

## FEATURES

- Low Forward Voltage
- High Surge Current Capability
- Low Leakage Current
- Low Inductance Package

## APPLICATIONS

- Field Supply For DC Motors
- Line Rectifiers For Transistorized AC Motor Controllers
- Non-controllable Rectifiers For AC/DC Converter



## Module Type

| Module Type | VRRM<br>(Repetitive Peak Reverse Voltage) | VRSM<br>(Non-Repetitive Peak Reverse Voltage) | Unit |
|-------------|---|---|------|
| MMD60A160U  | 1600                                      | 1700  | V    |

## ABSOLUTE MAXIMUM RATINGS

*T<sub>c</sub>=25°C unless otherwise specified*

| Symbol                | Parameter                            | Test Conditions  | Values      | Unit              |
|-----------------------|--------------------------------------|--|-------------|-------------------|
| I <sub>F(AV)</sub>    | Average Forward Current              | Single phase, half wave, 180° conduction,<br>T <sub>c</sub> = 85°C | 60          | A                 |
| I <sub>F(RMS)</sub>   | R.M.S. Forward Current               |  | 90          |                   |
| I <sub>FSM</sub>      | Non-Repetitive Surge Forward Current | 1/2 cycle, 50HZ, peak value T <sub>c</sub> =45°C                   | 1600        |                   |
|                       |                                      | 1/2 cycle, 60HZ, peak value T <sub>c</sub> =45°C                   | 1750        |                   |
| I <sup>2</sup> t      | I <sup>2</sup> t (For Fusing)        | 1/2 cycle, 50HZ, peak value T <sub>c</sub> =45°C                   | 12.8        | KA <sup>2</sup> s |
|                       |                                      | 1/2 cycle, 60HZ, peak value T <sub>c</sub> =45°C                   | 12.7        | KA <sup>2</sup> s |
| P <sub>D</sub>        | Power Dissipation                    |  | 250         | W                 |
| T <sub>J</sub>        | Junction Temperature                 |  | -40 to +150 | °C                |
| T <sub>STG</sub>      | Storage Temperature Range            |  | -40 to +125 | °C                |
| V <sub>ISO</sub>      | Isolation Breakdown Voltage          | AC, 50Hz(R.M.S), t=1minute   | 3000        | V                 |
| Torque                | Module-to-Sink                       | Recommended (M6)   | 3~5         | N.m               |
| Torque                | Module Electrodes                    | Recommended (M5)   | 2.5~5       | N.m               |
| R <sub>th (J-C)</sub> | Junction-to-Case Thermal Resistance  |  | 0.5         | K /W              |
| Weight                |                                      |  | 90          | g                 |

# MMD60A160U

## ELECTRICAL AND THERMAL CHARACTERISTICS $T_C=25^\circ\text{C}$ unless otherwise specified

| Symbol   | Parameter                        | Test Conditions                          | Min. | Typ. | Max. | Unit       |
|----------|----------------------------------|--|------|------|------|------------|
| $I_{RM}$ | Max.Reverse Leakage Current      | $V_R = V_{RRM}$                          |      |      | 0.5  | mA         |
|          |                                  | $V_R = V_{RRM}, T_J = 125^\circ\text{C}$ |      |      | 10   | mA         |
| $V_F$    | Forward Voltage                  | $I_F = 60\text{A}$                       |      |      | 1.15 | V          |
| $V_{T0}$ | For power-loss calculations only |  |      |      | 0.95 | V          |
| $r_T$    | $T_J = 125^\circ\text{C}$        |  |      |      | 3.6  | m $\Omega$ |

