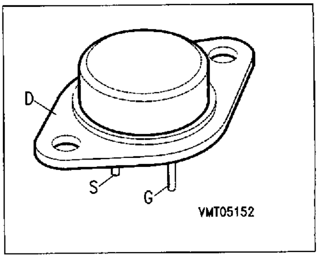
SIEMENS

SIPMOS® Power Transistor

BUZ 64

- N channel
- Enhancement mode
- Avalanche-rated



Type	V_{DS}	I_D	$R_{DS\,(on)}$	Package [1)]	Ordering Code
BUZ 64	400 V	11.5 A	0.4 Ω	TO-204 AA	C67078-S1017-A2

Maximum Ratings

Parameter	Symbol	Values	Unit
Continuous drain current, T_C = 31 ˚C	I_D	11.5	A
Pulsed drain current, T_C = 25 ˚C	$I_{D\,puls}$	46	
Avalanche current, limited by $T_{j\,max}$	I_{AR}	11.5	
Avalanche energy, periodic limited by $T_{j\,(max)}$	E_{AR}	13	mJ
Avalanche energy, single pulse I_D =11.5 A, V_{DD} = 50 V, R_{GS} = 25 Ω L = 8.87 mH, T_j = 25 ˚C	E_{AS}	670	
Gate-source voltage	V_{GS}	± 20	V
Power dissipation, T_C = 25 ˚C	P_{tot}	125	W
Operating and storage temperature range	T_j , T_{stg}	– 55 ... + 150	˚C

Thermal resistance, chip-case	$R_{th\,JC}$	≤ 1.0	K/W
DIN humidity category, DIN 40 040		C	–
IEC climatic category, DIN IEC 68-1		55/150/56	

1) See chapter Package Outlines.

Electrical Characteristics
at T_j = 25 °C, unless otherwise specified.

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
Static characteristics					
Drain-source breakdown voltage V_{GS} = 0 V, I_D = 0.25 mA	$V_{(BR)\,DSS}$	400	–	–	V
Gate threshold voltage V_{GS} = V_{DS} , I_D = 1 mA	$V_{GS\,(th)}$	2.1	3.0	4.0	
Zero gate voltage drain current V_{DS} = 400 V, V_{GS} = 0 V T_j = 25 °C T_j = 125 °C	I_{DSS}	 – –	 0.1 10	 1.0 100	µA
Gate-source leakage current V_{GS} = 20 V, V_{DS} = 0 V	I_{GSS}	–	10	100	nA
Drain-source on-resistance V_{GS} = 10 V, I_D = 7.5 A	$R_{DS\,(on)}$	–	0.35	0.40	Ω
Dynamic characteristics					
Forward transconductance $V_{DS} \geq 2 \times I_D \times R_{DS(on)max}$, I_D = 7.5 A	g_{fs}	5.0	9.5	–	S
Input capacitance V_{GS} = 0 V, V_{DS} = 25 V, f = 1 MHz	C_{iss}	–	1900	2500	pF
Output capacitance V_{GS} = 0 V, V_{DS} = 25 V, f = 1 MHz	C_{oss}	–	260	400	
Reverse transfer capacitance V_{GS} = 0 V, V_{DS} = 25 V, f = 1 MHz	C_{rss}	–	110	170	
Turn-on time t_{on} , ($t_{on} = t_{d\,(on)} + t_r$) V_{DD} = 30 V, V_{GS} = 10 V, I_D = 3 A, R_{GS} = 50 Ω	$t_{d\,(on)}$	–	30	45	ns
	t_r	–	90	135	
Turn-off time t_{off} , ($t_{off} = t_{d\,(off)} + t_f$) V_{DD} = 30 V, V_{GS} = 10 V, I_D = 3 A, R_{GS} = 50 Ω	$t_{d\,(off)}$	–	350	465	
	t_f	–	100	135	

