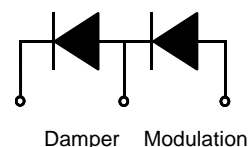


FFPF60B150DS

Features

- High voltage and high reliability
- High speed switching
Modulation diode / Damper diode
- Low conduction loss
Modulation diode / Damper diode



Applications

- (Modulation + Damper) diode designed for horizontal deflection circuits in C-TVs & monitors

DAMPER + MODULATION DIODE

Absolute Maximum Ratings (Modulation) $T_C=25^\circ\text{C}$ unless otherwise noted

| Symbol | Parameter | Value | Units |
|----------------|---|--------------|------------------|
| V_{RRM} | Peak Repetitive Reverse Voltage | 600 | V |
| $I_{F(AV)}$ | Average Rectified Forward Current @ $T_C = 100^\circ\text{C}$ | 20 | A |
| I_{FSM} | Non-repetitive Peak Surge Current 60Hz Single Half-Sine Wave | 120 | A |
| T_J, T_{STG} | Operating Junction and Storage Temperature | - 65 to +150 | $^\circ\text{C}$ |

Absolute Maximum Ratings (Damper) $T_C=25^\circ\text{C}$ unless otherwise noted

| Symbol | Parameter | Value | Units |
|----------------|---|--------------|------------------|
| V_{RRM} | Peak Repetitive Reverse Voltage | 1500 | V |
| $I_{F(AV)}$ | Average Rectified Forward Current @ $T_C = 100^\circ\text{C}$ | 6 | A |
| I_{FSM} | Non-repetitive Peak Surge Current 60Hz Single Half-Sine Wave | 60 | A |
| T_J, T_{STG} | Operating Junction and Storage Temperature | - 65 to +150 | $^\circ\text{C}$ |

Thermal Characteristics

| Symbol | Parameter | Value | Units |
|-----------------|--|-------|--------------------|
| $R_{\theta JC}$ | Maximum Thermal Resistance, Junction to Case | 3.3 | $^\circ\text{C/W}$ |

Electrical Characteristics*(Modulation) $T_C=25\text{ }^{\circ}\text{C}$ unless otherwise noted

| Symbol | Parameter | Min. | Typ. | Max. | Units |
|----------|---|------|------|------|---------------|
| V_{FM} | Maximum Instantaneous Forward Voltage | | | | V |
| | $I_F = 20\text{A}$ | | | 2.2 | |
| | $I_F = 20\text{A}$ | | | 2.0 | |
| I_{RM} | Maximum Instantaneous Reverse Current @ rated V_R | | | 10 | μA |
| | $T_C = 25\text{ }^{\circ}\text{C}$ | | | 100 | |
| | $T_C = 100\text{ }^{\circ}\text{C}$ | | | | |
| t_{rr} | Maximum Reverse Recovery Time | | | 90 | ns |
| I_{rr} | Maximum Reverse Recovery Current | | | 8 | A |
| Q_{rr} | Maximum Reverse Recovery Charge ($I_F = 20\text{A}$, $di/dt = 200\text{A}/\mu\text{s}$) | | | 360 | nC |

* Pulse Test: Pulse Width=300 μs , Duty Cycle=2%**Electrical Characteristics*(Damper)** $T_C=25\text{ }^{\circ}\text{C}$ unless otherwise noted

| Symbol | Parameter | Min | Typ | Max | Units |
|-----------|---|-----|-----|-----|---------------|
| V_{FM} | Maximum Instantaneous Forward Voltage | | | | V |
| | $I_F = 6\text{A}$ | | | 1.6 | |
| | $I_F = 6\text{A}$ | | | 1.4 | |
| I_{RM} | Maximum Instantaneous Reverse Current @ rated V_R | | | 7 | μA |
| | $T_C = 25\text{ }^{\circ}\text{C}$ | | | 60 | |
| | $T_C = 100\text{ }^{\circ}\text{C}$ | | | | |
| t_{rr} | Maximum Reverse Recovery Time ($I_F = 1.0\text{A}$, $di/dt = 50\text{A}/\mu\text{s}$) | | | 170 | ns |
| t_{fr} | Maximum Forward Recovery Time ($I_F = 6.5\text{A}$, $di/dt = 50\text{A}/\mu\text{s}$) | | | 350 | ns |
| V_{FRM} | Maximum Forward Recovery Voltage | | | 17 | V |

