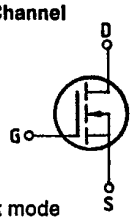
— SIEMENS AKTIENGESELLSCHAF —

Main ratings

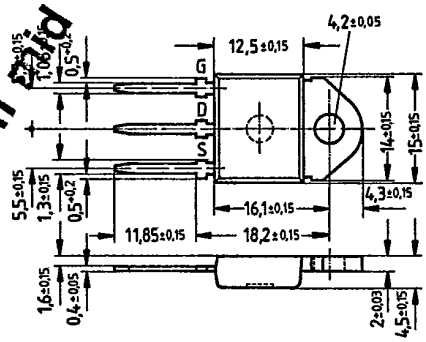
N-Channel



Drain-source voltage	V_{DS}	= 1000 V
Continuous drain current	I_D	= 4,9 A
Drain-source on-resistance	$R_{DS(on)}$	= 2,6 Ω

Description FREDET with fast-recovery reverse diode, N-channel, enhancement mode
Case Plastic package 15 in accordance with DIN 41869 or
TO 218 AA (TOP 3) in accordance with JEDEC.
The drain terminal is conductively connected to the mounting flange.
Approx. weight 4,5 g

Type	Ordering code
BUZ 381	C67078-A3206-A2



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 kΩ
Continuous drain current	I_D	4,9	A	T_C = 25 °C
Pulsed drain current	I_{Dpuls}	19	A	T_C = 25 °C
Gate-source voltage	V_{GS}	±20	V	
Max. power dissipation	P_D	125	W	T_C = 25 °C
Operating and storage temperature range	T_j T_{stg}	−55 ... +150	°C	
DIN humidity category		E	–	DIN 40040
IEC climatic category		55/150/56		DIN IEC 68-1
Thermal resistance				
Chip – case	$R_{th\,JC}$	≤1,0	K/W	
Chip – ambient	$R_{th\,JA}$	≤45	K/W	

Electrical characteristics

(at T_j = 25 °C unless otherwise specified)

Description	Symbol	Characteristics min.	typ.	max.	Unit	Conditions
Static ratings						
Drain-source breakdown voltage	$V_{(BR)\,DSS}$	1000	–	–	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	µA	T_j = 25 °C T_j = 125 °C V_{DS} = 1000V V_{GS} = 0V
Gate-source leakage current	I_{GSS}	–	10	100	nA	V_{GS} = 20V V_{DS} = 0V
Drain-source on-resistance	$R_{DS\,(on)}$	–	2,3	2,6	Ω	V_{GS} = 10V I_D = 3,5A
Dynamic ratings						
Forward transconductance	g_{fs}	1,4	4,0	–	S	V_{DS} = 25V I_D = 3,5A
Input capacitance	C_{iss}	–	3,9	5,0	nF	V_{GS} = 0V V_{DS} = 25V f = 1MHz
Output capacitance	C_{oss}	–	180	300	pF	
Reverse transfer capacitance	C_{rss}	–	70	120		
Turn-on time t_{on} (t_{on} = $t_{d\,(on)}$ + t_r)	$t_{d\,(on)}$	–	60	90	ns	V_{CC} = 30V I_D = 2,4A V_{GS} = 10V R_{GS} = 50Ω
	t_r	–	90	140		
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}	–	–	4,9	A	T_C = 25 °C
Pulsed reverse drain current	I_{DRM}	–	–	19		
Diode forward on-voltage	V_{SD}	–	1,35	1,60	V	I_F = 2× I_{DR} V_{GS} = 0V, T_j = 25 °C
Reverse recovery time	t_{rr}	–	–	250	ns	T_j = 25 °C; I_F = I_{DR}
		–	–	300		= 150 °C; di_F/dt = 100A/µs
Reserve recovery charge	Q_{rr}	–	–	1,2	µC	T_j = 25 °C; V_R = 100V
		–	–	5,0		= 150 °C
Repetitive peak reverse current	I_{RRM}	–	–	–	A	T_j = 25 °C
		–	15	–		= 150 °C

