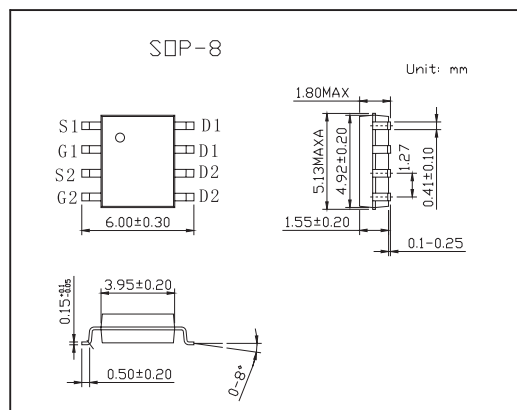
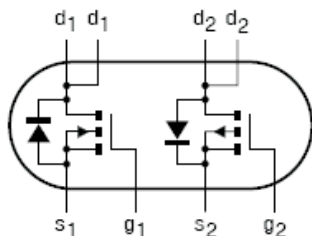


KHC21025

Features

- High-speed switching
- No secondary breakdown
- Very low on-resistance.



Absolute Maximum Ratings $T_a = 25^\circ\text{C}$

| Parameter | Symbol | N-Channel | P-Channel | Unit |
|--|---------------|------------|-----------|------------------|
| Drain to Source Voltage | V_{DSS} | 30 | -30 | V |
| Gate to Source Voltage | V_{GS} | ± 20 | ± 20 | V |
| Drain Current $T_s \leq 80^\circ\text{C}$ | I_D | 3.5 | -2.3 | A |
| peak drain current *1 | I_{DM} | 14 | -10 | A |
| total power dissipation $T_s = 80^\circ\text{C}; *2$ $T_{amb} = 25^\circ\text{C}; *3$ $T_{amb} = 25^\circ\text{C}; *4$ $T_{amb} = 25^\circ\text{C}; *5$ | P_{tot} | 2 | | W |
| | | 2 | | |
| | | 1 | | |
| | | 1.3 | | |
| storage temperature | T_{stg} | -65 to 150 | | $^\circ\text{C}$ |
| operating junction temperature | T_j | 150 | | $^\circ\text{C}$ |
| source current (DC) $T_s \leq 80^\circ\text{C}$ | I_S | 1.5 | -1.25 | A |
| peak pulsed source current *1 | I_{SM} | 6 | -5 | A |
| thermal resistance from junction to soldering point | $R_{th\ j-s}$ | 35 | | K/W |

*1 Pulse width and duty cycle limited by maximum junction temperature.

*2 Maximum permissible dissipation per MOS transistor. Both devices may be loaded up to 2 W at the same time.

*3 Maximum permissible dissipation per MOS transistor. Device mounted on printed-circuit board with an $R_{th\ a-tp}$ (ambient to tie-point) of 27.5 K/W.

*4 Maximum permissible dissipation per MOS transistor. Device mounted on printed-circuit board with an $R_{th\ a-tp}$ (ambient to tie-point) of 90 K/W.

*5 Maximum permissible dissipation if only one MOS transistor dissipates. Device mounted on printed-circuit board with an $R_{th\ a-tp}$ (ambient to tie-point) of 90 K/W.

