

isc N-Channel MOSFET Transistor

40N20

• FEATURES

- Low $R_{DS(on)}$
- V_{GS} Rated at $\pm 20V$
- Silicon Gate for Fast Switching Speed
- Rugged
- Low Drive Requirements
- Minimum Lot-to-Lot variations for robust device performance and reliable operation

• DESCRIPTION

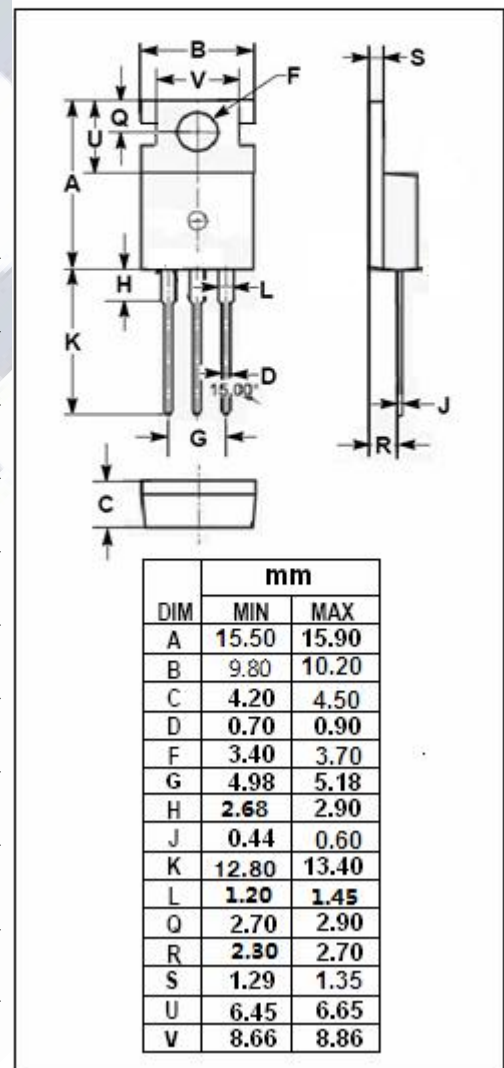
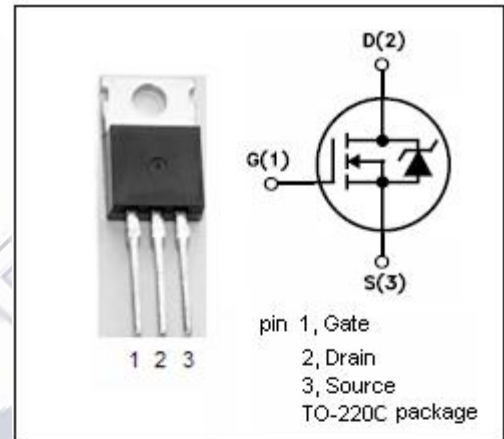
- Power switching applications
- Hard switched and high frequency circuits
- Uninterruptible power supply

• 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 | ± 20 | V |
| I_D | Drain Current-Continuous | 40 | A |
| I_{DM} | Drain Current-Single Plused | 160 | A |
| P_D | Total Dissipation @ $T_c=25^\circ C$ | 220 | 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 | 1.47 | $^\circ C/W$ |



isc N-Channel MOSFET Transistor**40N20****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 | $V_{GS}=0; I_D=0.25\text{mA}$ | 200 | | | 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 | $V_{GS}=10\text{V}; I_D=20\text{A}$ | | | 50 | $\text{m}\Omega$ |
| I_{GSS} | Gate-Body Leakage Current | $V_{GS}=\pm 20\text{V}; V_{DS}=0$ | | | ± 100 | nA |
| I_{DSS} | Zero Gate Voltage Drain Current | $V_{DS}=200\text{V}; V_{GS}=0$ | | | 1.0 | μA |
| V_{SD} | Forward On-Voltage | $I_S=40\text{A}; V_{GS}=0$ | | | 1.2 | V |
| Gfs | Forward Transconductance | $V_{DS}\geq 25\text{V}; I_D=25\text{A}$ | 26 | | | S |
| Ciss* | Input capacitance | | | 6500 | | pF |
| Coss* | Output capacitance | $V_{GS}=0\text{V}$ $V_{DS}=25\text{V}$ $f=1\text{MHz}$ | | 290 | | pF |
| Crss* | Reverse transfer capacitance | | | 220 | | pF |
| td(on)* | Turn-on delay time | | | 26 | | ns |
| Tr* | Rise time | $V_{DD}=30\text{V}$ $V_{GS}=10\text{V}$ $I_D=2\text{A}$ | | 24 | | ns |
| td(off)* | Turn-off delay time | $R_G=2.5\Omega$ $RL=15\Omega$ | | 91 | | ns |
| Tf* | Fall time | | | 39 | | ns |
| Qg* | Total Gate Charge | | | 163 | | nC |
| Qgs* | Gate-Source Charge | $I_D=30\text{A}$ $V_{DS}=30\text{V}$ $V_{GS}=10\text{V}$ | | 31 | | nC |
| Qgd* | Gate-Drain Charge | | | 64 | | nC |

*:Pulse width $\leq 300\mu\text{s}$,duty cycle $\leq 2\%$

*:Guaranteed by design,not subject to production