

N-CHANNEL ENHANCEMENT MOS FET

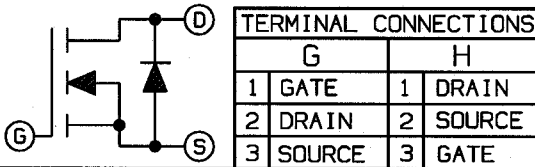
400V, 3.3A, 1.8Ω

SDF320 JAA
SDF320 JAB
SDF320 JDA

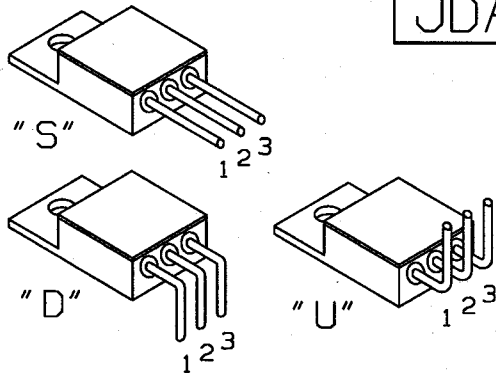
FEATURES

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

SCHEMATIC

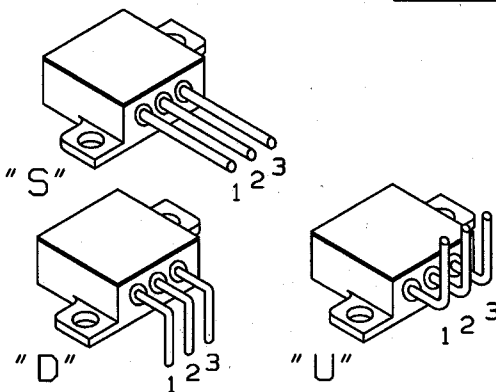


STANDARD BEND CONFIGURATIONS



(CUSTOM BEND OPTIONS AVAILABLE)

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ABSOLUTE MAXIMUM RATINGS

| PARAMETER | SYMBOL | | UNITS |
|--|----------------------------------|-------------|-----------------|
| Drain-source Volt.(1) | V _{DSS} | 400 | V _{dc} |
| Drain-Gate Voltage (R _{GS} =1.0MΩ) (1) | V _{DGR} | 400 | V _{dc} |
| Gate-Source Voltage Continuous | V _{GS} | ±20 | V _{dc} |
| Drain Current Continuous (T _c = 25°C) | I _D | 3.3 | A _{dc} |
| Drain Current Pulsed(3) | I _{DM} | 13 | A |
| Total Power Dissipation | P _D | 50 | W |
| Power Dissipation Derating > 25°C | | 0.4 | W/°C |
| Operating & Storage Temp. | T _J /T _{sig} | -55 TO +150 | °C |
| Thermal Resistance | R _{thJc} | 2.5 | °C/W |
| Max. Lead temperature | TL | 300 | °C |

ELECTRICAL CHARACTERISTICS T_c = 25°C (UNLESS OTHERWISE SPECIFIED)

| PARAMETER | SYMBOL | TEST CONDITIONS | MIN. | TYP. | MAX. | UNITS |
|---|----------------------|--|--|------|------|-------|
| Drain-source Breakdown Volt. | V _{(BR)DSS} | V _{GS} =0V I _D =250 μA | 400 | - | - | V |
| Gate Threshold Voltage | V _{GS(TH)} | V _D =V _{GS} I _D =250 μA | 2.0 | - | 4.0 | V |
| Gate Source Leakage | I _{GSS} | V _{GS} =±20 V | - | - | 100 | nA |
| Zero Gate Voltage Drain Current | I _{DSS} | V _D =MAX. RATING V _{GS} =0 | - | - | 250 | μA |
| | | V _D =0.8 MAX. RATING V _{GS} =0 T _J =125°C | - | - | 1000 | μA |
| Static Drain-Source On-State Resistance(1) | R _{DS(ON)} | V _{GS} =10 V I _D =1.8A | - | - | 1.8 | Ω |
| Forward Trans-Conductance (2) | g _{fs} | V _D ≥ 50 V I _{DS} =1.8A | 1.8 | - | - | S(U) |
| Input Capacitance | C _{ISS} | V _{GS} =0V V _D =25 V f=1.0 MHz | - | 350 | - | pF |
| Output Capacitance | C _{OSS} | | - | 64 | - | pF |
| Reverse Transfer Capacitance | C _{RSS} | | - | 8.1 | - | pF |
| Turn-On Delay | t _{d(on)} | V _{DD} =200V R _G =18Ω I _D =3.3A R _D =56Ω (MOSFET switching times are essentially independent of operating temp.) | - | - | 15 | ns |
| Rise Time | t _r | | - | - | 20 | ns |
| Turn-Off Delay | t _{d(off)} | | - | - | 45 | ns |
| Fall Time | t _f | | - | - | 20 | ns |
| Total Gate Charge (Gate-Source Plus Gate-Drain) | Q _g | | V _{GS} =10V, I _D =3.3A V _D =0.8 MAX. RATING (Gate charge is essentially independent of the operating temperature) | - | - | 20 |
| Gate-Source Charge | Q _{gs} | - | | - | 3.3 | nC |
| Gate-Drain ("Miller") Charge | Q _{gd} | - | | - | 11 | nC |

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

| PARAMETER | SYMBOL | TEST CONDITIONS | MIN. | TYP. | MAX. | UNITS |
|--|-----------------|--|------|------|------|-------|
| Continuous Source Current (Body Diode) | I _S | Modified MOSFET symbol showing the integral reverse P-N junction rectifier (See schematic) | - | - | 3.3 | A |
| Pulse Source Current (Body Diode) (1) | I _{SM} | | - | - | 13 | A |
| Diode Forward Voltage (2) | V _{SD} | I _F =3.3A V _{GS} =0V T _c =+25°C | - | - | 1.8 | V |
| Reverse Recovery Time | t _{rr} | T _c =+25°C | - | - | 600 | ns |
| Reverse Recovery Charge | Q _{rr} | I _F =3.3A di/dt=100A/μS | - | 1.4 | - | μC |

REV. 10/93

- (1) T_J = 25°C to 150°C.
(2) Pulse test: Pulse Width < 300μS, Duty Cycle < 2%.
(3) Repetitive Rating: Pulse Width limited By Max. junction Temperature.