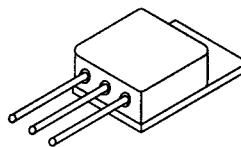
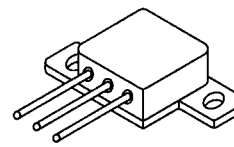




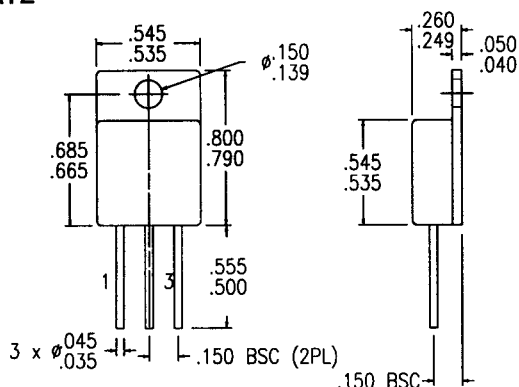
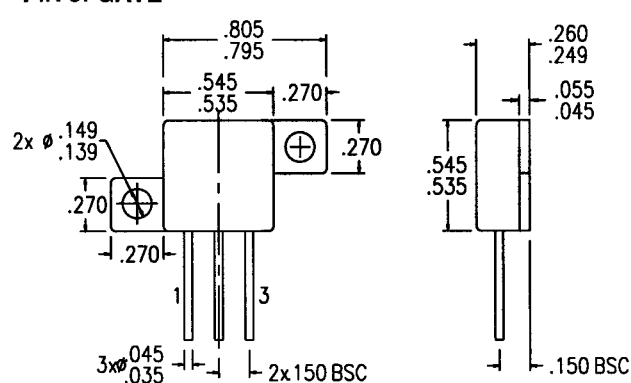
PRELIMINARY

**SOLID STATE DEVICES, INC**14849 Firestone Boulevard · La Mirada, CA 90638  
Phone: (714) 670-SSDI (7734) · Fax: (714) 522-7424**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
- Replaces: IRF9140 Types

**SFF9140M  
SFF9140Z**
**-18 AMP**  
**-100 VOLTS**  
**0.20Ω**  
**P-CHANNEL**  
**POWER MOSFET**
**TO-254****TO-254Z****MAXIMUM RATINGS**

| CHARACTERISTIC                                                           | SYMBOL                             | VALUE       | UNIT  |
|--------------------------------------------------------------------------|------------------------------------|-------------|-------|
| Drain to Source Voltage                                                  | V <sub>DS</sub>                    | -100        | Volts |
| Gate to Source Voltage                                                   | V <sub>GS</sub>                    | ±20         | Volts |
| Continuous Drain Current<br>@TC=25°C<br>@TC=100°C                        | I <sub>D</sub>                     | 18<br>11    | Amps  |
| Operating and Storage Temperature                                        | T <sub>op</sub> & T <sub>stg</sub> | -55 to +150 | °C    |
| Thermal Resistance, Junction to Case                                     | R <sub>θJC</sub>                   | 1.7         | °C/W  |
| Total Device Dissipation @ TC=25°C<br>Total Device Dissipation @ TC=55°C | P <sub>D</sub>                     | 63<br>48    | Watts |
| Single Pulse Avalanche Energy                                            | E <sub>AS</sub>                    | 500         | mJ    |
| Repetitive Avalanche Energy                                              | E <sub>AR</sub>                    | 12.5        | mJ    |

**PACKAGE OUTLINE: TO-254****PIN OUT:**
**PIN 1: DRAIN**  
**PIN 2: SOURCE**  
**PIN 3: GATE**
**PACKAGE OUTLINE: TO-254Z****PIN OUT:**
**PIN 1: DRAIN**  
**PIN 2: SOURCE**  
**PIN 3: GATE**


