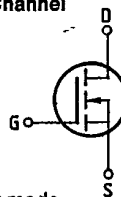


SIEMENS AKTIENGESELLSCHAFT

**Main ratings**

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

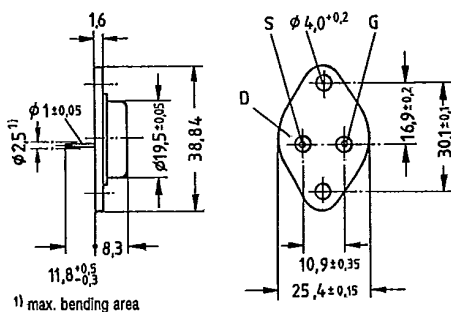
N-Channel



**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 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	$T_C = 30^\circ \text{C}$
Pulsed drain current	$I_{D(puls)}$	50	A	$T_C = 25^\circ \text{C}$
Gate-source voltage	$V_{GS}$	$\pm 20$	V	
Max. power dissipation	$P_D$	125	W	$T_C = 25^\circ \text{C}$
Operating and storage temperature range	$T_J$ $T_{stg}$	$-55 \dots +150$	$^\circ \text{C}$	
DIN humidity category		C	-	DIN 40040
IEC climatic category		55/150/56	-	DIN IEC 68-1

**Thermal resistance**

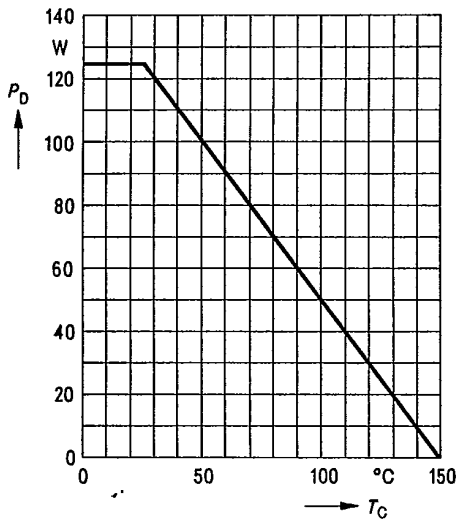
Chip - case	$R_{th JC}$	$\leq 1,0$	K/W
Chip - ambient	$R_{th JA}$	$\leq 35$	K/W

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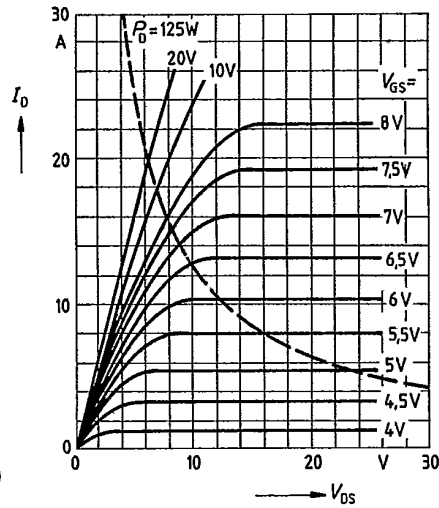
**Electrical characteristics**(at  $T_j = 25^\circ\text{C}$  unless otherwise specified)

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	$I_{DSS}$	—	20 100	250 1000	$\mu A$	$T_J = 25^{\circ}C$ $T_J = 125^{\circ}C$ $V_{DS} = 400V$ $V_{GS} = 0V$
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	$\Omega$	$V_{GS} = 10V$ $I_D = 8A$
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	$T_C = 25^{\circ}C$
Pulsed reverse drain current	$I_{DRM}$	—	—	50		
Diode forward on-voltage	$V_{SD}$	—	1,3	1,7	V	$I_F = 2 \times I_{DR}$ $V_{GS} = 0V, T_J = 25^{\circ}C$
Reverse recovery time	$t_{rr}$	—	180 220	250 300	ns	$T_J = 25^{\circ}C$ $= 150^{\circ}C$
Reverse recovery charge	$Q_{rr}$	—	0,65 2,6	1,2 5,0		$T_J = 25^{\circ}C$ $= 150^{\circ}C$
Repetitive peak reverse current	$I_{RRM}$	—	—	—	A	$T_J = 25^{\circ}C$ $= 150^{\circ}C$
		—	15	—		

