



**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

**DESIGNER'S DATA SHEET**

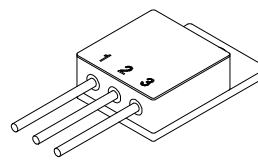
**Features:**

- 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

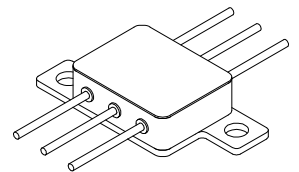
**SFF60P05M  
SFF60P05Z**

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

**TO-254 (M)**



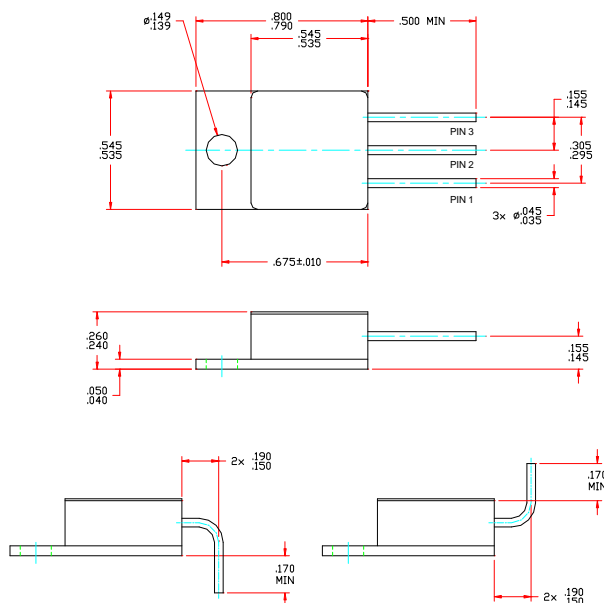
**TO-254Z (Z)**



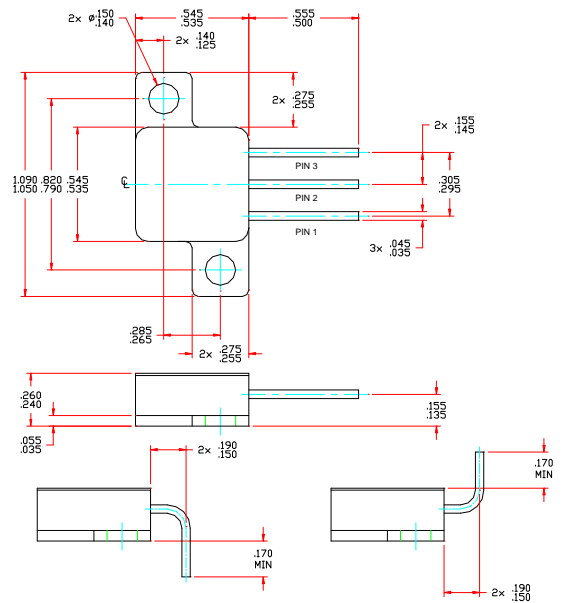
| Maximum Ratings                      | Symbol              | Value       | Units         |
|--------------------------------------|---------------------|-------------|---------------|
| Drain - Source Voltage               | $V_{DS}$            | -50         | V             |
| Gate - Source Voltage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

$T_C = 25^{\circ}C$   
 $T_C = -55^{\circ}C$

**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**



**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**

| Electrical Characteristics <sup>4/</sup>  |   | Symbol   | Min                        | Typ                            | Max                            | Units    |
|---|---|--|----------------------------|--------------------------------|--------------------------------|----------|
| <b>Drain to Source Breakdown Voltage</b><br>( $V_{GS} = 0V, I_D = 250\mu A$ )   |   | $BV_{DSS}$   | -50                        | —                              | —                              | Volts    |
| <b>Drain to Source On State Resistance</b><br>( $V_{GS} = -10V, I_D = 60A$ )  |   | $R_{DS(on)}$   | —                          | —                              | 0.033                          | W        |
| <b>On State Drain Current</b><br>( $V_{DS} > I_{D(on)} \times R_{DS(on)}$ Max, $V_{GS} = -10V$ )  |   | $R_{DS(on)}$   | —                          | —                              | —                              | Amps     |
| <b>Gate Threshold Voltage</b><br>( $V_{DS} = V_{GS}, I_D = -250\mu A$ )   |   | $V_{GS(th)}$   | -2.0                       | —                              | -4.0                           | Volts    |
| <b>Forward Transconductance</b><br>( $V_{DS} > I_{D(on)} \times R_{DS(on)}$ Max, $I_{Ds} = 60\%$ of Rated $I_D$ )                               |   | $g_{fs}$   | —                          | —                              | —                              | S        |
| <b>Zero Gate Voltage Drain Current</b><br>( $V_{DS} =$ Max Rated Voltage, $V_{GS} = 0V$ )<br>( $V_{DS} = 80\%$ Rated $V_{DS}$ , $V_{GS} = 0V$ ) | $T_A = 25^\circ C$<br>$T_A = 125^\circ C$   | $I_{DSS}$  | —<br>—                     | —<br>—                         | 1<br>50                        | mA       |
| <b>Gate to Source Leakage (For Gate to Source Leakage)</b>  | At Rated $V_{GS}$   | $I_{GSS}$  | —<br>—                     | —<br>—                         | -100<br>100                    | mA       |
| <b>Total Gate Charge</b><br><b>Gate to Source Charge</b><br><b>Gate to Drain Charge</b>   | $V_{GS} = -10V$<br>$V_{DD} = 40V$<br>$I_D = 60A$<br>$R_L = 0.67\Omega$  | $Q_g$<br>$Q_{gs}$<br>$Q_{gd}$  | —<br>—<br>—                | —<br>—<br>—                    | 450<br>225<br>15               | nC       |
| <b>Turn on Delay Time</b><br><b>Rise Time</b><br><b>Turn off Delay Time</b><br><b>Fall Time</b>   | $V_{DD} = 50\%$ Rated $V_{DS}$<br>50% Rated $I_D$<br>$I_{G1} = I_{G2} = 2A$<br>$R_L = 0.83\Omega$<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       |
| <b>Diode Forward Voltage</b>  | $I_S =$ Rated $I_D$<br>$V_{GS} = 0V$<br>$T_J = 25^\circ C$  | $V_{SD}$   | —                          | —                              | -1.9                           | Volts    |
| <b>Diode Reverse Recovery Time</b>  | $I_F = 10A$<br>$di/dt = 100A/usec$  | $t_{rr}$<br>$Q_{rr}$   | —<br>—                     | 140<br>—                       | 200<br>—                       | ns<br>mC |
| <b>Input Capacitance</b><br><b>Output Capacitance</b><br><b>Reverse Transfer Capacitance</b>  | $V_{GS} = 0V$<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 |
|                           |       |        |       |