| **TranElectric** | **IRFCF30**<br>**Die for Hexfet®** |
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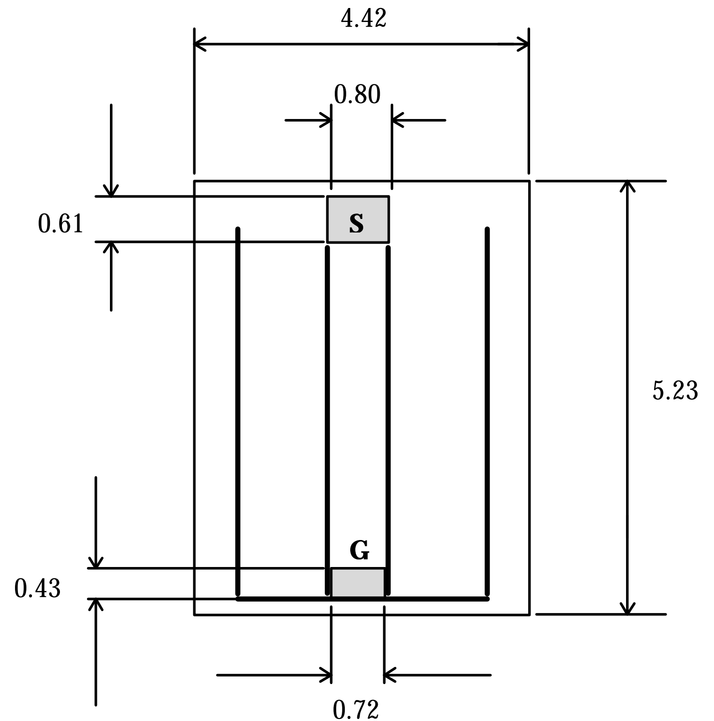
## Die Specification




**General description :**
Hexfet® power MOSFET die with the following features:

- **Dynamic dv/dt rating**
- **Ease of paralleing**
- **Repetitve avalanche rated**
- **Fast switching**

**Mechanical Characteristic:**

Silicon Chip

| Dimension (mm): 4.42*5.32 |
| --- |
| Dimension (mil): 174*206 |
| Thickness: |
| Metallization: Al |
| Recommended wire(mm): 0.25 |
| Recommended wire(mil): 10 |
| |

| Type | Vds | Rds(on)<br>Vgs=10V | Idss<br>@Ids | Vgs(th)<br>Vds=Vgs,Id=250mkA |
| --- | --- | --- | --- | --- |
| IRFCF30 | 900V | 3.70 Ohms | 250 mkA | 2.0V ... 4.0V |

Typical device : IRFBF30 (in TO-220AB)

# HEXFET® Power MOSFET IRFBF30

CHANNEL : N
PACKAGE : TO-220AB

## Absolut Maximum Rating

| | Parameter | Max. | Units |
|---|---|---|---|
| $I_D$ , $T_C$=25°C | Continuous Drain Current , $V_{GS}$=10V | 3.6 | A |
| $I_D$ , $T_C$=100°C | Continuous Drain Current $V_{GS}$=10V | 2.3 | |
| $I_{DM}$ | Pulsed Drain Current ❶ | 14 | |
| $P_D$ , $T_C$=25°C | Power Dissipation | 125 | W |
| | Linear Derating Factor | 1.0 | W/°C |
| $V_{GS}$ | Gate-to-Sourse Voltage | ±20 | V |
| $E_{AS}$ | Single Pulse Avalanche Energy ❷ | 250 | mJ |
| $I_{AR}$ | Avalanche Current | 3.6 | A |
| $E_{AR}$ | Repetitive Avalanche Energy ❶ | 13 | mJ |
| dv/dt | Peak Diode Recovery dv/dt ❸ | 1.5 | V/ns |
| $T_J$ , $T_{STG}$ | Operating Junction and Storage Temperature Range | -55 to +150 | °C |

