BUZ 216

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Main ratings

N-Channel

Drain-source voltage	V_{DS}	= 500 V
Continuous drain current	I_D	= 4,4 A
Drain-source on-resistance	$R_{DS(on)}$	= 2 Ω
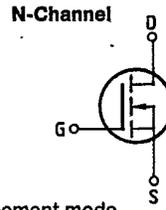
Description FREDFET with fast-recovery reverse diode, N-channel, enhancement mode.
Case Plastic package 14 A 3 in accordance with DIN 41 869,
or TO 220 AB in accordance with JEDEC.
The drain terminal is conductively connected to the mounting flange.
Approx. weight 2 g

Type	Ordering code
BUZ 216	C67078-A1402-A2
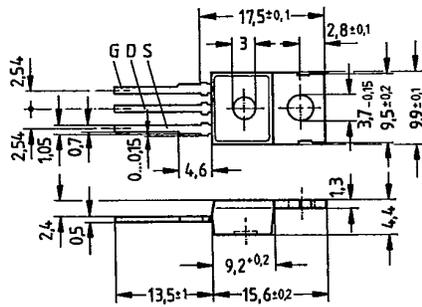
Dimensions in mm

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	4,4	A	T_C = 25 °C
Pulsed drain current	I_{Dpuls}	17	A	T_C = 25 °C
Gate-source voltage	V_{GS}	±20	V	
Max. power dissipation	P_D	75	W	T_C = 25 °C
Operating and storage	T_j			
temperature range	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_{thJC}	≤1,67	K/W	
Chip – ambient	R_{thJA}	≤75	K/W	

