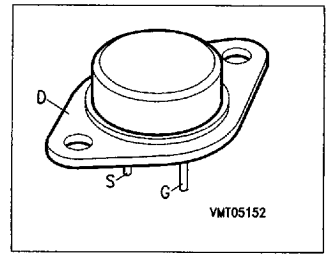
SIEMENS

SIPMOS® Power Transistors

BUZ 84
BUZ 84 A

- N channel
- Enhancement mode



Type	V_{DS}	I_D	T_C	$R_{DS(on)}$	Package [1]	Ordering Code
BUZ 84	800 V	5.3 A	25 °C	2.0 Ω	TO-204 AA	C67078-A1013-A2
BUZ 84 A	800 V	6.0 A	29 °C	1.5 Ω	TO-204 AA	C67078-A1013-A3

Maximum Ratings

Parameter	Symbol	BUZ		Unit
		84	84 A	
Continuous drain current	I_D	5.3	6.0	A
Pulsed drain current, T_C = 25 °C	$I_{D\,puls}$	21	24	
Drain source voltage	V_{DS}	800		V
Drain-gate voltage, R_{GS} = 20 kΩ	V_{DGR}	800		
Gate-source voltage	V_{GS}	± 20		
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	$V_{(BR)\ DSS}$	800	–	–	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} = 800 V, V_{GS} = 0 V T_j = 25 °C T_j = 125 °C	I_{DSS}	 – –	 20 100	 250 1000	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 = 3.0 A BUZ 84 BUZ 84 A	$R_{DS\ (on)}$	 – –	 1.6 1.3	 2.0 1.5	Ω
Dynamic characteristics					
Forward transconductance $V_{DS} \geq 2 \times I_D \times R_{DS(on)max}$, I_D = 3.0 A	g_{fs}	1.8	3.0	–	S
Input capacitance V_{GS} = 0 V, V_{DS} = 25 V, f = 1 MHz	C_{iss}	–	3.9	5.0	pF
Output capacitance V_{GS} = 0 V, V_{DS} = 25 V, f = 1 MHz	C_{oss}	–	200	350	
Reverse transfer capacitance V_{GS} = 0 V, V_{DS} = 25 V, f = 1 MHz	C_{rss}	–	80	140	
Turn-on time t_{on} , (t_{on} = $t_{d\ (on)}$ + t_r) V_{DD} = 30 V, V_{GS} = 10 V, I_D = 2.5 A, R_{GS} = 50 Ω	$t_{d\ (on)}$ t_r	– –	60 90	90 140	ns
Turn-off time t_{off} , (t_{off} = $t_{d\ (off)}$ + t_f) V_{DD} = 30 V, V_{GS} = 10 V, I_D = 2.5 A, R_{GS} = 50 Ω	$t_{d\ (off)}$ t_f	– –	330 110	430 140	

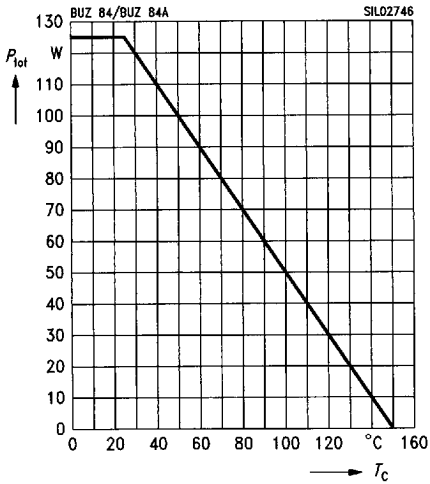
Electrical Characteristics (cont'd)
at T_j = 25 °C, unless otherwise specified.

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
Reverse diode					
Continuous reverse drain current T_C = 25 °C BUZ 84 BUZ 84 A	I_S	 – –	 – –	 5.3 6.0	A
Pulsed reverse drain current T_C = 25 °C BUZ 84 BUZ 84 A	I_{SM}	 – –	 – –	 21 24	
Diode forward on-voltage I_S = 12 A, V_{GS} = 0 V	V_{SD}	–	1.1	1.5	V
Reverse recovery time V_R = 100 V, $I_F = I_S$, di_F/dt = 100 A/µs	t_{rr}	–	1.8	–	µs
Reverse recovery charge V_R = 100 V, $I_F = I_S$, di_F/dt = 100 A/µs	Q_{rr}	–	25	–	µC