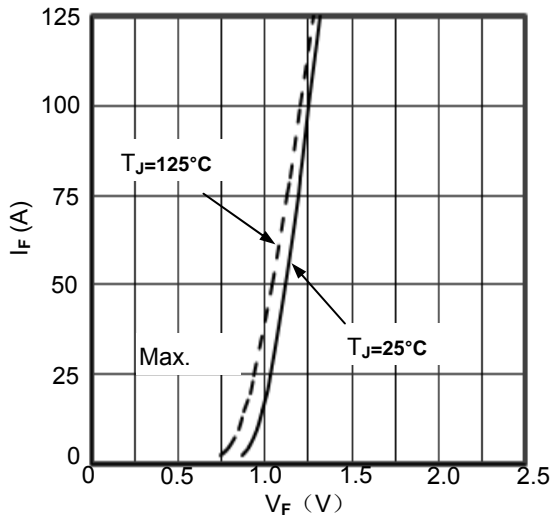


Figure1. Forward current vs.voltage drop

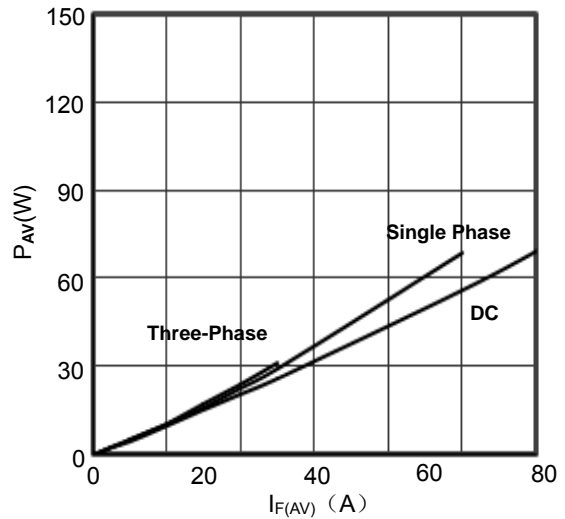


Figure2. Diode Power dissipation vs.  $I_{F(AV)}$

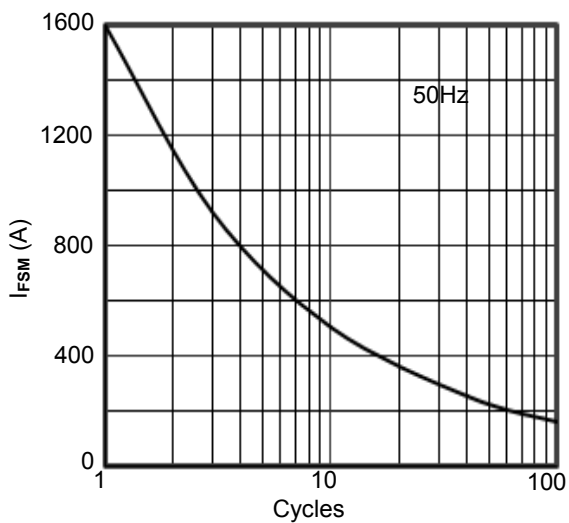


Figure3. Max Non-Repetitive Forward Surge Current

