

## isc N-Channel MOSFET Transistor

12N20

## • FEATURES

- Drain Current  $I_D = 12A @ T_C = 25^\circ C$
- Drain Source Voltage-  
:  $V_{DSS} = 200V(\text{Min})$
- Static Drain-Source On-Resistance  
:  $R_{DS(on)} = 0.25 \Omega (\text{Max})$
- Fast Switching
- Minimum Lot-to-Lot variations for robust device performance and reliable operation

## • APPLICATIONS

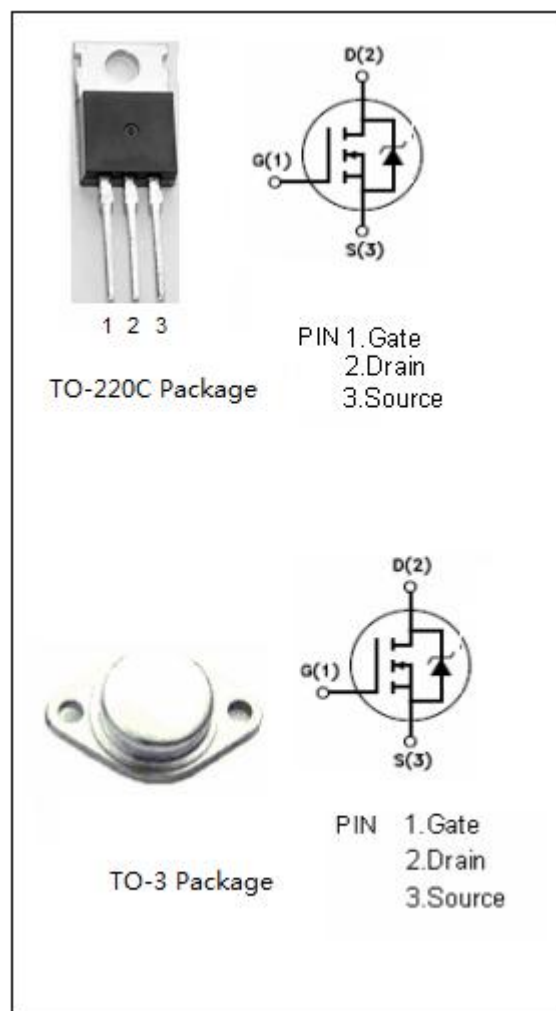
- Switch mode power supply.

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

| SYMBOL    | PARAMETER                              | VALUE    | UNIT       |
|-----------|----------------------------------------|----------|------------|
| $V_{DSS}$ | Drain-Source Voltage                   | 200      | V          |
| $V_{GS}$  | Gate-Source Voltage-Continuous         | $\pm 30$ | V          |
| $I_D$     | Drain Current-Continuous               | 12       | A          |
| $I_{DM}$  | Drain Current-Single Pulsed            | 40       | A          |
| $P_D$     | Total Dissipation @ $T_C = 25^\circ C$ | 100      | W          |
| $T_j$     | Max. Operating Junction Temperature    | 150      | $^\circ C$ |
| $T_{stg}$ | Storage Temperature                    | -55~150  | $^\circ C$ |

## • THERMAL CHARACTERISTICS

| SYMBOL       | PARAMETER                            | MAX  | UNIT         |
|--------------|--------------------------------------|------|--------------|
| $R_{th j-c}$ | Thermal Resistance, Junction to Case | 1.25 | $^\circ C/W$ |



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## • ELECTRICAL CHARACTERISTICS

