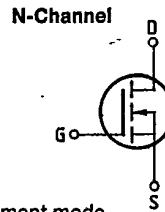


SIEMENS AKTIENGESELLSCHAFT

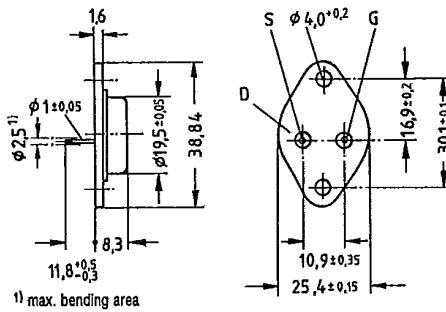
Main ratings

Drain-source voltage $V_{DS} = 400$ V
 Continuous drain current $I_D = 12,5$ A
 Drain-source on-resistance $R_{DS(on)} = 0,4 \Omega$



Description FREDET with fast-recovery reverse diode, N-channel, enhancement mode
Case Metal case 3A2 in accordance with DIN 41 872, or TO 204 AA (TO 3) in accordance with JEDEC. Approx. weight 12 g

| | |
|---------|-----------------|
| Type | Ordering code |
| BUZ 201 | C67078-A1101-A2 |



Dimensions in mm

Maximum ratings

| Description | Symbols | Ratings | Units | Conditions |
|---|--------------------|-------------|------------------|-----------------------------------|
| Drain-source voltage | V_{DS} | 400 | V | |
| Drain-gate voltage | V_{DGR} | 400 | V | $R_{GS} = 20 \text{ k}\Omega$ |
| Continuous drain current | I_D | 12,5 | A | $T_C = 30 \text{ }^\circ\text{C}$ |
| Pulsed drain current | I_{Dpuls} | 50 | A | $T_C = 25 \text{ }^\circ\text{C}$ |
| Gate-source voltage | V_{GS} | ± 20 | V | |
| Max. power dissipation | P_D | 125 | W | $T_C = 25 \text{ }^\circ\text{C}$ |
| Operating and storage temperature range | T_J T_{stg} | -55... +150 | $^\circ\text{C}$ | |
| DIN humidity category | | C | - | DIN 40 040 |
| IEC climatic category | | 55/150/56 | - | DIN IEC 68-1 |

Thermal resistance

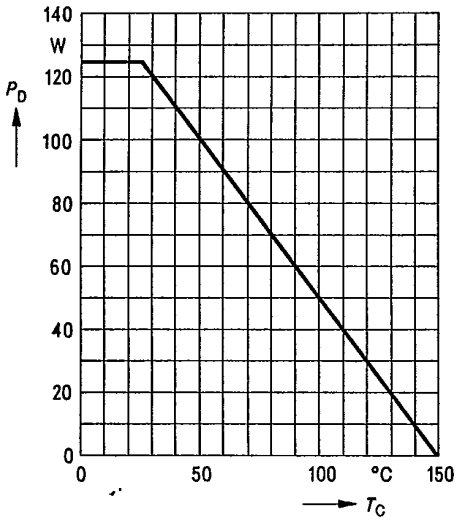
| | | | |
|----------------|------------|------------|-----|
| Chip - case | R_{thJC} | $\leq 1,0$ | K/W |
| Chip - ambient | R_{thJA} | ≤ 35 | K/W |

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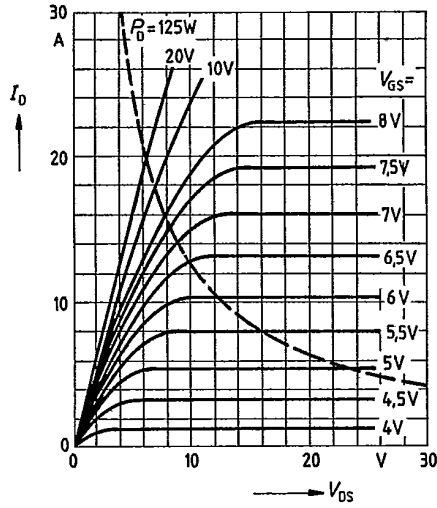
Electrical characteristics(at $T_j = 25^\circ\text{C}$ unless otherwise specified)

