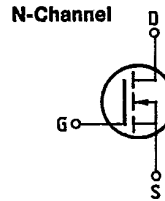


SIEMENS AKTIENGESELLSCHAFT

Main ratings

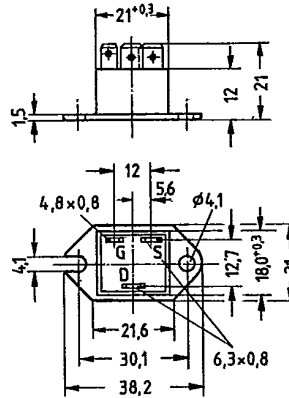
Drain-source voltage $V_{DS} = 500\text{ V}$
 Continuous drain current $I_D = 3,9\text{ A}$
 Drain-source on-resistance $R_{DS(on)} = 2,0\ \Omega$



Description SIPMOS, N-channel, enhancement mode
Case Plastic package TO 238 AA with insulated metal base plate in accordance with JEDEC, compatible with TO 3; AMP plug-in connections.
 Approx. weight 21 g

| | |
|----------|-----------------|
| Type | Ordering code |
| BUZ 47 A | C67078-A1604-A2 |

Not for new design



Dimensions in mm

Maximum ratings

| Description | Symbols | Ratings | Units | Conditions |
|---|--------------------|-------------|-------------------|----------------------------------|
| Drain-source voltage | V_{DS} | 500 | V | |
| Drain-gate voltage | V_{DGR} | 500 | V | $R_{GS} = 20\text{ k}\Omega$ |
| Continuous drain current | I_D | 3,9 | A | $T_C = 30\text{ }^\circ\text{C}$ |
| Pulsed drain current | $I_{D\text{puls}}$ | 15 | A | $T_C = 25\text{ }^\circ\text{C}$ |
| Gate-source voltage | V_{GS} | ± 20 | V | |
| Max. power dissipation | P_D | 70 | W | $T_C = 25\text{ }^\circ\text{C}$ |
| Operating and storage temperature range | T_J | -40... +150 | $^\circ\text{C}$ | |
| Isolation test voltage | V_{is} | 3500 | Vdc ¹⁾ | $t = 1\text{ min}$ |
| DIN humidity category | | F | - | DIN 40040 |
| IEC climatic category | | 40/150/56 | - | DIN IEC 68-1 |

Thermal resistance

| | | | |
|-------------|-------------------|-------------|-----|
| Chlp - case | $R_{th\text{JC}}$ | $\leq 1,78$ | K/W |
|-------------|-------------------|-------------|-----|

¹⁾ Isolation test voltage between drain and base plate referred to standard climate 23/50 in accordance with DIN 50014.

Electrical characteristics(at $T_j = 25^\circ\text{C}$ unless otherwise specified)

| Description | Symbol | Characteristics | | | Unit | Conditions |
|-------------|--------|-----------------|------|------|------|------------|
| | | min. | typ. | max. | | |

Static ratings

| | | | | | | |
|---------------------------------|---------------|-----|-----|-----|----------|---|
| Drain-source breakdown voltage | $V_{(BR)DSS}$ | 500 | — | — | V | $V_{GS} = 0V$ $I_D = 0,25mA$ |
| Gate threshold voltage | $V_{GS(th)}$ | 2,1 | 3,0 | 4,0 | | $V_{DS} = V_{GS}$ $I_D = 1mA$ |
| Zero gate voltage drain current | I_{DSS} | — | 20 | 250 | μA | $T_j = 25^\circ C$ $T_j = 125^\circ C$ $V_{DS} = 500V$ $V_{GS} = 0V$ |
| Gate-source leakage current | I_{GSS} | — | 10 | 100 | nA | $V_{GS} = 20V$ $V_{DS} = 0V$ |
| Drain-source on-resistance | $R_{DS(on)}$ | — | 1,6 | 2,0 | Ω | $V_{GS} = 10V$ $I_D = 2,5A$ |