* Pulse Test: Pulse Width=300 μs , Duty Cycle=2%

Typical Characteristics

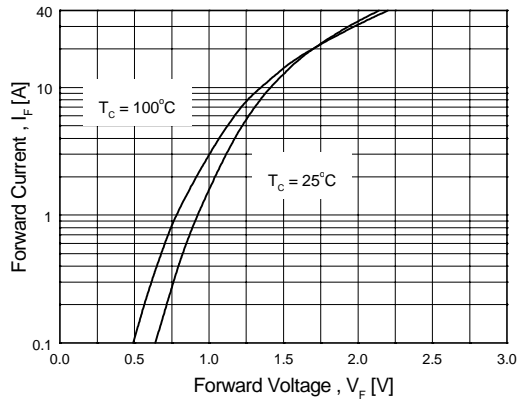


Figure 1. Typical Forward Characteristics (Modulation Diode)

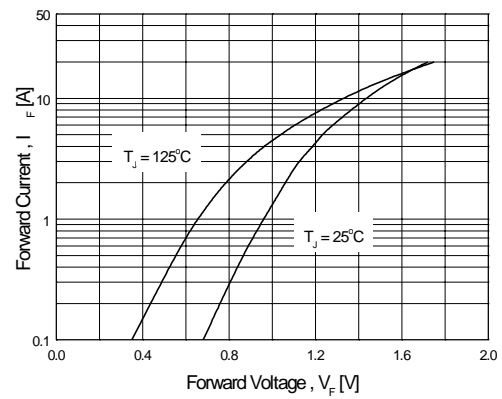


Figure 2. Typical Forward Characteristics (Damper Diode)

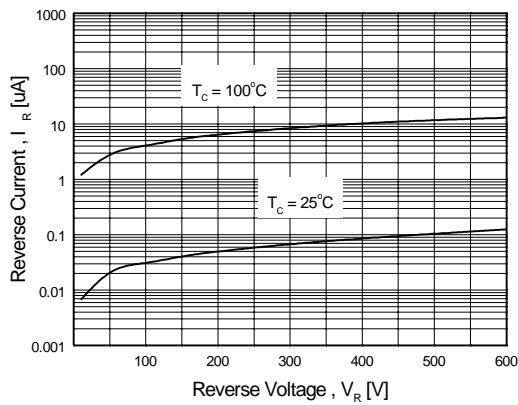


Figure 3. Typical Reverse Current vs. Reverse Voltage (Modulation Diode)

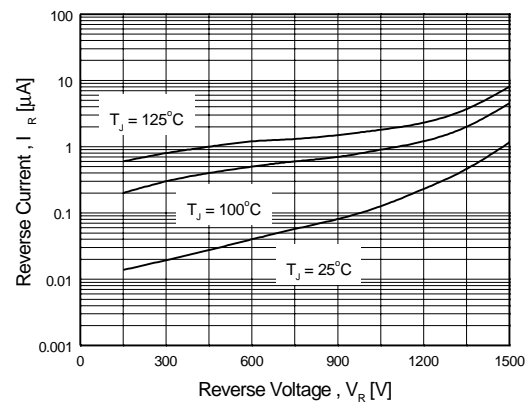


Figure 4. Typical Reverse Current vs. Reverse Voltage (Damper Diode)

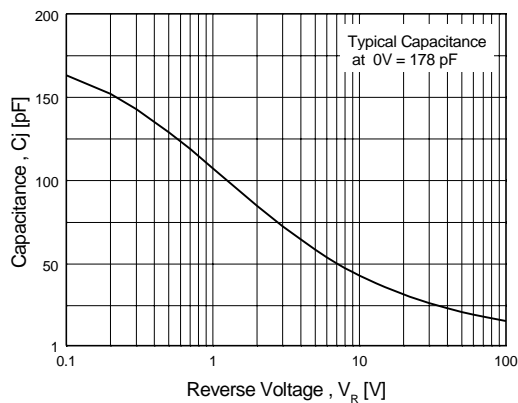


Figure 5. Typical Junction Capacitance (Modulation Diode)

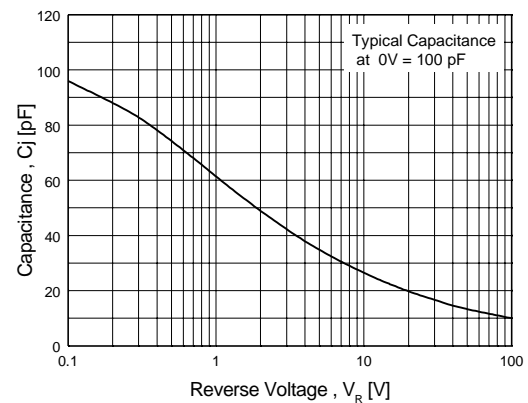


Figure 6. Typical Junction Capacitance (Damper Diode)

