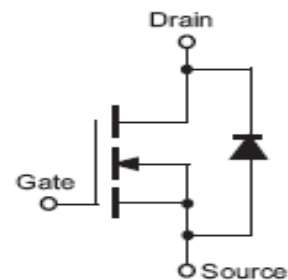


IRF640

N CHANNEL ENHANCEMENT MODE POWER MOS TRANSISTORS

FEATURE

N channel in a plastic TO220 package.
 They are intended for use in high speed power switching, low voltage, relay drivers and general purpose switching applications.
 DC-DC & DC-AC converters for telecom, industrial and lighting equipment.
 Compliance to RoHS.



ABSOLUTE MAXIMUM RATINGS

| Symbol | Ratings | Value | Unit |
|--------------|---|-------------|------------------|
| V_{DS} | Drain-Source Voltage | 200 | V |
| I_{DS} | Continuous Drain Current $T_C= 37^\circ\text{C}$ | 18 | A |
| I_{DM} | Pulsed Drain Current $T_C= 25^\circ\text{C}$ | 72 | |
| I_{AR} | Avalanche Current, Limited by T_{jmax} | 18 | |
| E_{AS} | Avalanche Energy, Single pulse $I_D = 18\text{ A}, V_{DD} = 50\text{ V}, T_j = 25^\circ\text{C}$ | 280 | mJ |
| E_{AR} | Avalanche Energy, Periodic Limited by T_{jmax} | 13 | |
| V_{GS} | Gate-Source Voltage | 20 | V |
| $R_{DS(on)}$ | Drain-Source on Resistance | 0.18 | Ω |
| P_T | Power Dissipation at Case Temperature $T_C= 25^\circ\text{C}$ | 125 | W |
| t_J | Operating Temperature | 150 | $^\circ\text{C}$ |
| t_{stg} | Storage Temperature range | -55 to +150 | |

THERMAL CHARACTERISTICS

| Symbol | Ratings | Value | Unit |
|------------|--------------------------------------|-------|--------------------|
| R_{thJC} | Thermal Resistance, junction-case | 1 | $^\circ\text{C/W}$ |
| R_{thJA} | Thermal Resistance, junction-ambient | 62.5 | |

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ELECTRICAL CHARACTERISTICS

TC=25°C unless otherwise noted

| Symbol | Ratings | Test Condition(s) | Min | Typ | Max | Unit |
|--------------|---------------------------------|---|-----|------|------|----------|
| V_{DSS} | Drain-Source Breakdown Voltage | $I_D = 250 \mu A, V_{GS} = 0 V$ | 200 | - | - | V |
| $V_{GS(th)}$ | Gate-threshold Voltage | $I_D = 250 \mu A, V_{GS} = V_{DS}$ | 2 | 3 | 4 | V |
| I_{DSS} | Zero Gate Voltage Drain Current | $V_{DS} = 200 V, V_{GS} = 0 V$ $T_j = 25^\circ C$ | - | - | 25 | μA |
| | | $V_{DS} = 200 V, V_{GS} = 0 V$ $T_j = 125^\circ C$ | - | - | 250 | |
| I_{GSS} | Gate-Source leakage Current | $V_{GS} = 20 V, V_{DS} = 0 V$ | - | - | 100 | nA |
| $R_{DS(on)}$ | Drain-Source on Resistance | $I_D = 10 A, V_{GS} = 10 V$ | - | 0.15 | 0.18 | Ω |

DYNAMIC CHARACTERISTICS

| Symbol | Ratings | Test Condition(s) | Min | Typ | Max | Unit |
|--------------|------------------------------|---|-----|------|------|---------|
| g_{fs} | Transconductance | $V_{DS} = 2 \cdot I_D \cdot R_{DS(on)max}$ $I_D = 9 A$ | 7 | 11 | - | S |
| C_{ISS} | Input Capacitance | $V_{GS} = 0 V, V_{DS} = 25 V$ $f = 1 MHz$ | - | 1200 | 1560 | μF |
| C_{OSS} | Output Capacitance | | - | 200 | 260 | |
| C_{RSS} | Reverse transfer Capacitance | | - | 60 | 80 | |
| $t_{d(on)}$ | Turn-on Delay Time | $V_{DD} = 100 V,$ $I_D = 18 A, R_{GS} = 25 \Omega$ | - | 20 | 50 | ns |
| t_r | Rise time | | - | 145 | 300 | |
| $t_{d(off)}$ | Turn-off Delay Time | | - | 145 | 300 | |
| t_f | Fall Time | | - | 110 | 230 | |

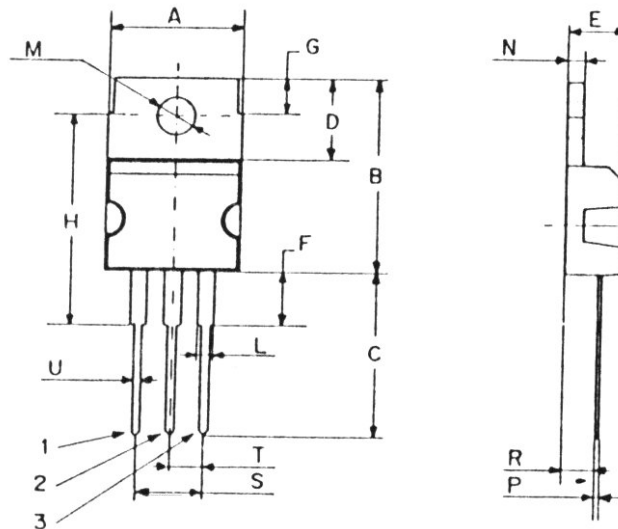
REVERSE DIODE

| Symbol | Ratings | Test Condition(s) | Min | Typ | Max | Unit |
|----------|---|--|-----|-----|-----|---------|
| I_S | Inverse Diode Continuous Forward Current. | $T_C = 25^\circ C$ | - | - | 18 | A |
| I_{SM} | Inverse diode direct current, pulsed. | $T_C = 25^\circ C$ | - | - | 72 | |
| V_{SD} | Inverse Diode Forward voltage | $V_{GS} = 0 V, I_F = 18 A$ | - | - | 2 | V |
| T_{rr} | Reverse Recovery Time | $V_R = 25 V, I_F = 18 A$ | - | 130 | - | ns |
| Q_{rr} | Reverse Recovery Charge | $di/dt = 100 A/\mu s, T_C = 150^\circ C$ | - | 0.8 | - | μC |

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MECHANICAL DATA CASE TO-220

| DIMENSIONS (mm) | | |
|-----------------|-------|-------|
| | Min. | Max. |
| A | 9,90 | 10,30 |
| B | 15,65 | 15,90 |
| C | 13,20 | 13,40 |
| D | 6,45 | 6,65 |
| E | 4,30 | 4,50 |
| F | 2,70 | 3,15 |
| G | 2,60 | 3,00 |
| H | 15,75 | 17,15 |
| L | 1,15 | 1,40 |
| M | 3,50 | 3,70 |
| N | - | 1,37 |
| P | 0,46 | 0,55 |
| R | 2,50 | 2,70 |
| S | 4,98 | 5,08 |
| T | 2,49 | 2,54 |
| U | 0,70 | 0,90 |



| | |
|---------|--------|
| Pin 1 : | Gate |
| Pin 2 : | Drain |
| Pin 3 : | Source |

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