PRELIMINARY

# SOLID STATE DEVICES, INC

14849 Firestone Boulevard · La Mirada,CA 90638
Phone: (714) 670-SSDI (7734) · Fax: (714) 522-7424

# SFF40N30N
# SFF40N30P

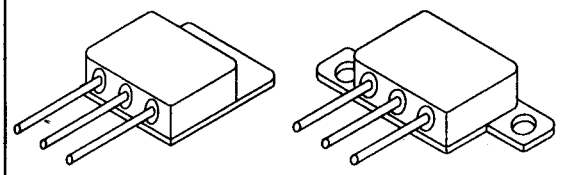
## Designer's Data Sheet

## 40 AMP
## 300 VOLTS
## 0.10 Ω
## N-CHANNEL
## POWER MOSFET

### FEATURES:

- Rugged construction with polysilicon 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
- Ceramic Seals for improved hermeticity
- Hermetically sealed package
- TX, TXV and Space Level screening available
- Replaces: IXTH40N30 Types

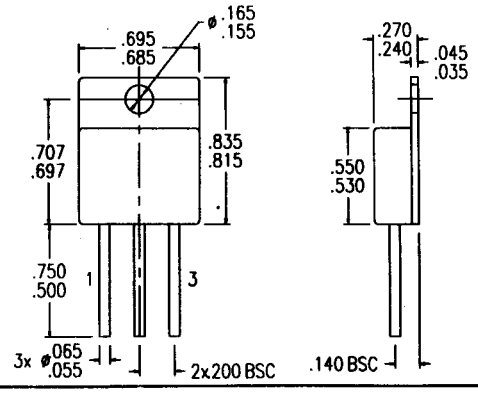
TO-258 TO-259



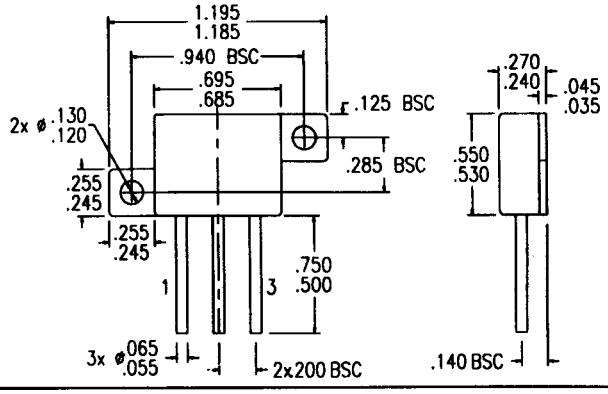
## MAXIMUM RATINGS

| CHARACTERISTIC | SYMBOL | VALUE | UNIT |
|---|---|---|---|
| Drain to Source Voltage | $V_{DS}$ | 300 | Volts |
| Gate to Source Voltage | $V_{GS}$ | ±20 | Volts |
| Continuous Drain Current | $I_D$ | 40 | Amps |
| Operating and Storage Temperature | $T_{op}$ & $T_{stg}$ | -55 to +150 | °C |
| Thermal Resistance, Junction to Case | $R_{\theta JC}$ | 0.83 | °C/W |
| Total Device Dissipation @ TC=25°C<br>Total Device Dissipation @ TC=55°C | $P_D$ | 150<br>114 | Watts |

**PACKAGE OUTLINE: TO-258 (N)**
**PIN OUT:**
**PIN 1: DRAIN**
**PIN 2: SOURCE**
**PIN 3: GATE**




**PACKAGE OUTLINE: TO-259 (P)**
**PIN OUT:**
**PIN 1: DRAIN**
**PIN 2: SOURCE**
**PIN 3: GATE**




**NOTE: All specifications are subject to change without notification. SCD's for these devices should be reviewed by SSDI prior to release.**

**DATA SHEET #: F00145 B**

**MED**

# SFF40N30N
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## ELECTRICAL CHARACTERISTICS @ TJ=25 C (Unless Otherwise Specified)

| RATING | | SYMBOL | MIN | TYP | MAX | UNIT |
|---|---|---|---|---|---|---|
| **Drain to Source Breakdown Voltage** (VGS=0 V, ID=250μA) | | BVDSS | 300 | --- | --- | V |
| **Drain to Source on State Resistance** (VGS=10 V, ID=50% Rated ID | | RDS(on) | --- | --- | 0.10 | Ω |
| **On State Drain Current** (VDS >ID(on) X RDS(on) Max, VGS=10 V | | ID(on) | 40 | --- | --- | A |
| **Gate Threshold Voltage** (VDS≥VGS, ID=4mA) | | VGS(th) | 2.0 | --- | 4.0 | V |
| **Forward Transconductance** (VDS >ID(on) X RDS(on) Max, IDS=50% rated ID) | | gfs | 22 | 25 | --- | S(℧) |
| **Zero Gate Voltage Drain Current** (VDS=max rated voltage, VGS=0 V)<br>(VDS=80% rated VDS, VGS=0 V, TA=125°C) | | IDSS | ---<br>--- | ---<br>--- | 250<br>1000 | μA |
| **Gate to Source Leakage Forward**<br>**Gate to Source Leakage Reverse** | At rated VGS | IGSS | ---<br>--- | ---<br>--- | +100<br>-100 | nA |
| **Total Gate Charge**<br>**Gate to Source Charge**<br>**Gate to Drain Charge** | VGS=10 Volts<br>50% rated VDS<br>50% Rated ID | Qg<br>Qgs<br>Qgd | ---<br>---<br>--- | 177<br>28<br>78 | 200<br>50<br>105 | nC |
| **Turn on Delay Time**<br>**Rise Time**<br>**Turn Off Delay Time**<br>**Fall Time** | VDD=50%<br>rated VDS<br>50% rated ID<br>RG= 2.0 Ω<br>VGS=10V | td(on)<br>tr<br>td(off)<br>tf | ---<br>---<br>---<br>--- | 30<br>60<br>175<br>45 | 50<br>90<br>250<br>90 | nsec |
| **Diode Forward Voltage** (IS=rated ID, VGS=0 V, TJ=25°C) | | VSD | --- | --- | 1.5 | V |
| **Diode Reverse Recovery Time**<br>**Reverse Recovery Charge** | TJ=25°C<br>IF=rated ID<br>di/dt=100 A/μsec | trr<br>QRR | ---<br>--- | ---<br>--- | 325<br>--- | nsec<br>μC |
| **Input Capacitance**<br>**Output Capacitance**<br>**Reverse Transfer Capacitance** | VGS=0 Volts<br>VDS=25 Volts<br>f= 1 MHz | Ciss<br>Coss<br>Crss | ---<br>---<br>--- | 4800<br>745<br>283 | ---<br>---<br>--- | pF |