**Solid State Devices, Inc.**
14830 Valley View Blvd * La Mirada, Ca 90638
Phone: (562) 404-7855 * Fax: (562) 404-1773
ssdi@ssdi-power.com * www.ssdi-power.com

# SFF60P05M
# SFF60P05Z

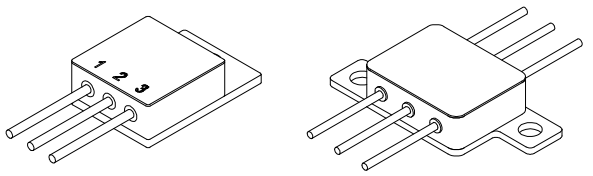
## -60 AMP/-50 Volts
## 33 mW
## P-Channel
## POWER MOSFET

**DESIGNER'S DATA SHEET**

**Features:**

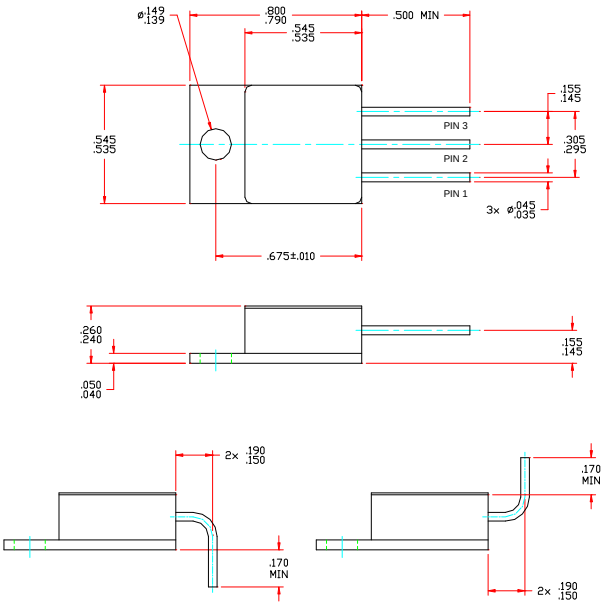
- Rugged Construction with Poly Silicon Gate
- Low RDS(on) and High Transconductance
- Excellent High Temperature Stability
- Very Fast Switching Speed
- Fast Recovery and Superior dv/dt Performance
- Increased Reverse Energy Capability
- Low Input and Transfer Capacitance for Easy Paralleling
- Hermetically Sealed
- TX, TXV, and Space Level Screening Available. Consult Factory.
- Replaces RFG60P05E Types

**TO-254 (M)** **TO-254Z (Z)**

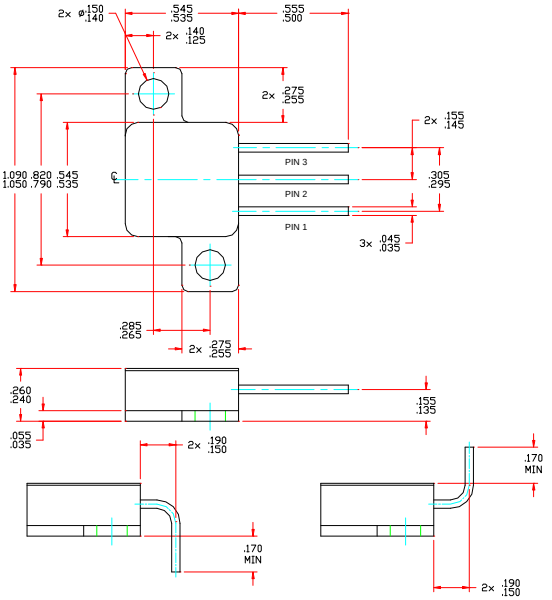



| Maximum Ratings | Symbol | Value | Units |
|---|---|---|---|
| **Drain - Source Voltage** | $V_{DS}$ | -50 | **V** |
| **Gate – Source Voltage** | $V_{GS}$ | ±20 | **V** |
| **Continuous Drain Current** | $I_D$ | -60 | **A** |
| **Operating & Storage Temperature** | $T_{OP}$ & $T_{STG}$ | -55 to +150 | **ºC** |
| **Thermal Resistance, Junction to Case** | $R_{qJC}$ | 0.8 | **ºC/W** |
| **Total Device Power Dissipation** $T_C$ = 25ºC<br>$T_C$ = -55ºC | $P_D$ | 156<br>118 | **Watts** |

**PACKAGE OUTLINE: TO-254 (M)**




**PACKAGE OUTLINE: TO-254Z (Z)**




Available with Glass or Ceramic Seals. Contact Factory for Details.