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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	$R_{DS(on)}$	—	1,7	2,0	Ω	V_{GS} = 10V I_D = 3,2A
Dynamic ratings						
Forward transconductance	g_{fs}	1,5	2,7	—	S	V_{DS} = 25V I_D = 3,2A
Input capacitance	C_{iss}	—	1,5	2,0	nF	V_{GS} = 0V
Output capacitance	C_{oss}	—	110	170	pF	V_{DS} = 25V
Reverse transfer capacitance	C_{rss}	—	40	70		f = 1MHz
Turn-on time t_{on} (t_{on} = $t_{d(on)}$ + t_r)	$t_{d(on)}$	—	30	45	ns	V_{CC} = 30V I_D = 2,5A
	t_r	—	40	60		V_{GS} = 10V R_{GS} = 50Ω
Turn-off time t_{off} (t_{off} = $t_{d(off)}$ + t_f)	$t_{d(off)}$	—	110	140		
	t_f	—	50	65		
Fast-recovery reverse diode						
Continuous reverse drain current	I_{DR}	—	—	4,4	A	T_C = 25°C
Pulsed reverse drain current	I_{DRM}	—	—	17		
Diode forward on-voltage	V_{SD}	—	1,3	1,6	V	I_F = 2 × I_{DR} V_{GS} = 0V, T_j = 25°C
Reverse recovery time	t_{rr}	— —	180 —	250 —	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 —	1,2 —	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 $P_D = f(T_C)$
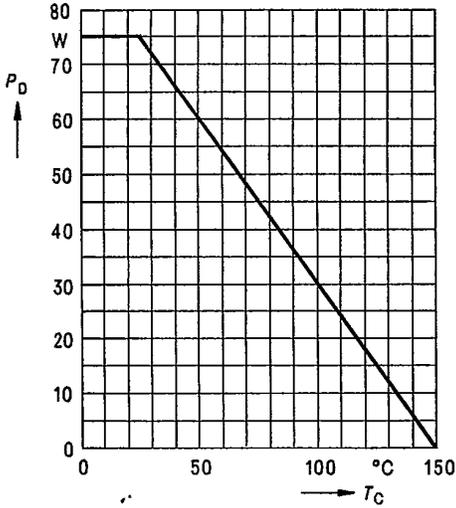
**Typical output characteristics** $I_D = f(V_{DS})$
parameter: 80 µs pulse test,
$T_j = 25°C$
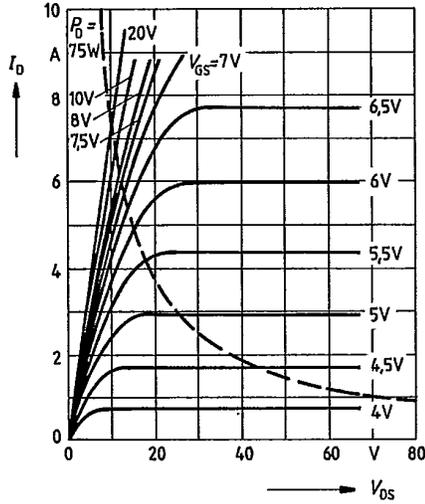
**Safe operating area** $I_D = f(V_{DS})$
parameter: $D = 0.01$, $T_C = 25°C$
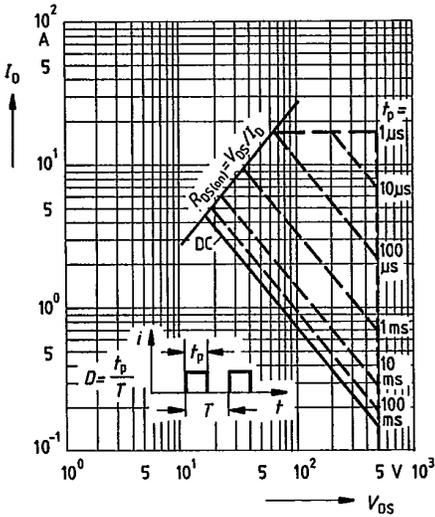
Typical transfer characteristic $I_D = f(V_{GS})$
parameter: 80 µs pulse test,
$V_{DS} = 25V$, $T_j = 25°C$
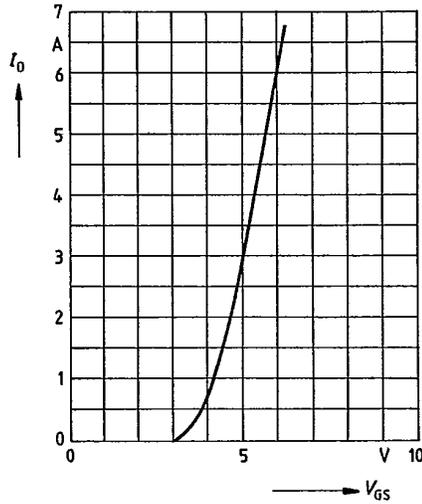
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Typical drain-source on-state resistance
$R_{DS (on)} = f(I_D)$
parameter: V_{GS}; $T_j = 25\,°C$
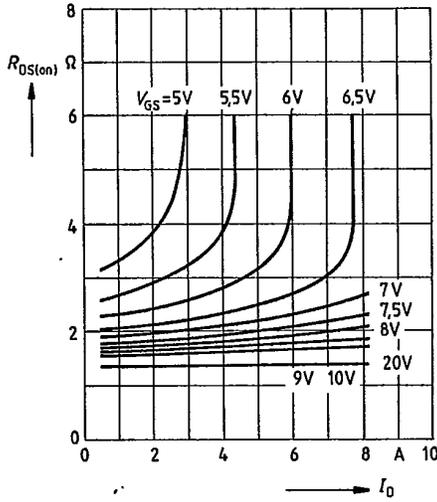
Drain-source on-state resistance
$R_{DS (on)} = f(T_j)$
parameter: $I_D = 3,2A$, $V_{GS} = 10V$
(spread)
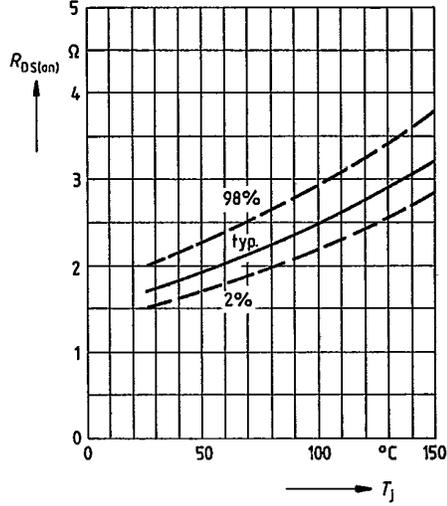
Typical transconductance $g_{fs} = f(I_D)$
parameter: 80 μs pulse test,
$V_{DS} = 25V$, $T_j = 25\,°C$
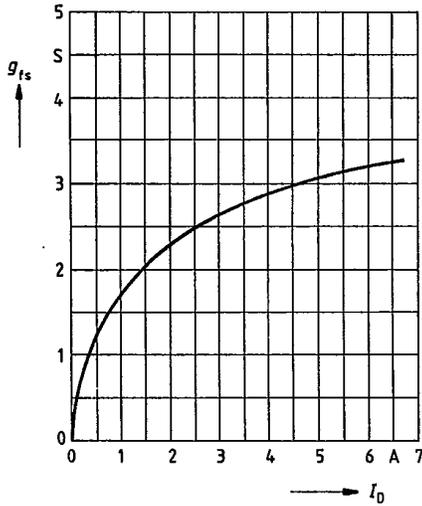
Gate threshold voltage $V_{GS(th)} = f(T_j)$
parameter: $V_{DS} = V_{GS}$, $I_D = 1mA$
(spread)

