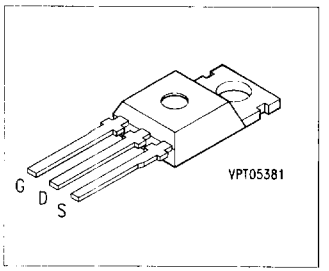
SIEMENS

SIPMOS® Power Transistor — BUZ 205

- N channel
- Enhancement mode
- FREDFET



Type	V_{DS}	I_D	$R_{DS(on)}$	Package [1]	Ordering Code
BUZ 205	400 V	6.0 A	1.0 Ω	TO-220 AB	C67078-A1401-A2

Maximum Ratings

Parameter	Symbol	Values	Unit
Continuous drain current, T_C = 35 °C	I_D	**6.0**	A
Pulsed drain current, T_C = 25 °C	$I_{D\,puls}$	**24**	
Drain-source voltage	V_{DS}	**400**	V
Drain-gate voltage, R_{GS} = 20 kΩ	V_{DGR}	**400**	
Gate-source voltage	V_{GS}	**± 20**	
Power dissipation, T_C = 25 °C	P_{tot}	**75**	W
Operating and storage temperature range	T_j , T_{stg}	**– 55 ... + 150**	°C
Thermal resistance, chip-case	$R_{th\,JC}$	**≤ 1.67**	K/W
DIN humidity category, DIN 40 040		**E**	–
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	4.0	4.0	
Zero gate voltage drain current V_{DS} = 400 V, V_{GS} = 0 V	I_{DSS}				µA
T_j = 25 °C		–	20	250	
T_j = 125 °C		–	100	1000	
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 = 4.0 A	$R_{DS\,(on)}$	–	0.9	1.0	Ω
Dynamic characteristics					
Forward transconductance $V_{DS} \geq 2 \times I_D \times R_{DS(on)max}$, I_D = 4.0 A	g_{fs}	1.7	2.9	–	S
Input capacitance V_{GS} = 0 V, V_{DS} = 25 V, f = 1 MHz	C_{iss}	–	1500	2000	pF
Output capacitance V_{GS} = 0 V, V_{DS} = 25 V, f = 1 MHz	C_{oss}	–	120	180	
Reverse transfer capacitance V_{GS} = 0 V, V_{DS} = 25 V, f = 1 MHz	C_{rss}	–	35	60	
Turn-on time t_{on} , ($t_{on} = t_{d\,(on)} + t_r$)	$t_{d\,(on)}$	–	30	45	ns
V_{DD} = – 30 V, V_{GS} = 10 V, I_D = 2.7 A, R_{GS} = 50 Ω	t_r	–	40	60	
Turn-off time t_{off} , ($t_{off} = t_{d\,(off)} + t_f$)	$t_{d\,(off)}$	–	110	140	
V_{DD} = – 30 V, V_{GS} = 10 V, I_D = 2.7 A, R_{GS} = 50 Ω	t_f	–	50	65	

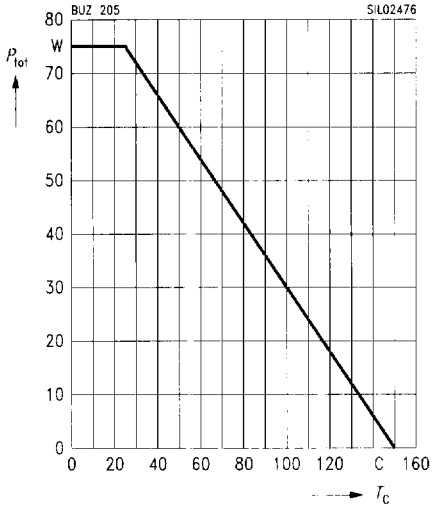
Electrical Characteristics (cont'd)
at T_j = 25 °C, unless otherwise specified.

