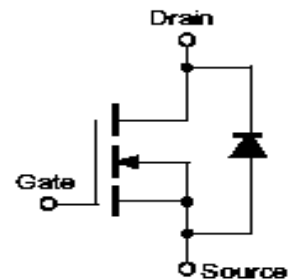


# IRF830

## N CHANNEL ENHANCEMENT MODE POWER MOS TRANSISTORS

### FEATURE

N channel in a plastic TO220 package.  
 They are intended for use in off-line switched mode power supplies, T.V. and computer monitor power supplies.  
 DC-DC converters, motor control circuits and general purpose switching applications  
 Compliance to RoHS.



### ABSOLUTE MAXIMUM RATINGS

| Symbol       | Ratings   | Value       | Unit       |
|--------------|---|-------------|------------|
| $V_{DS}$     | Drain-Source Voltage                                    | 500         | V          |
| $I_{DS}$     | Continuous Drain Current $T_C= 37^\circ C$              | 4.5         | A          |
| $I_{DM}$     | Pulsed Drain Current $T_C= 25^\circ C$                  | 18          |            |
| $I_{AR}$     | Avalanche Current, Limited by $T_{imax}$                | 4.5         |            |
| $E_{AS}$     | Avalanche Energy, Single pulse                          | 280         | mJ         |
| $E_{AR}$     | Avalanche Energy, Periodic Limited by $T_{imax}$        | 7.4         |            |
| $V_{GS}$     | Gate-Source Voltage                                     | 20          | V          |
| $R_{DS(on)}$ | Drain-Source on Resistance                              | 1.5         | $\Omega$   |
| $P_T$        | Power Dissipation at Case Temperature $T_C= 25^\circ C$ | 74          | W          |
| $t_J$        | Operating Temperature                                   | 150         | $^\circ C$ |
| $t_{stg}$    | Storage Temperature range                               | -55 to +150 |            |

### THERMAL CHARACTERISTICS

| Symbol     | Ratings                              | Value | Unit         |
|------------|--------------------------------------|-------|--------------|
| $R_{thJC}$ | Thermal Resistance, junction-case    | 1.7   | $^\circ C/W$ |
| $R_{thJA}$ | Thermal Resistance, junction-ambient | 62    |              |

## IRF830

### ELECTRICAL CHARACTERISTICS

TC=25°C unless otherwise noted

| Symbol       | Ratings                         | Test Condition(s)                                     | Min | Typ | Max | Unit     |
|--------------|---------------------------------|---|-----|-----|-----|----------|
| $V_{DSS}$    | Drain-Source Breakdown Voltage  | $I_D = 250 \mu A, V_{GS} = 0 V$                       | 500 | -   | -   | 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 | $V_{DS} = 500 V, V_{GS} = 0 V$<br>$T_j = 25^\circ C$  | -   | -   | 25  | $\mu A$  |
|              |                                 | $V_{DS} = 500 V, V_{GS} = 0 V$<br>$T_j = 125^\circ C$ | -   | -   | 250 |          |
| $I_{GSS}$    | Gate-Source leakage Current     | $V_{GS} = 20 V, V_{DS} = 0 V$                         | -   | -   | 100 | nA       |
| $R_{DS(on)}$ | Drain-Source on Resistance      | $I_D = 2.7 A, V_{GS} = 10 V$                          | -   | -   | 1.5 | $\Omega$ |

### DYNAMIC CHARACTERISTICS

| Symbol       | Ratings                      | Test Condition(s)                                      | Min | Typ | Max | Unit    |
|--------------|------------------------------|--|-----|-----|-----|---------|
| $g_{fs}$     | Transconductance             | $V_{DS} > I_{D(on)} * R_{DS(on)max}$<br>$I_D = 2.5 A$  | 2.5 | -   | -   | S       |
| $C_{ISS}$    | Input Capacitance            | $V_{GS} = 0 V, V_{DS} = 25 V$<br>$f = 1 MHz$           | -   | -   | 800 | $\mu F$ |
| $C_{OSS}$    | Output Capacitance           |  | -   | -   | 200 |         |
| $C_{RSS}$    | Reverse transfer Capacitance |  | -   | -   | 60  |         |
| $t_{d(on)}$  | Turn-on Delay Time           | $V_{DD} = 225 V,$<br>$I_D = 2.5 A, R_{GS} = 15 \Omega$ | -   | -   | 30  | ns      |
| $t_r$        | Rise time                    |  | -   | -   | 30  |         |
| $t_{d(off)}$ | Turn-off Delay Time          |  | -   | -   | 55  |         |
| $t_f$        | Fall Time                    |  | -   | -   | 30  |         |

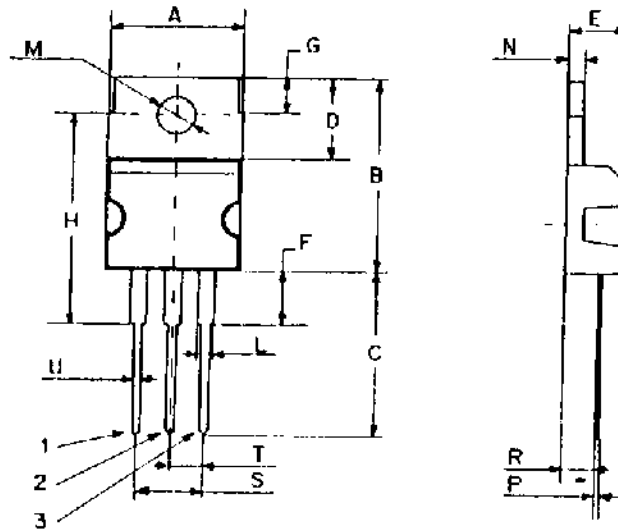
### REVERSE DIODE

| Symbol   | Ratings                                   | Test Condition(s)           | Min | Typ | Max | Unit    |
|----------|---|-----------------------------|-----|-----|-----|---------|
| $I_S$    | Inverse Diode Continuous Forward Current. | $T_C = 25^\circ C$          | -   | -   | 4.5 | A       |
| $I_{SM}$ | Inverse diode direct current, pulsed.     | $T_C = 25^\circ C$          | -   | -   | 18  |         |
| $V_{SD}$ | Inverse Diode Forward voltage             | $V_{GS} = 0 V, I_F = 4.5 A$ | -   | -   | 1.6 | V       |
| $T_{rr}$ | Reverse Recovery Time                     | $I_F = 3.1 A$               | -   | 320 | 640 | ns      |
| $Q_{rr}$ | Reverse Recovery Charge                   | $di/dt = 100 A/\mu s$       | -   | 1   | 2   | $\mu C$ |

# IRF830

## 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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