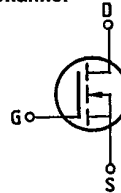


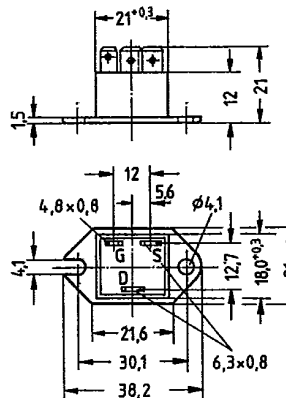
SIEMENS AKTIENGESELLSCHAFT

Main ratingsDrain-source voltage $V_{DS} = 200 \text{ V}$ Continuous drain current $I_D = 18 \text{ A}$ Drain-source on-resistance $R_{DS(on)} = 0,12 \Omega$

N-Channel

**Description** SiPMOS, 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 38	C67078-A1611-A2



Dimensions in mm

Maximum ratings

Description	Symbols	Ratings	Units	Conditions
Drain-source voltage	V_{DS}	200	V	
Drain-gate voltage	V_{DGR}	200	V	$R_{GS} = 20 \text{ k}\Omega$
Continuous drain current	I_D	18	A	$T_C = 30^\circ \text{C}$
Pulsed drain current	I_{Dpuls}	70	A	$T_C = 25^\circ \text{C}$
Gate-source voltage	V_{GS}	± 20	V	
Max. power dissipation	P_D	83,3	W	$T_C = 25^\circ \text{C}$
Operating and storage temperature range	T_j	$-40 \dots +150$	$^\circ \text{C}$	
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 resistanceChip - case $R_{thJC} \leq 1,5 \text{ K/W}$ ¹⁾ Isolation test voltage between drain and base plate referred to standard climate 23/50 in accordance with DIN 50014.

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

Description	Symbol	Characteristics			Unit	Conditions
		min.	typ.	max.		

Static ratings

Drain-source breakdown voltage	$V_{(BR) DSS}$	200	—	—	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	$T_j = 25^\circ\text{C}$ $T_j = 125^\circ\text{C}$ $V_{DS} = 200V$ $V_{GS} = 0V$
Gate-source leakage current	I_{GSS}	—	10	100	nA	$V_{GS} = 20V$ $V_{DS} = 0V$
Drain-source on-resistance	$R_{DS(on)}$	—	0,09	0,12	Ω	$V_{GS} = 10V$ $I_D = 11A$

Dynamic ratings

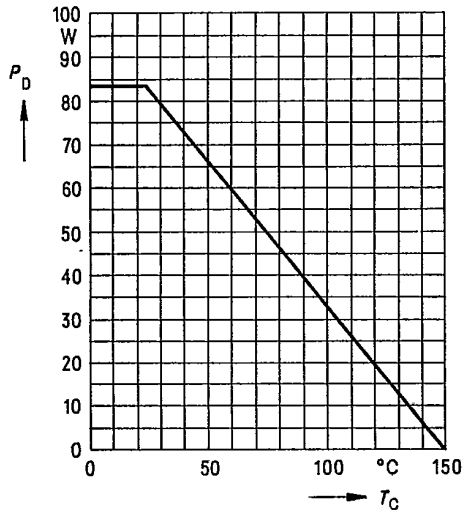
Forward transconductance	g_{fs}	9,0	13,0	—	S	$V_{DS} = 25V$ $I_D = 11A$
Input capacitance	C_{iss}	—	1500	2000	pF	$V_{GS} = 0V$ $V_{DS} = 25V$ $f = 1MHz$
Output capacitance	C_{oss}	—	500	800		
Reverse transfer capacitance	C_{rss}	—	200	350		
Turn-on time t_{on} ($t_{on} = t_{d(on)} + t_r$)	$t_{d(on)}$	—	30	45	ns	$V_{CC} = 30V$ $I_D = 3A$ $V_{GS} = 10V$ $R_{GS} = 50\Omega$
	t_r	—	70	110		
Turn-off time t_{off} ($t_{off} = t_{d(off)} + t_f$)	$t_{d(off)}$	—	330	430		
	t_f	—	120	160		

Reverse diode

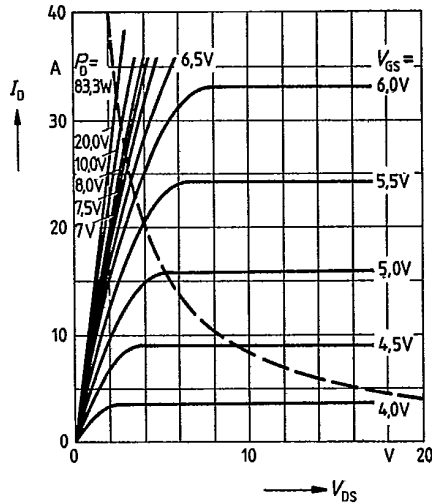
Continuous reverse drain current	I_{DR}	—	—	18	A	$T_C = 25^\circ\text{C}$
Pulsed reverse drain current	I_{DRM}	—	—	70		
Diode forward on-voltage	V_{SD}	—	1,15	1,6	V	$I_F = 2 \times I_{DR}$ $V_{GS} = 0V, T_j = 25^\circ\text{C}$
Reverse recovery time	t_{rr}	—	400	—	ns	$T_j = 25^\circ\text{C}$
Reverse recovery charge	Q_{rr}	—	6,0	—	μC	$I_F = I_{DR}$ $dI_F/dt = 100A/\mu s$ $V_R = 100V$

