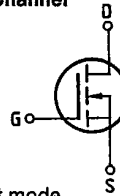


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Main ratings

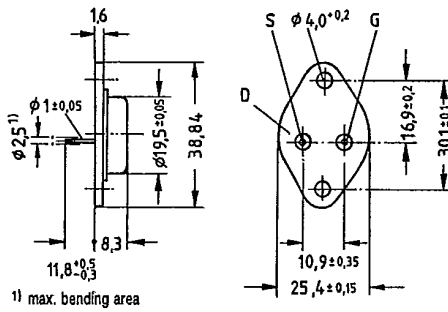
Drain-source voltage  $V_{DS} = 400$  V  
 Continuous drain current  $I_D = 11,5$  A  
 Drain-source on-resistance  $R_{DS(on)} = 0,5 \Omega$

N-Channel



Description FREDET with fast-recovery reverse diode, N-channel, enhancement mode  
 Case Metal case 3A2 in accordance with DIN 41872, or TO 204 AA (TO 3) in accordance with JEDEC.  
 Approx. weight 12 g

|         |                 |
|---------|-----------------|
| Type    | Ordering code   |
| BUZ 202 | C67078-A1107-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                | $I_D$              | 11,5             | A                | $T_C = 25 \text{ }^\circ\text{C}$ |
| Pulsed drain current                    | $I_{Dpulv}$        | 46               | A                | $T_C = 25 \text{ }^\circ\text{C}$ |
| Gate-source voltage                     | $V_{GS}$           | $\pm 20$         | V                |                                   |
| Max. power dissipation                  | $P_D$              | 125              | W                | $T_C = 25 \text{ }^\circ\text{C}$ |
| Operating and storage temperature range | $T_j$<br>$T_{stg}$ | $-55 \dots +150$ | $^\circ\text{C}$ |                                   |
| DIN humidity category                   | C                  |                  |                  | DIN 40040                         |
| IEC climatic category                   | 55/150/56          |                  |                  | DIN IEC 68-1                      |

Thermal resistance

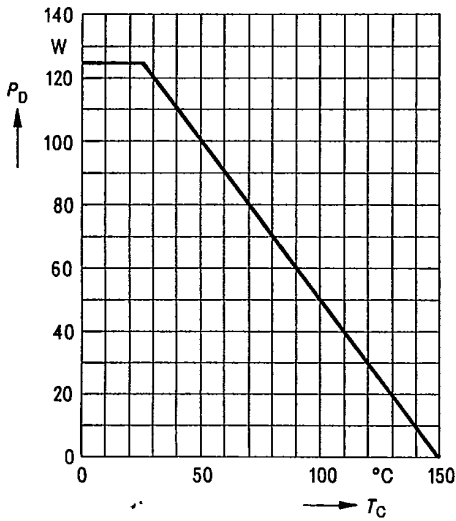
|                |            |            |     |
|----------------|------------|------------|-----|
| Chip - case    | $R_{thJC}$ | $\leq 1,0$ | K/W |
| Chip - ambient | $R_{thJA}$ | $\leq 35$  | K/W |

