

# N-CHANNEL ENHANCEMENT MODE VERTICAL DMOS FET

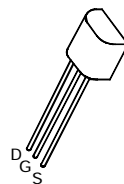
## BS170P

ISSUE 2 – SEPT 93

### FEATURES

- \* 60 Volt  $V_{DS}$
- \*  $R_{DS(on)}=5\Omega$

REFER TO ZVN3306A FOR GRAPHS



E-Line  
TO92 Compatible

### ABSOLUTE MAXIMUM RATINGS.

| PARAMETER   | SYMBOL         | VALUE       | UNIT        |
|---|----------------|-------------|-------------|
| Drain-Source Voltage                              | $V_{DS}$       | 60          | V           |
| Continuous Drain Current at $T_{amb}=25^{\circ}C$ | $I_D$          | 270         | mA          |
| Pulsed Drain Current                              | $I_{DM}$       | 3           | A           |
| Gate-Source Voltage                               | $V_{GS}$       | $\pm 20$    | V           |
| Power Dissipation at $T_{amb}=25^{\circ}C$        | $P_{tot}$      | 625         | mW          |
| Operating and Storage Temperature Range           | $T_j; T_{stg}$ | -55 to +150 | $^{\circ}C$ |

### ELECTRICAL CHARACTERISTICS (at $T_{amb}=25^{\circ}C$ ).

| PARAMETER                                   | SYMBOL       | MIN. | TYP. | MAX. | UNIT     | CONDITIONS.                         |
|---|--------------|------|------|------|----------|-------------------------------------|
| Drain-Source Breakdown Voltage              | $BV_{DSS}$   | 60   |      |      | V        | $I_D=100\mu A, V_{GS}=0V$           |
| Gate-Source Threshold Voltage               | $V_{GS(th)}$ | 0.8  |      | 3    | V        | $I_D=1mA, V_{DS}=V_{GS}$            |
| Gate Body Leakage                           | $I_{GSS}$    |      |      | 10   | nA       | $V_{GS}=15V, V_{DS}=0V$             |
| Zero Gate Voltage Drain Current             | $I_{DSS}$    |      |      | 0.5  | $\mu A$  | $V_{GS}=0V, V_{DS}=25V$             |
| Static Drain-Source on-State Resistance (1) | $R_{DS(on)}$ |      |      | 5    | $\Omega$ | $V_{GS}=10V, I_D=200mA$             |
| Forward Transconductance (1)(2)             | $g_{fs}$     |      | 200  |      | mS       | $V_{DS}=10V, I_D=200mA$             |
| Input Capacitance (2)                       | $C_{iss}$    |      | 60   |      | pF       | $V_{GS}=0V, V_{DS}=10V$<br>$f=1MHz$ |
| Turn-On Time (2)(3)                         | $t_{(on)}$   |      |      | 10   | ns       | $V_{DD}=15V, I_D=600mA$             |
| Turn-Off Time (2)(3)                        | $t_{(off)}$  |      |      | 10   | ns       |                                     |

(1) Measured under pulsed conditions. Pulse width=300 $\mu s$ . Duty cycle  $\leq 2\%$  (2) Sample test

(3) Switching times measured with a 50 $\Omega$  source impedance and <5ns rise time on a pulse generator