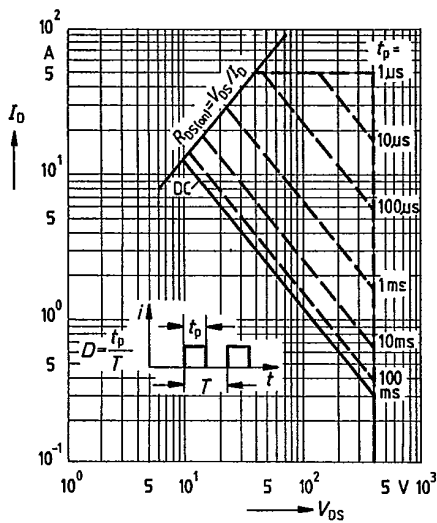
Power dissipation  $P_D = f(T_C)$



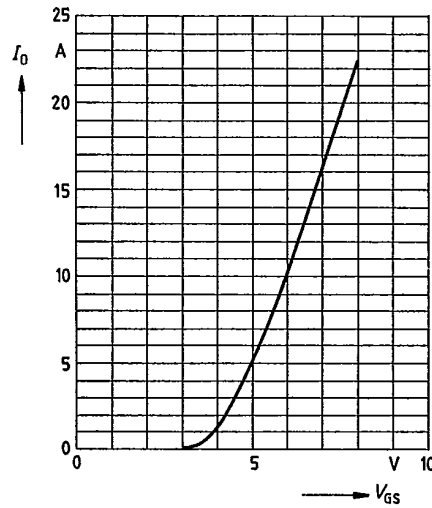
Typical output characteristics  $I_D = f(V_{DS})$   
parameter: 80  $\mu$ s pulse test,  
 $T_J = 25^\circ\text{C}$



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

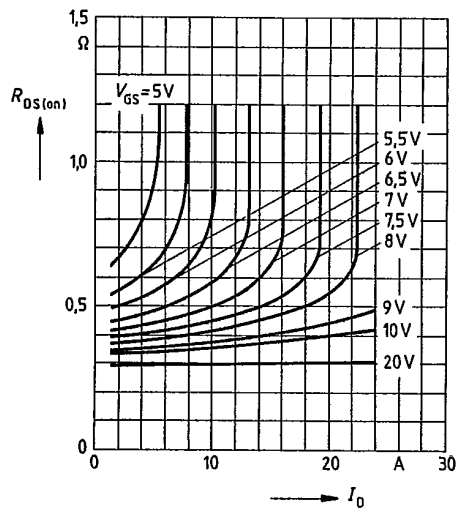


Typical transfer characteristic  $I_D = f(V_{GS})$   
parameter: 80  $\mu$ s pulse test,  
 $V_{DS} = 25\text{V}$ ,  $T_J = 25^\circ\text{C}$



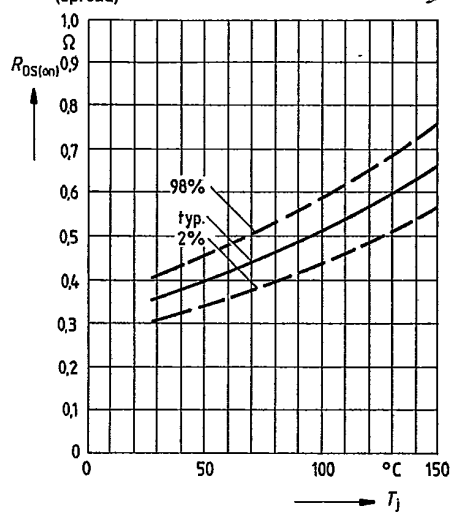
Typical drain-source on-state resistance