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

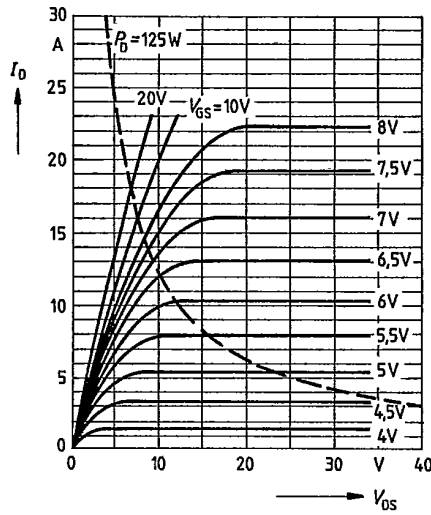
| Description   | Symbol        | Characteristics |      |      | Unit     | Conditions  |
|---|---------------|-----------------|------|------|----------|---|
|   |               | min.            | typ. | max. |          |   |
| <b>Static ratings</b>                                     |               |                 |      |      |          |   |
| Drain-source breakdown voltage                            | $V_{(BR)DSS}$ | 400             | —    | —    | 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>$V_{DS} = 400V$<br>$V_{GS} = 0V$                       |
| Gate-source leakage current                               | $I_{GSS}$     | —               | 10   | 100  | nA       | $V_{GS} = 20V$<br>$V_{DS} = 0V$   |
| Drain-source on-resistance                                | $R_{DS(on)}$  | —               | 0,45 | 0,5  | $\Omega$ | $V_{GS} = 10V$<br>$I_D = 8A$  |
| <b>Dynamic ratings</b>                                    |               |                 |      |      |          |   |
| Forward transconductance                                  | $g_{fs}$      | 3,3             | 5,2  | —    | S        | $V_{DS} = 25V$<br>$I_D = 8A$  |
| Input capacitance   | $C_{iss}$     | —               | 3,8  | 4,9  | nF       | $V_{GS} = 0V$   |
| Output capacitance  | $C_{oss}$     | —               | 300  | 500  | pF       | $V_{DS} = 25V$<br>$f = 1MHz$  |
| Reverse transfer capacitance                              | $C_{rss}$     | —               | 120  | 200  |          |   |
| Turn-on time $t_{on}$<br>( $t_{on} = t_d(on) + t_r$ )     | $t_d(on)$     | —               | 50   | 75   | ns       | $V_{CC} = 30V$<br>$I_D = 2,9A$<br>$V_{GS} = 10V$<br>$R_{GS} = 50\Omega$   |
|   | $t_r$         | —               | 80   | 120  |          |   |
| Turn-off time $t_{off}$<br>( $t_{off} = t_d(off) + t_f$ ) | $t_d(off)$    | —               | 330  | 430  |          |   |
|   | $t_f$         | —               | 110  | 140  |          |   |
| <b>Fast-recovery reverse diode</b>                        |               |                 |      |      |          |   |
| Continuous reverse drain current                          | $I_{DR}$      | —               | —    | 11,5 | A        | $T_C = 25^\circ\text{C}$  |
| Pulsed reverse drain current                              | $I_{DRM}$     | —               | —    | 46   |          |   |
| Diode forward on-voltage                                  | $V_{SD}$      | —               | 1,4  | 1,9  | V        | $I_F = 2 \times I_{DR}$<br>$V_{GS} = 0V, T_j = 25^\circ\text{C}$  |
| Reverse recovery time                                     | $t_{rr}$      | —               | 180  | 250  | ns       | $T_j = 25^\circ\text{C}$<br>$T_j = 150^\circ\text{C}$<br>$I_F = I_{DR}$<br>$di/dt = 100A/\mu s$<br>$V_R = 100V$ |
|   |               | —               | 220  | 300  |          |   |
| Reverse recovery charge                                   | $Q_{rr}$      | —               | 0,65 | 1,2  | $\mu C$  | $T_j = 25^\circ\text{C}$<br>$T_j = 150^\circ\text{C}$   |
|   |               | —               | 2,6  | 5,0  |          |   |
| Repetitive peak reverse current                           | $I_{RRM}$     | —               | —    | —    | A        | $T_j = 25^\circ\text{C}$<br>$T_j = 150^\circ\text{C}$   |
|   |               | —               | 15   | —    |          |   |

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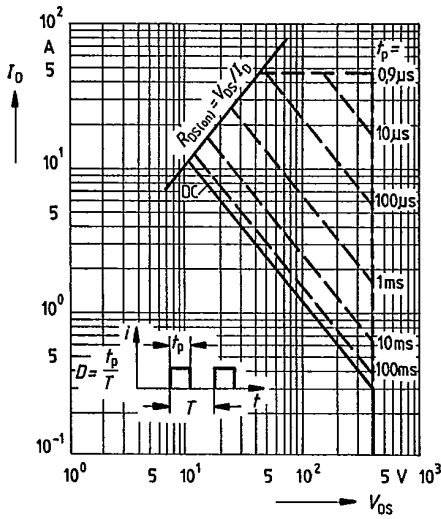
Power dissipation  $P_D = f(T_C)$