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

Total power dissipation

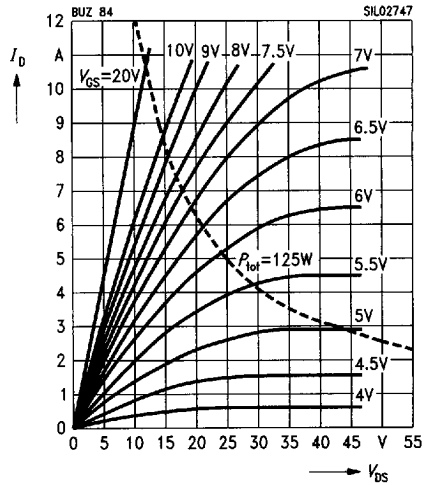
$P_{tot} = f(T_C)$



Typ. output characteristics

$I_D = f(V_{DS})$ **BUZ 84**

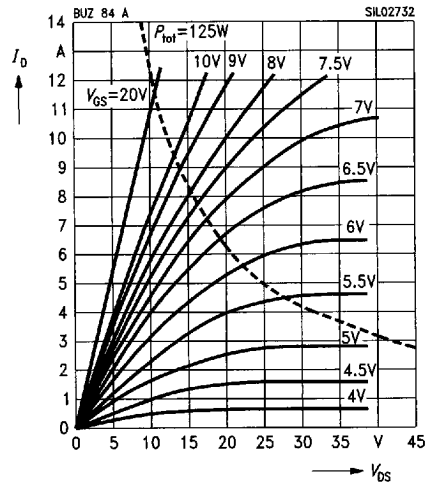
parameter: t_p = 80 µs



Typ. output characteristics

$I_D = f(V_{DS})$ **BUZ 84 A**

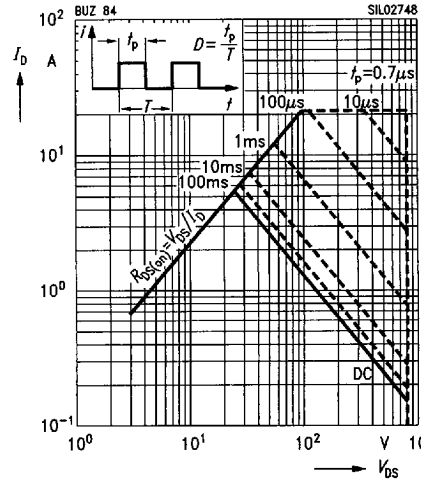
parameter: t_p = 80 µs



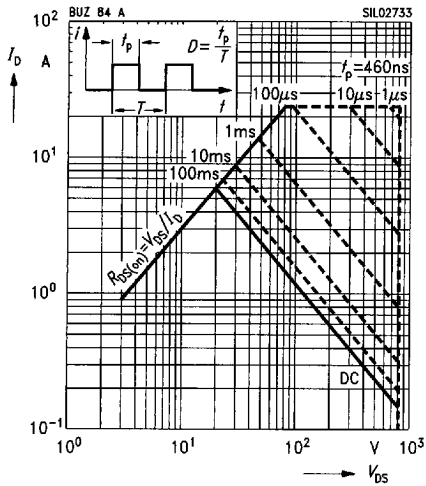
Safe operating area

$I_D = f(V_{DS})$ **BUZ 84**

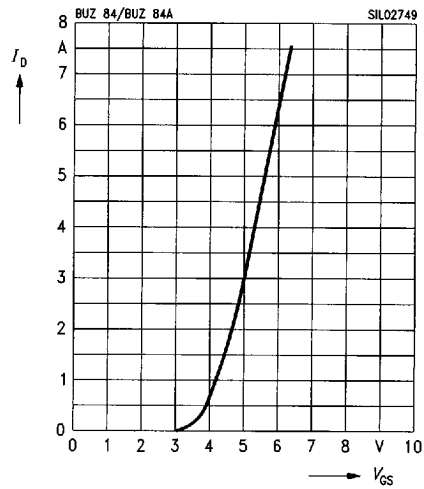
parameter: D = 0.01, T_C = 25 °C



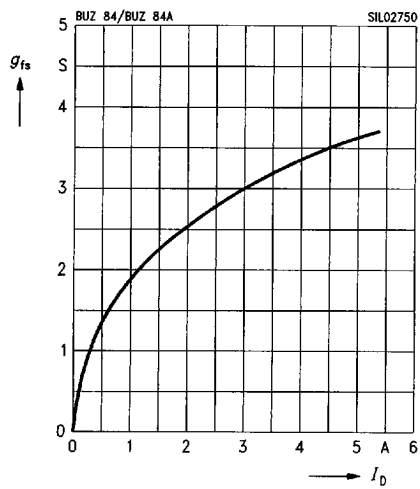
