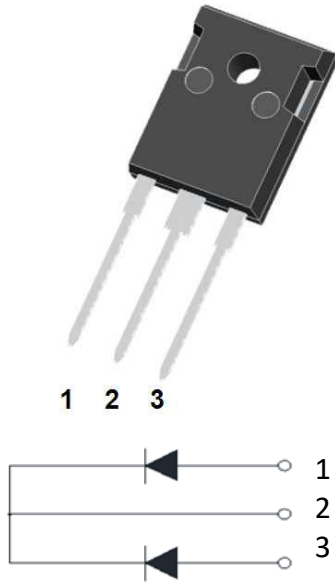


## Hyperfast power diode with Standard recovery diode



### Features

- Adopt FRED+STD chip
- Low forward Voltage drop
- Fast reverse recovery time
- High frequency operation
- High purity, high temperature epoxy encapsulation for enhanced mechanical strength and moisture resistance
- Guard ring for enhanced ruggedness and long term reliability

### Typical Applications

- Typical applications are in switching power supplies, converters, freewheeling diodes, and reverse battery protection.

### Mechanical Data

- **Package:** TO-247AB  
Molding compound meets UL 94 V-0 flammability rating, RoHS-compliant
- **Terminals:** Tin plated leads, solderable per J-STD-002 and JESD22-B102
- **Polarity:** As marked

### ■Maximum Ratings ( $T_j=25^{\circ}\text{C}$ Unless otherwise specified)

| PARAMETER                                                                                       | SYMBOL | UNIT             | MUR3060PU45EPS16 |
|-------------------------------------------------------------------------------------------------|--------|------------------|------------------|
| Device marking code                                                                             |        |                  | MUR3060PU45EPS16 |
| Repetitive Peak Reverse Voltage                                                                 | VRRM   | V                | 600              |
| Average Rectified Output Current<br>@60Hz sine wave, R-load, $T_c=127^{\circ}\text{C}$          | $I_O$  | A                | 30               |
| Surge(Non-repetitive)Forward Current @60Hz<br>half sine-wave, 1 cycle, $T_j=25^{\circ}\text{C}$ | IFSM   | A                | 300              |
| Current Squared Time<br>@1ms≤t≤8.3ms $T_j=25^{\circ}\text{C}$ ,                                 | $I^2t$ | A <sup>2</sup> s | 373              |
| Storage Temperature                                                                             | Tstg   | °C               | -55 ~ +175       |
| Junction Temperature                                                                            | $T_j$  | °C               | -55 ~ +175       |
| Typical Junction capacitance @4V,1MHz                                                           | Cj     | pF               | 191              |



# MUR3060PU45EPS16

## ■Electrical Characteristics (T<sub>j</sub>=25°C Unless otherwise specified)

| PARAMETER                                                 | SYMBOL            | UNIT | TEST CONDITIONS                                                                         | Min | Typ  | Max  |
|-----------------------------------------------------------|-------------------|------|-----------------------------------------------------------------------------------------|-----|------|------|
| Instantaneous forward voltage drop per diode              | V <sub>FM</sub>   | V    | I <sub>FM</sub> =30.0A @ T <sub>j</sub> =25°C                                           | -   | 2.05 | 2.75 |
|                                                           |                   |      | I <sub>FM</sub> =30.0A @ T <sub>j</sub> =150°C                                          | -   | 1.34 | 1.80 |
| DC reverse current at rated DC blocking voltage per diode | I <sub>RRM1</sub> | uA   | V <sub>RM</sub> =V <sub>RRM</sub><br>T <sub>j</sub> =25°C                               | -   | -    | 10.0 |
|                                                           | I <sub>RRM2</sub> | mA   | V <sub>RM</sub> =V <sub>RRM</sub><br>T <sub>j</sub> =150°C                              | -   | -    | 1.0  |
| Reverse Recovery Time                                     | T <sub>RR</sub>   | ns   | I <sub>F</sub> =0.5A I <sub>RM</sub> =1A I <sub>RR</sub> =0.25A<br>T <sub>j</sub> =25°C | -   | 36   | 50   |
|                                                           |                   |      | T <sub>j</sub> =25°C                                                                    |     | 21   |      |
|                                                           |                   |      | T <sub>j</sub> =125°C                                                                   |     | 80   |      |
| Peak recovery current                                     | I <sub>RRM</sub>  | A    | T <sub>j</sub> =25°C                                                                    | -   | 2.95 | -    |
|                                                           |                   |      | T <sub>j</sub> =125°C                                                                   | -   | 7.95 | -    |
| Reverse recovery charge                                   | Q <sub>rr</sub>   | nC   | T <sub>j</sub> =25°C                                                                    | -   | 35   | -    |
|                                                           |                   |      | T <sub>j</sub> =125°C                                                                   | -   | 320  | -    |

