

# PRODUCT CATALOG

## N-CHANNEL ENHANCEMENT MOS FET

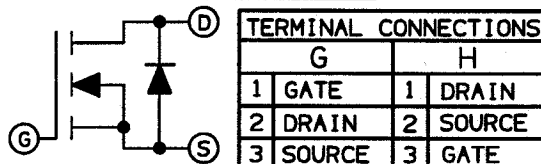
600V, 15A, 0.50  $\Omega$

SDF15N60 GAF

### FEATURES

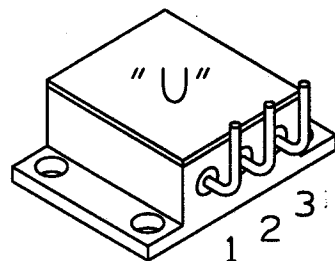
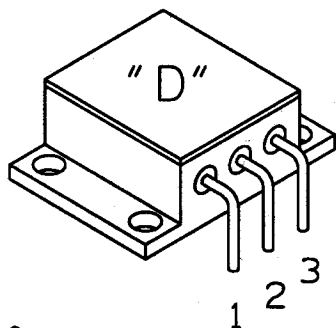
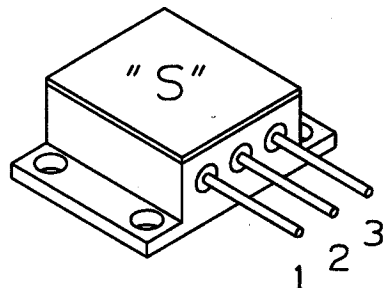
- RUGGED PACKAGE
- HI-REL CONSTRUCTION
- CERAMIC EYELETS
- LEAD BENDING OPTIONS
- COPPER CORED 52 ALLOY PINS
- LOW IR LOSSES
- LOW THERMAL RESISTANCE
- OPTIONAL MIL-S-19500 SCREENING

### SCHEMATIC



STANDARD BEND CONFIGURATIONS

GAF



(CUSTOM BEND OPTIONS AVAILABLE)

### ABSOLUTE MAXIMUM RATINGS

| PARAMETER                                   | SYMBOL  |             | UNITS |
|---------------------------------------------|---------|-------------|-------|
| Drain-source Volt.(1)                       | VDSS    | 600         | Vdc   |
| Drain-Gate Voltage (Rgs=1.0M $\Omega$ ) (1) | VDGR    | 600         | Vdc   |
| Gate-Source Voltage Continuous              | VGS     | $\pm 20$    | Vdc   |
| Drain Current Continuous (Tc = 25°C)        | ID      | 15          | Adc   |
| Drain Current Pulsed(3)                     | IDM     | 60          | A     |
| Total Power Dissipation                     | PD      | 300         | W     |
| Power Dissipation Derating > 25°C           |         | 2.4         | W/°C  |
| Operating & Storage Temp.                   | TJ/Tsig | -55 TO +150 | °C    |
| Thermal Resistance                          | RthJc   | 0.42        | °C/W  |
| Max. Lead temperature                       | TL      | 300         | °C    |

### ELECTRICAL CHARACTERISTICS Tc = 25°C (UNLESS OTHERWISE SPECIFIED)

| PARAMETER                                       | SYMBOL   | TEST CONDITIONS                                                                                           | MIN. | TYP. | MAX. | UNITS    |
|-------------------------------------------------|----------|-----------------------------------------------------------------------------------------------------------|------|------|------|----------|
| Drain-source Breakdown Volt.                    | V(BR)DSS | VGS=0V ID=250 $\mu$ A                                                                                     | 600  | -    | -    | V        |
| Gate Threshold Voltage                          | VGS(TH)  | VDS=VGS ID=250 $\mu$ A                                                                                    | 2.0  | -    | 4.5  | V        |
| Gate Source Leakage                             | IGSS     | VGS= $\pm 20$ V                                                                                           | -    | -    | 100  | nA       |
| Zero Gate Voltage Drain Current                 | IDSS     | VDS=MAX. RATING VGS=0                                                                                     | -    | -    | 250  | $\mu$ A  |
|                                                 |          | VDS=0.8 MAX. RATING VGS=0 TJ=125°C                                                                        | -    | -    | 1000 | $\mu$ A  |
| Static Drain-Source On-State Resistance(1)      | RDS(ON)  | VGS=10 V ID=7.5A                                                                                          | -    | -    | 0.5  | $\Omega$ |
| Forward Trans-Conductance (2)                   | gfs      | VDS $\geq 50$ V IDS=7.5A                                                                                  | 9.0  | -    | -    | S(U)     |
| Input Capacitance                               | CISS     | VGS=0V VDS=25 V f=1.0 MHz                                                                                 | -    | 4500 | -    | pF       |
| Output Capacitance                              | COSS     |                                                                                                           | -    | 550  | -    | pF       |
| Reverse Transfer Capacitance                    | CRSS     |                                                                                                           | -    | 160  | -    | pF       |
| Turn-On Delay                                   | td(on)   | VDD=300V Zo=50n ID=7.5A (MOSFET switching times are essentially independent of operating temp.)           | -    | -    | 100  | ns       |
| Rise Time                                       | tr       |                                                                                                           | -    | -    | 110  | ns       |
| Turn-Off Delay                                  | td(off)  |                                                                                                           | -    | -    | 220  | ns       |
| Fall Time                                       | tf       |                                                                                                           | -    | -    | 105  | ns       |
| Total Gate Charge (Gate-Source Plus Gate-Drain) | Qg       | VGS=10V, ID=15A VDS=0.8 MAX. RATING (Gate charge is essentially independent of the operating temperature) | -    | 165  | -    | nC       |
| Gate-Source Charge                              | Qgs      |                                                                                                           | -    | 65   | -    | nC       |
| Gate-Drain ("Miller") Charge                    | Qgd      |                                                                                                           | -    | 100  | -    | nC       |

### SOURCE-DRAIN DIODE RATINGS & CHARACT. Tc = 25°C (UNLESS OTHERWISE SPECIFIED)

| PARAMETER                              | SYMBOL | TEST CONDITIONS                                                                            | MIN. | TYP. | MAX. | UNITS   |
|----------------------------------------|--------|--------------------------------------------------------------------------------------------|------|------|------|---------|
| Continuous Source Current (Body Diode) | IS     | Modified MOSFET symbol showing the integral reverse P-N junction rectifier (See schematic) | -    | -    | 15   | A       |
| Pulse Source Current (Body Diode) (1)  | ISM    |                                                                                            | -    | -    | 60   | A       |
| Diode Forward Voltage (2)              | VSD    | IF=15A VGS=0V Tc=+25°C                                                                     | -    | -    | 1.5  | V       |
| Reverse Recovery Time                  | trr    | Tc=+25°C IF=15A                                                                            | -    | 500  | -    | ns      |
| Reverse Recovery Charge                | Qrr    | di/dt=100A/ $\mu$ S                                                                        | -    | 8.0  | -    | $\mu$ C |

(1) TJ = 25°C to 150°C.

(2) Pulse test: Pulse Width < 300 $\mu$ S, Duty Cycle < 2%.

(3) Repetitive Rating: Pulse Width limited By Max. junction Temperature.