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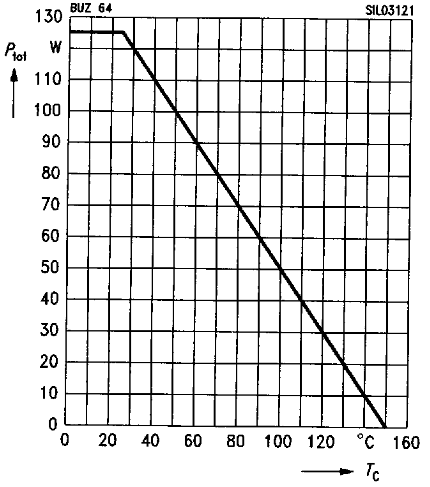
Electrical Characteristics (cont'd)
at T_j = 25 °C, unless otherwise specified.

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
Reverse diode					
Continuous reverse drain current T_C = 25 °C	I_S	–	–	11.5	A
Pulsed reverse drain current T_C = 25 °C	I_{SM}	–	–	46	
Diode forward on-voltage I_S = 23 A, V_{GS} = 0 V	V_{SD}	–	1.1	1.4	V
Reverse recovery time V_R = 30 V, $I_F = I_S$, di_F / dt = 100 A/µs	t_{rr}	–	180	–	ns
Reverse recovery charge V_R = 30 V, $I_F = I_S$, di_F / dt = 100 A/µs	Q_{rr}	–	1.2	–	µC

Characteristics at T_j = 25 °C, unless otherwise specified.