## ■ Characteristics(Typical)

FIG1:I<sub>o</sub> -T<sub>c</sub> Curve

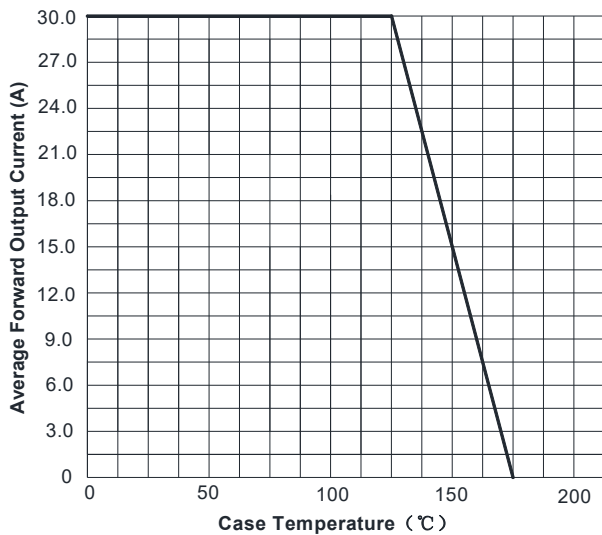
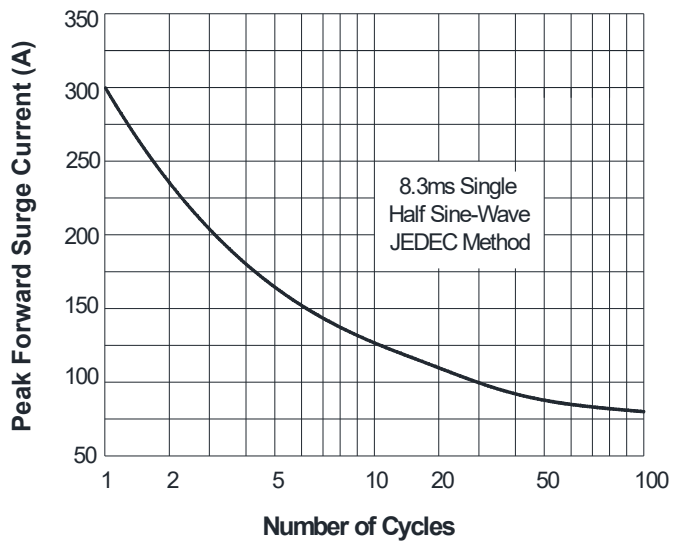