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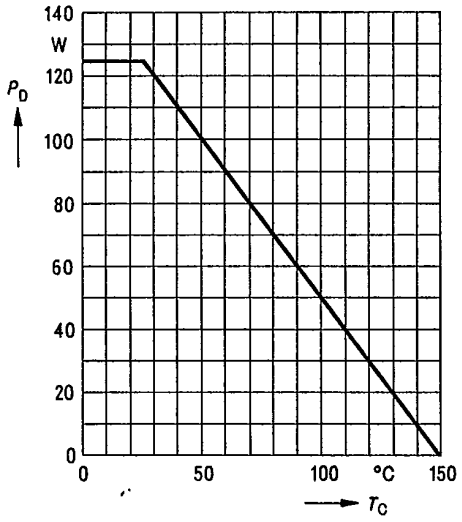
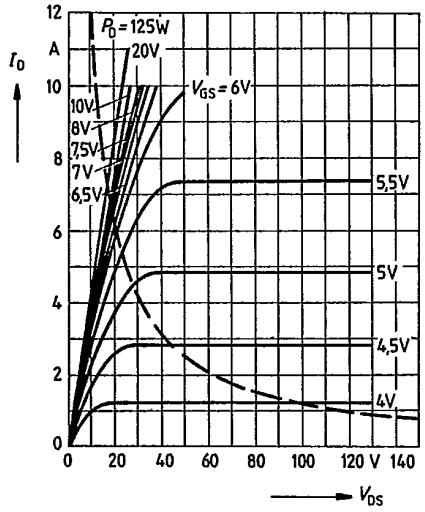
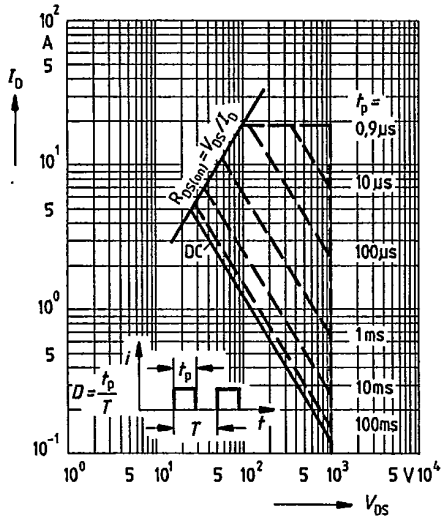
Power dissipation $P_D = f(T_C)$



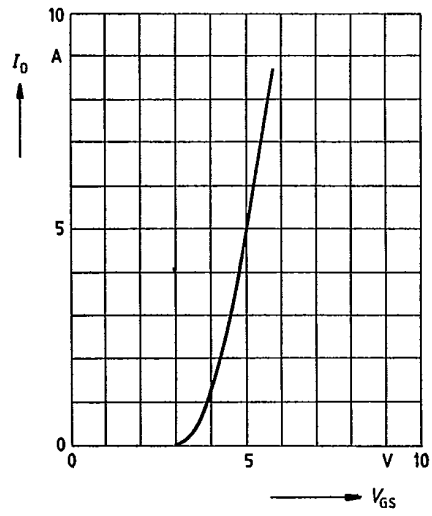
Typical output characteristics $I_D = f(V_{DS})$
parameter: 80 µs pulse test,
$T_j = 25$ °C



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



Typical transfer characteristic $I_D = f(V_{GS})$
parameter: 80 µs pulse test,
$V_{DS} = 25$V, $T_j = 25$ °C



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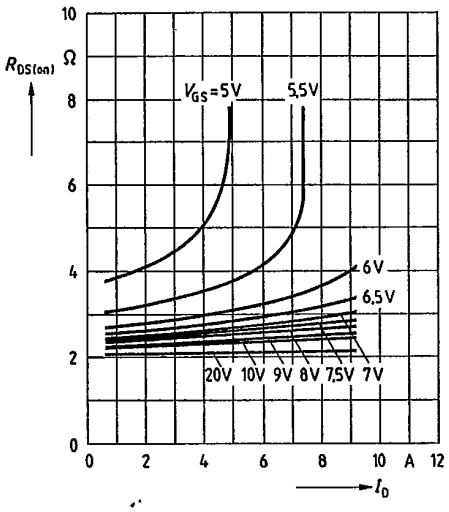
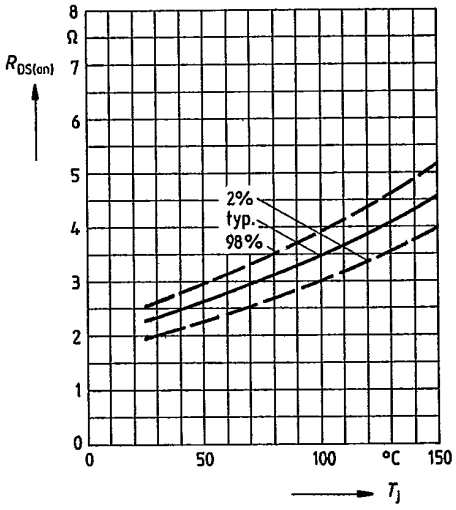
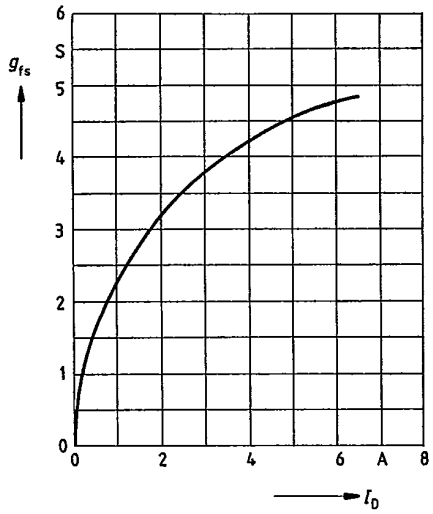
Typical drain-source on-state resistance
$R_{DS(on)} = f(I_D)$
parameter: V_{GS}; $T_j = 25\,°C$