KHC21025

■ Electrical Characteristics Ta = 25°C

| Parameter | Symbol | Testconditions | Type | Min | Typ | Max | Unit |
|------------------------------------|----------------------|--|------|------|------|------|------|
| drain-source breakdown voltage | V _{(BR)DSS} | V _{GS} = 0; I _D = 10 mA | N-Ch | 30 | | | V |
| | | V _{GS} = 0; I _D = -10 mA | P-Ch | -30 | | | V |
| gate-source threshold voltage | V _{Gsth} | V _{GS} = V _{DS} ; I _D = 1 mA | N-Ch | 1 | | 2.8 | V |
| | | V _{GS} = V _{DS} ; I _D = -1 mA | P-Ch | -1 | | -2.8 | V |
| drain-source leakage current | I _{DSS} | V _{GS} = 0; V _{DS} = 24 V | N-Ch | | | 100 | nA |
| | | V _{GS} = 0; V _{DS} = -24 V | P-Ch | | | -100 | nA |
| gate leakage current | I _{GSS} | V _{GS} = ±20 V; V _{DS} = 0 | N-Ch | | | ±100 | nA |
| | | | P-Ch | | | ±100 | nA |
| on-state drain current | I _{Don} | V _{GS} = 10 V; V _{DS} = 1 V | N-Ch | 3.5 | | | A |
| | | V _{GS} = 4.5 V; V _{DS} = 5 V | | 2 | | | A |
| | | V _{GS} = -10 V; V _{DS} = -1 V | P-Ch | -2.3 | | | A |
| | | V _{GS} = -4.5 V; V _{DS} = -5 V | | -1 | | | A |
| drain-source on-state resistance | R _{DSon} | V _{GS} = 4.5 V; I _D = 1 A | N-Ch | | 0.11 | 0.2 | Ω |
| | | V _{GS} = 10 V; I _D = 2.2 A | | | 0.08 | 0.1 | Ω |
| | | V _{GS} = -4.5 V; I _D = -0.5 A | P-Ch | | 0.33 | 0.4 | Ω |
| | | V _{GS} = -10 V; I _D = -1 A | | | 0.22 | 0.25 | Ω |
| forward transfer admittance | y _{fs} | V _{DS} = 20 V; I _D = 2.2 A | N-Ch | 2 | 4.5 | | S |
| | | V _{DS} = -20 V; I _D = -1 A | P-Ch | 1 | 2 | | S |
| input capacitance | C _{iss} | V _{GS} = 0; V _{DS} = 20 V; f = 1 MHz | N-Ch | | 250 | | pF |
| | | V _{GS} = 0; V _{DS} = -20 V; f = 1 MHz | P-Ch | | 250 | | pF |
| output capacitance | C _{oss} | V _{GS} = 0; V _{DS} = 20 V; f = 1 MHz | N-Ch | | 140 | | pF |
| | | V _{GS} = 0; V _{DS} = -20 V; f = 1 MHz | P-Ch | | 140 | | pF |
| reverse transfer capacitance | C _{rss} | V _{GS} = 0; V _{DS} = 20 V; f = 1 MHz | N-Ch | | 50 | | pF |
| | | V _{GS} = 0; V _{DS} = -20 V; f = 1 MHz | P-Ch | | 50 | | pF |
| total gate charge | Q _G | V _{GS} = 10 V; V _{DS} = 15 V; I _D = 2.3 A | N-Ch | | 10 | 30 | nC |
| | | V _{GS} = -10 V; V _{DS} = -15 V; I _D = -2.3 A | P-Ch | | 10 | 25 | nC |
| gate-source charge | Q _{GS} | V _{GS} = 10 V; V _{DS} = 15 V; I _D = 2.3 A | N-Ch | | 1 | | nC |
| | | V _{GS} = -10 V; V _{DS} = -15 V; I _D = -2.3 A | P-Ch | | 1 | | nC |
| gate-drain charge | Q _{GD} | V _{GS} = 10 V; V _{DS} = 15 V; I _D = 2.3 A | N-Ch | | 2.5 | | nC |
| | | V _{GS} = -10 V; V _{DS} = -15 V; I _D = -2.3 A | P-Ch | | 3 | | nC |
| turn-on time | t _{on} | V _{GS} = 0 to 10 V; V _{DD} = 20V; I _D = 1A; R _L = 20 Ω | N-Ch | | 15 | 40 | ns |
| | | V _{GS} = 0 to -10V; V _{DD} = -20V; I _D = -1 A; R _L = 20 Ω | P-Ch | | 20 | 80 | ns |
| turn-off time | t _{off} | V _{GS} = 10 to 0 V; V _{DD} = 20V; I _D = 1A; R _L = 20 Ω | N-Ch | | 25 | 140 | ns |
| | | V _{GS} = -10 to 0 V; V _{DD} = -20V; I _D = -1 A; R _L = 20 Ω | P-Ch | | 50 | 140 | ns |
| source-drain diode forward voltage | V _{SD} | V _{GD} = 0; I _S = 1.25 A | N-Ch | | | 1.2 | V |
| | | V _{GD} = 0; I _S = -1.25 A | P-Ch | | | -1.6 | V |
| reverse recovery time | t _{rr} | I _S = 1.25 A; di/dt = 100 A/μs | N-Ch | | 35 | 100 | ns |
| | | I _S = -1.25 A; di/dt = 100 A/μs | P-Ch | | 150 | 200 | ns |