FIG2:Surge Forward Current Capability





## MUR3060PU45EPS16

FIG3: Forward Voltage

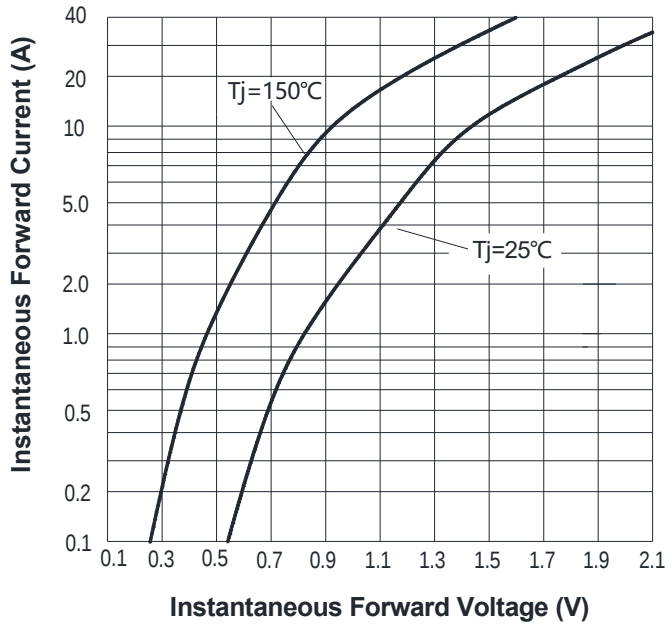


FIG.4: Typical Reverse Characteristics

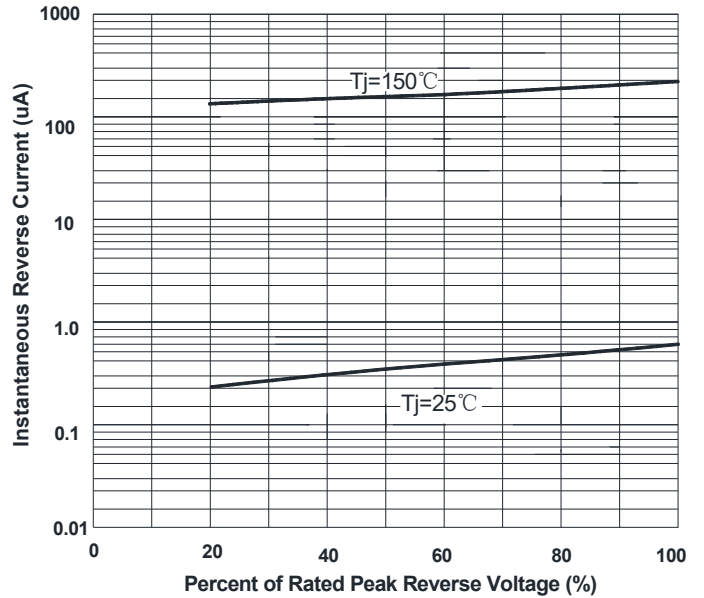
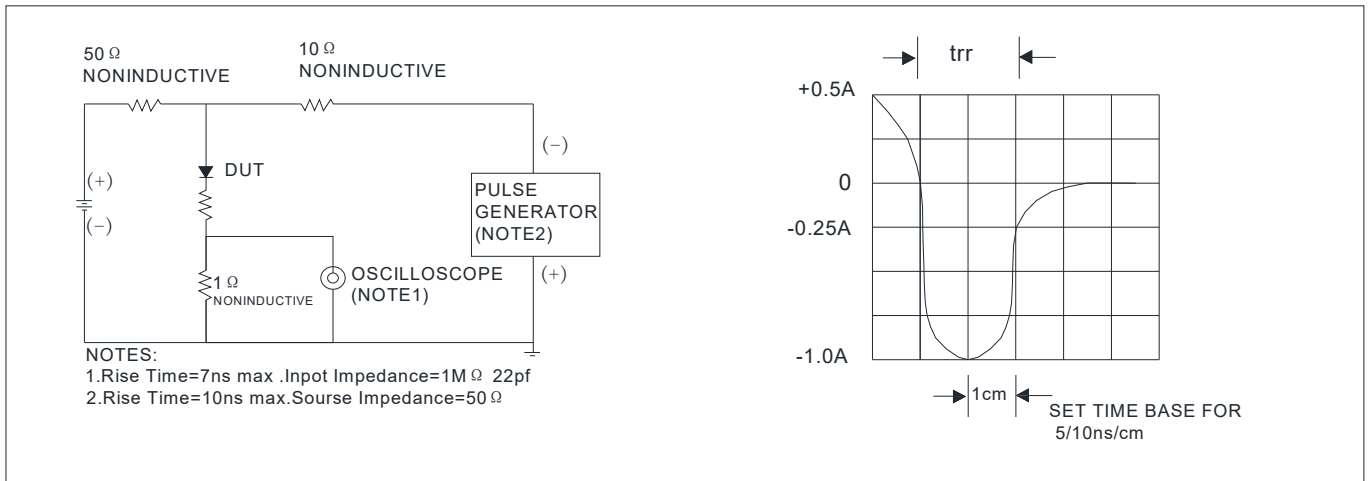


