BUZ 213

SIEMENS AKTIENGESELLSCHAF
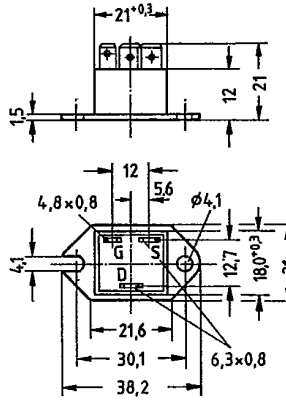
Main ratings

N-Channel

Drain-source voltage	V_{DS}	= 500 V
Continuous drain current	I_D	= 8,5 A
Drain-source on-resistance	$R_{DS(on)}$	= 0,6 Ω

Description FREDET with fast-recovery reverse diode, 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 213	C67078-A1700-A2

Dimensions in mm

Maximum ratings

Description	Symbols	Ratings	Units	Conditions
Drain-source voltage	V_{DS}	500	V	
Drain-gate voltage	V_{DGR}	500	V	R_{GS} = 20 kΩ
Continuous drain current	I_D	8,5	A	T_C = 25 °C
Pulsed drain current	I_{Dpuls}	34	A	T_C = 25 °C
Gate-source voltage	V_{GS}	±20	V	
Max. power dissipation	P_D	83,3	W	T_C = 25 °C
Operating and storage temperature range	T_j T_{stg}	−40...+150	°C	
Isolation test voltage	V_{is}	3500	Vdc[1]	t = 1 min
DIN humidity category		F	–	DIN 40040
IEC climatic category		40/150/56		DIN IEC 68-1

Thermal resistance

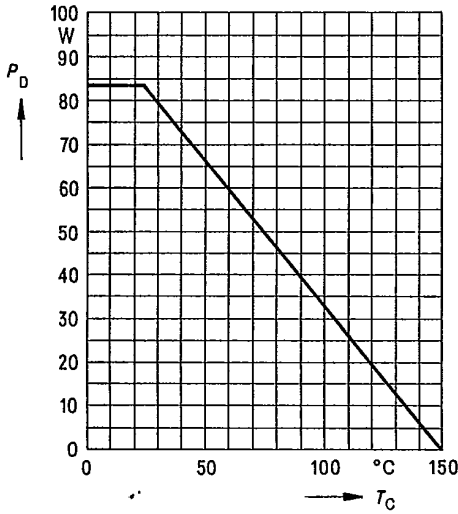|				
Chip – case	$R_{th\,JC}$	≤1,5	K/W	

[1] Isolation test voltage between drain and base plate referred to standard climate 23/50 in accordance with DIN 50014.

Electrical characteristics
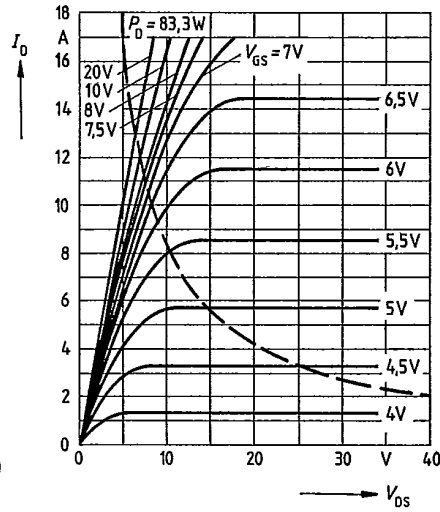
(at T_j = 25°C unless otherwise specified)