## Electrical Characteristics , TJ=25°C (unless otherwise specified)

| | Parameter | Min. | Typ. | Max. | Units | Conditions |
|---|---|---|---|---|---|---|
| $V_{(BR)DSS}$ | Drain-to-Sourse Breakdown Voltage | 900 | | | V | $V_{GS}$=0 , $I_D$=250µA |
| $\Delta V_{(BR)}/\Delta T_J$ | Breakdown Voltage Temp. Coefficient | | 1.1 | | V/°C | 25°C , $I_D$=1mA |
| $R_{(DS)on}$ | Static Drain-to-Source On-Resistance | | | 3.7 | Ω | $V_{GS}$=10V , $I_D$=2.2A❹ |
| $V_{GS(th)}$ | Gate Threshold Voltage | 2.0 | | 4.0 | V | $V_{DS}$=$V_{GS}$ , $I_D$=250µA |
| $g_{fs}$ | Forward Transconductance | 2.3 | | | S | $V_{DS}$=100V , $I_D$=2.2A |
| $I_{DSS}$ | Drain-to-Source Leakage Current | | | 100 | µA | $V_{DS}$=900V, $V_{GS}$=0V |
| | | | | 500 | µA | $V_{DS}$=720V ,$V_{GS}$=0V , $T_J$=125°C |
| $I_{GSS}$ | Gate-to-Source Forward Current | | | 100 | nA | $V_{GS}$=20V |
| | Gate-to-Source Reverse Current | | | -100 | nA | $V_{GS}$=-20V |
| $Q_g$ | Total Gate Charge | | | 78 | nC | $V_{GS}$=10V |
| $Q_{gs}$ | Gate-to-Source Charge | | | 10 | nC | $V_{DS}$=360V |
| $Q_{gd}$ | Gate-to-Drain Charge | | | 42 | nC | $I_D$=3.6A ❹ |
| $t_{d(on)}$ | Turn-On Delay Time | | 14 | | ns | $V_{DD}$=450V |
| $t_r$ | Rise Time | | 25 | | | $I_D$=3.6A |
| $t_{d(off)}$ | Turn-Off Delay Time | | 90 | | | $R_G$=12Ω |
| $t_f$ | Fall Time | | 30 | | | $R_D$=120Ω ❹ |
| $L_D$ | Internal Drain Inductance | | 4.5 | | nH | Between lead , 6 mm from package and center of die contact |
| $L_S$ | Internal Source Inductance | | 7.5 | | | |
| $C_{ISS}$ | Input Capacitance | | 1200 | | pF | $V_{GS}$=0 |
| $C_{OSS}$ | Output Capacitance | | 320 | | | $V_{DS}$=25V |
| $C_{RSS}$ | Reverse Transfer Capacitance | | 200 | | | f=1.0MHz |

## Source-Drain Ratings and Characteristics

| | Parameter | Min. | Typ. | Max. | Units | Conditions |
|---|---|---|---|---|---|---|
| $I_S$ | Continuous Source Current (Body Diode) | | | 3.6 | A | |
| $I_{SM}$ | Pulsed Source Current (Body Diode) ❶ | | | 14 | A | |
| $V_{SD}$ | Diode Forward Voltage | | | 1.8 | V | $I_S$=3.6A , $V_{GS}$=0V , $T_J$=25°C ❹ |
| $t_{rr}$ | Reverse Recovery Time | | 430 | 650 | ns | $T_J$=25°C, $I_F$=3.6A, ❹ |
| $Q_{rr}$ | Reverse RecoveryCharge | | 1.4 | 2.1 | µC | di/dt=100A/µs |

## Thermal resistance

| | Parameter | Min. | Typ. | Max. | Units |
|---|---|---|---|---|---|
| $R_{\theta JC}$ | Junction-to-Case | | | 1.0 | W/°C |
| $R_{\theta JC}$ | Case-to-Sink, Flat, Greased Surfase | | 0.50 | | |
| $R_{\theta JC}$ | Junction-to-Ambient | | | 62 | |

❶ Reprtitive rating ; pulse width limited by max. junction temperature .
❷ $V_{DD}$=50V , starting $T_J$=25°C , L=36 mH , $R_G$=25Ω , $I_{AS}$=3.6A.
❸ $I_{SD}$≤3.6A , di/dt≤70A/µs , $V_{DD}$≤600V , $T_J$≤150°C.
❹ Pulse width ≤300µs ; duty cycle≤2%