Total power dissipation

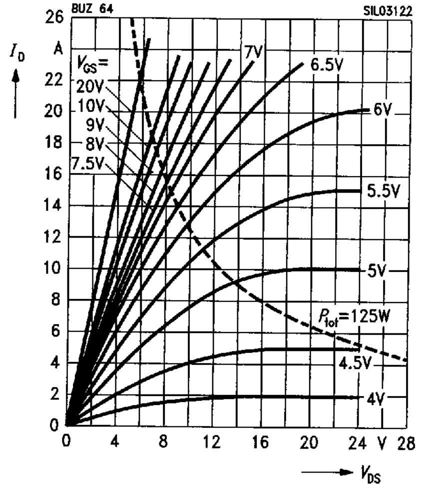
$P_{tot} = f(T_C)$



Typ. output characteristics

$I_D = f(V_{DS})$

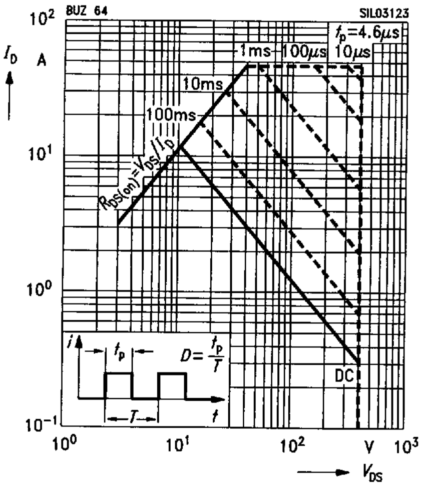
parameter: t_p = 80 µs



Safe operating area

$I_D = f(V_{DS})$

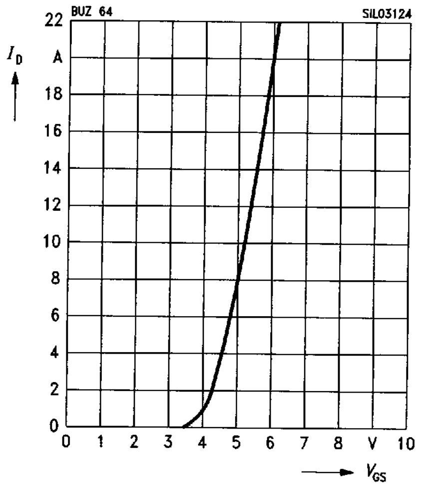
parameter: D = 0.01, T_C = 25 °C



Typ. transfer characteristics

$I_D = f(V_{GS})$

parameter: t_p = 80 µs, V_{DS} = 25 V



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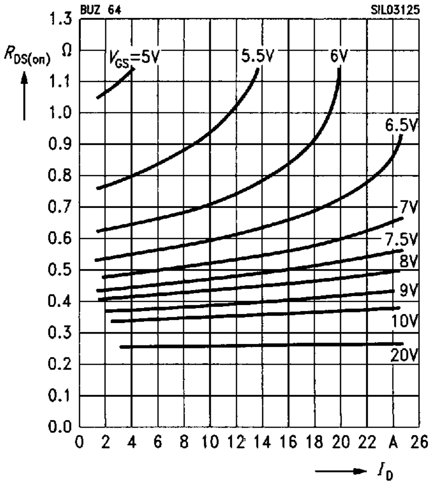
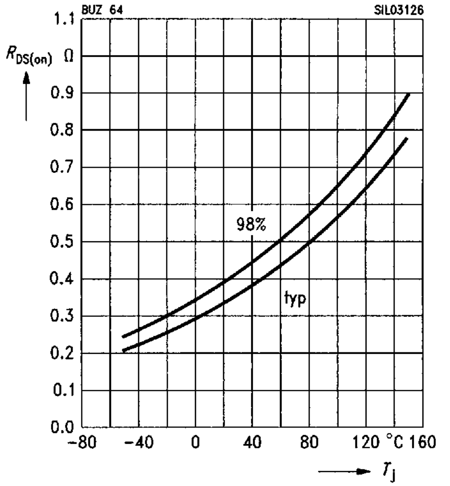
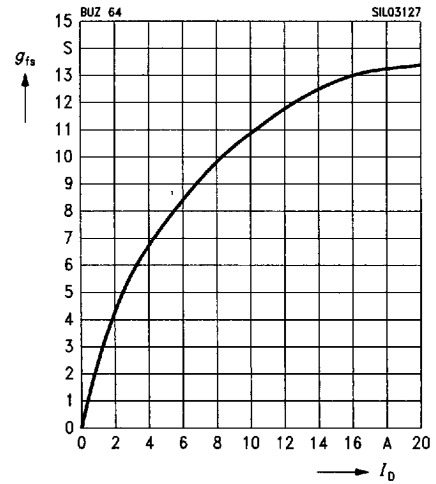
Typ. drain-source on-resistance
$R_{DS(on)} = f(I_D)$
parameter: V_{GS}



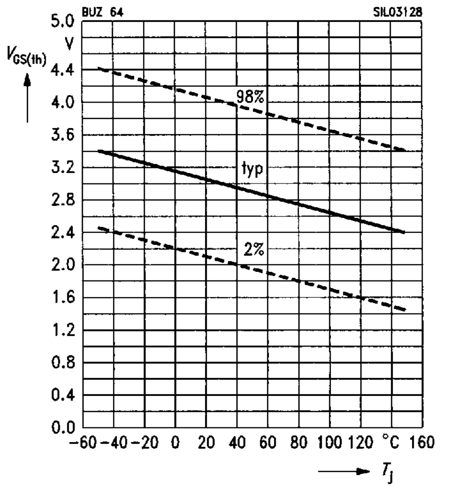
Drain-source on-resistance
$R_{DS(on)} = f(T_j)$
parameter: I_D = 7.5 A, V_{GS} = 10 V, (spread)



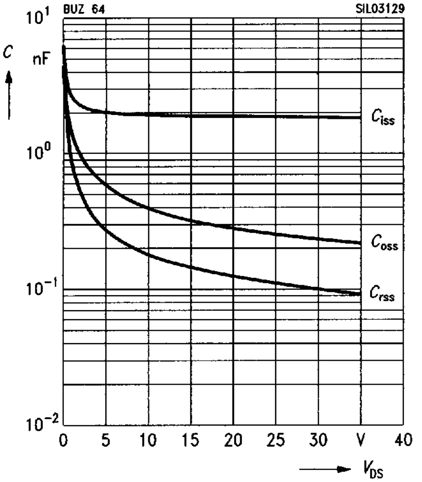
Typ. forward transconductance
$g_{fs} = f(I_D)$
parameter: t_p = 80 µs



