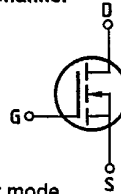


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Main ratings

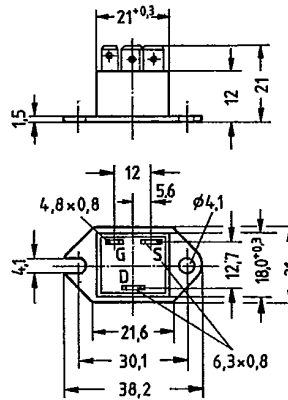
Drain-source voltage $V_{DS} = 500\text{ V}$
 Continuous drain current $I_D = 8,5\text{ A}$
 Drain-source on-resistance $R_{DS(on)} = 0,6\ \Omega$

N-Channel



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	$R_{GS} = 20\text{ k}\Omega$
Continuous drain current	I_D	8,5	A	$T_C = 25\text{ }^\circ\text{C}$
Pulsed drain current	$I_{D,puls}$	34	A	$T_C = 25\text{ }^\circ\text{C}$
Gate-source voltage	V_{GS}	± 20	V	
Max. power dissipation	P_D	83,3	W	$T_C = 25\text{ }^\circ\text{C}$
Operating and storage temperature range	T_j	-40 ... +150	$^\circ\text{C}$	
Isolation test voltage	V_{is}	3500	Vdc ¹⁾	$t = 1\text{ min}$
DIN humidity category	F		-	DIN 40040
IEC climatic category	40/150/56			DIN IEC 68-1

Thermal resistance

Chip - case	R_{thJC}	$\leq 1,5$	K/W
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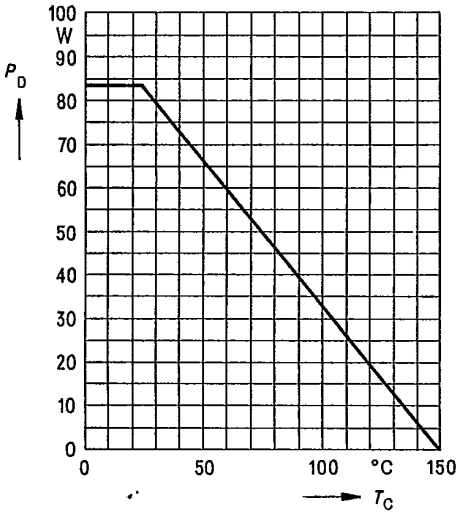
¹⁾ Isolation test voltage between drain and base plate referred to standard climate 23/50 in accordance with DIN 50014.

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

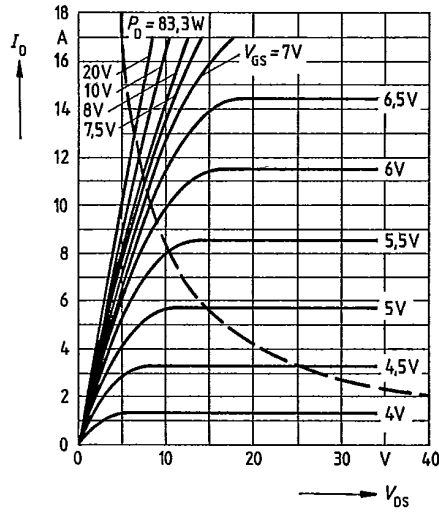
Description	Symbol	Characteristics			Unit	Conditions
		min.	typ.	max.		
Static ratings						
Drain-source breakdown voltage	$V_{(BR)DSS}$	500	—	—	V	$V_{GS} = 0V$ $I_D = 0,25mA$
Gate threshold voltage	$V_{GS(th)}$	2,1	3,0	4,0		$V_{DS} = V_{GS}$ $I_D = 1mA$
Zero gate voltage drain current	I_{DSS}	—	20	250	μA	$T_j = 25^\circ\text{C}$ $T_j = 125^\circ\text{C}$ $V_{DS} = 500V$ $V_{GS} = 0V$
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	$V_{CC} = 30V$ $I_D = 2,8A$ $V_{GS} = 10V$ $R_{GS} = 50\Omega$
	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}	—	—	8,5	A	$T_C = 25^\circ\text{C}$
Pulsed reverse drain current	I_{DRM}	—	—	34		
Diode forward on-voltage	V_{SD}	—	1,3	1,7	V	$I_F = 2 \times I_{DR}$ $V_{GS} = 0V, T_j = 25^\circ\text{C}$
Reverse recovery time	t_{rr}	—	180	250	ns	$T_j = 25^\circ\text{C}$
		—	220	300		$T_j = 150^\circ\text{C}$
Reverse recovery charge	Q_{rr}	—	0,65	1,2	μC	$T_j = 25^\circ\text{C}$
		—	2,6	5,0		$T_j = 150^\circ\text{C}$
Repetitive peak reverse current	I_{RRM}	—	—	—	A	$T_j = 25^\circ\text{C}$
		—	15	—		$T_j = 150^\circ\text{C}$