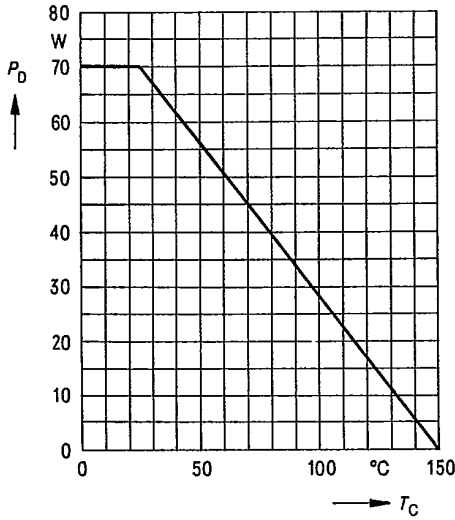
Dynamic ratings

| | | | | | | |
|---|--------------|-----|-----|-----|----|---|
| Forward transconductance | g_{fs} | 1,5 | 2,5 | — | S | $V_{DS} = 25V$ $I_D = 2,5A$ |
| Input capacitance | C_{iss} | — | 1,5 | 2,0 | nF | $V_{GS} = 0V$ |
| Output capacitance | C_{oss} | — | 110 | 170 | pF | $V_{DS} = 25V$ $f = 1MHz$ |
| Reverse transfer capacitance | C_{rss} | — | 40 | 70 | | |
| Turn-on time t_{on} ($t_{on} = t_{d(on)} + t_r$) | $t_{d(on)}$ | — | 30 | 45 | ns | $V_{CC} = 30V$ $I_D = 2,5A$ $V_{GS} = 10V$ $R_{GS} = 50\Omega$ |
| | t_r | — | 40 | 60 | | |
| Turn-off time t_{off} ($t_{off} = t_{d(off)} + t_f$) | $t_{d(off)}$ | — | 110 | 140 | | |
| | t_f | — | 50 | 65 | | |

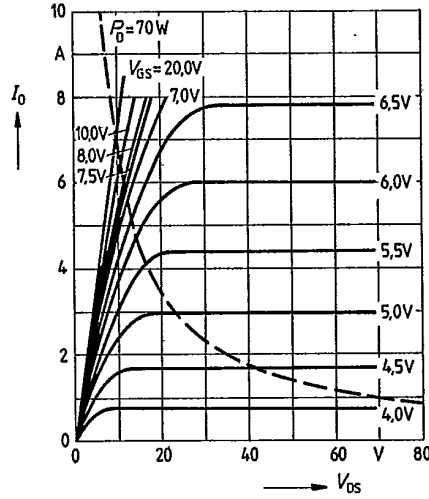
Reverse diode

| | | | | | | |
|----------------------------------|-----------|---|-----|-----|---------|--|
| Continuous reverse drain current | I_{DR} | — | — | 3,9 | A | $T_C = 25^\circ C$ |
| Pulsed reverse drain current | I_{DRM} | — | — | 15 | | |
| Diode forward on-voltage | V_{SD} | — | 1,1 | 1,4 | V | $I_F = 2 \times I_{DR}$ $V_{GS} = 0V, T_j = 25^\circ C$ |
| Reverse recovery time | t_{rr} | — | 1,2 | — | ns | $T_j = 25^\circ C$ |
| Reverse recovery charge | Q_{rr} | — | 6 | — | μC | $I_F = I_{DR}$ $dI_F/dt = 100A/\mu s$ $V_R = 100V$ |

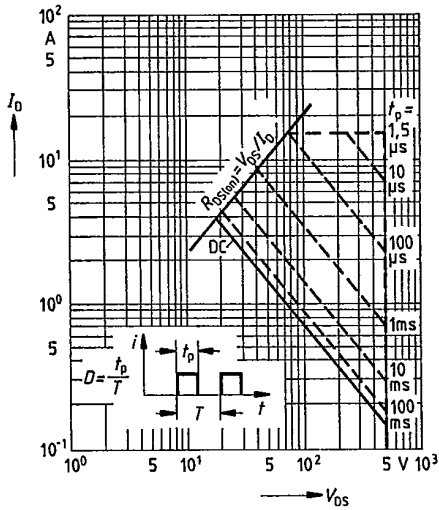
Power dissipation $P_D = f(T_C)$



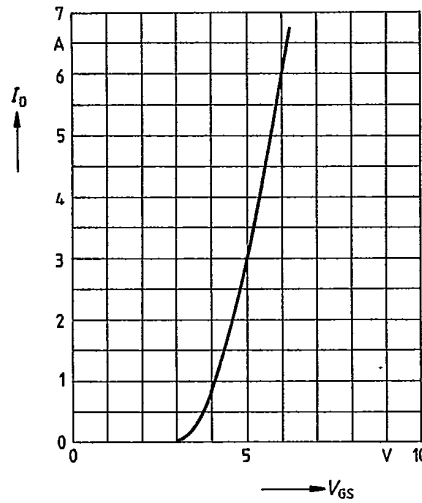
Typical output characteristics $I_D = f(V_{DS})$
parameter: 80 μ s pulse test,
 $T_I = 25^\circ\text{C}$