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 #: FP0017 C****MED**

# SFF9140M SFF9140Z

PRELIMINARY



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## ELECTRICAL CHARACTERISTICS @ T<sub>J</sub>=25°C (Unless Otherwise Specified)

| RATING                                                                                                                                                                                      |                                                                                               | SYMBOL                                                                        | MIN                      | TYP                 | MAX                  | UNIT       |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|--------------------------|---------------------|----------------------|------------|
| Drain to Source Breakdown Voltage<br>(V <sub>GS</sub> =0 V, I <sub>D</sub> =1mA)                                                                                                            |                                                                                               | BV <sub>DSS</sub>                                                             | -100                     | ---                 | ---                  | V          |
| Drain to Source on State Resistance<br>(V <sub>GS</sub> = -10 V) ID=11A<br>ID=18A                                                                                                           |                                                                                               | R <sub>DS(on)</sub>                                                           | ---                      | 0.15<br>---         | 0.20<br>0.23         | Ω          |
| Temperature Coefficient of Breakdown Voltage                                                                                                                                                |                                                                                               | $\frac{\Delta BV_{DSS}}{\Delta T_J}$                                          | ---                      | -0.087              | ---                  | A          |
| Gate Threshold Voltage<br>(V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> = -250μA)                                                                                                      |                                                                                               | V <sub>GS(th)</sub>                                                           | -2.0                     | ---                 | -4.0                 | V          |
| Forward Transconductance<br>V <sub>DS</sub> ≥15V, I <sub>DS</sub> =11A)                                                                                                                     |                                                                                               | g <sub>fs</sub>                                                               | 6.2                      | 8                   | ---                  | S(Ω)       |
| Zero Gate Voltage Drain Current<br>(V <sub>DS</sub> =80% rated voltage, V <sub>GS</sub> =0 V)<br>(V <sub>DS</sub> =80% rated V <sub>DS</sub> , V <sub>GS</sub> =0 V, T <sub>A</sub> =125°C) |                                                                                               | I <sub>DSS</sub>                                                              | ---                      | ---                 | 25<br>250            | μA         |
| Gate to Source Leakage Forward<br>Gate to Source Leakage Reverse                                                                                                                            | At rated V <sub>GS</sub>                                                                      | I <sub>GSS</sub>                                                              | ---                      | ---                 | -100<br>100          | nA         |
| Total Gate Charge<br>Gate to Source Charge<br>Gate to Drain Charge                                                                                                                          | V <sub>GS</sub> = -10 Volts<br>50% rated V <sub>DS</sub><br>I <sub>D</sub> =18 A              | Q <sub>g</sub><br>Q <sub>gs</sub><br>Q <sub>gd</sub>                          | 31<br>---<br>7           | 50<br>3<br>25       | 70<br>13<br>45       | nC         |
| Turn on Delay Time<br>Rise Time<br>Turn Off Delay Time<br>Fall Time                                                                                                                         | V <sub>DD</sub> =50%<br>rated V <sub>DS</sub><br>rated I <sub>D</sub><br>R <sub>G</sub> =9.1Ω | t <sub>d(on)</sub><br>t <sub>r</sub><br>t <sub>d(off)</sub><br>t <sub>f</sub> | ---<br>---<br>---<br>--- | 15<br>8<br>35<br>20 | 35<br>85<br>85<br>65 | nsec       |
| Diode Forward Voltage<br>(I <sub>S</sub> =rated I <sub>D</sub> , V <sub>GS</sub> =0 V, T <sub>J</sub> =25°C)                                                                                |                                                                                               | V <sub>SD</sub>                                                               | ---                      | ---                 | -4.2                 | V          |
| Diode Reverse Recovery Time<br>Reverse Recovery Charge                                                                                                                                      | T <sub>J</sub> =25°C<br>I <sub>F</sub> =rated I <sub>D</sub><br>di/dt=100 A/μsec              | t <sub>rr</sub><br>Q <sub>RR</sub>                                            | ---<br>---               | 170<br>---          | 280<br>3.6           | nsec<br>μC |
| Input Capacitance<br>Output Capacitance<br>Reverse Transfer Capacitance                                                                                                                     | V <sub>GS</sub> =0 Volts<br>V <sub>DS</sub> = -25 Volts<br>f= 1 MHz                           | C <sub>iss</sub><br>C <sub>oss</sub><br>C <sub>rss</sub>                      | ---<br>---<br>---        | 1400<br>600<br>200  | ---<br>---<br>---    | pF         |

For thermal derating curves and other characteristic curves please contact SSDI Marketing Department.