| Description | Symbol | Characteristics | | | Unit | Conditions |
|---|---------------|-----------------|------|------|----------|---|
| | | min. | typ. | max. | | |
| Static ratings | | | | | | |
| Drain-source breakdown voltage | $V_{(BR)DSS}$ | 400 | — | — | 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 | $T_j = 25^\circ\text{C}$ $T_j = 125^\circ\text{C}$ $V_{DS} = 400V$ $V_{GS} = 0V$ |
| Gate-source leakage current | I_{GSS} | — | 10 | 100 | nA | $V_{GS} = 20V$ $V_{DS} = 0V$ |
| Drain-source on-resistance | $R_{DS(on)}$ | — | 0,35 | 0,40 | Ω | $V_{GS} = 10V$ $I_D = 8A$ |
| Dynamic ratings | | | | | | |
| Forward transconductance | g_{fs} | 3,3 | 5,2 | — | S | $V_{DS} = 25V$ $I_D = 8A$ |
| Input capacitance | C_{iss} | — | 3,8 | 4,9 | nF | $V_{GS} = 0V$ |
| Output capacitance | C_{oss} | — | 300 | 500 | pF | $V_{DS} = 25V$ $f = 1MHz$ |
| Reverse transfer capacitance | C_{rss} | — | 120 | 200 | | |
| Turn-on time t_{on} ($t_{on} = t_d(on) + t_r$) | $t_d(on)$ | — | 50 | 75 | ns | $V_{CC} = 30V$ $I_D = 2,9A$ $V_{GS} = 10V$ $R_{GS} = 50\Omega$ |
| | t_r | — | 80 | 120 | | |
| Turn-off time t_{off} ($t_{off} = t_d(off) + t_f$) | $t_d(off)$ | — | 330 | 430 | | |
| | t_f | — | 110 | 140 | | |
| Fast-recovery reverse diode | | | | | | |
| Continuous reverse drain current | I_{DR} | — | — | 12,5 | A | $T_C = 25^\circ\text{C}$ |
| Pulsed reverse drain current | I_{DRM} | — | — | 50 | | |
| Diode forward on-voltage | V_{SD} | — | 1,3 | 1,7 | V | $I_F = 2 \times I_{DR}$ $V_{GS} = 0V, T_j = 25^\circ\text{C}$ |
| Reverse recovery time | t_{rr} | — | 180 | 250 | ns | $T_j = 25^\circ\text{C}$ |
| | | — | 220 | 300 | | $T_j = 150^\circ\text{C}$ |
| Reverse recovery charge | Q_{rr} | — | 0,65 | 1,2 | μC | $T_j = 25^\circ\text{C}$ |
| | | — | 2,6 | 5,0 | | $T_j = 150^\circ\text{C}$ |
| Repetitive peak reverse current | I_{RRM} | — | — | — | A | $T_j = 25^\circ\text{C}$ |
| | | — | 15 | — | | $T_j = 150^\circ\text{C}$ |

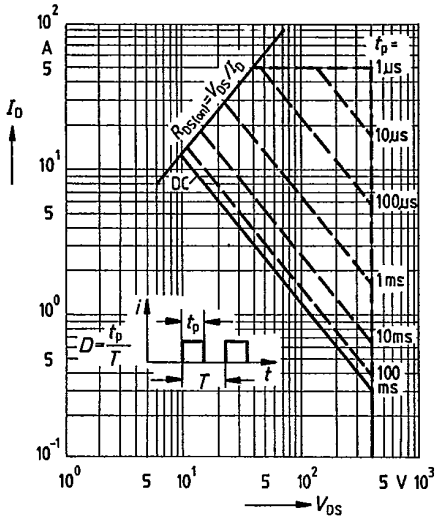
Power dissipation $P_D = f(T_C)$



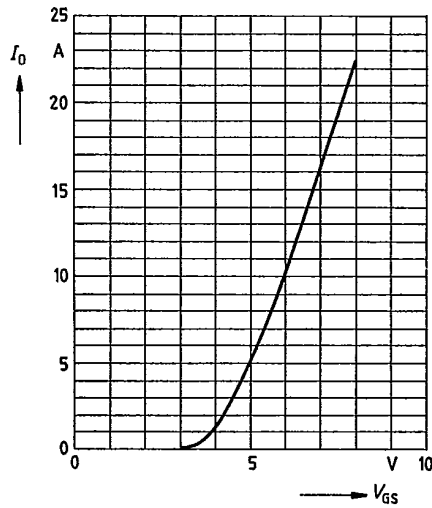
Typical output characteristics $I_D = f(V_{DS})$
 parameter: 80 μ s pulse test,
 $T_J = 25^\circ\text{C}$