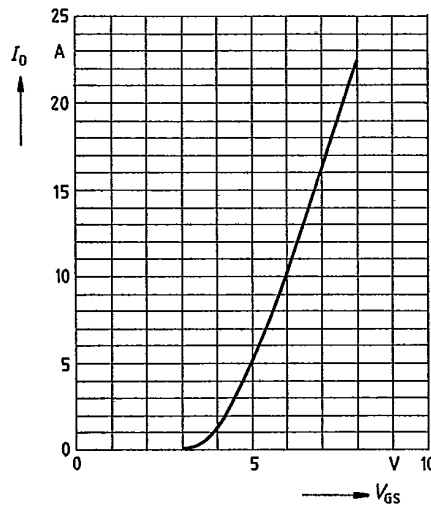
Typical output characteristics  $I_D = f(V_{DS})$   
parameter: 80  $\mu$ s pulse test,  
 $T_1 = 25^\circ\text{C}$



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



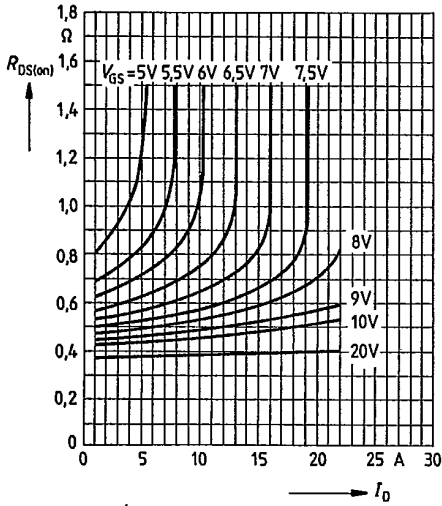
Typical transfer characteristic  $I_D = f(V_{GS})$   
parameter: 80  $\mu$ s pulse test,  
 $V_{DS} = 25\text{V}$ ,  $T_1 = 25^\circ\text{C}$



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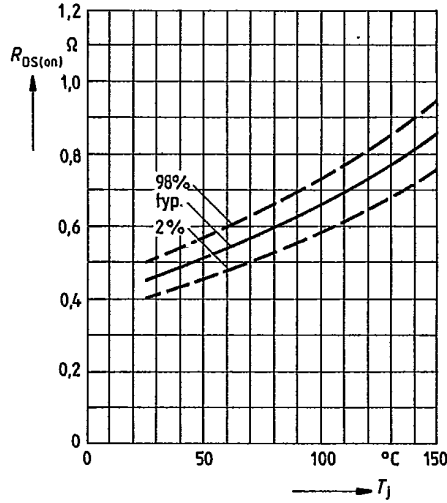
Typical drain-source on-state resistance

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



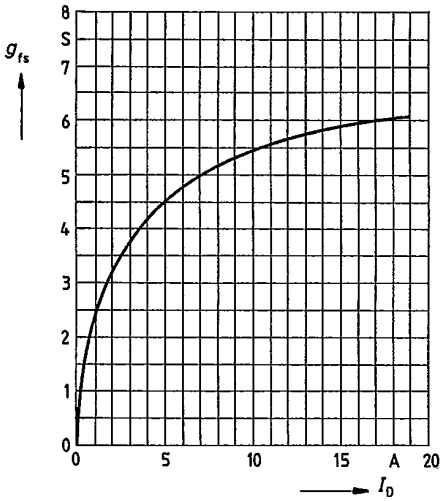
Drain-source on-state resistance

$R_{DS(on)} = f(T_J)$   
parameter:  $I_D = 8A$ ,  $V_{GS} = 10V$   
(spread)



