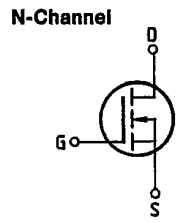


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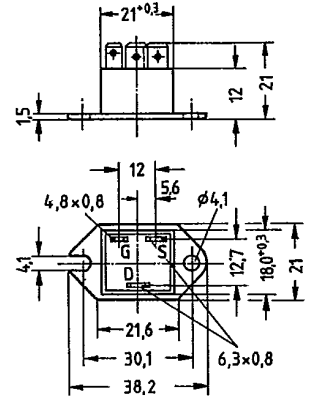
Main ratings

Drain-source voltage  $V_{DS} = 1000 \text{ V}$   
 Continuous drain current  $I_D = 3,6 \text{ A}$   
 Drain-source on-resistance  $R_{DS(on)} = 2,6 \Omega$



**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 58 A | C67078-A1607-A3 |



Dimensions in mm

Maximum ratings

| Description                             | Symbols            | Ratings          | Units             | Conditions                        |
|---|--------------------|------------------|-------------------|-----------------------------------|
| Drain-source voltage                    | $V_{DS}$           | 1000             | V                 |                                   |
| Drain-gate voltage                      | $V_{DGR}$          | 1000             | V                 | $R_{GS} = 20 \text{ k}\Omega$     |
| Continuous drain current                | $I_D$              | 3,6              | A                 | $T_C = 30 \text{ }^\circ\text{C}$ |
| Pulsed drain current                    | $I_{D\text{puls}}$ | 14               | A                 | $T_C = 25 \text{ }^\circ\text{C}$ |
| Gate-source voltage                     | $V_{GS}$           | $\pm 20$         | V                 |                                   |
| Max. power dissipation                  | $P_D$              | 83,3             | W                 | $T_C = 25 \text{ }^\circ\text{C}$ |
| Operating and storage temperature range | $T_J$              | $-40 \dots +150$ | $^\circ\text{C}$  |                                   |
| Isolation test voltage                  | $V_{is}$           | 3500             | Vdc <sup>1)</sup> | $t = 1 \text{ min}$               |
| DIN humidity category                   |                    | F                | -                 | DIN 40040                         |
| IEC climatic category                   |                    | 40/150/56        | -                 | DIN IEC 68-1                      |

Thermal resistance

|             |             |            |     |
|-------------|-------------|------------|-----|
| Chip - case | $R_{th,JC}$ | $\leq 1,5$ | K/W |
|-------------|-------------|------------|-----|

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

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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  | $V_{(BR)DSS}$ | 1000 | —   | —   | V        | $V_{GS} = 0V$<br>$I_D = 0,25mA$  |
| Gate threshold voltage          | $V_{GS(th)}$  | 2,1  | 3,0 | 4,0 |          | $V_{DS} = V_{GS}$<br>$I_D = 1mA$   |
| Zero gate voltage drain current | $I_{DSS}$     | —    | 20  | 250 | $\mu A$  | $T_j = 25^\circ\text{C}$<br>$T_j = 125^\circ\text{C}$<br>$V_{DS} = 1000V$<br>$V_{GS} = 0V$ |
| Gate-source leakage current     | $I_{GSS}$     | —    | 10  | 100 | nA       | $V_{GS} = 20V$<br>$V_{DS} = 0V$  |
| Drain-source on-resistance      | $R_{DS(on)}$  | —    | 2,3 | 2,6 | $\Omega$ | $V_{GS} = 10V$<br>$I_D = 2,6A$   |