Safe operating area
$I_D = f(V_{DS})$ **BUZ 84 A**
parameter: $D = 0.01$, $T_C = 25$ °C



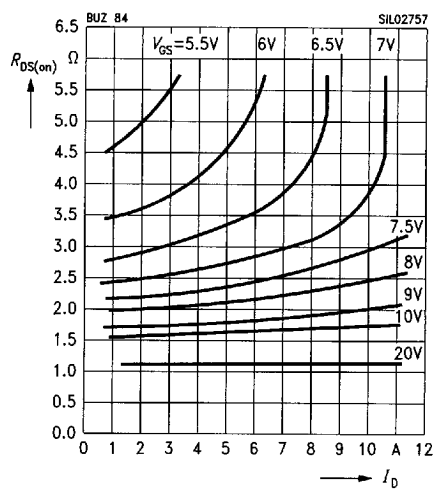
Typ. transfer characteristics
$I_D = f(V_{GS})$
parameter: t_p = 80 µs, V_{DS} = 25 V



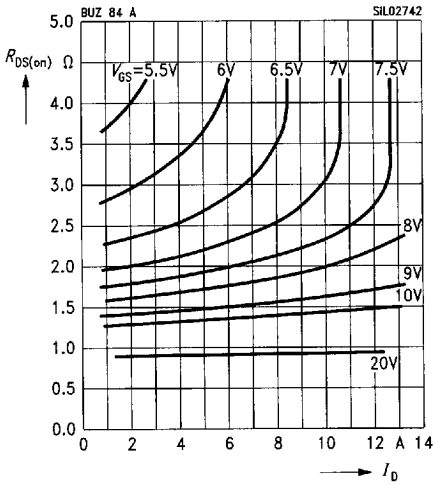
Typ. forward transconductance
$g_{fs} = f(I_D)$
parameter: t_p = 80 µs



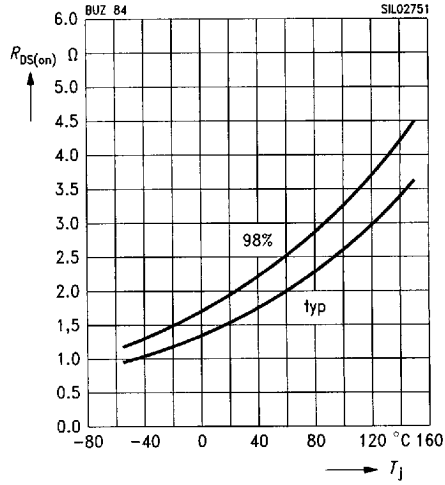
Typ. drain-source on-resistance
$R_{DS(on)} = f(I_D)$ **BUZ 84**
parameter: V_{GS}



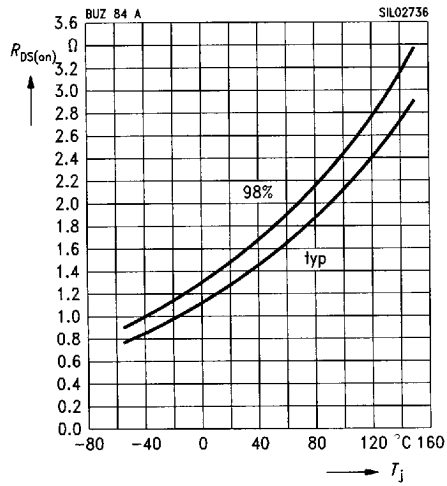
Typ. drain-source on-resistance
$R_{DS\,(on)} = f(I_D)$ **BUZ 84 A**
parameter: V_{GS}