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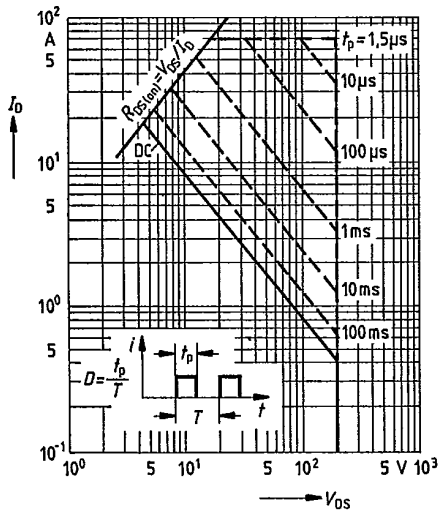
Power dissipation $P_D = f(T_C)$



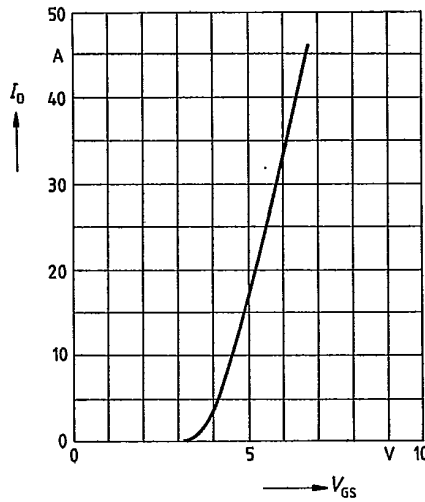
Typical output characteristics $I_D = f(V_{DS})$
parameter: 80 μ s pulse test,
 $T_J = 25^\circ\text{C}$



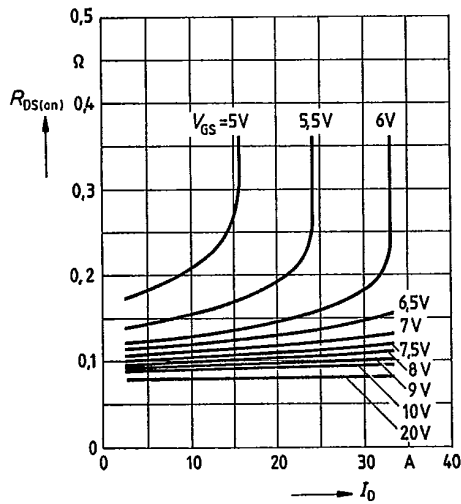
Safe operating area $I_D = f(V_{DS})$
parameter: $D = 0.01$, $T_C = 25^\circ\text{C}$



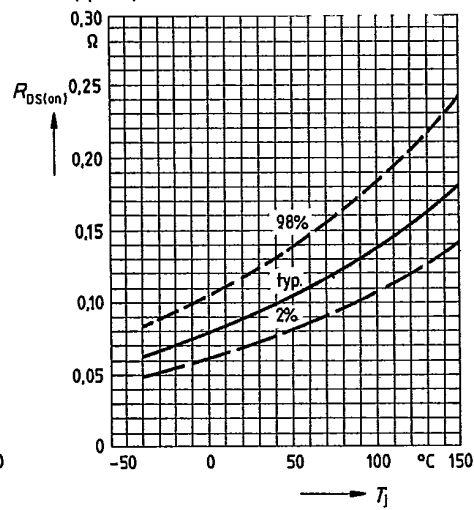
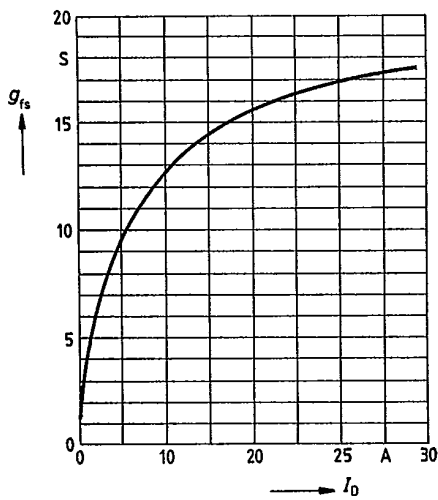
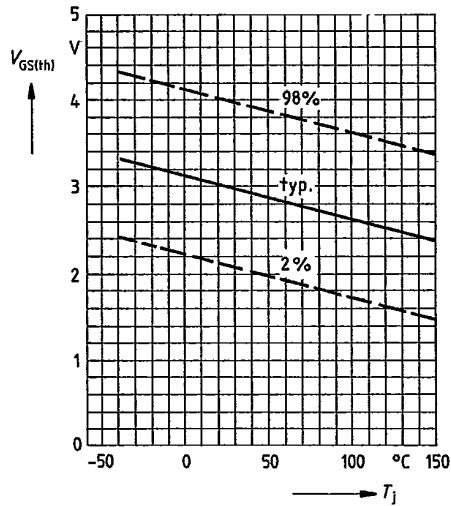
Typical transfer characteristic $I_D = f(V_{GS})$
parameter: 80 μ s pulse test,
 $V_{DS} = 25\text{V}$, $T_J = 25^\circ\text{C}$