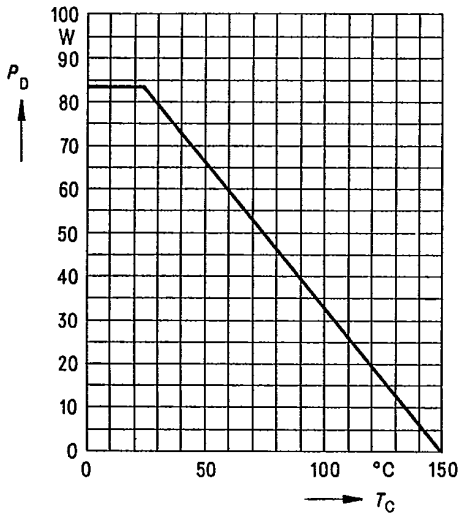
**Dynamic ratings**

|   |              |     |     |     |    |                                |
|---|--------------|-----|-----|-----|----|--------------------------------|
| Forward transconductance                                  | $g_{fs}$     | 1,4 | 3,5 | —   | S  | $V_{DS} = 25V$<br>$I_D = 2,6A$ |
| Input capacitance   | $C_{iss}$    | —   | 3,9 | 5,0 | nF | $V_{GS} = 0V$                  |
| Output capacitance  | $C_{oss}$    | —   | 180 | 300 | pF | $V_{DS} = 25V$<br>$f = 1MHz$   |
| Reverse transfer capacitance                              | $C_{rss}$    | —   | 70  | 120 |    |                                |
| Turn-on time $t_{on}$<br>( $t_{on} = t_d(on) + t_r$ )     | $t_{d(on)}$  | —   | 60  | 90  | ns | $V_{CC} = 30V$<br>$I_D = 2,4A$ |
|   | $t_r$        | —   | 90  | 140 |    | $V_{GS} = 10V$                 |
| Turn-off time $t_{off}$<br>( $t_{off} = t_d(off) + t_f$ ) | $t_{d(off)}$ | —   | 330 | 430 |    | $R_{GS} = 50\Omega$            |
|   | $t_f$        | —   | 110 | 140 |    |                                |

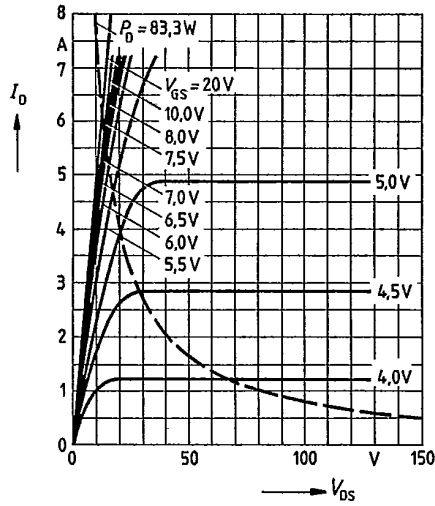
**Reverse diode**

|                                  |           |   |      |     |         |  |
|----------------------------------|-----------|---|------|-----|---------|--|
| Continuous reverse drain current | $I_{DR}$  | — | —    | 3,6 | A       | $T_C = 25^\circ\text{C}$   |
| Pulsed reverse drain current     | $I_{DRM}$ | — | —    | 14  |         |  |
| Diode forward on-voltage         | $V_{SD}$  | — | 1,1  | 1,4 | V       | $I_F = 2 \times I_{DR}$<br>$V_{GS} = 0V, T_j = 25^\circ\text{C}$ |
| Reverse recovery time            | $t_{rr}$  | — | 2000 | —   | ns      | $T_j = 25^\circ\text{C}$   |
| Reverse recovery charge          | $Q_{rr}$  | — | 30   | —   | $\mu C$ | $I_F = I_{DR}$<br>$dI_F/dt = 100A/\mu s$<br>$V_R = 100V$         |

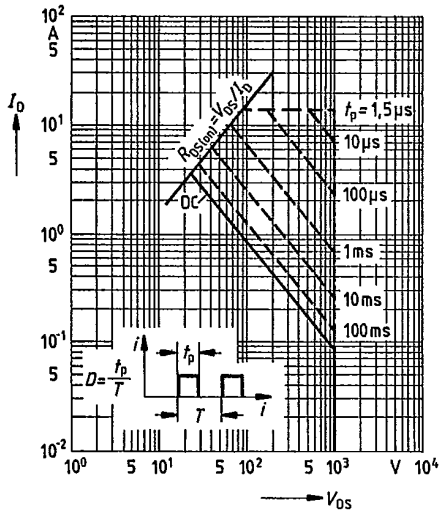
Power dissipation  $P_D = f(T_C)$



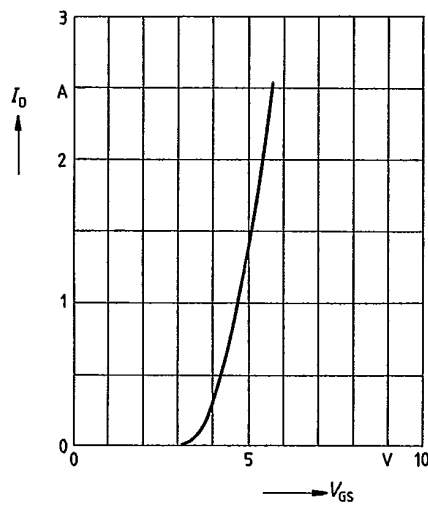
Typical output characteristics  $I_D = f(V_{DS})$   
parameter: 80  $\mu$ s pulse test,  
 $T_J = 25^\circ\text{C}$