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

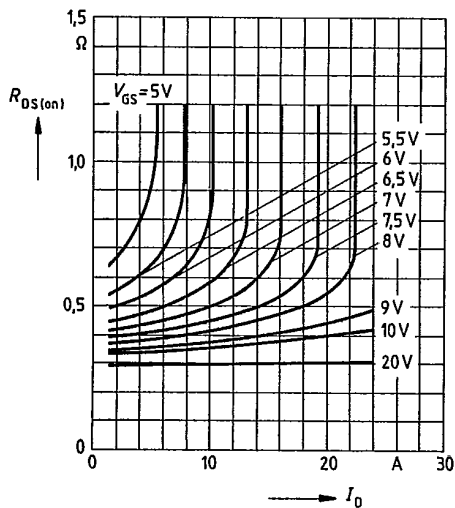


Typical transfer characteristic $I_D = f(V_{GS})$
 parameter: 80 μ s pulse test,
 $V_{DS} = 25\text{V}$, $T_J = 25^\circ\text{C}$



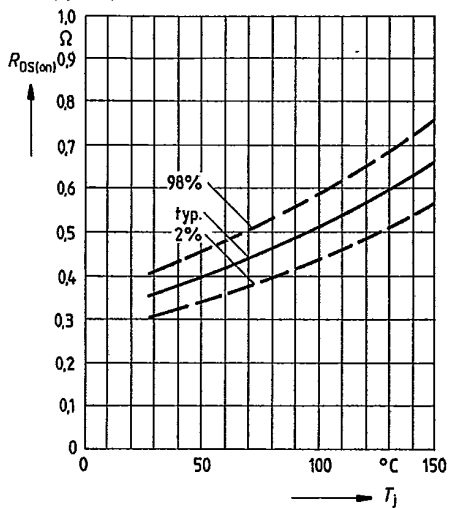
Typical drain-source on-state resistance

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



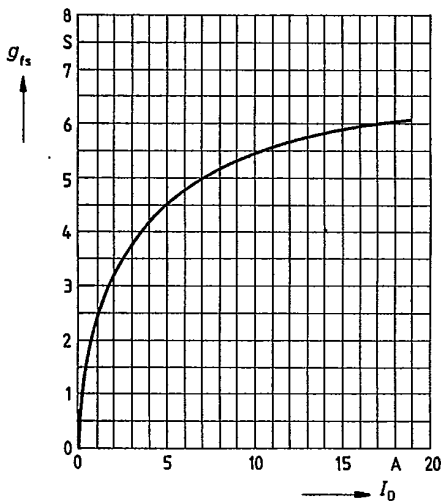
Drain-source on-state resistance

$R_{DS(on)} = f(T_j)$
parameter: $I_D = 4.2\text{A}, V_{GS} = 10\text{V}$
(spread)



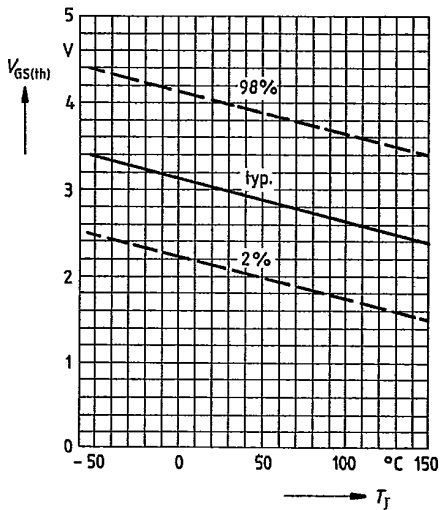
Typical transconductance $g_{fs} = f(I_D)$

