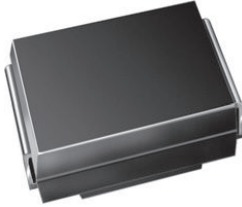




**THE DATASHEET OF
USB260-M3/52T**



Surface-Mount Ultrafast Plastic Rectifier


SMB (DO-214AA)

Cathode Anode

LINKS TO ADDITIONAL RESOURCES


[3D Models](#)

| PRIMARY CHARACTERISTICS | |
|-------------------------|----------------|
| $I_{F(AV)}$ | 2.0 A |
| V_{RRM} | 600 V |
| I_{FSM} | 90 A |
| t_{rr} | 30 ns |
| V_F at I_F | 1.0 V |
| T_J max. | 150 °C |
| Package | SMB (DO-214AA) |
| Circuit configuration | Single |

FEATURES

- Glass passivated pellet chip junction
- Ideal for automated placement
- Ultrafast recovery times for high efficiency
- Low forward voltage, low power losses
- High forward surge capability
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- AEC-Q101 qualified available
- Automotive ordering code: base P/NHM3
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

AUTOMOTIVE GRADE


RoHS
COMPLIANT
HALOGEN
FREE

TYPICAL APPLICATIONS

For use in high frequency rectification, and freewheeling application in switching mode converters and inverters for consumer, computer, and telecommunication.

MECHANICAL DATA

Case: SMB (DO-214AA)

Molding compound meets UL 94 V-0 flammability rating
Base P/N-M3 - halogen-free, RoHS-compliant

Base P/NHM3 - halogen-free, RoHS-compliant, and AEC-Q101 qualified

Terminals: matte tin plated leads, solderable per J-STD-002 and JESD 22-B102

M3 and HM3 suffix meets JESD 201 class 2 whisker test

Polarity: color band denotes cathode end

| MAXIMUM RATINGS ($T_A = 25\text{ °C}$ unless otherwise noted) | | | |
|--|----------------|-------------|------|
| PARAMETER | SYMBOL | USB260 | UNIT |
| Device marking code | | U60 | |
| Maximum repetitive peak reverse voltage | V_{RRM} | 600 | V |
| Maximum RMS voltage | V_{RMS} | 420 | V |
| Maximum DC blocking voltage | V_{DC} | 600 | V |
| Maximum average forward rectified current (fig. 1) | $I_{F(AV)}$ | 2.0 | A |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load | I_{FSM} | 90 | A |
| Non-repetitive avalanche energy at $I_{AS} = 2.0\text{ A}$, $L = 10\text{ mH}$, $T_J = 25\text{ °C}$ | E_{AS} | 20 | mJ |
| Operating junction and storage temperature range | T_J, T_{STG} | -55 to +150 | °C |



| ELECTRICAL CHARACTERISTICS ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted) | | | | | | |
|--|---|-----------------------------------|-------------|---------------|------|---------------|
| PARAMETER | TEST CONDITIONS | | SYMBOL | TYP. | MAX. | UNIT |
| Breakdown voltage | $I_R = 10\ \mu\text{A}$ | $T_J = 25\text{ }^\circ\text{C}$ | V_{BR} | 600 (minimum) | | V |
| Instantaneous forward voltage | $I_F = 1\ \text{A}$ | $T_J = 25\text{ }^\circ\text{C}$ | $V_F^{(1)}$ | 1.25 | - | V |
| | | $T_J = 125\text{ }^\circ\text{C}$ | | 1.5 | 1.6 | |
| | $I_F = 2.0\ \text{A}$ | $T_J = 125\text{ }^\circ\text{C}$ | | 1.0 | 1.1 | |
| Maximum reverse current | $V_R = 600\ \text{V}$ | $T_J = 25\text{ }^\circ\text{C}$ | $I_R^{(2)}$ | - | 5.0 | μA |
| | | $T_J = 125\text{ }^\circ\text{C}$ | | 30 | 100 | |
| Maximum reverse recovery time | $I_F = 0.5\ \text{A}, I_R = 1.0\ \text{A}, I_{rr} = 0.25\ \text{A}$ | | t_{rr} | 30 | | ns |
| Typical junction capacitance | 4.0 V, 1 MHz | | C_J | 45 | | pF |