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

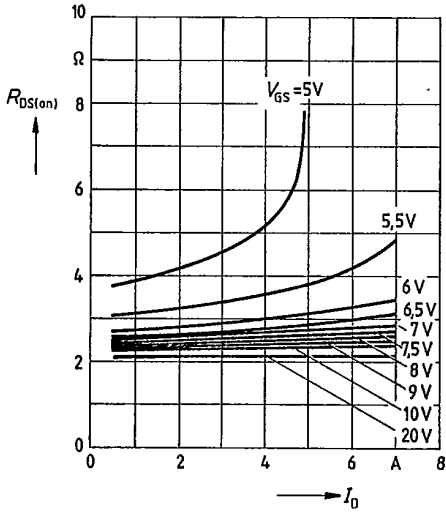


Typical transfer characteristic  $I_D = f(V_{GS})$   
parameter: 80  $\mu$ s pulse test,  
 $V_{DS} = 25\text{V}$ ,  $T_J = 25^\circ\text{C}$



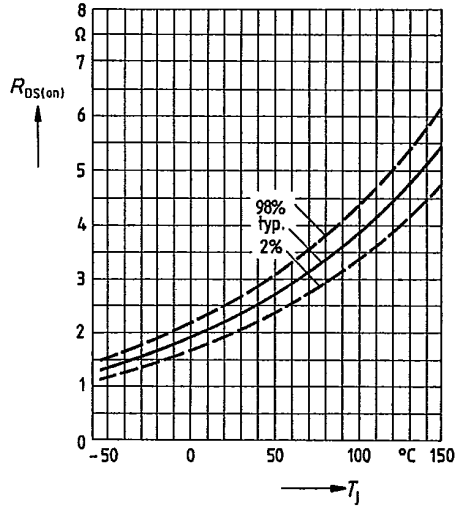
Typical drain-source on-state resistance

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



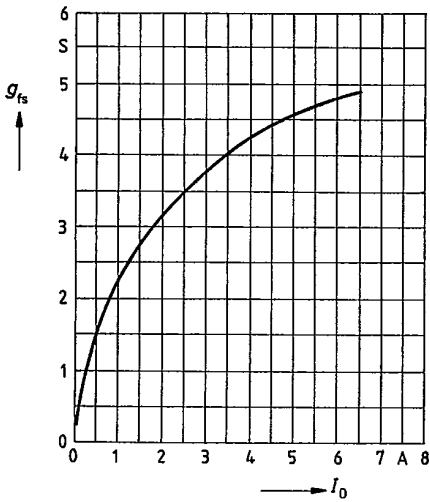
Drain-source on-state resistance

$R_{DS(on)} = f(T_J)$   
parameter:  $I_D = 2.8\text{A}$ ,  $V_{GS} = 10\text{V}$   
(spread)



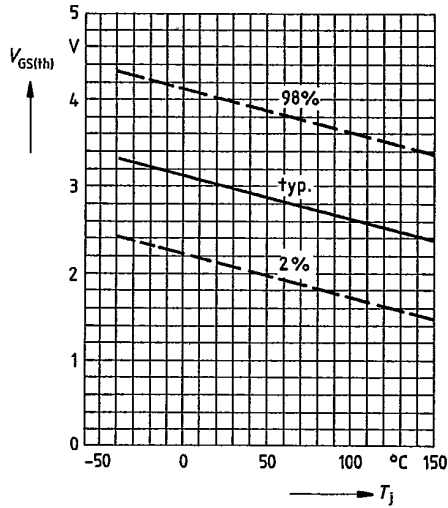
Typical transconductance  $g_{fs} = f(I_D)$

parameter: 80  $\mu\text{s}$  pulse test,  
 $V_{DS} = 25\text{V}$ ,  $T_J = 25^\circ\text{C}$