Safe operating area $I_D = f(V_{DS})$
parameter: $D = 0.01$, $T_C = 25^\circ\text{C}$

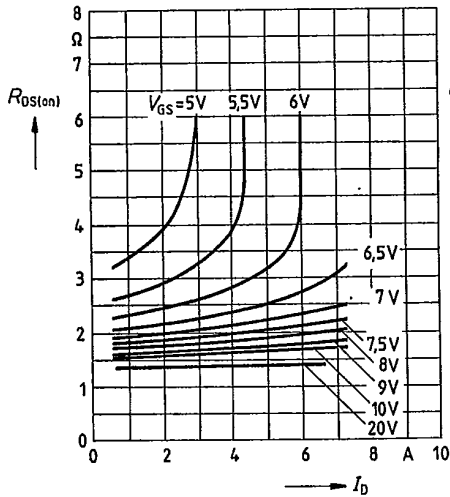


Typical transfer characteristic $I_D = f(V_{GS})$
parameter: 80 μ s pulse test,
 $V_{DS} = 25\text{V}$, $T_I = 25^\circ\text{C}$



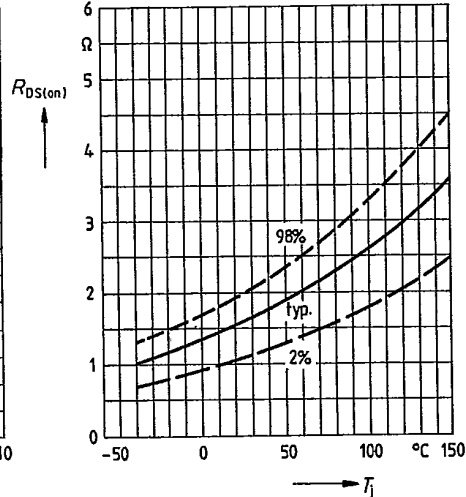
Typical drain-source on-state resistance

$R_{DS(on)} = f(I_D)$
parameter: $V_{GS} = 10V, T_j = 25^\circ C$



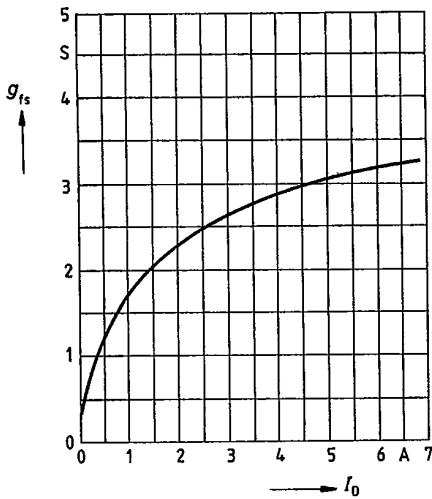
Drain-source on-state resistance

$R_{DS(on)} = f(T_j)$
parameter: $I_D = 2.5A, V_{GS} = 10V$
(spread)



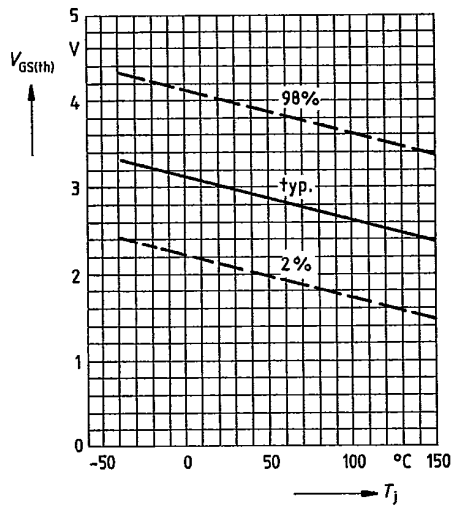
Typical transconductance $g_{fs} = f(I_D)$

