**Solid State Devices, Inc.**
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Phone: (562) 404-7855 * Fax: (562) 404-1773
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# SFF9140J

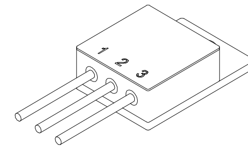
**-18 AMPS**
**-100 VOLTS**
**0.20 Ω**
**P-CHANNEL**
**POWER MOSFET**

## Designer's Data Sheet

**FEATURES:**

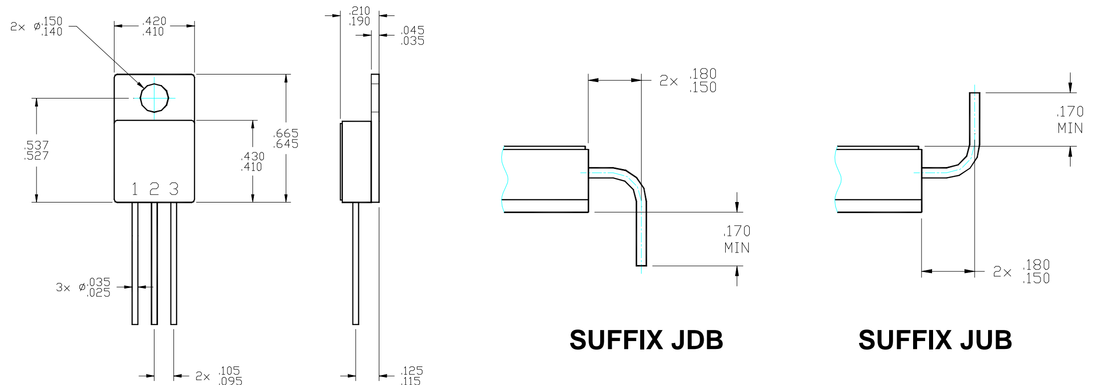
- Rugged Construction with Poly Silicon Gate
- Low RDS(on) and High Transconductance
- Excellent High Temperature Stability
- Very Fast Switching Speed
- Fast Recovery and Superior dv/dt Performance
- Increased Reverse Energy Capability
- Low Input and Transfer Capacitance for Easy Paralleling
- Hermetically Sealed
- Replaces: IRF9140 Types
- TX, TXV, and Space Level Screening Available. Consult Factory.

**TO-257**




| MAXIMUM RATINGS | | Symbol | Value | Units |
|---|---|---|---|---|
| Drain to Source Voltage | | $V_{DS}$ | -100 | Volts |
| Gate to Source Voltage | | $V_{GS}$ | ±20 | Volts |
| Continuous Drain Current | $T_C = 25°C$<br>$T_C = 100°C$ | $I_D$ | -18<br>-11 | Amps |
| Operating and Storage Temperature | | $T_{OP}$ & $T_{stg}$ | -55 to +150 | °C |
| Thermal Resistance, Junction to Case | | $R_{\theta JC}$ | 2.0 | °C/W |
| Total Device Dissipation | $T_C = 25°C$<br>$T_C = 55°C$ | $P_D$ | 63<br>48 | Watts |
| Single Pulse Avalanche Energy | | $E_{AS}$ | 500 | mJ |
| Repetitive Avalanche Energy | | $E_{AR}$ | 12.5 | mJ |

**PACKAGE OUTLINE:**
**TO-257 (J)**
**PINOUT:**
**PIN 1: DRAIN**
**PIN 2: SOURCE**
**PIN 3: GATE**



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| ELECTRICAL CHARACTERISTICS | | Symbol | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| **Drain to Source Breakdown Voltage**<br>($V_{GS}$ = 0 V, $I_D$ = 1 mA) | | **DBV$_{DSS}$** | -100 | — | — | **Volts** |
| **Temperature Coefficient of Breakdown Voltage** | | **DBV$_{DSS}$ / $T_J$** | — | 0.087 | — | **Volts** |
| **Drain to Source ON State Resistance**<br>($V_{GS}$ = -10 V) | $I_D$ = 11A<br>$I_D$ = 18A | **$R_{DS(on)}$** | —<br>— | 0.15<br>— | 0.20<br>0.23 | **W** |
| **Gate Threshold Voltage**<br>($V_{DS}$ = $V_{GS}$, $I_D$ = 250µA) | | **$V_{GS(th)}$** | -2.0 | — | -4.0 | **Volts** |
| **Forward Transconductance**<br>($V_{DS}$ ≥ 10V, $I_{DS}$ = 11A) | | **gfs** | 6.1 | 8.0 | — | **S mho** |
| **Zero Gate Voltage Drain Current**<br>($V_{DS}$ = 80% rated $V_{DS}$, $V_{GS}$ = 0 V)<br>($V_{DS}$ = 80% rated $V_{DS}$, $V_{GS}$ = 0 V, $T_A$ = 125°C) | | **$I_{DSS}$** | —<br>— | —<br>— | 25<br>250 | **mA** |
| **Gate to Source Leakage Forward**<br>**Gate to Source Leakage Reverse** | At rated $V_{GS}$ | **$I_{gSS}$** | —<br>— | —<br>— | -100<br>100 | **nA** |
| **Total Gate Charge**<br>**Gate to Source Charge**<br>**Gate to Drain Charge** | $V_{GS}$ = -10 Volts<br>50% rated $V_{DS}$<br>$I_D$ = -18 A) | **$Q_g$**<br>**$Q_{gs}$**<br>**$Q_{gd}$** | 31<br>—<br>7 | 50<br>3<br>25 | 70<br>15<br>45 | **nC** |
| **Turn ON Delay Time**<br>**Rise Time**<br>**Turn OFF Delay Time**<br>**Fall TIme** | ($V_{DD}$ = 50% of<br>rated $V_{DS}$<br>rated $I_D$<br>$R_G$ = 9.1 Ω) | **$t_{d(on)r}$**<br>**$t_r$**<br>**$t_{d(off)}$**<br>**$t_f$** | —<br>—<br>—<br>— | 15<br>8<br>35<br>20 | 35<br>85<br>85<br>65 | **ns** |
| **Diode Forward Voltage**<br>(IS = rated ID, VGS = 0 V, $T_J$ = 25°C) | | **$V_{SD}$** | — | — | -4.2 | **Volts** |
| **Diode Reverse Recovery Time**<br>**Reverse Recovery Charge** | $T_J$ = 25°C<br>$I_F$ = rated $I_D$<br>di/dt = 100 A/µsec | **$t_{rr}$**<br>**$Q_{RR}$** | —<br>— | 170<br>— | 280<br>3.6 | **ns**<br>**mC** |
| **Input Capacitance**<br>**Output Capacitance**<br>**Reverse Transfer Capacitance** | $V_{GS}$ = 0 Volts<br>$V_{DS}$ = -25 Volts<br>f = 1 MHz | **$C_{iss}$**<br>**$C_{oss}$**<br>**$C_{rss}$** | —<br>—<br>— | 1400<br>600<br>200 | 1650<br>740<br>260 | **ns** |