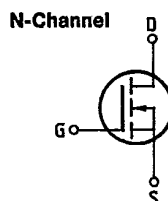


SIEMENS AKTIENGESELLSCHAFT

**Main ratings**

**Drain-source voltage**  $V_{DS} = 500 \text{ V}$   
**Continuous drain current**  $I_D = 3,9 \text{ A}$   
**Drain-source on-resistance**  $R_{DS(on)} = 2,0 \Omega$

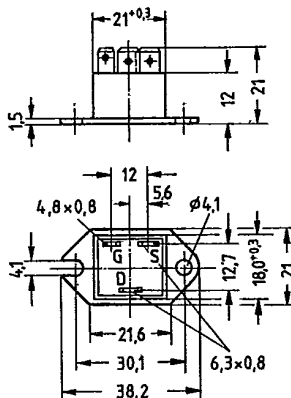


**Description** SIPMOS, N-channel, enhancement mode

**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 47 A	C67078-A1604-A2

Not for new design



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	$I_D$	3,9	A	$T_C = 30^\circ \text{C}$
Pulsed drain current	$I_{D(puls)}$	15	A	$T_C = 25^\circ \text{C}$
Gate-source voltage	$V_{GS}$	$\pm 20$	V	
Max. power dissipation	$P_D$	70	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 <sup>1)</sup>	$t = 1 \text{ min}$
DIN humidity category		F	—	DIN 40040
IEC climatic category		40/150/56	—	DIN IEC 68-1

**Thermal resistance**

Chlp - case  $R_{th JC} \leq 1,78 \text{ K/W}$

<sup>1)</sup> 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**

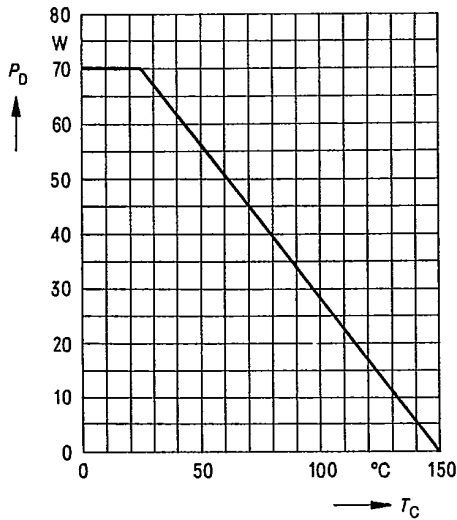
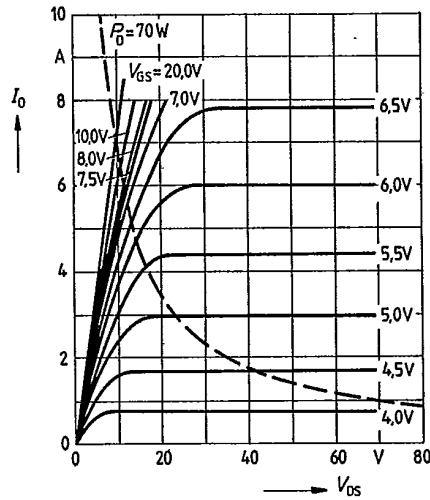
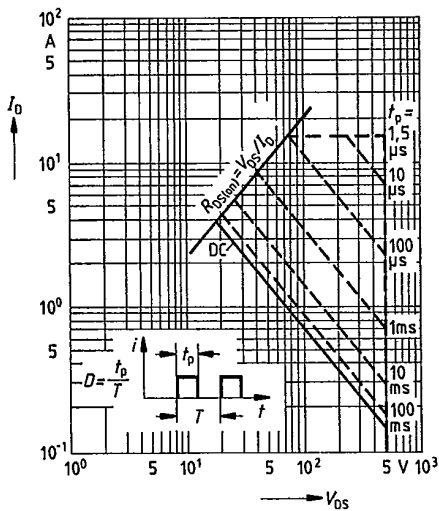
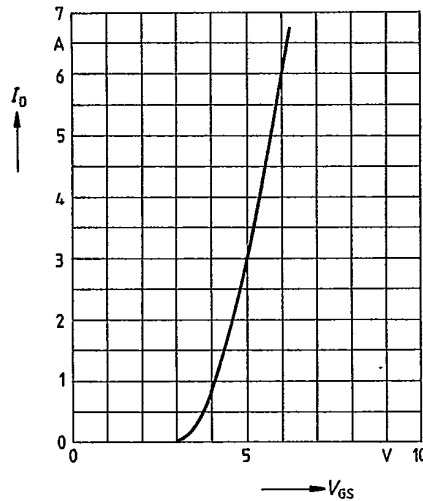
Drain-source breakdown voltage	$V_{(BR) DSS}$	500	—	—	V	$V_{GS} = 0V$ $I_D = 0,25mA$
Gate threshold voltage	$V_{GS(th)}$	2,1	3,0	4,0		$V_{DS} = V_{GS}$ $I_D = 1mA$
Zero gate voltage drain current	$I_{DSS}$	—	20 100	250 1000	$\mu A$	$T_j = 25^\circ\text{C}$ $T_j = 125^\circ\text{C}$ $V_{DS} = 500V$ $V_{GS} = 0V$
Gate-source leakage current	$I_{GSS}$	—	10	100	nA	$V_{GS} = 20V$ $V_{DS} = 0V$
Drain-source on-resistance	$R_{DS(on)}$	—	1,6	2,0	$\Omega$	$V_{GS} = 10V$ $I_D = 2,5A$