Typical Characteristics

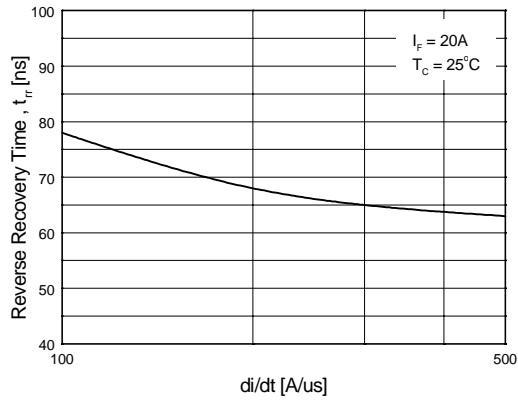


Figure 7. Typical Reverse Recovery Time vs. di/dt (Modulation Diode)

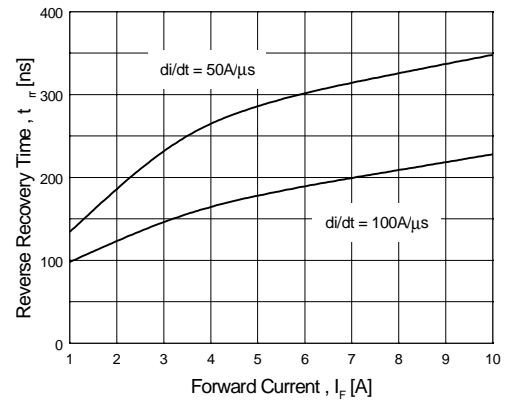


Figure 8. Typical Reverse Recovery Time vs. di/dt (Damper Diode)

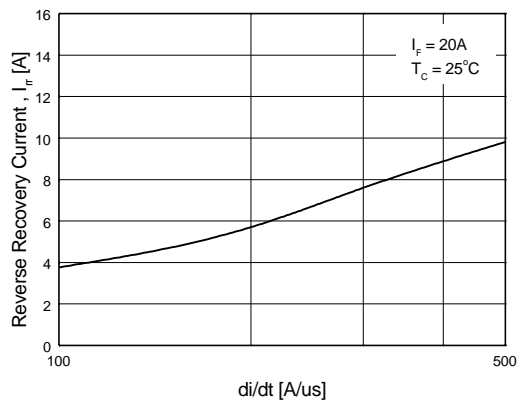


Figure 9. Typical Reverse Recovery Current vs. di/dt (Modulation Diode)

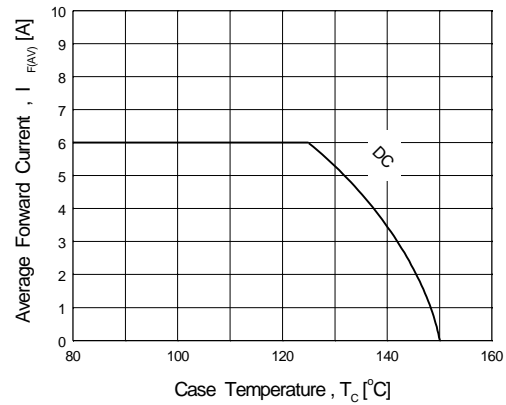


Figure 10. Forward Current Derating Curve (Damper Diode)

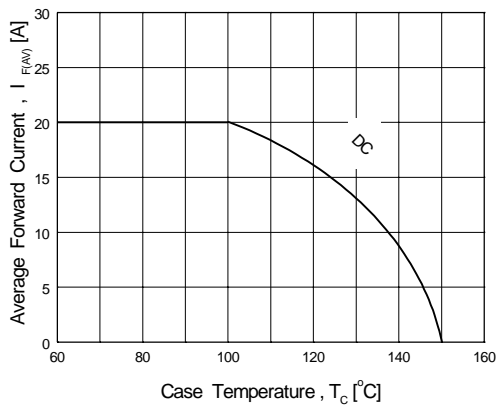
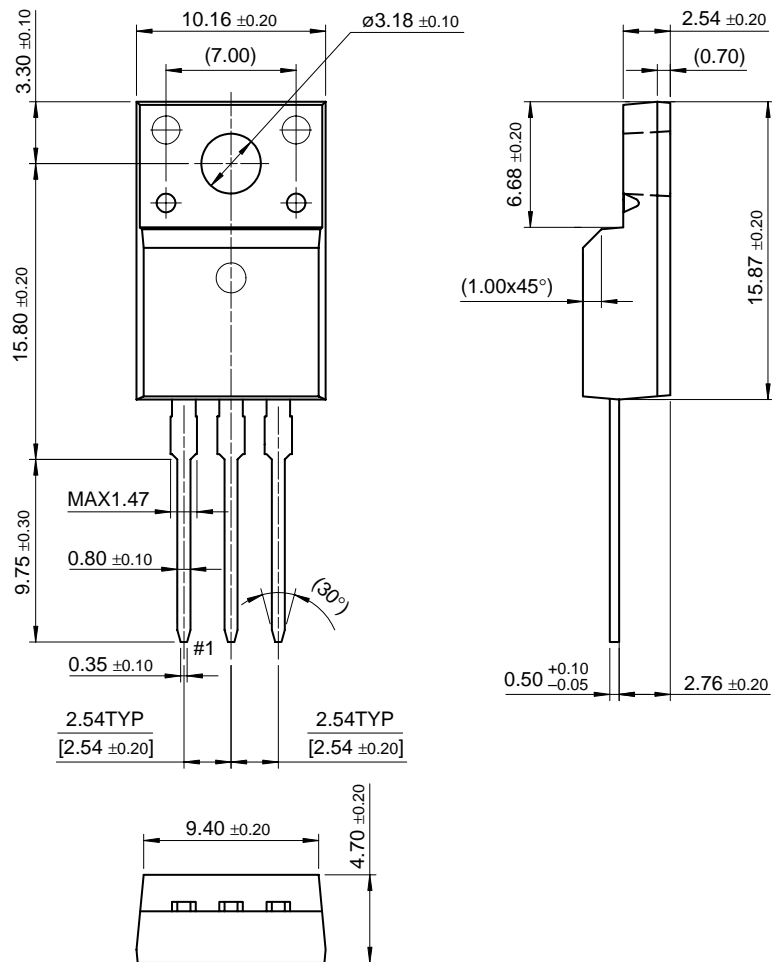