FIG.5: Diagram of circuit and Testing wave form of reverse recovery time





# MUR3060PU45EPS16

## ■Maximum Ratings (T<sub>a</sub>=25°C Unless otherwise specified)

| PARAMETER                                                                                    | SYMBOL           | UNIT              | MUR3060PU45EPS16 |
|----------------------------------------------------------------------------------------------|------------------|-------------------|------------------|
| Repetitive Peak Reverse Voltage                                                              | V <sub>RRM</sub> | V                 | 1600             |
| Average Rectified Output Current<br>@60Hz half sine-wave, R-load, T <sub>c</sub> (FIG.1)     | I <sub>o</sub>   | A                 | 45               |
| Surge(Non-repetitive) Forward Current<br>@60Hz half sine-wave, 1 cycle, T <sub>j</sub> =25°C | I <sub>FSM</sub> | A                 | 600              |
| Current Squared Time<br>@1ms≤t≤10ms T <sub>j</sub> =25°C                                     | I <sup>2</sup> t | A <sup>2</sup> s. | 1494             |
| Storage Temperature                                                                          | T <sub>stg</sub> | °C                | -55 ~ +175       |
| Junction Temperature                                                                         | T <sub>j</sub>   | °C                | -55 ~ +175       |
| Typical Junction capacitance @4V,1MHz                                                        | C <sub>j</sub>   | pF                | 125              |

## ■Electrical Characteristics (T<sub>j</sub>=25°C Unless otherwise specified)

| PARAMETER                                                    | SYMBOL            | UNIT | TEST CONDITIONS                                            | Min | Typ  | Max  |
|--------------------------------------------------------------|-------------------|------|------------------------------------------------------------|-----|------|------|
| Instantaneous forward voltage drop per diode                 | V <sub>FM</sub>   | V    | I <sub>FM</sub> =45.0A @ T <sub>j</sub> =25°C              | -   | 1.17 | 1.40 |
|                                                              |                   |      | I <sub>FM</sub> =45.0A @ T <sub>j</sub> =150°C             | -   | 1.11 | 1.30 |
| DC reverse current at<br>rated DC blocking voltage per diode | I <sub>RRM1</sub> | uA   | V <sub>RM</sub> =V <sub>RRM</sub><br>T <sub>j</sub> =25°C  | -   | -    | 10.0 |
|                                                              | I <sub>RRM2</sub> | mA   | V <sub>RM</sub> =V <sub>RRM</sub><br>T <sub>j</sub> =150°C | -   | -    | 1.5  |

## ■Thermal Characteristics (T<sub>a</sub>=25°C Unless otherwise specified)

| PARAMETER          |                           | SYMBOL            | UNIT | MUR3060PU45EPS16 |
|--------------------|---------------------------|-------------------|------|------------------|
| Thermal Resistance | Between junction and case | R <sub>θJ-C</sub> | °C/W | 0.5              |
|                    | Between junction and Air  | R <sub>θJ-A</sub> | °C/W | 37               |

## ■Ordering Information (Example)

| PREFERRED P/N    | UNIT WEIGHT(g)  | MINIMUM PACKAGE(pcs) | INNER BOX QUANTITY(pcs) | OUTER CARTON QUANTITY(pcs) | DELIVERY MODE |
|------------------|-----------------|----------------------|-------------------------|----------------------------|---------------|
| MUR3060PU45EPS16 | Approximate 6.0 | 30                   | 360                     | 1800                       | Tube          |