Typical drain-source on-state resistance

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


Drain-source on-state resistance

 $R_{DS(on)} = f(T_j)$
 parameter: $I_D = 11\text{A}$, $V_{GS} = 10\text{V}$
 (spread)
Typical transconductance $g_{fs} = f(I_D)$
 parameter: 80 μs pulse test,
 $V_{DS} = 25\text{V}$, $T_j = 25^\circ\text{C}$
Gate threshold voltage $V_{GS(th)} = f(T_j)$
 parameter: $V_{DS} = V_{GS}$, $I_D = 1\text{mA}$
 (spread)


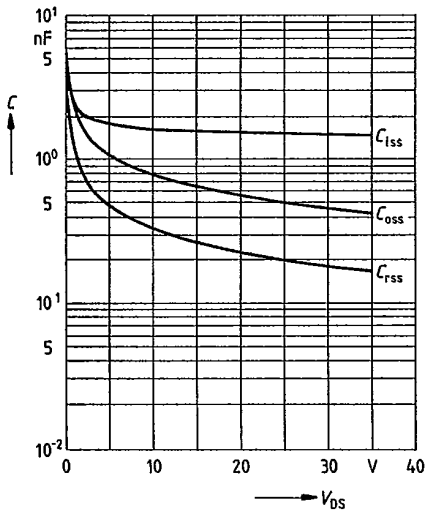
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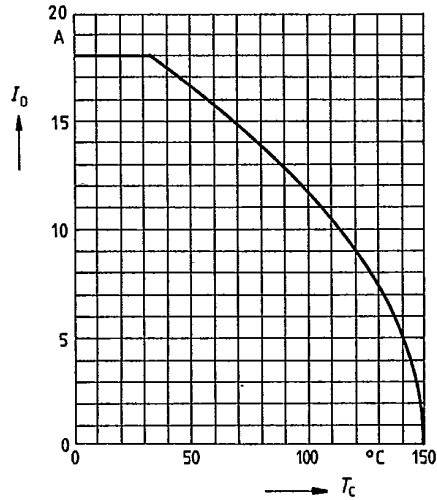
BUZ 38

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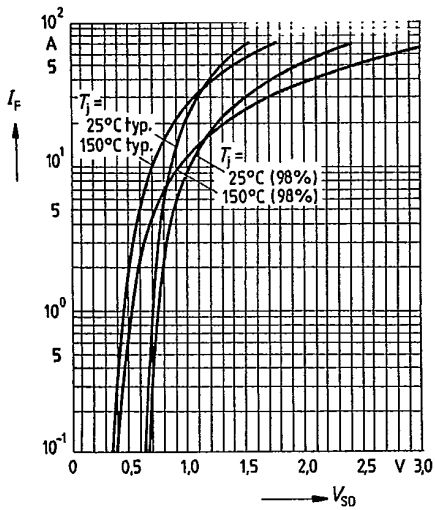
Typical capacitances $C = f(V_{DS})$
parameter: $V_{GS} = 0$, $f = 1\text{MHz}$



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)



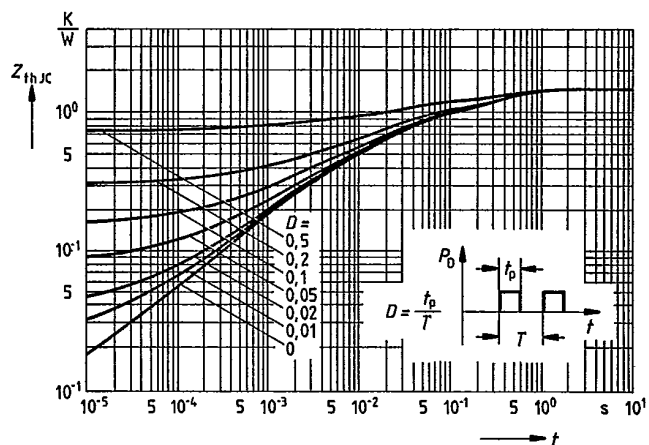
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F-13

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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: $I_D \text{ puls} = 33A$