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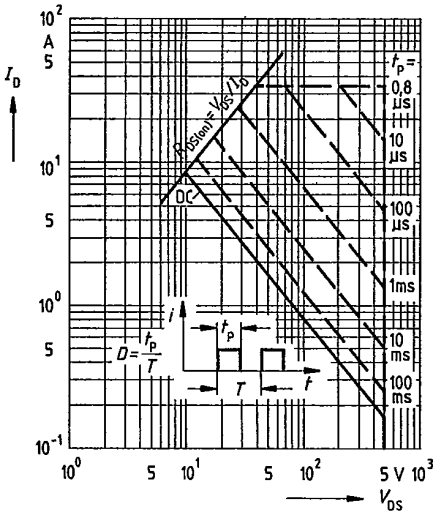
Power dissipation $P_D = f(T_C)$



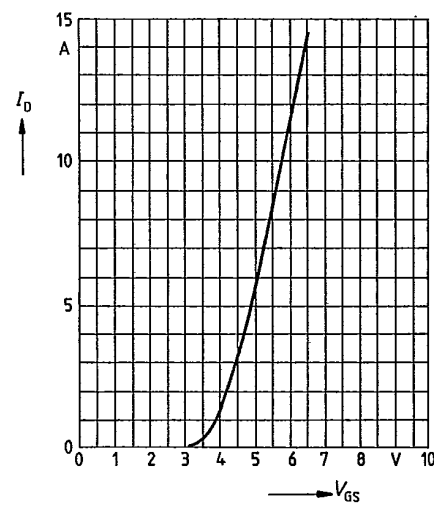
Typical output characteristics $I_D = f(V_{DS})$
parameter: 80 μ s pulse test,
 $T_J = 25^\circ\text{C}$



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



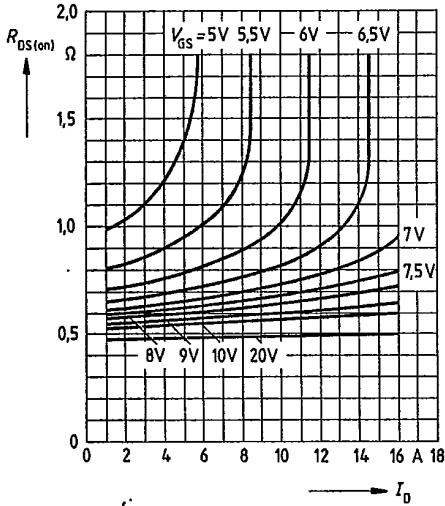
Typical transfer characteristic $I_D = f(V_{GS})$
parameter: 80 μ s pulse test,
 $V_{DS} = 25\text{V}$, $T_J = 25^\circ\text{C}$



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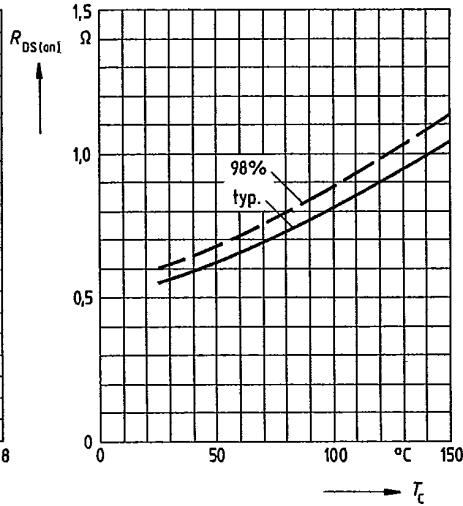
Typical drain-source on-state resistance