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
Reverse diode					
Continuous reverse drain current T_C = 25 °C	I_S	–	–	6.0	A
Pulsed reverse drain current T_C = 25 °C	I_{SM}	–	–	24	
Diode forward on-voltage I_S = 12 A, V_{GS} = 0 V	V_{SD}	–	1.3	1.6	V
Reverse recovery time V_R = 100 V, $I_F = I_{DR}$, di_F / dt = 100 A/µs	t_{rr}	–	180	250	ns
Reverse recovery charge V_R = 100 V, $I_F = I_{DR}$, di_F / dt = 100 A/µs	Q_{rr}	–	0.65	1.2	µC

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

Total power dissipation

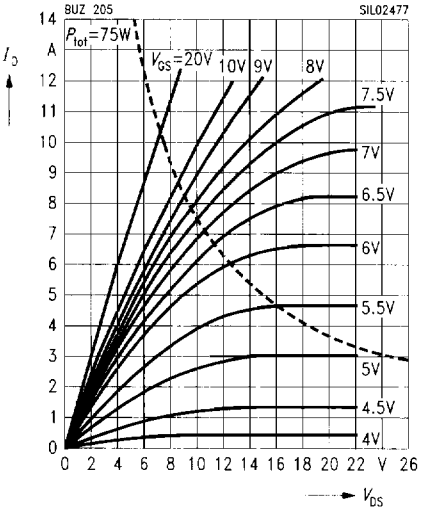
$P_{tot} = f(T_C)$



Typ. output characteristics

$I_D = f(V_{DS})$

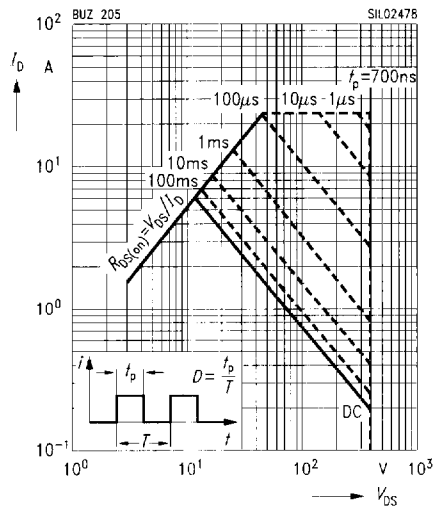
parameter: t_p = 80 µs



Safe operating area

$I_D = f(V_{DS})$

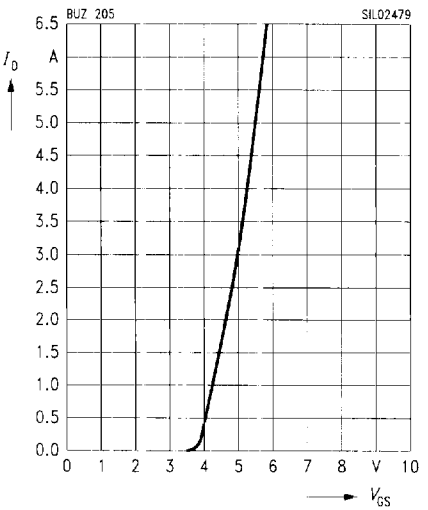
parameter: D = 0.01, T_C = 25 °C



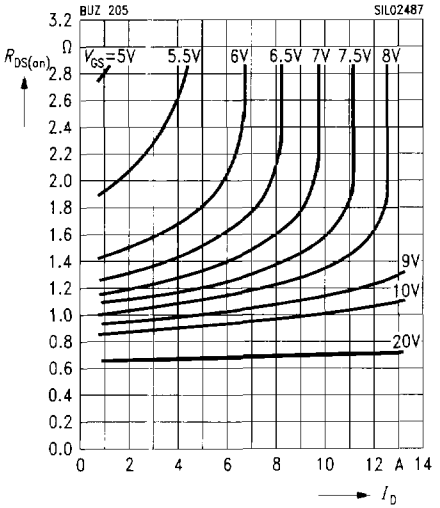