**Dynamic ratings**

Forward transconductance	$g_{fs}$	1,5	2,5	—	S	$V_{DS} = 25V$ $I_D = 2,5A$
Input capacitance	$C_{iss}$	—	1,5	2,0	nF	$V_{GS} = 0V$
Output capacitance	$C_{oss}$	—	110	170	pF	$V_{DS} = 25V$ $f = 1MHz$
Reverse transfer capacitance	$C_{rss}$	—	40	70		
Turn-on time $t_{on}$ ( $t_{on} = t_{d(on)} + t_r$ )	$t_{d(on)}$	—	30	45	ns	$V_{CC} = 30V$ $I_D = 2,5A$ $V_{GS} = 10V$ $R_{GS} = 50\Omega$
	$t_r$	—	40	60		
Turn-off time $t_{off}$ ( $t_{off} = t_{d(off)} + t_f$ )	$t_{d(off)}$	—	110	140		
	$t_f$	—	50	65		

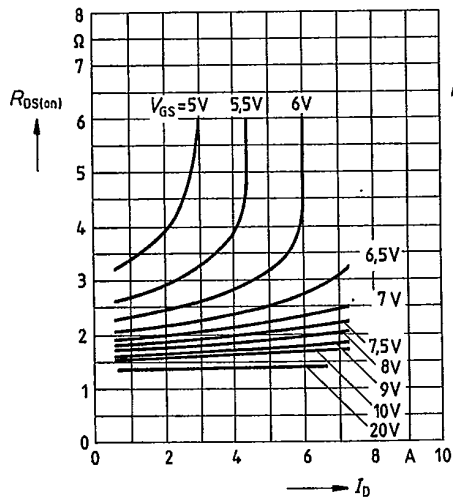
**Reverse diode**

Continuous reverse drain current	$I_{DR}$	—	—	3,9	A	$T_C = 25^\circ\text{C}$
Pulsed reverse drain current	$I_{DRM}$	—	—	15		
Diode forward on-voltage	$V_{SD}$	—	1,1	1,4	V	$I_F = 2 \times I_{DR}$ $V_{GS} = 0V, T_j = 25^\circ\text{C}$
Reverse recovery time	$t_{rr}$	—	1,2	—	ns	$T_j = 25^\circ\text{C}$
Reverse recovery charge	$Q_{rr}$	—	6	—	$\mu C$	$I_F = I_{DR}$ $d_{F/dt} = 100A/\mu s$ $V_R = 100V$

Power dissipation  $P_D = f(T_C)$ Typical output characteristics  $I_D = f(V_{DS})$   
parameter: 80  $\mu$ s pulse test,  
 $T_I = 25^\circ\text{C}$ 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  $\mu$ s pulse test,  
 $V_{DS} = 25\text{V}$ ,  $T_I = 25^\circ\text{C}$ 

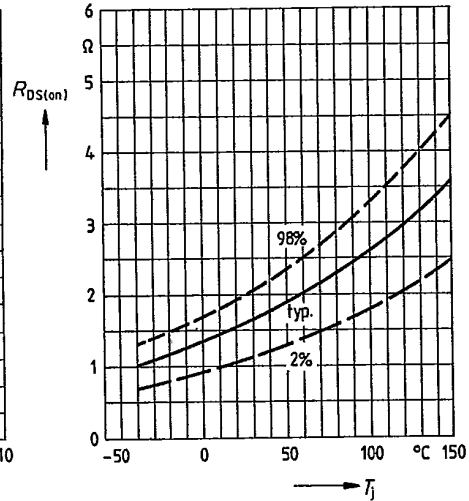
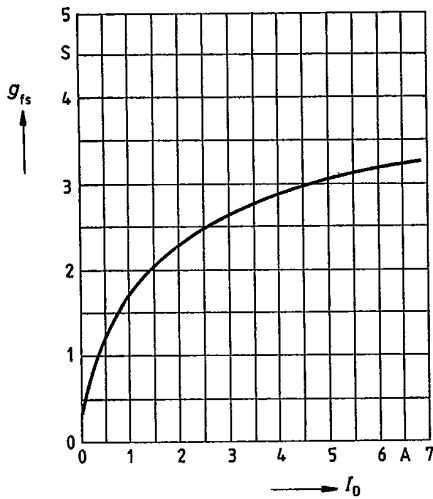
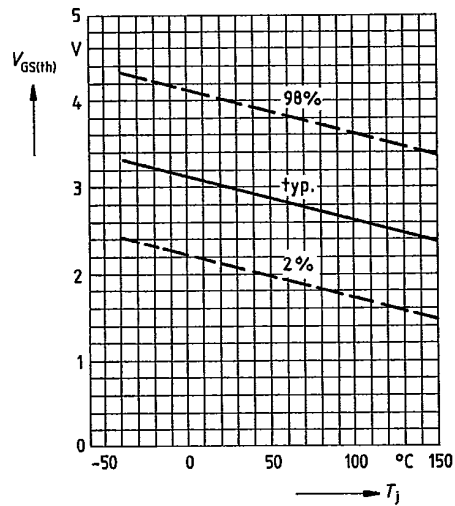
Typical drain-source on-state resistance