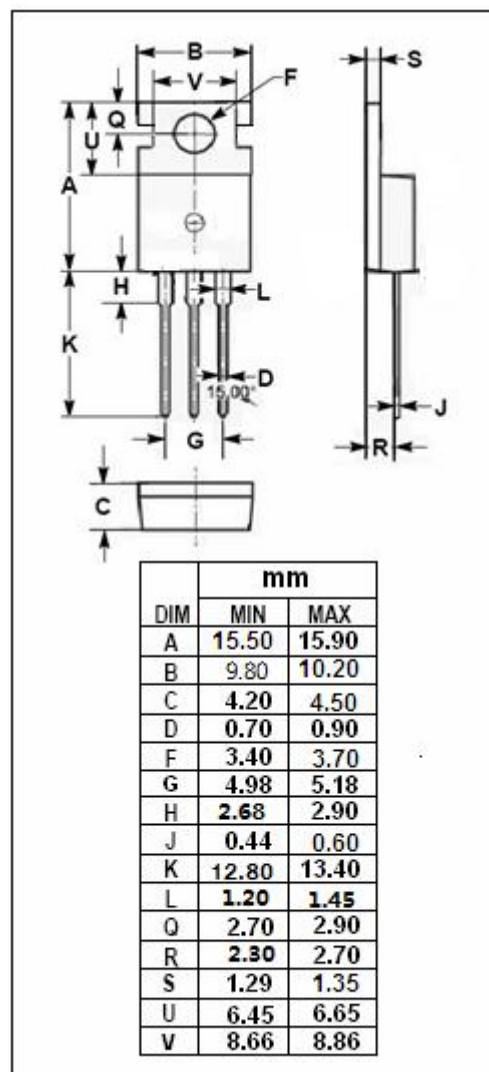
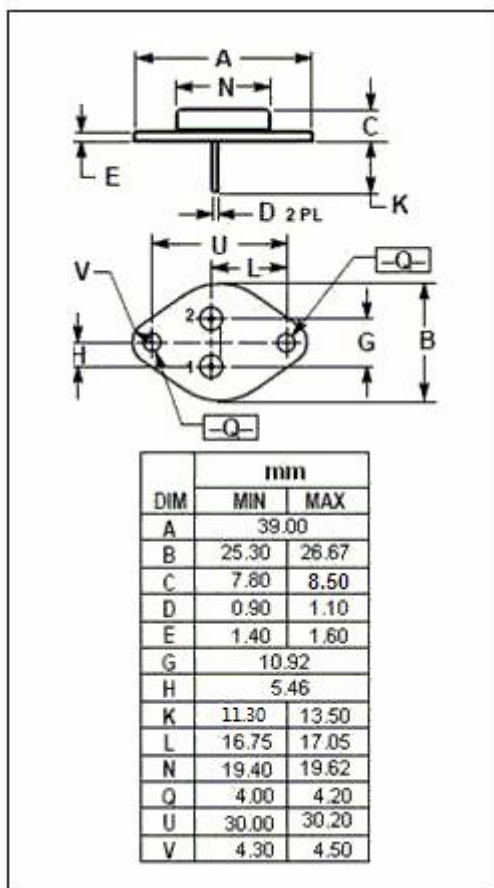
 $T_c=25^{\circ}\text{C}$  unless otherwise specified

| SYMBOL        | PARAMETER                       | CONDITIONS                                                                           | MIN | TYPE | MAX       | UNIT          |
|---------------|---------------------------------|--------------------------------------------------------------------------------------|-----|------|-----------|---------------|
| $V_{(BR)DSS}$ | Drain-Source Breakdown Voltage  | $V_{GS}=0; I_D=250\mu\text{A}$                                                       | 200 |      |           | V             |
| $V_{GS(th)}$  | Gate Threshold Voltage          | $V_{DS}=V_{GS}; I_D=250\mu\text{A}$                                                  | 2.0 |      | 4.0       | V             |
| $V_{SD}$      | Diode Forward On-voltage        | $I_S=11\text{A}; V_{GS}=0$                                                           |     |      | 1.4       | V             |
| $R_{DS(on)}$  | Drain-Source On-Resistance      | $V_{GS}=10\text{V}; I_D=6\text{A}$                                                   |     |      | 0.35      | $\Omega$      |
| $I_{GSS}$     | Gate-Body Leakage Current       | $V_{GS}=\pm 30\text{V}; V_{DS}=0$                                                    |     |      | $\pm 100$ | nA            |
| $I_{DSS}$     | Zero Gate Voltage Drain Current | $V_{DS}=200\text{V}; V_{GS}=0$                                                       |     |      | 250       | $\mu\text{A}$ |
| $C_{iss}$     | Input Capacitance               | $V_{DS}=25\text{V};$<br>$V_{GS}=0\text{V};$<br>$f_T=1\text{MHz}$                     |     | 800  |           | pF            |
| $C_{rss}$     | Reverse Transfer capacitance    |                                                                                      |     | 150  |           |               |
| $C_{oss}$     | Output Capacitance              |                                                                                      |     | 450  |           |               |
| $t_r$         | Rise Time                       | $V_{GS}=10\text{V};$<br>$I_D=5.0\text{A};$<br>$V_{DD}=90\text{V};$<br>$R_L=15\Omega$ |     |      | 50        | ns            |
| $t_{d(on)}$   | Turn-on Delay Time              |                                                                                      |     |      | 30        |               |
| $t_f$         | Fall Time                       |                                                                                      |     |      | 40        |               |
| $t_{d(off)}$  | Turn-off Delay Time             |                                                                                      |     |      | 50        |               |

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## Outline Drawing



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