Notes(1) Pulse test: 300 μs pulse width, 1 % duty cycle(2) Pulse test: Pulse width $\leq 40\ \text{ms}$

| THERMAL CHARACTERISTICS ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted) | | | |
|---|-----------------------|--------|--------------------|
| PARAMETER | SYMBOL | USB260 | UNIT |
| Typical thermal resistance | $R_{\theta JA}^{(1)}$ | 45 | $^\circ\text{C/W}$ |
| | $R_{\theta JL}^{(1)}$ | 10 | |

Note

(1) Units mounted on PCB with 2.0" x 2.0" copper pad areas

| ORDERING INFORMATION (Example) | | | | |
|---------------------------------------|-----------------|------------------------|---------------|------------------------------------|
| PREFERRED P/N | UNIT WEIGHT (g) | PREFERRED PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
| USB260-M3/52T | 0.096 | 52T | 750 | 7" diameter plastic tape and reel |
| USB260-M3/5BT | 0.096 | 5BT | 3200 | 13" diameter plastic tape and reel |
| USB260HM3/52T | 0.096 | 52T | 750 | 7" diameter plastic tape and reel |
| USB260HM3/5BT | 0.096 | 5BT | 3200 | 13" diameter plastic tape and reel |

RATINGS AND CHARACTERISTICS CURVES ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)