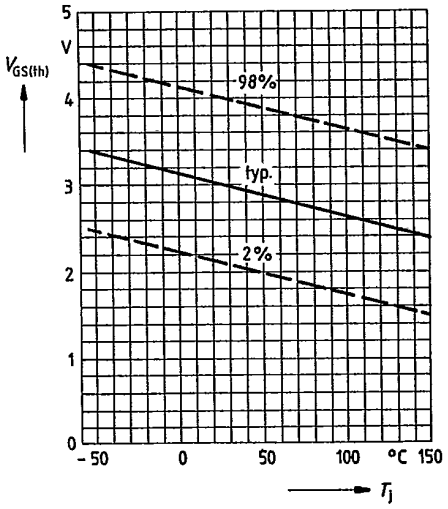
Drain-source on-state resistance
$R_{DS(on)} = f(T_j)$
parameter: $I_D = 3{,}5A$, $V_{GS} = 10V$
(spread)



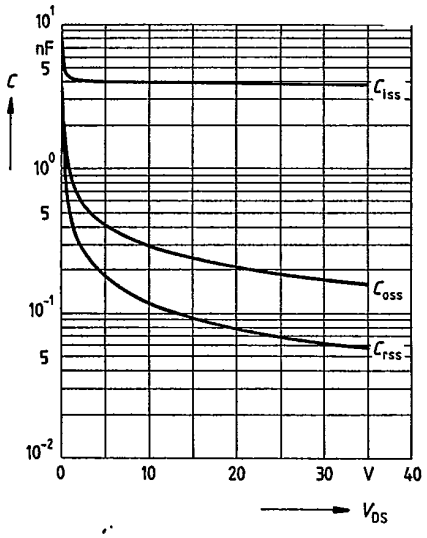
Typical transconductance $g_{fs} = f(I_D)$
parameter: 80 µs pulse test,
$V_{DS} = 25V$, $T_j = 25\,°C$



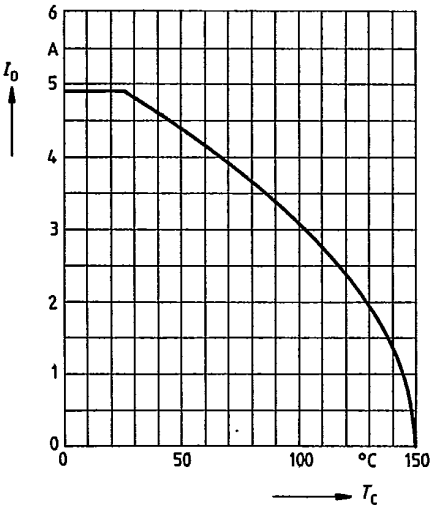
Gate threshold voltage $V_{GS(th)} = f(T_j)$
parameter: $V_{DS} = V_{GS}$, $I_D = 1mA$
(spread)



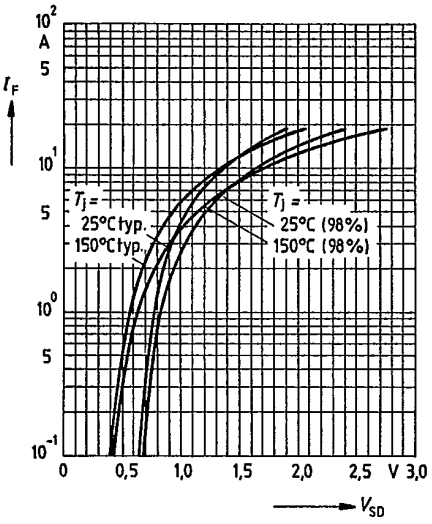
Typical capacitances $C = f(V_{DS})$
parameter: $V_{GS} = 0$, $f = 1MHz$



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



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



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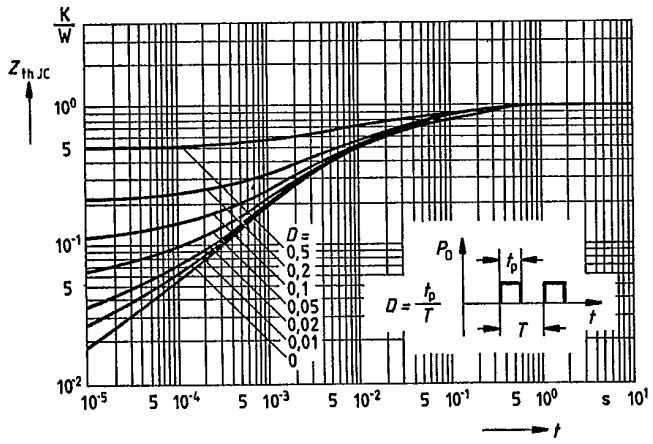
Transient thermal impedance $Z_{thJC} = f(t)$
parameter: $D = t_p/T$



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