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

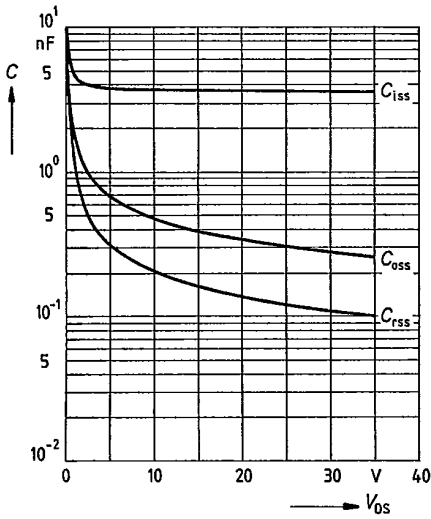


Gate threshold voltage $V_{GS(th)} = f(T_j)$

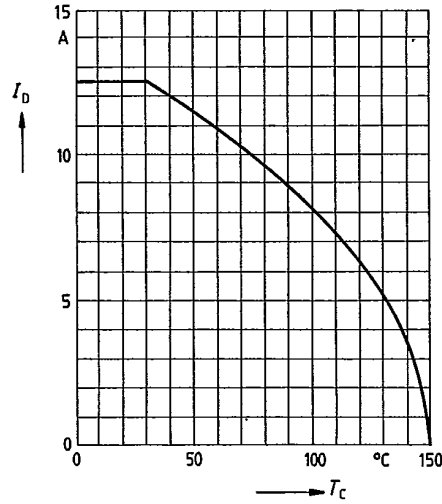
parameter: $V_{DS} = V_{GS}, I_D = 1\text{mA}$
(spread)



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

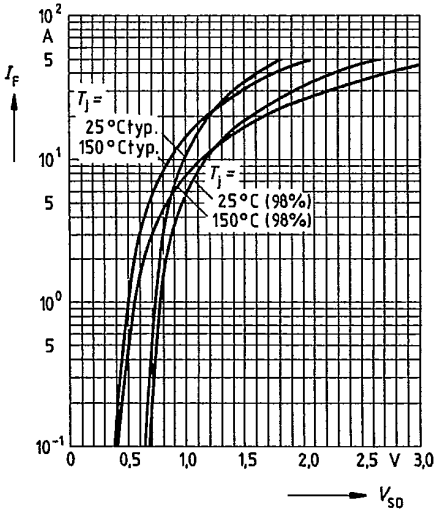


Continuous drain current $I_D = f(T_C)$
parameter: $V_{GS} \geq 10\text{V}$



Forward characteristic of reverse diode

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

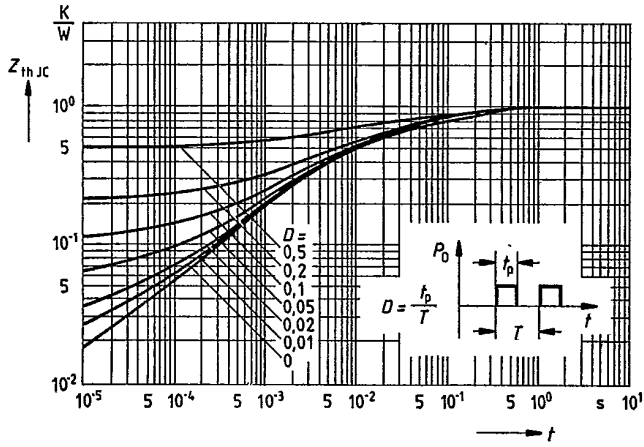


590

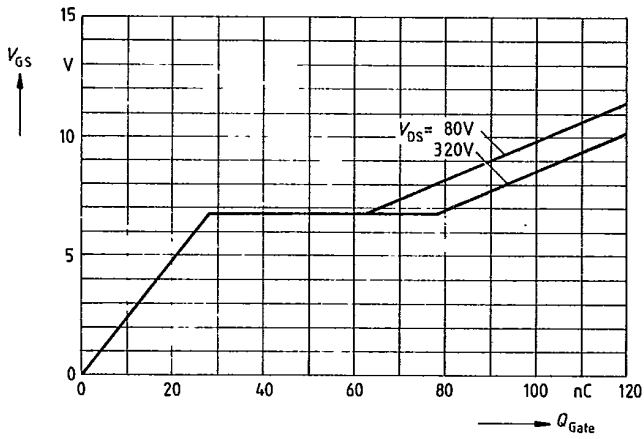
1172

G-05

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



Typical gate-charge $V_{GS} = f(Q_{Gate})$
 parameter: $I_{D\ puls} = 17,3A$





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