

isc N-Channel Mosfet Transistor

IRF512

FEATURES

- Low  $R_{DS(on)}$
- $V_{GS}$  Rated at  $\pm 20V$
- Silicon Gate for Fast Switching Speed
- Rugged
- Low Drive Requirements

DESCRIPTION

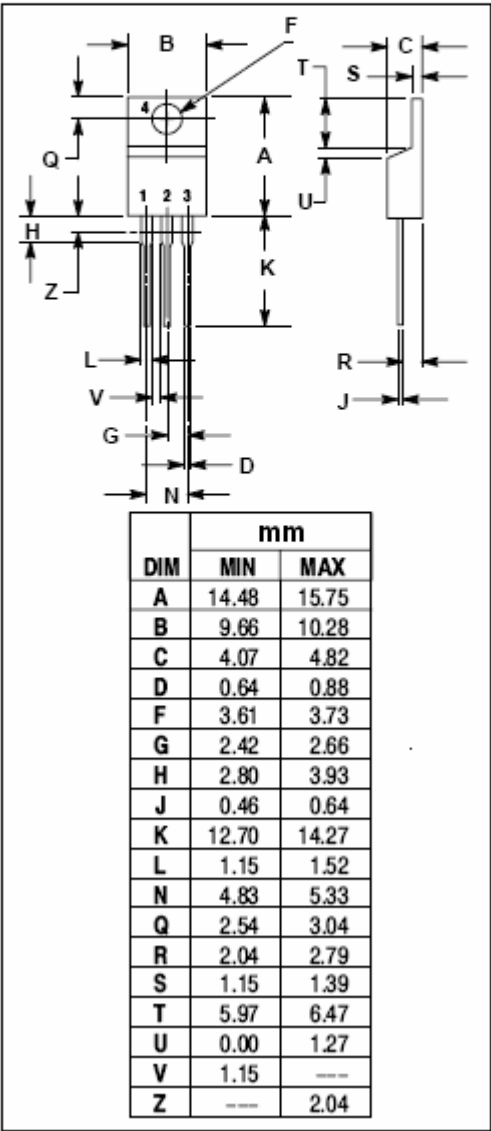
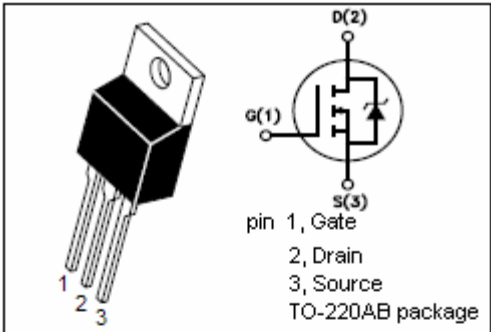
- Designed especially for high voltage,high speed applications, such as off-line switching power supplies , UPS,AC and DC motor controls,relay and solenoid drivers.

ABSOLUTE MAXIMUM RATINGS( $T_a=25^{\circ}C$ )

| SYMBOL    | PARAMETER                             | VALUE    | UNIT        |
|-----------|---------------------------------------|----------|-------------|
| $V_{DSS}$ | Drain-Source Voltage                  | 100      | V           |
| $V_{GS}$  | Gate-Source Voltage-Continuous        | $\pm 20$ | V           |
| $I_D$     | Drain Current-Continuous              | 4.9      | A           |
| $I_{DM}$  | Drain Current-Single Plused           | 18       | A           |
| $P_D$     | Total Dissipation @ $T_C=25^{\circ}C$ | 43       | W           |
| $T_j$     | Max. Operating Junction Temperature   | -55~175  | $^{\circ}C$ |
| $T_{stg}$ | Storage Temperature                   | -55~175  | $^{\circ}C$ |

THERMAL CHARACTERISTICS

| SYMBOL        | PARAMETER                              | MAX | UNIT          |
|---------------|----------------------------------------|-----|---------------|
| $R_{th\ j-c}$ | Thermal Resistance,Junction to Case    | 3.5 | $^{\circ}C/W$ |
| $R_{th\ j-a}$ | Thermal Resistance,Junction to Ambient | 80  | $^{\circ}C/W$ |



**isc N-Channel Mosfet Transistor****IRF512****ELECTRICAL CHARACTERISTICS** $T_C=25^{\circ}\text{C}$  unless otherwise specified

| SYMBOL        | PARAMETER                       | CONDITIONS                                                      | MIN | TYP | MAX       | UNIT          |
|---------------|---------------------------------|-----------------------------------------------------------------|-----|-----|-----------|---------------|
| $V_{(BR)DSS}$ | Drain-Source Breakdown Voltage  | $V_{GS}=0$ ; $I_D=0.25\text{mA}$                                | 100 |     |           | V             |
| $V_{GS(th)}$  | Gate Threshold Voltage          | $V_{DS}=V_{GS}$ ; $I_D=0.25\text{mA}$                           | 2   |     | 4         | V             |
| $R_{DS(on)}$  | Drain-Source On-Resistance      | $V_{GS}=10\text{V}$ ; $I_D=3.4\text{A}$                         |     |     | 0.54      | $\Omega$      |
| $I_{GSS}$     | Gate-Body Leakage Current       | $V_{GS}=\pm 20\text{V}$ ; $V_{DS}=0$                            |     |     | $\pm 500$ | nA            |
| $I_{DSS}$     | Zero Gate Voltage Drain Current | $V_{DS}=100\text{V}$ ; $V_{GS}=0$                               |     |     | 250       | $\mu\text{A}$ |
| $V_{SD}$      | Forward On-Voltage              | $I_S=5.6\text{A}$ ; $V_{GS}=0$                                  |     |     | 2.0       | V             |
| $C_{iss}$     | Input Capacitance               | $V_{DS}=25\text{V}$ , $V_{GS}=0\text{V}$ ,<br>$F=1.0\text{MHz}$ |     | 135 |           | pF            |
| $C_{oss}$     | Output Capacitance              |                                                                 |     | 80  |           | pF            |
| $C_{rss}$     | Reverse Transfer Capacitance    |                                                                 |     | 20  |           | pF            |

**• SWITCHING CHARACTERISTICS ( $T_C=25^{\circ}\text{C}$ )**

| SYMBOL     | PARAMETER           | CONDITIONS                                                                                               | MIN | TYP | MAX | UNIT |
|------------|---------------------|----------------------------------------------------------------------------------------------------------|-----|-----|-----|------|
| $T_d(on)$  | Turn-on Delay Time  | $V_{DD}=50\text{V}$ , $I_D=5.6\text{A}$<br>$V_{GS}=10\text{V}$ , $R_{GEN}=24\Omega$<br>$R_{GS}=24\Omega$ |     | 8   | 11  | ns   |
| $T_r$      | Rise Time           |                                                                                                          |     | 25  | 36  | ns   |
| $T_d(off)$ | Turn-off Delay Time |                                                                                                          |     | 15  | 21  | ns   |
| $T_f$      | Fall Time           |                                                                                                          |     | 12  | 21  | ns   |