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



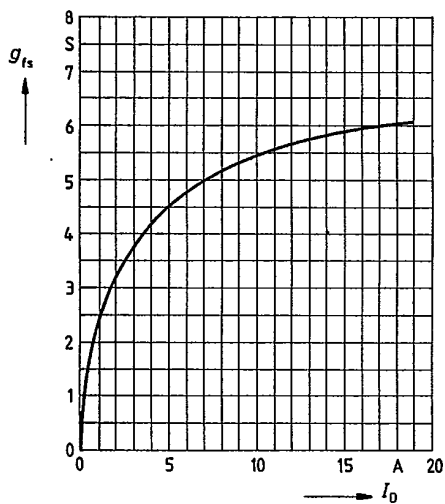
Drain-source on-state resistance

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



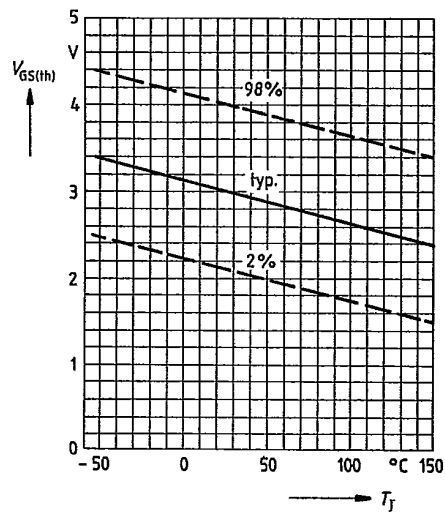
Typical transconductance  $g_{fs} = f(I_D)$

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

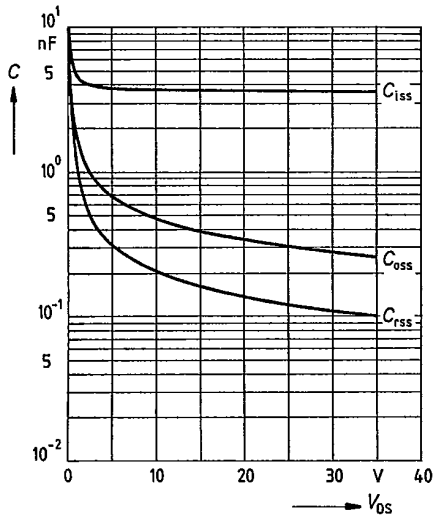


Gate threshold voltage  $V_{GS(th)} = f(T_J)$

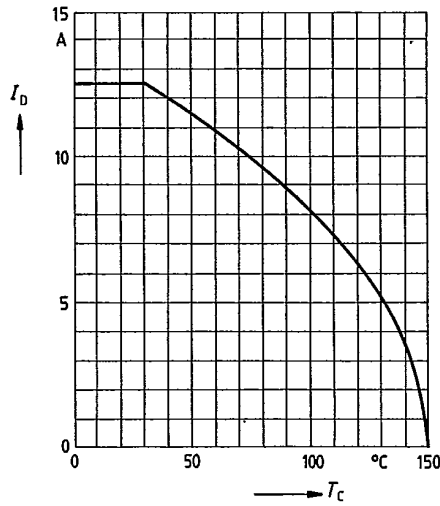
parameter:  $V_{DS} = V_{GS}$ ,  $I_D = 1mA$   
(spread)



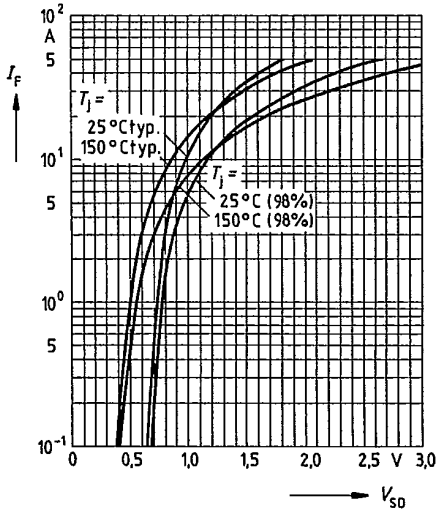
Typical capacitances  $C = f(V_{DS})$   
parameter:  $V_{GS} = 0$ ,  $f = 1\text{MHz}$



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)

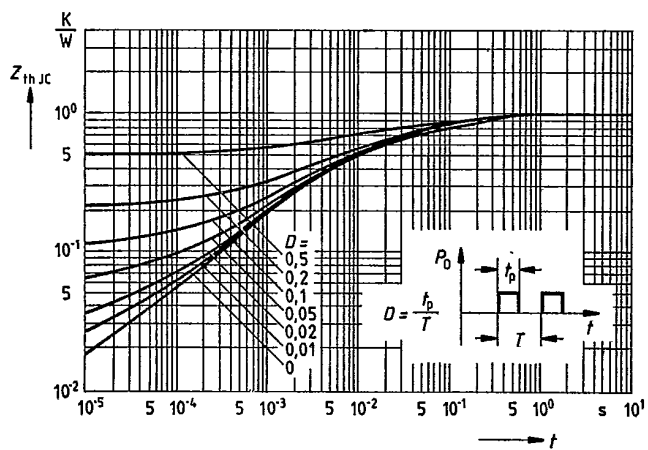


590

1172

G-05

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



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