$R_{DS(on)} = f(I_D)$

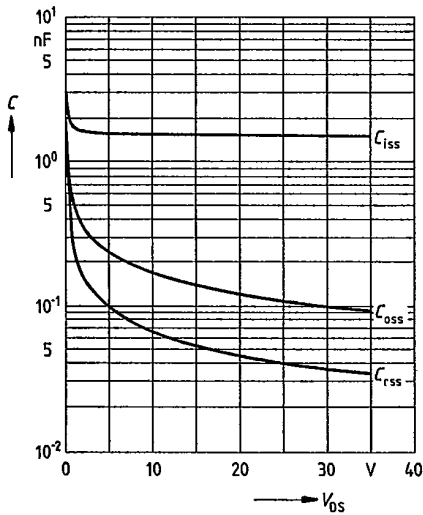
parameter:  $V_{GS} = 10V$ ,  $T_J = 25^\circ C$ 

Drain-source on-state resistance

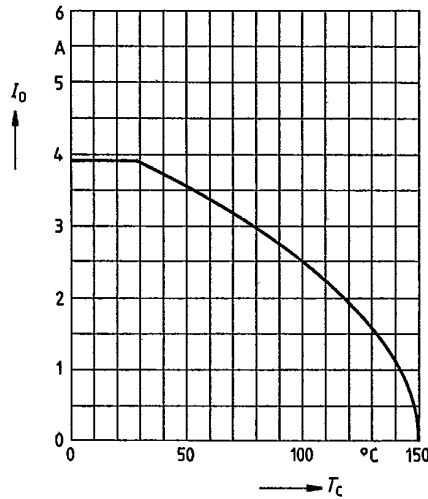
$R_{DS(on)} = f(T_J)$

parameter:  $I_D = 2.5A$ ,  $V_{GS} = 10V$  (spread)Typical transconductance  $g_{fs} = f(I_D)$ parameter: 80  $\mu s$  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)

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

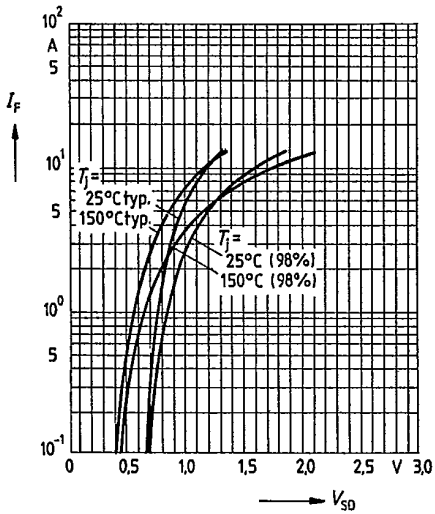


Continuous drain current  $I_D = f(T_C)$   
parameter:  $V_{GS} \geq 10\text{V}$

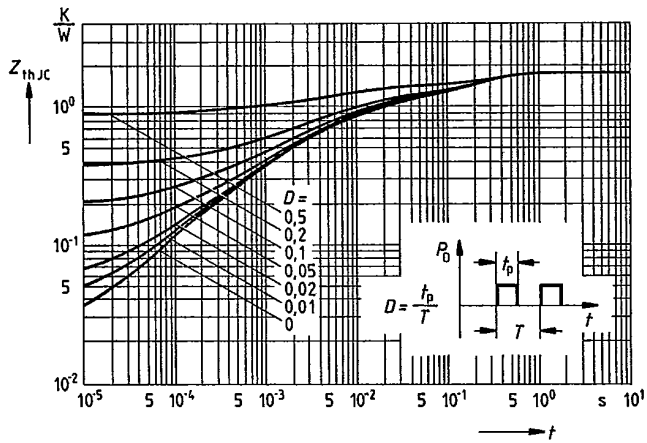


Forward characteristic of reverse diode

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



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



Typical gate-charge  $V_{GS} = f(Q_{Gate})$   
 parameter:  $I_{D\ puls} = 6,8A$