Typ. transfer characteristics

$I_D = f(V_{GS})$

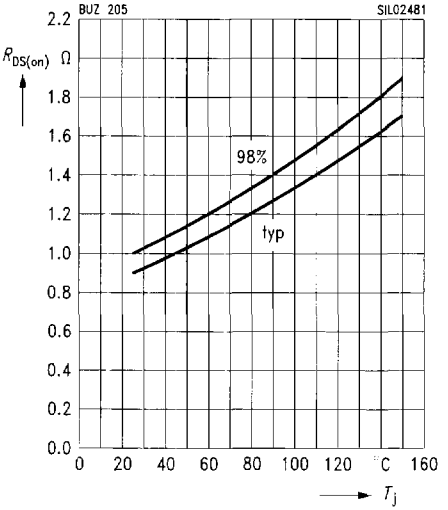
parameter: t_p = 80 µs, V_{DS} = 25 V



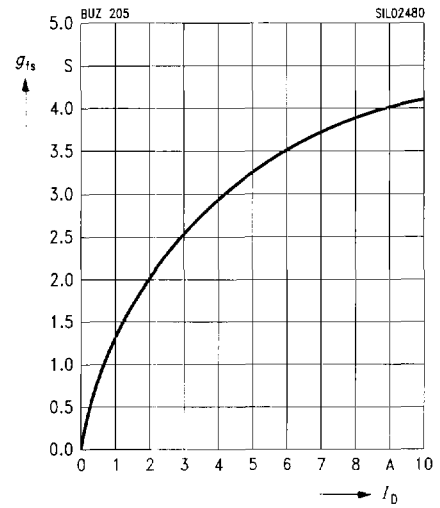
Typ. drain-source on-resistance
$R_{DS\,(on)} = f(I_D)$
parameter: V_{GS}



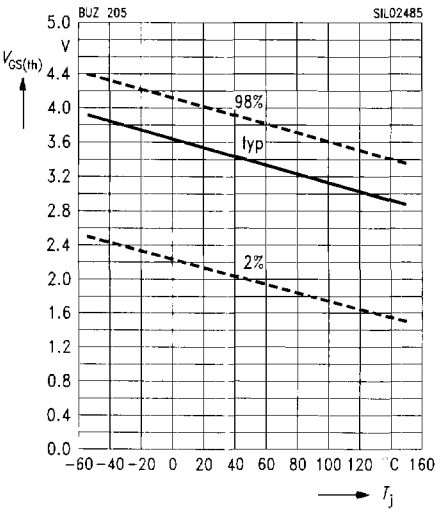
Drain-source on-resistance
$R_{DS\,(on)} = f(T_j)$
parameter: I_D = 4.0 A, V_{GS} = 10 V, (spread)



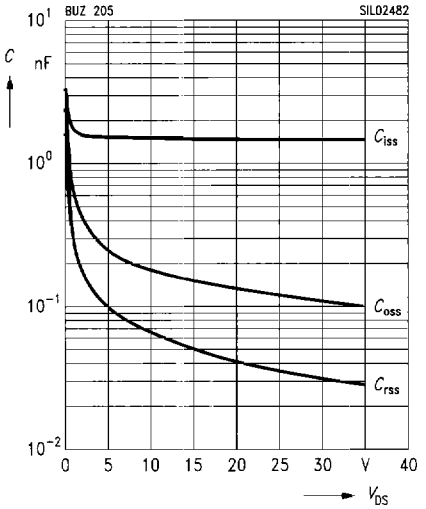
Typ. forward transconductance
$g_{fs} = f(I_D)$
parameter: t_p = 80 µs



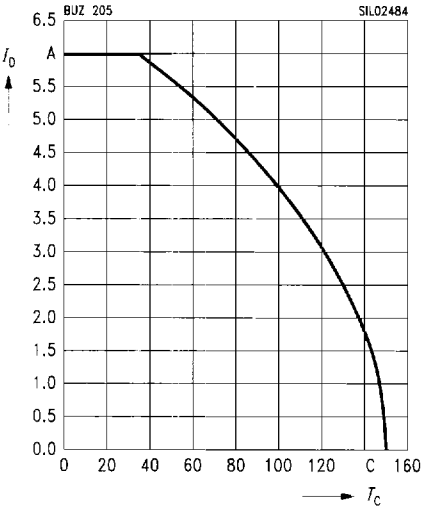
Gate threshold voltage
$V_{GS\,(th)} = f(T_j)$
parameter: $V_{GS} = V_{DS}$, I_D = 1 mA, (spread)



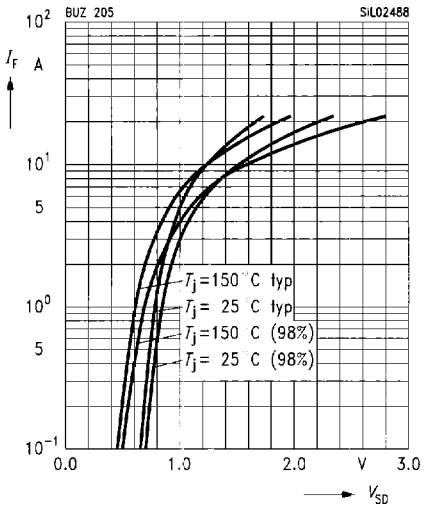
Typ. capacitances
$C = f(V_{DS})$
parameter: V_{GS} = 0 V, f = 1 MHz



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_p = 80 µs, T_j



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