## ■ Characteristics (Typical)

FIG1:  $I_o$  -  $T_c$  Curve

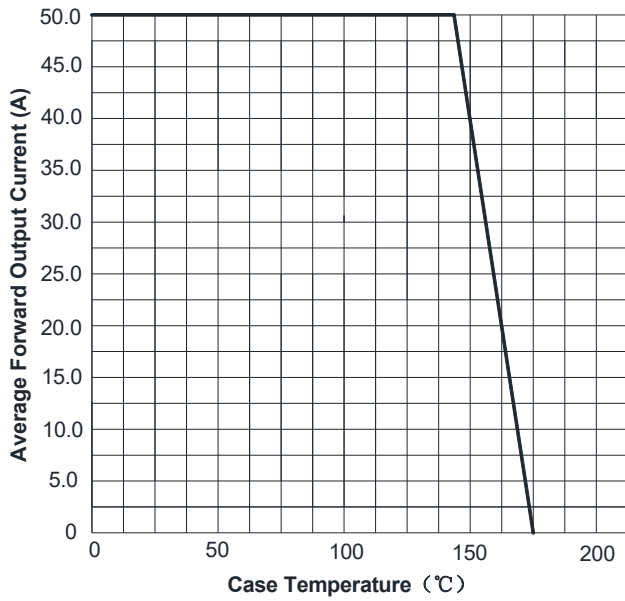


FIG2: Surge Forward Current Capability

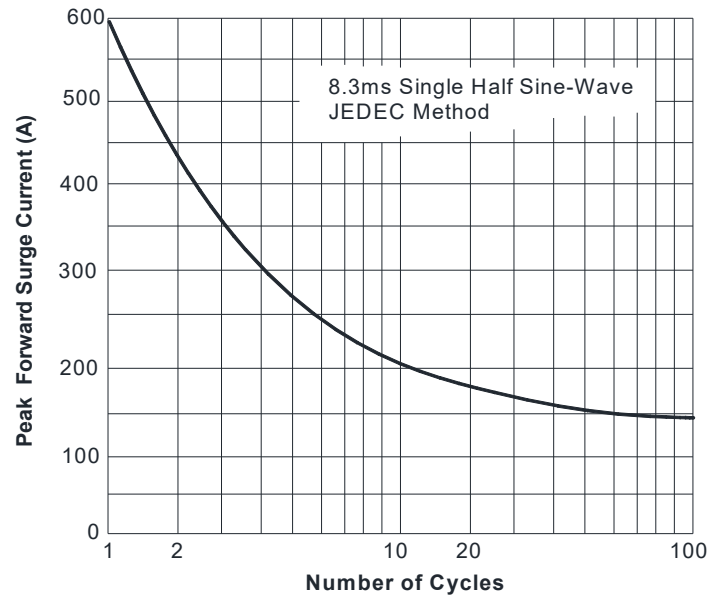


FIG3: Typical Forward Voltage

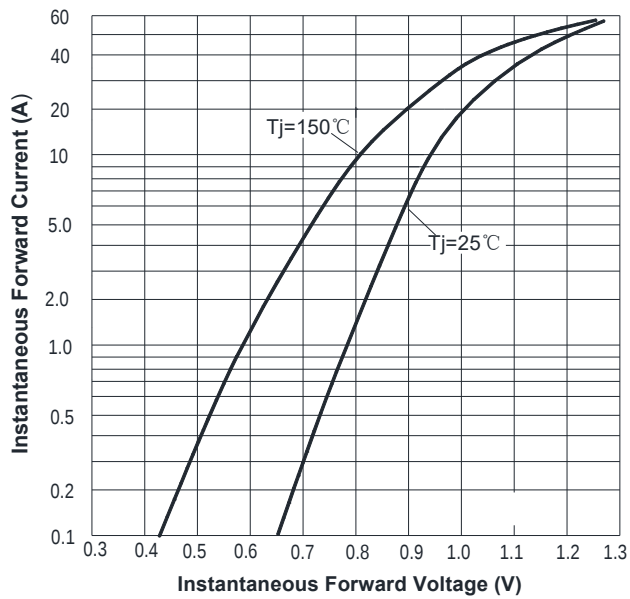
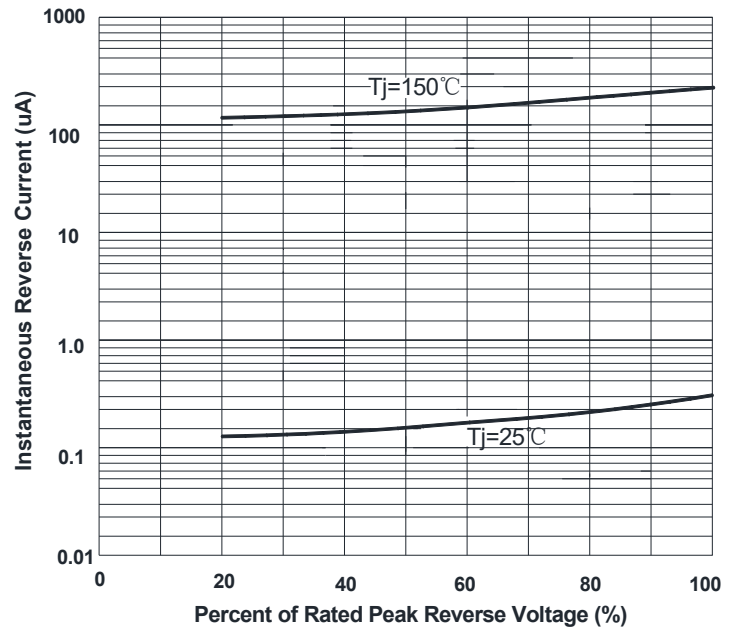