Figure 11. Forward Current Derating Curve (Modulation Diode)

Package Dimensions

TO-220F



Dimensions in Millimeters

FFPF60B150DS

TRADEMARKS

The following are registered and unregistered trademarks Fairchild Semiconductor owns or is authorized to use and is not intended to be an exhaustive list of all such trademarks.

| | | | |
|-----------------------------------|-------------------------------------|----------------------------------|---------------------------|
| ACE ^x TM | FAST [®] | PACMAN TM | SuperSOT TM -3 |
| Bottomless TM | FAST ^r TM | POP TM | SuperSOT TM -6 |
| CoolFET TM | GlobalOptoisolator TM | PowerTrench [®] | SuperSOT TM -8 |
| CROSSVOLT TM | GTO TM | QFET TM | SyncFET TM |
| DenseTrench TM | HiSeC TM | QS TM | TinyLogic TM |
| DO ^{ME} TM | ISOP ^{LANAR} TM | QT Optoelectronics TM | UHC TM |
| EcoSPARK TM | LittleFET TM | Quiet Series TM | UltraFET [®] |
| E ² CMOS TM | MicroFET TM | SLIENT SWITCHER [®] | VCX TM |
| EnSigna TM | MICROWIRE TM | SMART START TM | |
| FACT TM | OPTOLOGIC TM | Star* Power TM | |
| FACT Quiet Series TM | OPTOPLANAR TM | Stealth TM | |

DISCLAIMER

FAIRCHILD SEMICONDUCTOR RESERVES THE RIGHT TO MAKE CHANGES WITHOUT FURTHER NOTICE TO ANY PRODUCTS HEREIN TO IMPROVE RELIABILITY, FUNCTION OR DESIGN. FAIRCHILD DOES NOT ASSUME ANY LIABILITY ARISING OUT OF THE APPLICATION OR USE OF ANY PRODUCT OR CIRCUIT DESCRIBED HEREIN; NEITHER DOES IT CONVEY ANY LICENSE UNDER ITS PATENT RIGHTS, NOR THE RIGHTS OF OTHERS.

LIFE SUPPORT POLICY

FAIRCHILD'S PRODUCTS ARE NOT AUTHORIZED FOR USE AS CRITICAL COMPONENTS IN LIFE SUPPORT DEVICES OR SYSTEMS WITHOUT THE EXPRESS WRITTEN APPROVAL OF FAIRCHILD SEMICONDUCTOR CORPORATION.

As used herein:

1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body, or (b) support or sustain life, or (c) whose failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in significant injury to the user.
2. A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

PRODUCT STATUS DEFINITIONS

Definition of Terms

| Datasheet Identification | Product Status | Definition |
|--------------------------|------------------------|---|
| Advance Information | Formative or In Design | This datasheet contains the design specifications for product development. Specifications may change in any manner without notice. |
| Preliminary | First Production | This datasheet contains preliminary data, and supplementary data will be published at a later date. Fairchild Semiconductor reserves the right to make changes at any time without notice in order to improve design. |
| No Identification Needed | Full Production | This datasheet contains final specifications. Fairchild Semiconductor reserves the right to make changes at any time without notice in order to improve design. |
| Obsolete | Not In Production | This datasheet contains specifications on a product that has been discontinued by Fairchild semiconductor. The datasheet is printed for reference information only. |