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



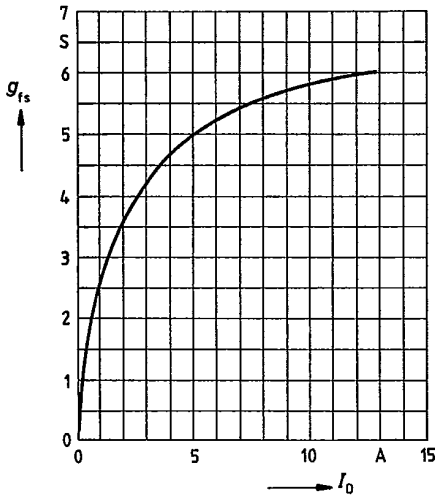
Drain-source on-state resistance

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



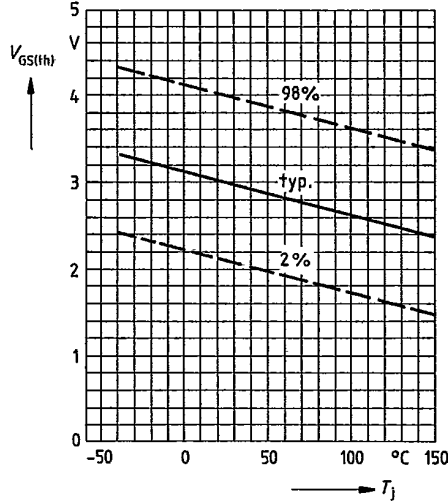
Typical transconductance $g_{fs} = f(I_D)$

parameter: 80 μs pulse test,
 $V_{DS} = 25V, T_j = 25^\circ C$



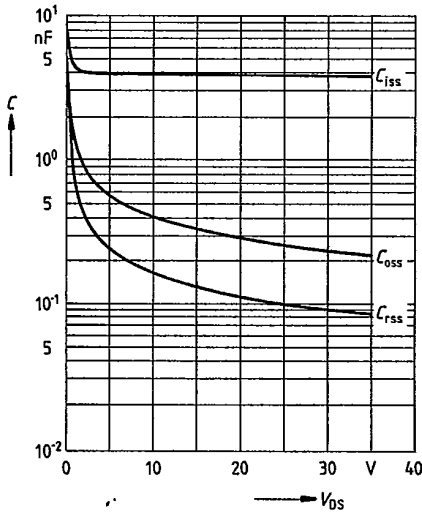
Gate threshold voltage $V_{GS(th)} = f(T_j)$

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

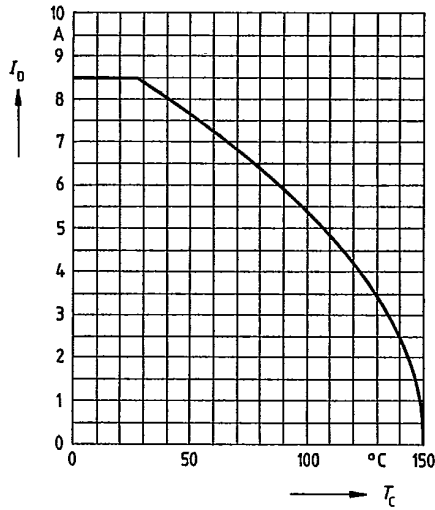


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Typical capacitances $C = f(V_{DS})$
parameter: $V_{GS} = 0, f = 1\text{MHz}$

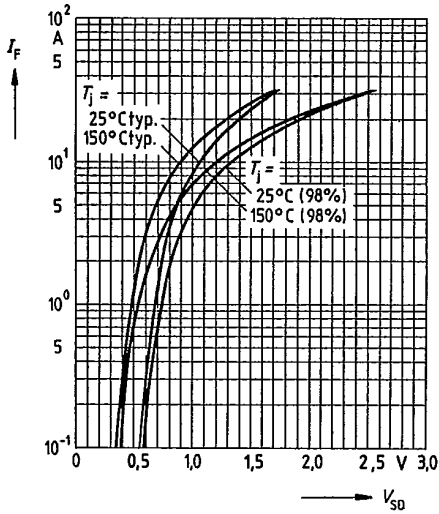


Continuous drain current $I_D = f(T_C)$
parameter: $V_{GS} \geq 10\text{V}$



Forward characteristic of reverse diode

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



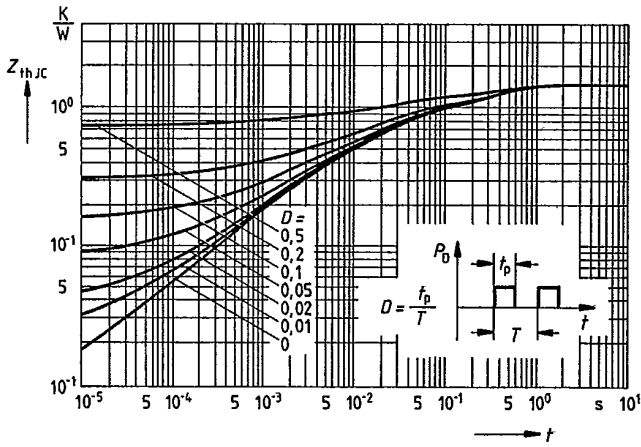
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Transient thermal impedance $Z_{thJC} = f(t)$
 parameter: $D = t_p/T$



Typical gate-charge $V_{GS} = f(Q_{Gate})$
 parameter: $I_{D\,puls} = 14,4A$