Description	Symbol	Characteristics			Unit	Conditions
		min.	typ.	max.		
Static ratings						
Drain-source breakdown voltage	$V_{(BR)DSS}$	500	–	–	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} = 500V V_{GS} = 0V
Gate-source leakage current	I_{GSS}	–	10	100	nA	V_{GS} = 20V V_{DS} = 0V
Drain-source on-resistance	$R_{DS(on)}$	–	0,55	0,6	Ω	V_{GS} = 10V I_D = 5,5A
Dynamic ratings						
Forward transconductance	g_{fs}	2,7	5,3	–	S	V_{DS} = 25V I_D = 5,5A
Input capacitance	C_{iss}	–	3,8	4,9	nF	V_{GS} = 0V
Output capacitance	C_{oss}	–	250	400	pF	V_{DS} = 25V
Reverse transfer capacitance	C_{rss}	–	100	170		f = 1MHz
Turn-on time t_{on} (t_{on} = $t_{d(on)}$ + t_r)	$t_{d(on)}$	–	50	75	ns	V_{CC} = 30V I_D = 2,8A
	t_r	–	80	120		V_{GS} = 10V R_{GS} = 50Ω
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}	–	–	8,5	A	T_C = 25°C
Pulsed reverse drain current	I_{DRM}	–	–	34		
Diode forward on-voltage	V_{SD}	–	1,3	1,7	V	I_F = 2 × I_{DR} V_{GS} = 0V, T_j = 25°C
Reverse recovery time	t_{rr}	– –	180 220	250 300	ns	T_j = 25°C = 150°C	I_F = I_{DR} di_F/dt = 100A/µs V_R = 100V
Reserve recovery charge	Q_{rr}	– –	0,65 2,6	1,2 5,0	µC	T_j = 25°C = 150°C	
Repetitive peak reverse current	I_{RRM}	– –	– 15	– –	A	T_j = 25°C = 150°C	

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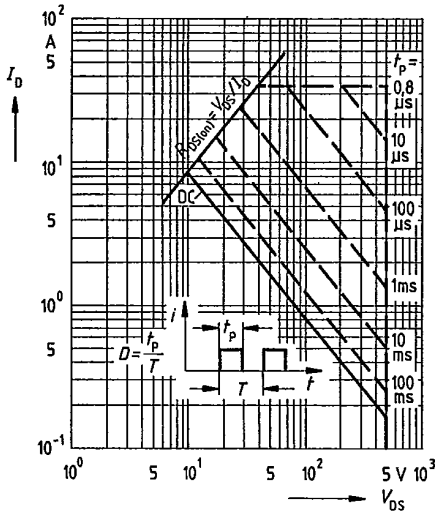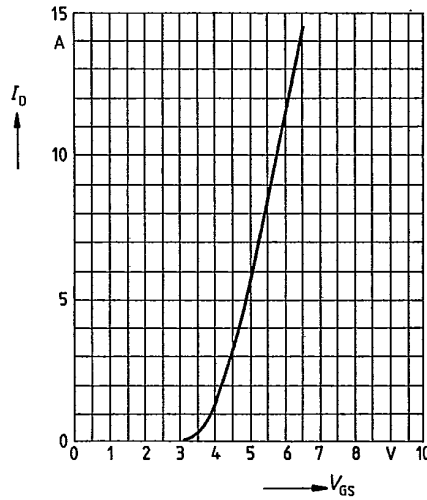**Power dissipation** $P_D = f(T_C)$

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

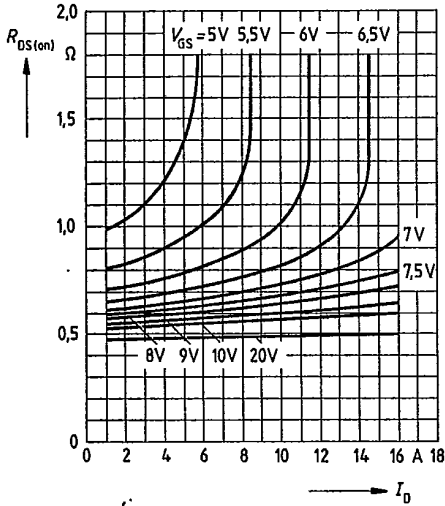**Safe operating area** $I_D = f(V_{DS})$
parameter: $D = 0.01$, $T_C = 25°C$

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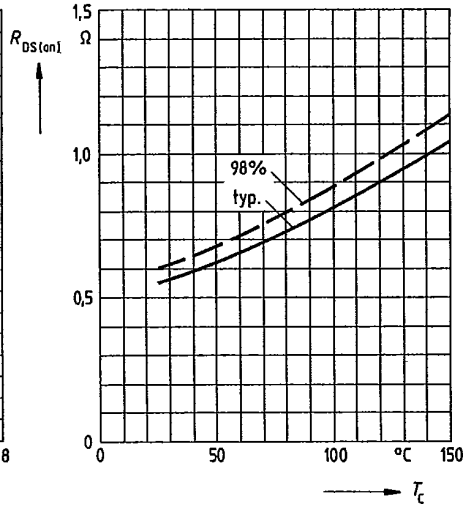$V_{DS} = 25V$, $T_j = 25°C$

