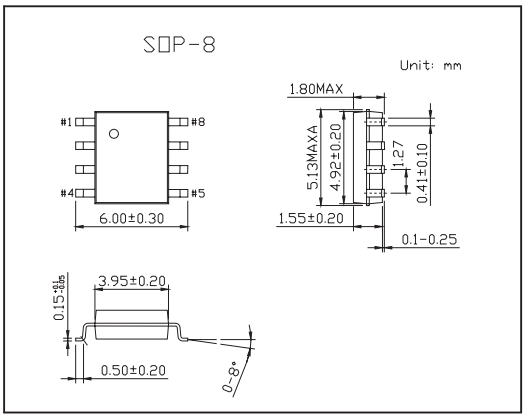
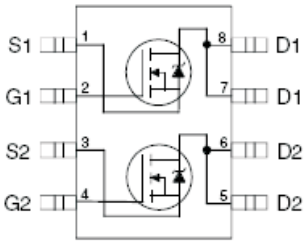
# HEXFET®Power MOSFET

# KRF7313

## ■ Features

- Generation V Technology
- Ultra Low On-Resistance
- Dual N-Channel Mosfet
- Surface Mount
- Fully Avalanche Rated




Top View

## ■ Absolute Maximum Ratings Ta = 25℃

| Parameter | Symbol | Rating | Unit |
|---|---|---|---|
| Drain- Source Voltage | $V_{DS}$ | 30 | V |
| Gate-to-Source Voltage | $V_{GS}$ | ±20 | |
| Continuous Drain Current, Ta = 25℃ *3 | $I_D$ | 6.5 | A |
| Continuous Drain Current,Tc = 70℃ *3 | $I_D$ | 30 | |
| Pulsed Drain Current | $I_{DM}$ | 2.5 | |
| Maximum Power Dissipation Ta = 25℃*3 | $P_D$ | 2 | W |
| Maximum Power Dissipation Ta = 70℃ *3 | | 1.3 | |
| Single Pulse Avalanche Energy *4 | $E_{AS}$ | 82 | mJ |
| Avalanche Current | $I_{AR}$ | 4 | A |
| Repetitive Avalanche Energy | $E_{AR}$ | 0.2 | mJ |
| Peak Diode Recovery dv/dt*2 | dv/dt | 5.8 | V/ns |
| Operating Junction and Storage Temperature Range | $T_J$,$T_{STG}$ | -55 to + 150 | ℃ |
| Maximum Junction-to-Ambient *3 | R θ JA | 62.5 | ℃/W |

*1 Repetitive rating; pulse width limited by max. junction temperature.

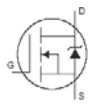
*2 $I_{SD}$≤4.0A, di/dt≤74A/μs, $V_{DD}$≤$V_{(BR)DSS}$,$T_J$≤150℃

*3 Surface mounted on FR-4 board, t ≤ 10sec.

*4 Starting $T_J$=25℃ ,L=10mH,$R_G$=25Ω, $I_{AS}$=4.0A

# KRF7313

■ Electrical Characteristics Ta = 25℃

| Parameter | Symbol | Testconditons | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| Drain-to-Source Breakdown Voltage | $V_{(BR)DSS}$ | $V_{GS}$ = 0V, $I_D$ = 250A | 30 | | | V |
| Breakdown Voltage Temp. Coefficient | $\triangle V_{(BR)DSS}/\triangle T_J$ | $I_D$ = 1mA,Reference to 25℃ | | 0.022 | | V/℃ |
| Static Drain-to-Source On-Resistance | $R_{DS(on)}$ | $V_{GS}$ = 10V, $I_D$ = 5.8A*1 | | 0.023 | 0.029 | Ω |
| | | $V_{GS}$ = 4.5V, $I_D$ = 4.7A*1 | | 0.032 | 0.046 | |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS}$ = $V_{GS}$, $I_D$ = 250μA | 1.0 | | | V |
| Forward Transconductance | $g_{fs}$ | $V_{DS}$ = 15V, $I_D$ = 5.8A*1 | | 14 | | S |
| Drain-to-Source Leakage Current | $I_{DSS}$ | $V_{DS}$ = 24V, $V_{GS}$ = 0V | | | 1.0 | μA |
| | | $V_{DS}$ = 24V, $V_{GS}$ = 0V, $T_J$ = 55℃ | | | 25 | |
| Gate-to-Source Forward Leakage | $I_{GSS}$ | $V_{GS}$ = 20V | | | 100 | nA |
| Gate-to-Source Reverse Leakage | | $V_{GS}$ = -20V | | | -100 | |
| Total Gate Charge | $Q_g$ | $I_D$ = 5.8A | | 22 | 33 | nC |
| Gate-to-Source Charge | $Q_{gs}$ | $V_{DS}$ = 15V | | 2.6 | 3.9 | |
| Gate-to-Drain ("Miller") Charge | $Q_{gd}$ | $V_{GS}$ = 10V,*1 | | 6.4 | 9.6 | |
| Turn-On Delay Time | $t_{d(on)}$ | $V_{DD}$ = 15V | | 8.1 | 12 | ns |
| Rise Time | $t_r$ | $I_D$ = 1.0A | | 8.9 | 13 | |
| Turn-Off Delay Time | $t_{d(off)}$ | $R_G$ = 6.0Ω | | 26 | 39 | |
| Fall Time | $t_f$ | $R_D$ = 15Ω *1 | | 17 | 26 | |
| Input Capacitance | $C_{iss}$ | $V_{GS}$ = 0V | | 650 | | pF |
| Output Capacitance | $C_{oss}$ | $V_{DS}$ = 25V | | 320 | | |
| Reverse Transfer Capacitance | $C_{rss}$ | f = 1.0MHz | | 130 | | |
| Continuous Source Current（Body Diode) | $I_S$ | MOSFET symbol showing the integral reverse p-n junction diode.  | | | 2.5 | A |
| Pulsed Source Current （Body Diode) *2 | $I_{SM}$ | | | | 30 | |
| Diode Forward Voltage | $V_{SD}$ | $T_J$ = 25℃, $I_S$ = 1.7A, $V_{GS}$ = 0V*1 | | 0.78 | 1.0 | V |
| Reverse Recovery Time | $t_{rr}$ | $T_J$ = 25℃, $I_F$ =1.7A | | 45 | 68 | ns |
| Reverse RecoveryCharge | $Q_{rr}$ | di/dt = 100A/μs*1 | | 58 | 87 | μC |

*1 Pulse width ≤ 300μs; duty cycle ≤ 2%.

*2 Repetitive rating; pulse width limited bymax