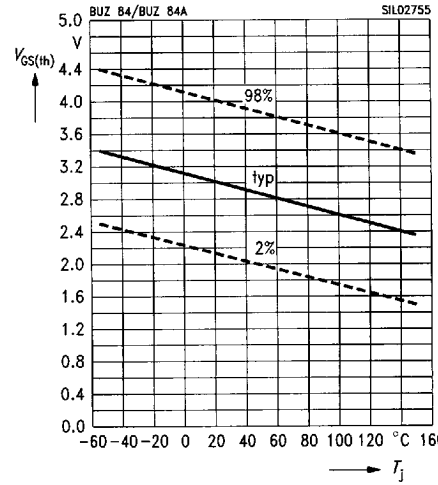
Drain-source on-resistance
$R_{DS\,(on)} = f(T_j)$ **BUZ 84**
parameter: I_D = 3.0 A, V_{GS} = 10 V, (spread)



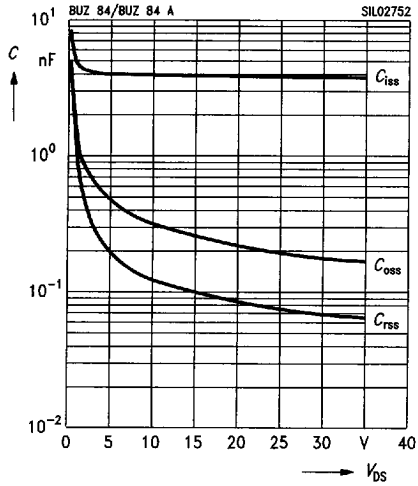
Drain-source on-resistance
$R_{DS\,(on)} = f(T_j)$ **BUZ 84 A**
parameter: I_D = 3.0 A, V_{GS} = 10 V, (spread)



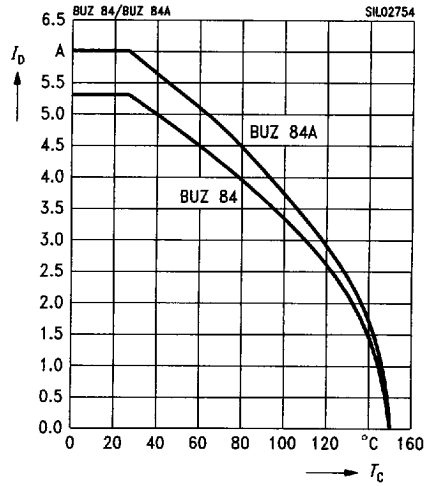
Gate threshold voltage
$V_{GS\,(th)} = f(T_j)$
parameter: $V_{GS} = V_{DS}$, I_D = 1 mA, (spread)



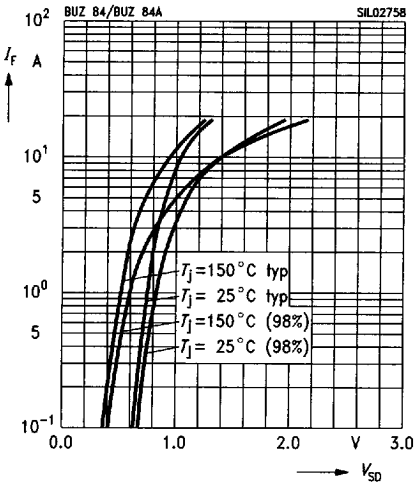
Typ. capacitances
$C = f(V_{DS})$
parameter: V_{GS} = 0 V, f = 1 MHz



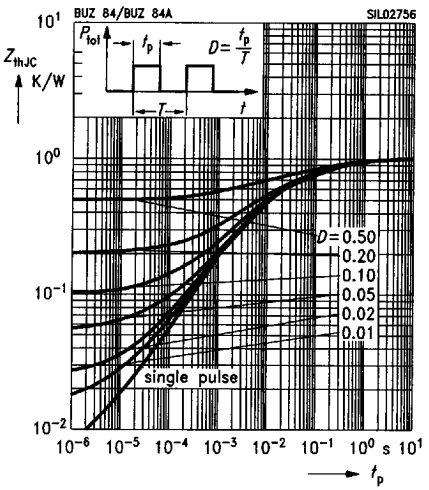
Drain current
$I_D = f(T_C)$
parameter: $V_{GS} \geq 10$ V



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



Transient thermal impedance
$Z_{th\,JC} = f(t_p)$
parameter: $D = t_p / T$



Typ. gate charge
$V_{GS} = f(Q_{Gate})$
parameter: $I_{D\,puls}$ = 9 A