parameter: 80 μs pulse test,
 $V_{DS} = 25V, T_j = 25^\circ C$

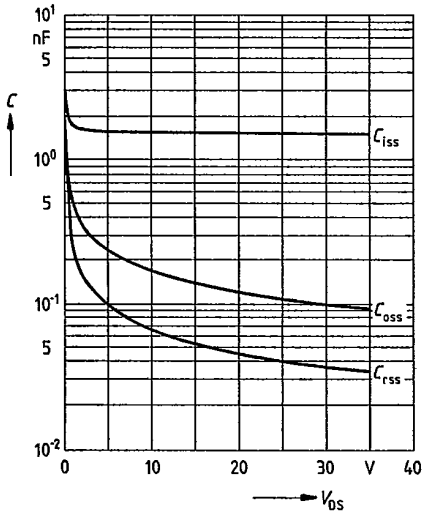


Gate threshold voltage $V_{GS(th)} = f(T_j)$

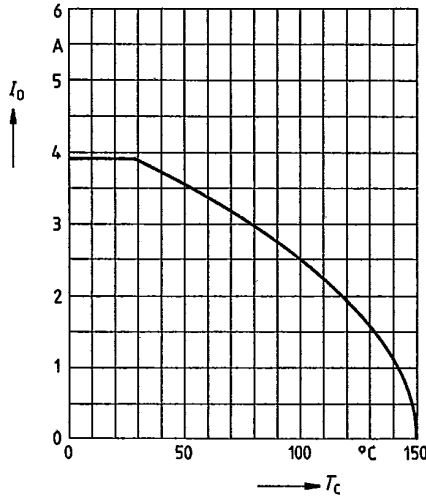
parameter: $V_{DS} = V_{GS}, I_D = 1mA$
(spread)



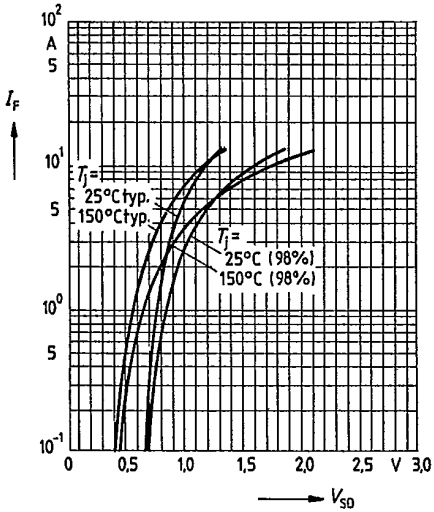
Typical capacitances $C = f(V_{DS})$
parameter: $V_{GS} = 0, f = 1\text{MHz}$



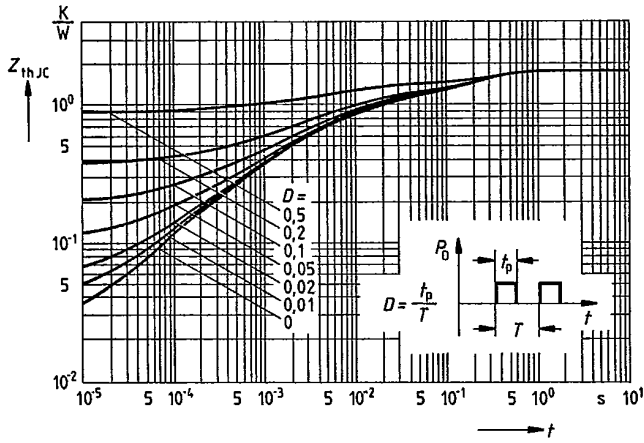
Continuous drain current $I_D = f(T_C)$
parameter: $V_{GS} \geq 10\text{V}$



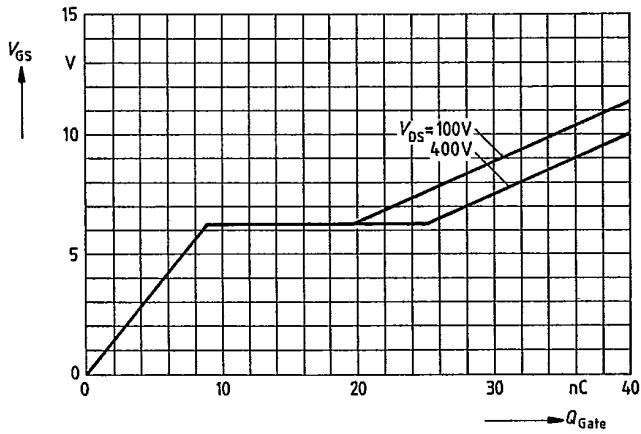
Forward characteristic of reverse diode
 $I_F = f(V_{SD})$
parameter: $T_j, t_p = 80 \mu\text{s}$
(spread)



Transient thermal impedance $Z_{thJC} = f(t)$
 parameter: $D = t_p/T$



Typical gate-charge $V_{GS} = f(Q_{Gate})$
 parameter: $I_D \text{ puls} = 6,8A$





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