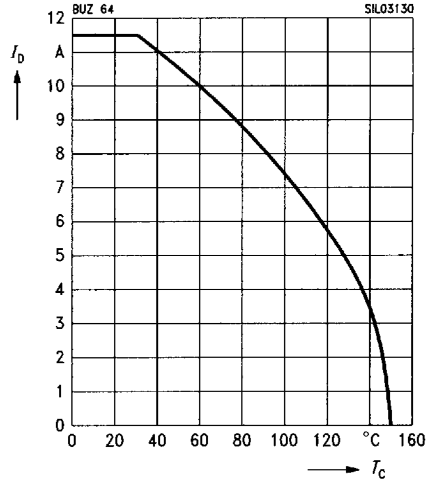
Gate threshold voltage
$V_{GS(th)} = f(T_j)$
parameter: $V_{GS} = V_{DS}$, I_D = 1 mA, (spread)



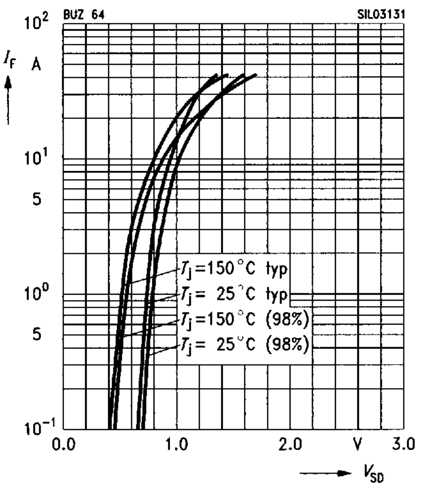
Typ. capacitances
$C = f(V_{DS})$
parameter: $V_{GS} = 0$ V, $f = 1$ MHz



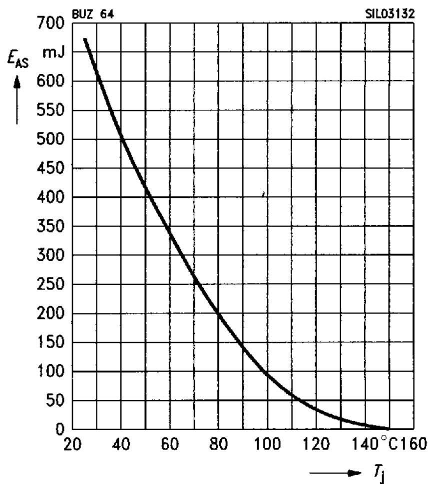
Drain current
$I_D = f(T_C)$
parameter: $V_{GS} \geq 10$ V



Forward characteristics of reverse diode
$I_F = f(V_{SD})$
parameter: T_j , $t_p = 80$ µs, (spread)



Avalanche energy $E_{AS} = f(T_j)$
parameter: $I_D = 11.5$ A, $V_{DD} = 50$ V
$R_{GS} = 25\ \Omega$, $L = 8.87$ mH



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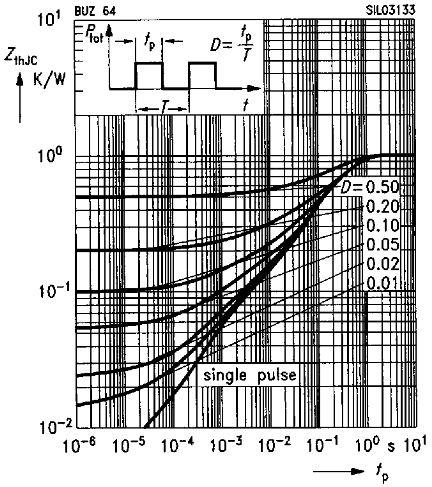
Transient thermal impedance
$Z_{thJC} = f(t_p)$
parameter: $D = t_p / T$



Typ. gate charge
$V_{GS} = f(Q_{Gate})$
parameter: $I_{D\,puls} = 21$ A