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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
$R_{DS(on)} = f(T_j)$
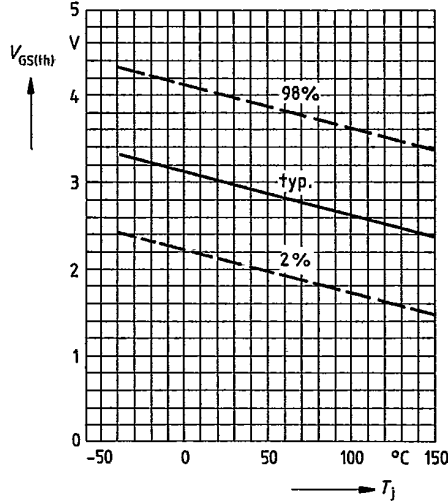parameter: $I_D = 5.5A$, $V_{GS} = 10V$
(spread)

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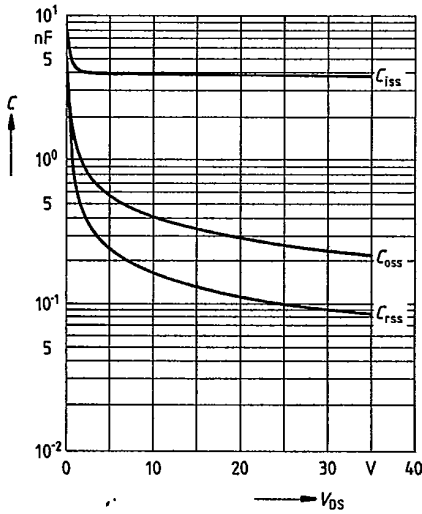parameter: 80 µs pulse test,
$V_{DS} = 25V$, $T_j = 25°C$

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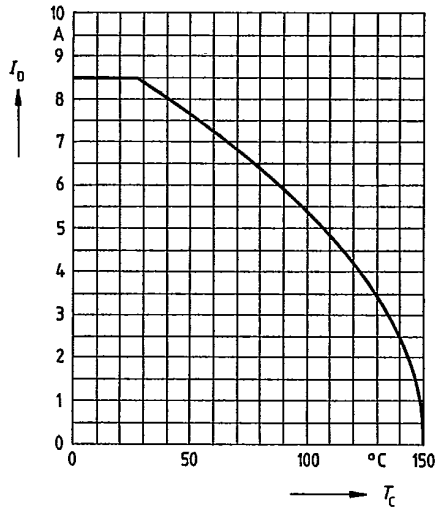parameter: $V_{DS} = V_{GS}$, $I_D = 1mA$
(spread)

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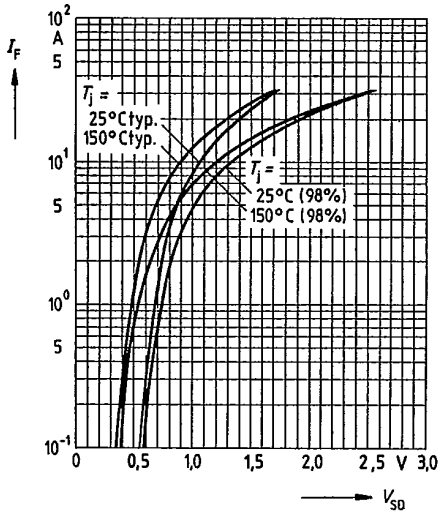parameter: $V_{GS} = 0$, $f = 1MHz$

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

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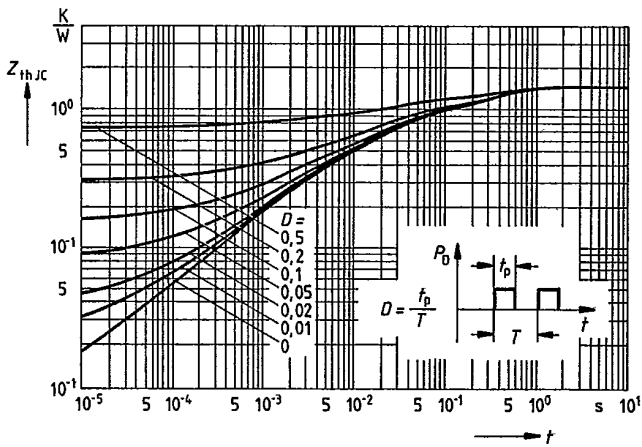$I_F = f(V_{SD})$
parameter: T_j, $t_p = 80\ \mu s$
(spread)

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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: $I_{D\,puls} = 14.4A$