| NOTE: All specifications are subject to change without notification. SCD's for these devices should be reviewed by SSDI prior to release. | DATA SHEET #: FP0045D | DOC |
|---|---|---|

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# SFF60P05M
# SFF60P05Z

| Electrical Characteristics [4/] | | Symbol | Min | Typ | Max | Units |
|---|---|---|---|---|---|---|
| **Drain to Source Breakdown Voltage** ($V_{GS}$ = 0V, $I_D$ = 250μA) | | **$BV_{DSS}$** | -50 | — | — | **Volts** |
| **Drain to Source On State Resistance** ($V_{GS}$ = -10V, $I_D$ = 60A) | | **$R_{DS(on)}$** | — | — | 0.033 | W |
| **On State Drain Current** ($V_{DS}$ > $I_{D(on)}$ x $R_{DS(on)}$ Max, $V_{GS}$ = -10V) | | **$R_{DS(on)}$** | — | — | — | **Amps** |
| **Gate Threshold Voltage** ($V_{DS}$ = $V_{GS}$, $I_D$ = -250μA) | | **$V_{GS(th)}$** | -2.0 | — | -4.0 | **Volts** |
| **Forward Transconductance** ($V_{DS}$ > $I_{D(on)}$ x $R_{DS(on)}$ Max, $I_{Ds}$ = 60% of Rated $I_D$) | | **$g_{fs}$** | — | — | — | **S** |
| **Zero Gate Voltage Drain Current** ($V_{DS}$ = Max Rated Voltage, $V_{GS}$ = 0V)<br>($V_{DS}$ = 80% Rated $V_{DS}$, $V_{GS}$ = 0V) | $T_A$ = 25°C<br>$T_A$ = 125°C | **$I_{DSS}$** | —<br>— | —<br>— | 1<br>50 | mA |
| **Gate to Source Leakage (For Gate to Source Leakage** | At Rated $V_{GS}$ | **$I_{GSS}$** | —<br>— | —<br>— | -100<br>100 | mA |
| **Total Gate Charge**<br>**Gate to Source Charge**<br>**Gate to Drain Charge** | $V_{GS}$ = -10V<br>$V_{DD}$ = 40V<br>$I_D$ = 60A<br>$R_L$ = 0.67Ω | **$Q_g$**<br>**$Q_{gs}$**<br>**$Q_{gd}$** | —<br>—<br>— | —<br>—<br>— | 450<br>225<br>15 | **nC** |
| **Turn on Delay Time**<br>**Rise Time**<br>**Turn off Delay Time**<br>**Fall Time** | $V_{DD}$ = 50% Rated $V_{DS}$<br>50% Rated $I_D$<br>$I_{G1}$ = $I_{G2}$ = 2A<br>$R_L$ = 0.83Ω<br>$V_{GS(clamp)}$ = -10V/+0.6V | **$t_{(on)}$**<br>**$t_{d(on)}$**<br>**$t_r$**<br>**$t_{(off)}$**<br>**$t_{d(off)}$**<br>**$t_f$** | —<br>—<br>—<br>—<br>—<br>— | —<br>20<br>70<br>—<br>65<br>20 | 125<br>—<br>—<br>125<br>—<br>— | **ns** |
| **Diode Forward Voltage** | $I_S$ = Rated $I_D$<br>$V_{GS}$ = 0V<br>$T_J$ = 25°C | **$V_{SD}$** | — | — | -1.9 | **Volts** |
| **Diode Reverse Recovery Time** | $I_F$ = 10A<br>di/dt = 100A/usec | **$t_{rr}$**<br>**$Q_{rr}$** | —<br>— | 140<br>— | 200<br>— | **ns**<br>mC |
| **Input Capacitance**<br>**Output Capacitance**<br>**Reverse Transfer Capacitance** | $V_{GS}$ = 0V<br>$V_{DS}$ = -25V<br>f = 1 MHz | **$C_{iss}$**<br>**$C_{oss}$**<br>**$C_{rss}$** | —<br>—<br>— | 6000<br>1800<br>500 | —<br>—<br>— | **pF** |

**Available Part Numbers:**

**SFF60P05M, SFF60P05MUB, SFF60P05MDB;**
**SFF60P05Z, SFF60P05ZUB, SFF60P05ZDB**

**PIN ASSIGNMENT (Standard)**

| Package | Drain | Source | Gate |
|---|---|---|---|
| **TO-254 (M)** | Pin 1 | Pin 2 | Pin 3 |
| **TO-254Z (Z)** | Pin 1 | Pin 2 | Pin 3 |
| | | | |