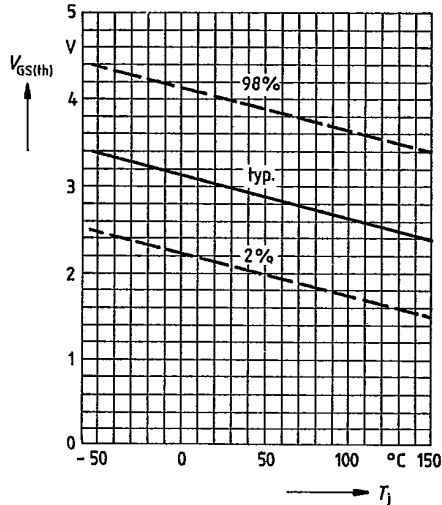
Typical transconductance  $g_{fs} = f(I_D)$

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

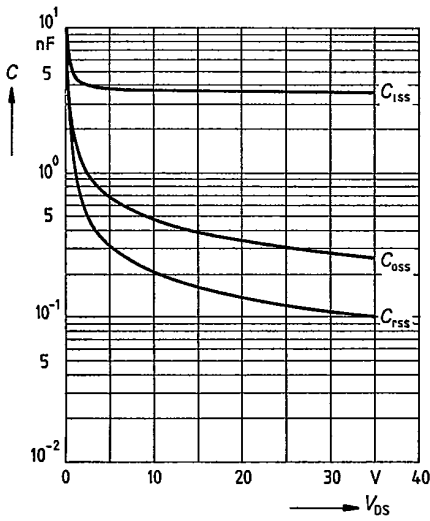


Gate threshold voltage  $V_{GS(th)} = f(T_J)$

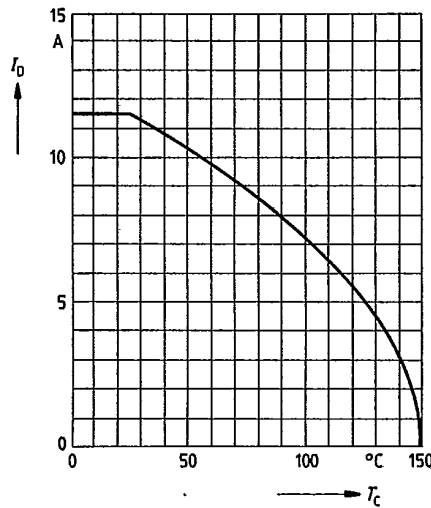
parameter:  $V_{DS} = V_{GS}$ ,  $I_D = 1mA$   
(spread)



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

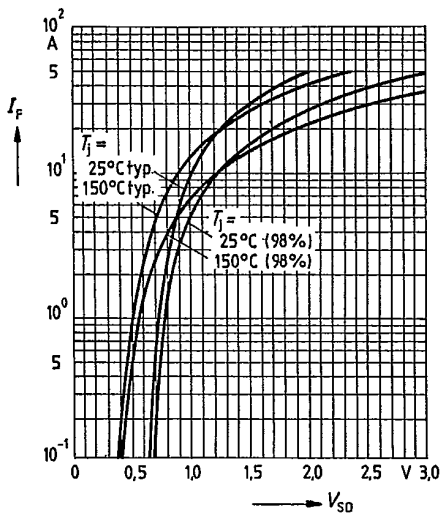


Continuous drain current  $I_D = f(T_C)$   
parameter:  $V_{GS} \geq 10\text{V}$



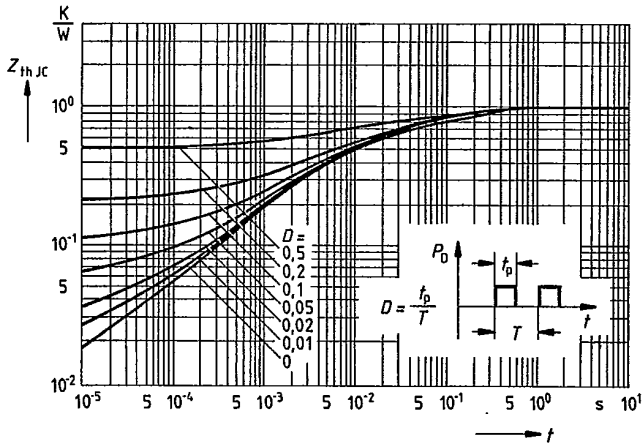
Forward characteristic of reverse diode

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



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



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