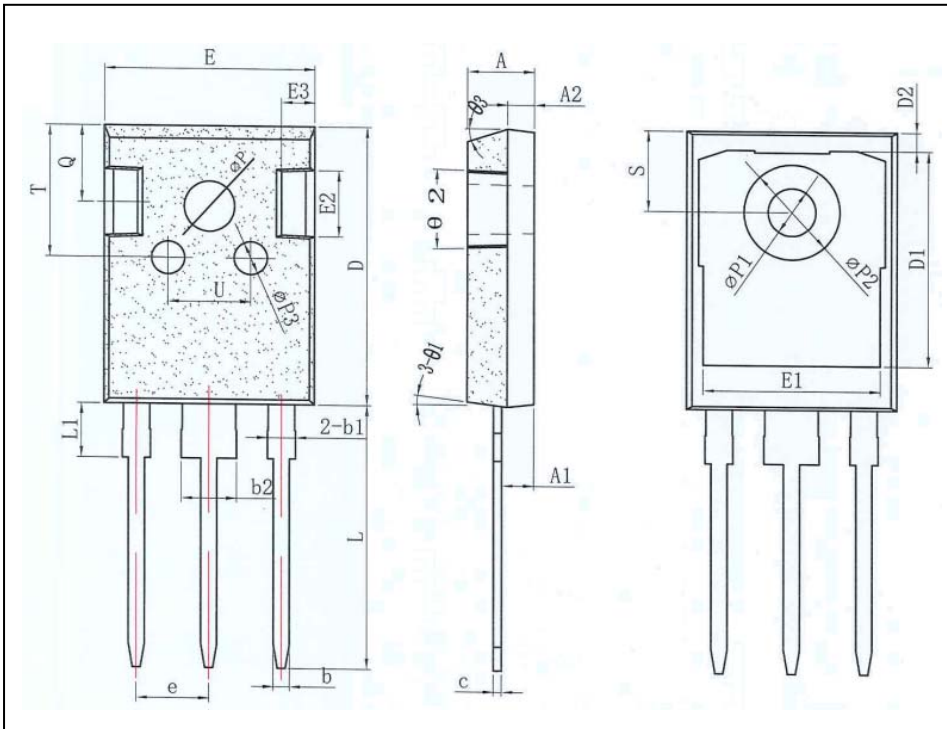
FIG4: Typical Reverse Characteristics





## MUR3060PU45EPS16

### ■ Outline Dimensions



| TO-247AB(W5038HF) |       |       |
|-------------------|-------|-------|
| Dim               | Min   | Max   |
| A                 | 4.90  | 5.10  |
| A1                | 2.31  | 2.51  |
| A2                | 1.90  | 2.10  |
| b                 | 1.15  | 1.25  |
| b1                | 1.95  | 2.25  |
| b2                | 2.95  | 3.25  |
| C                 | 0.55  | 0.65  |
| D                 | 20.90 | 21.10 |
| D1                | 16.35 | 16.75 |
| D2                | 1.05  | 1.35  |
| E                 | 15.70 | 15.90 |
| E1                | 13.10 | 13.40 |
| E2                | 4.90  | 5.10  |
| E3                | 2.40  | 2.60  |
| e                 | 5.40  | 5.48  |
| L                 | 19.80 | 20.15 |
| L1                | -     | 4.30  |
| $\phi P$          | 3.60  | 3.80  |
| $\phi P1$         | 3.45  | 3.65  |
| $\phi P2$         | 7.03  | 7.33  |
| $\phi P3$         | 2.40  | 2.60  |
| Q                 | 5.60  | 6.00  |
| S                 | 6.05  | 6.25  |
| T                 | 9.80  | 10.20 |
| U                 | 6.00  | 6.40  |
| $\theta 1$        | 5°    | 9°    |
| $\theta 2$        | 1°    | 5°    |
| $\theta 3$        | 13°   | 17°   |



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