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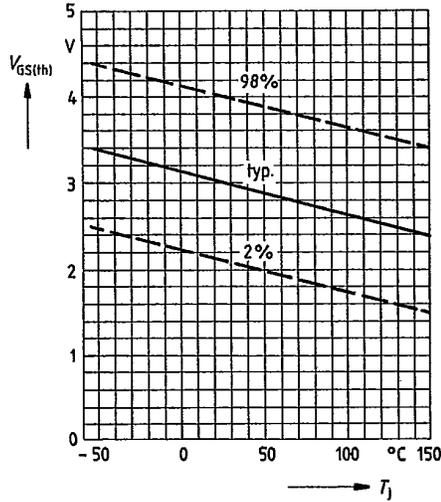
Typical capacitances $C = f(V_{DS})$
parameter: $V_{GS} = 0$, $f = 1MHz$

**Continuous drain current** $I_D = f(T_C)$
parameter: $V_{GS} \geq 10V$
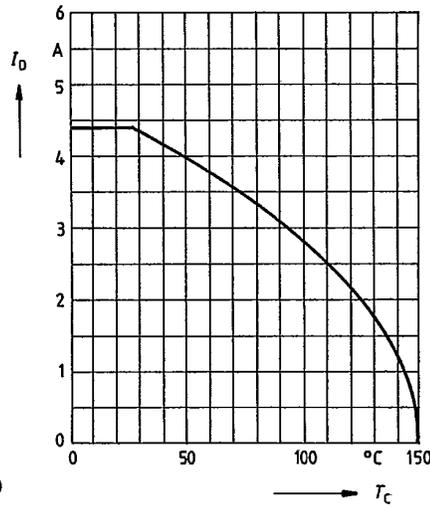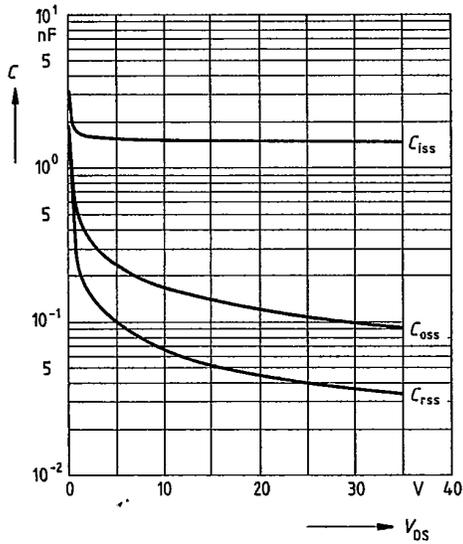
Forward characteristic of reverse diode
$I_F = f(V_{SD})$
parameter: T_j, $t_p = 80\ \mu s$
(spread)
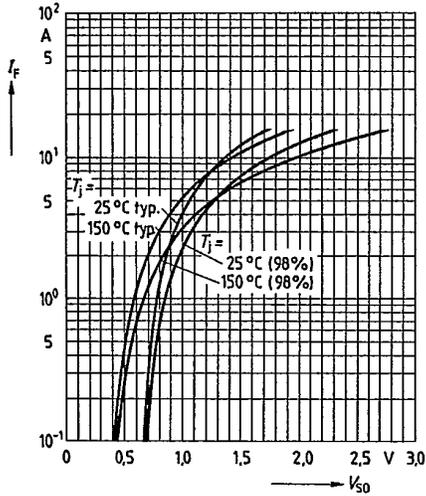
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Transient thermal Impedance $Z_{thJC} = f(t)$
parameter: $D = t_p / T$
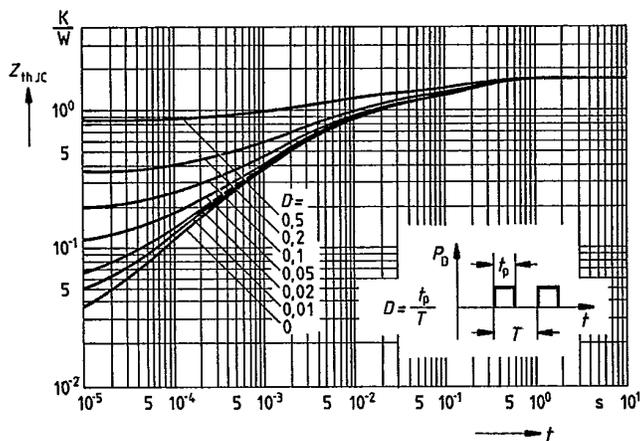
Typical gate-charge $V_{GS} = f(Q_{Gate})$
parameter: $I_{D\ puls} = 6.8A$