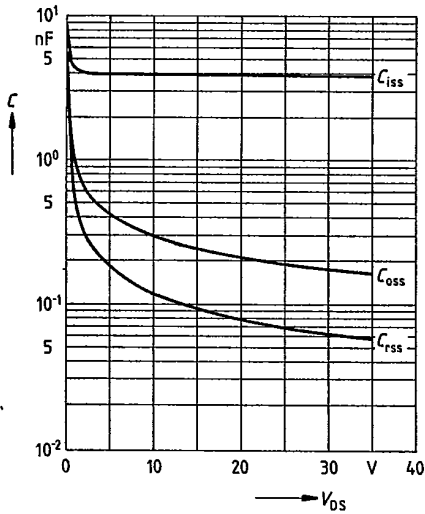
Gate threshold voltage  $V_{GS(th)} = f(T_J)$

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

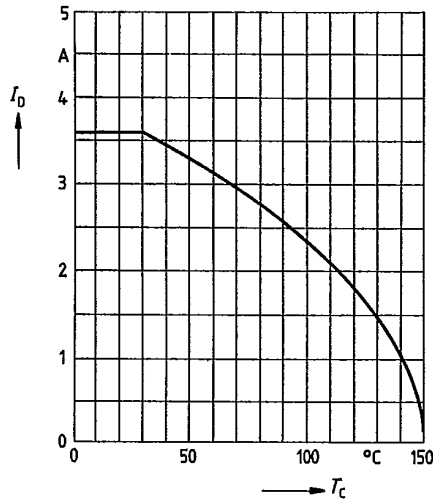


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Typical capacitances  $C = f(V_{DS})$   
 parameter:  $V_{GS} = 0, f = 1\text{MHz}$

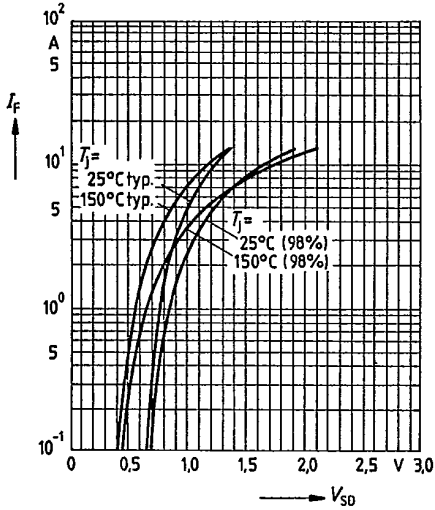


Continuous drain current  $I_D = f(T_C)$   
 parameter:  $V_{GS} \geq 10\text{V}$

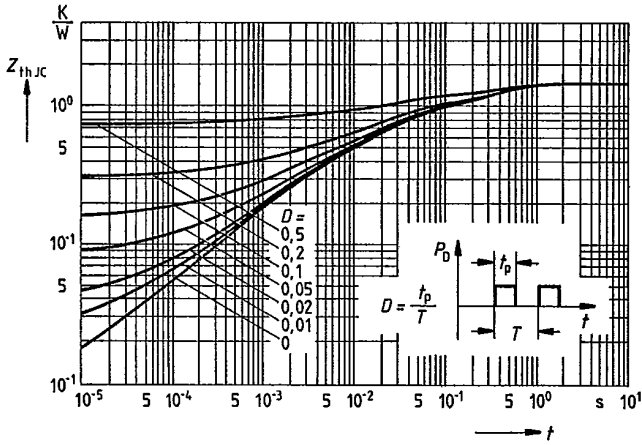


Forward characteristic of reverse diode

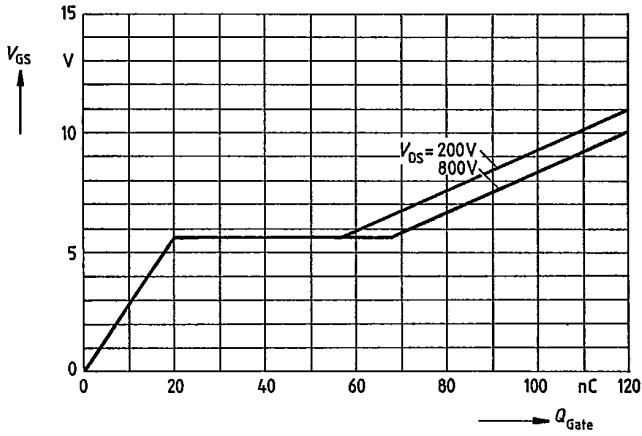
$I_F = f(V_{SD})$   
 parameter:  $T_j, t_p = 80 \mu\text{s}$   
 (spread)



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



Typical gate-charge  $V_{GS} = f(Q_{Gate})$   
 parameter:  $I_{D,puls} = 8A$



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