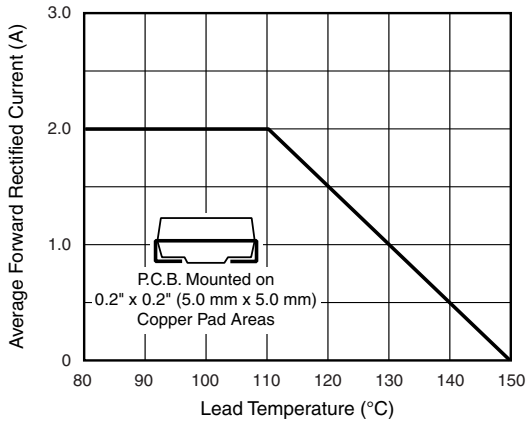


Fig. 1 - Maximum Forward Current Derating Curve

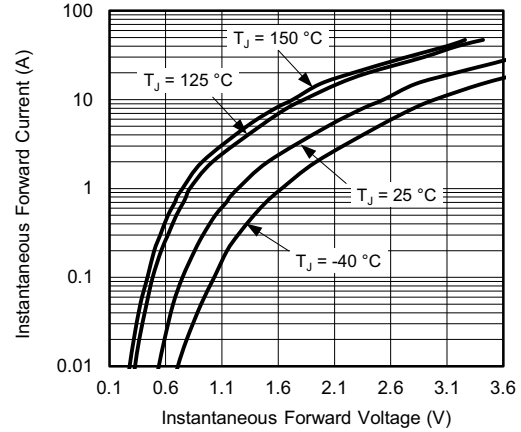


Fig. 4 - Typical Instantaneous Forward Characteristics

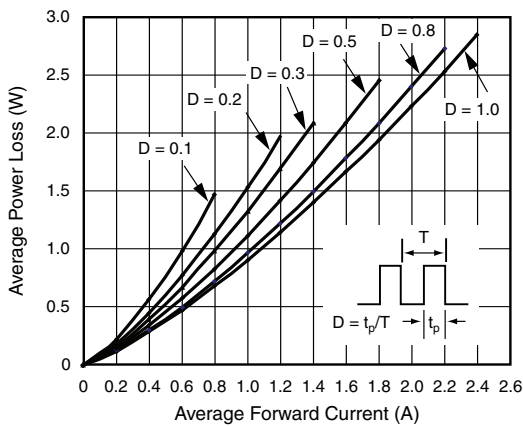


Fig. 2 - Forward Power Loss Characteristics

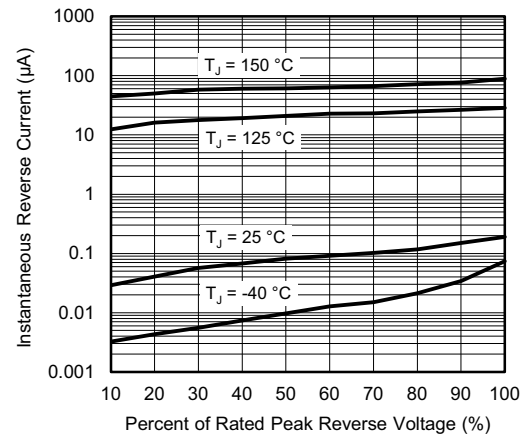


Fig. 5 - Typical Reverse Leakage Characteristics

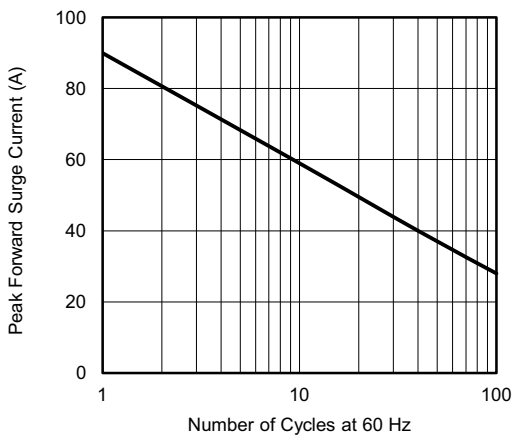


Fig. 3 - Maximum Non-Repetitive Peak Forward Surge Current

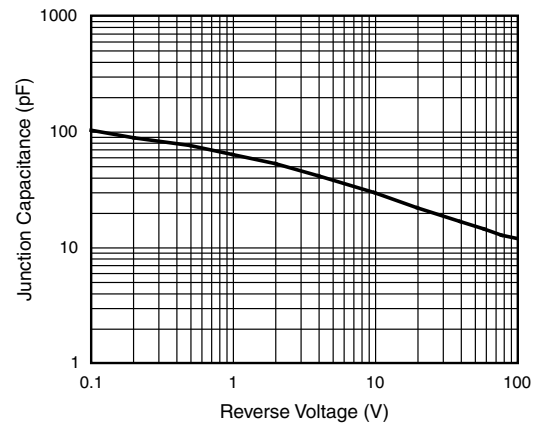


Fig. 6 - Typical Junction Capacitance

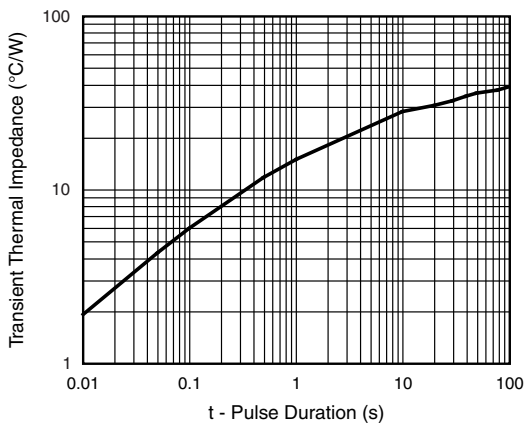
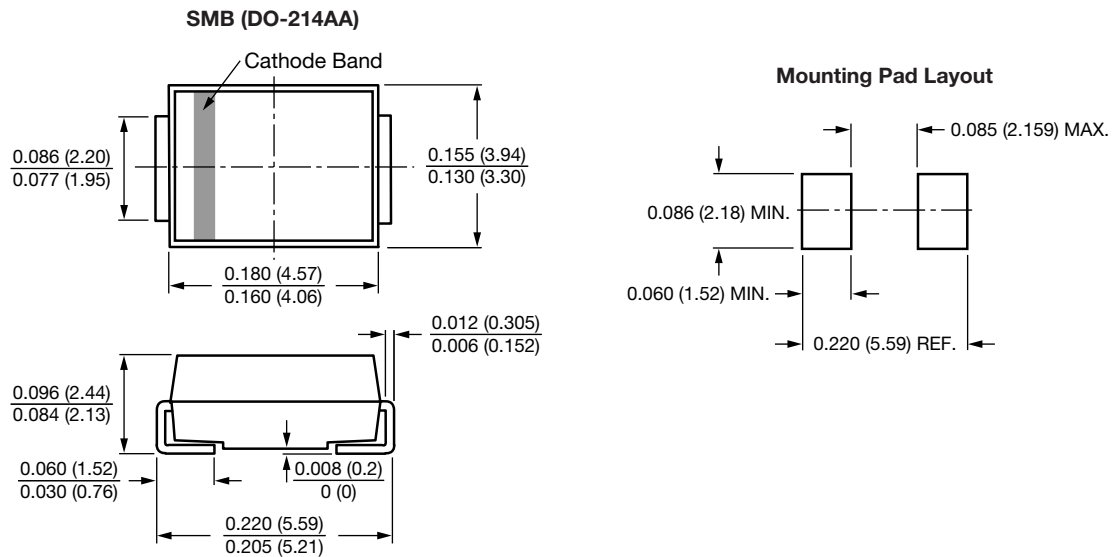


Fig. 7 - Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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