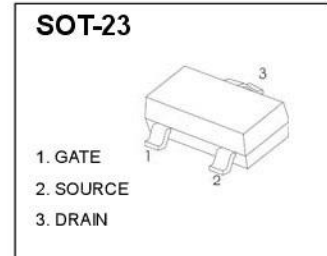




H3415 P-Channel 20-V(D-S) MOSFET

| $V_{(BR)DSS}$ | $R_{DS(on)MAX}$ | I_D |
|---------------|-----------------|-------|
| -20V | 50mΩ@-4.5V | -4A |
| | 60mΩ@-2.5V | |
| | 100mΩ@-1.8V | |



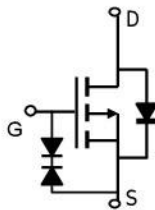
FEATURE

- Excellent $R_{DS(ON)}$, low gate charge, low gate voltages

APPLICATION

- Load switch and in PWM applications

Equivalent Circuit



Maximum ratings ($T_a=25^\circ\text{C}$ unless otherwise noted)

| Parameter | Symbol | Value | Unit |
|---|-----------------|------------|--------------------|
| Drain-Source Voltage | V_{DS} | -20 | V |
| Gate-Source Voltage | V_{GS} | ± 8 | |
| Continuous Drain Current ($t \leq 10s$) | I_D | -4.0 | A |
| Maximum Power Dissipation ($t \leq 10s$) | P_D | 0.35 | W |
| Thermal Resistance from Junction to Ambient | $R_{\theta JA}$ | 357 | $^\circ\text{C/W}$ |
| Operating Junction Temperature | T_J | 150 | $^\circ\text{C}$ |
| Storage Temperature | T_{STG} | -55 ~ +150 | $^\circ\text{C}$ |

MOSFET ELECTRICAL CHARACTERISTICS

$T_a=25^\circ\text{C}$ unless otherwise specified

| Parameter | Symbol | Test Condition | Min | Typ | Max | Units |
|---|---------------|--|------|-------|----------|----------|
| Static Parameters | | | | | | |
| Drain-source breakdown voltage | $V_{(BR)DSS}$ | $V_{GS} = 0V, I_D = -250\mu A$ | -20 | | | V |
| Gate threshold voltage | $V_{GS(th)}$ | $V_{DS} = V_{GS}, I_D = -250\mu A$ | -0.3 | -0.56 | -1 | |
| Gate-body leakage current | I_{GSS} | $V_{DS} = 0V, V_{GS} = \pm 8V$ | | | ± 10 | μA |
| | | $V_{DS} = 0V, V_{GS} = \pm 4.5V$ | | | ± 1 | |
| Zero gate voltage drain current | I_{DSS} | $V_{DS} = -16V, V_{GS} = 0V$ | | | -1 | |
| Drain-source on-state resistance(note1) | $R_{DS(on)}$ | $V_{GS} = -4.5V, I_D = -4A$ | | 0.037 | 0.050 | Ω |
| | | $V_{GS} = -2.5V, I_D = -4A$ | | 0.045 | 0.060 | |
| | | $V_{GS} = -1.8V, I_D = -2A$ | | 0.080 | 0.100 | |
| Forward transconductance(note2) | g_{FS} | $V_{DS} = -5V, I_D = -4A$ | 8 | | | S |
| Body diode voltage(note2) | V_{SD} | $I_S = -1A, V_{GS} = 0V$ | | | -1 | V |
| Dynamic Parameters (note3) | | | | | | |
| Input capacitance | C_{iss} | $V_{DS} = -10V, V_{GS} = 0V, f = 1MHz$ | | 1450 | | μF |
| Output capacitance | C_{oss} | | | 205 | | |
| Reverse transfer capacitance | C_{rss} | | | 160 | | |
| Gate resistance | R_g | $V_{DS} = 0V, V_{GS} = 0V, f = 1MHz$ | | 6.5 | | Ω |
| Switching Parameters | | | | | | |
| Total gate charge | Q_g | $V_{DS} = -10V, V_{GS} = -4.5V, I_D = -4A$ | | 17.2 | | nC |
| Gate-Source charge | Q_{gs} | | | 1.3 | | |
| Gate-drain charge | Q_{gd} | | | 4.5 | | |
| Turn-on delay time (note3) | $t_{d(on)}$ | $V_{DS} = -10V, V_{GS} = -4.5V$ $R_{GEN} = 3\Omega, R_L = 2.5\Omega,$ | | 9.5 | | ns |
| Turn-on rise time(note3) | t_r | | | 17 | | |
| Turn-off delay time(note3) | $t_{d(off)}$ | | | 94 | | |
| Turn-off fall time(note3) | t_f | | | 35 | | |

Notes:

1. Repetitive rating, pulse width limited by junction temperature.
2. Pulse Test : Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
3. These parameters have no way to verify.

Typical Characteristics