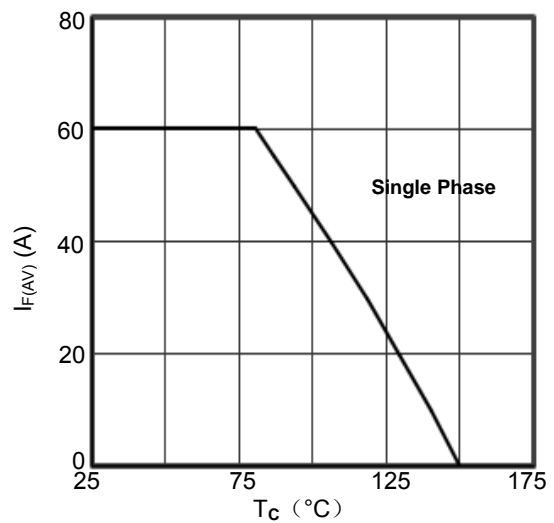


Figure4. Forward current vs. Case temperature

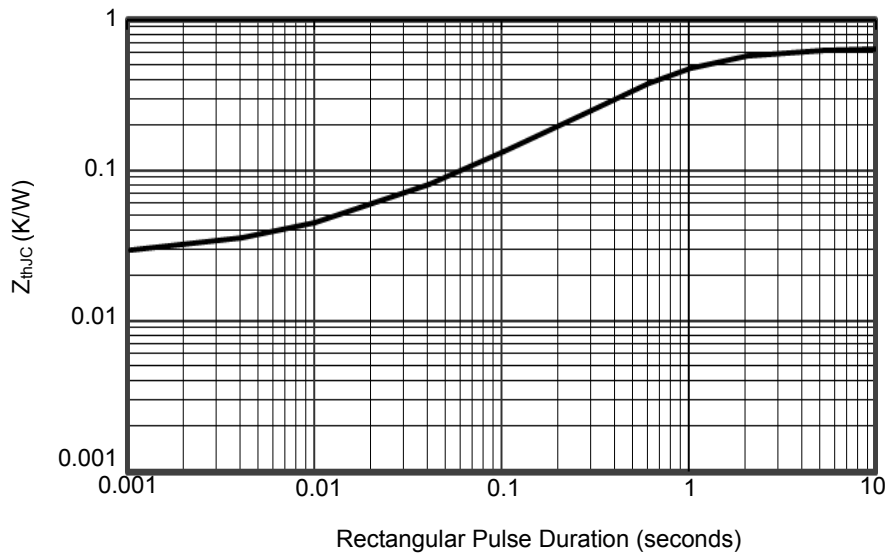
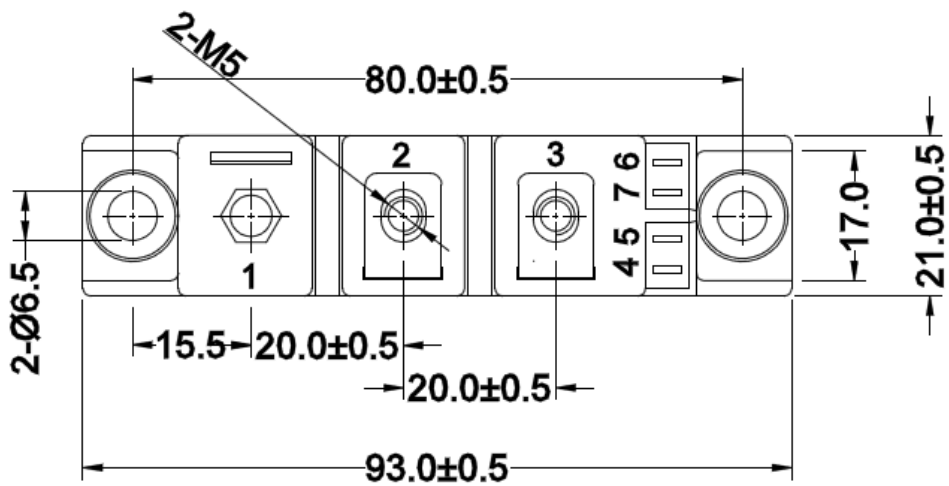
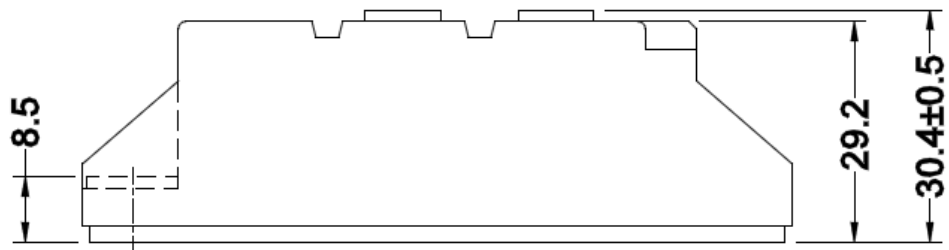


Figure5. Transient Thermal Impedance



Dimensions in Millimeters  
Figure6. Package Outline