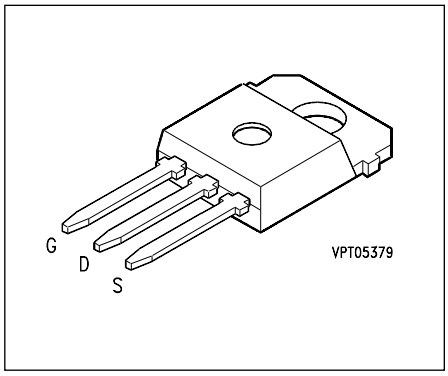
SIEMENS

SIPMOS® Power Transistors

BUZ 307
BUZ 308

- N channel
- Enhancement mode



Type	V_{DS}	I_D	$R_{DS\ (on)}$	Package [1]	Ordering Code
BUZ 307	800 V	3.0 A	3.0 Ω	TO-218 AA	C67078-A3100-A2
BUZ 308	800 V	2.6 A	4.0 Ω	TO-218 AA	C67078-A3109-A2

Maximum Ratings

Parameter	Symbol	BUZ		Unit
		307	308	
Continuous drain current, T_C = 50 ˚C	I_D	**3.0**	**2.6**	A
Pulsed drain current, T_C = 25 ˚C	$I_{D\ puls}$	**10**		
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}	**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	$V_{(BR)\ DSS}$	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 = 1.5 A BUZ 307 BUZ 308	$R_{DS\ (on)}$	 – –	 2.7 3.5	 3.0 4.0	Ω
Dynamic characteristics					
Forward transconductance V_{DS} ≥ 2 x I_D x $R_{DS(on)max}$, I_D = 1.5 A	g_{fs}	1.0	1.8	–	S
Input capacitance V_{GS} = 0 V, V_{DS} = 25 V, f = 1 MHz	C_{iss}	–	1600	2100	pF
Output capacitance V_{GS} = 0 V, V_{DS} = 25 V, f = 1 MHz	C_{oss}	–	90	150	
Reverse transfer capacitance V_{GS} = 0 V , V_{DS} = 25 V, f = 1 MHz	C_{rss}	–	30	55	
Turn-on time t_{on} , (t_{on} = $t_{d\ (on)}$ + t_r) V_{DD} = 30 V, V_{GS} = 10 V, I_D = 3.0 A, R_{GS} = 50 Ω	$t_{d\ (on)}$	–	30	45	ns
	t_r	–	40	60	
Turn-off time t_{off} , (t_{off} = $t_{d\ (off)}$ + t_f) V_{DD} = 30 V, V_{GS} = 10 V, I_D = 3.0 A, R_{GS} = 50 Ω	$t_{d\ (off)}$	–	110	140	
	t_f	–	60	80	

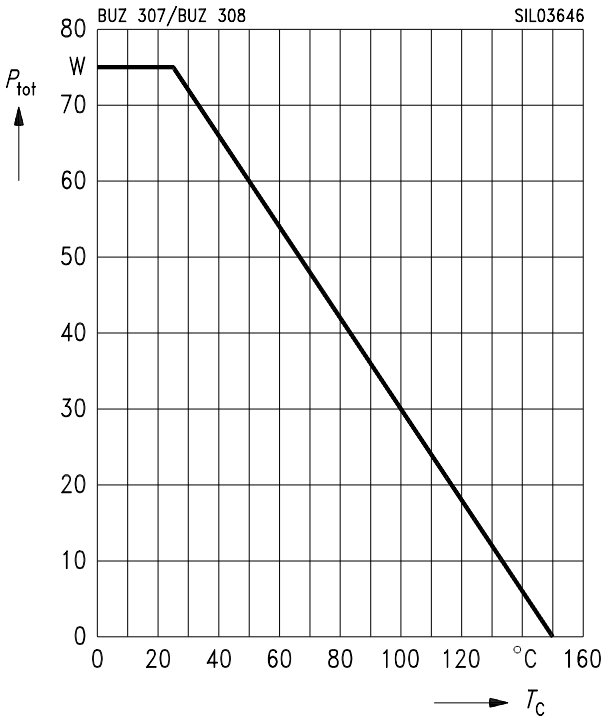
Electrical Characteristics (cont'd)
at T_j = 25 ˚C, unless otherwise specified.

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
Reverse diode					
Continuous reverse drain current T_C = 25 ˚C BUZ 307 BUZ 308	I_S	 – –	 – –	 3.0 2.6	A
Pulsed reverse drain current T_C = 25 ˚C BUZ 307 BUZ 308	I_{SM}	 – –	 – –	 12 10	
Diode forward on-voltage I_S = 6.0 A, V_{GS} = 0 V	V_{SD}	–	1.05	1.3	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}	–	12	–	µC

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

Total power dissipation

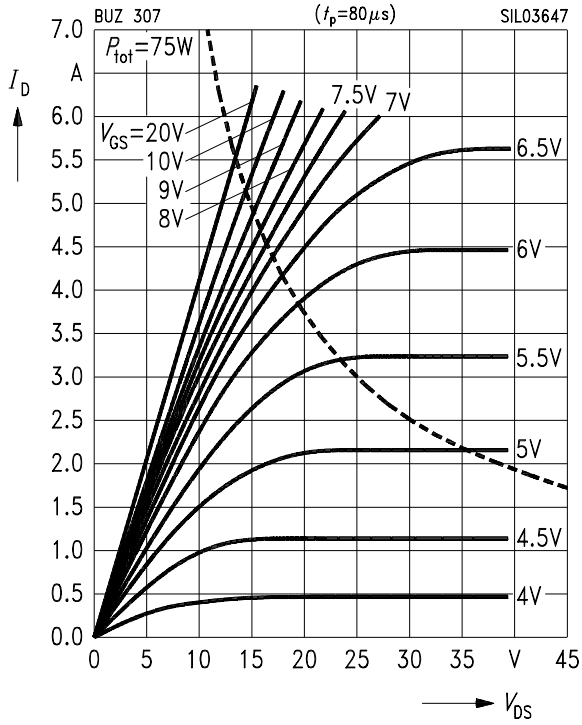
$P_{tot} = f(T_C)$



Typ. output characteristics

$I_D = f(V_{DS})$ **BUZ 307**

parameter: t_p = 80 µs



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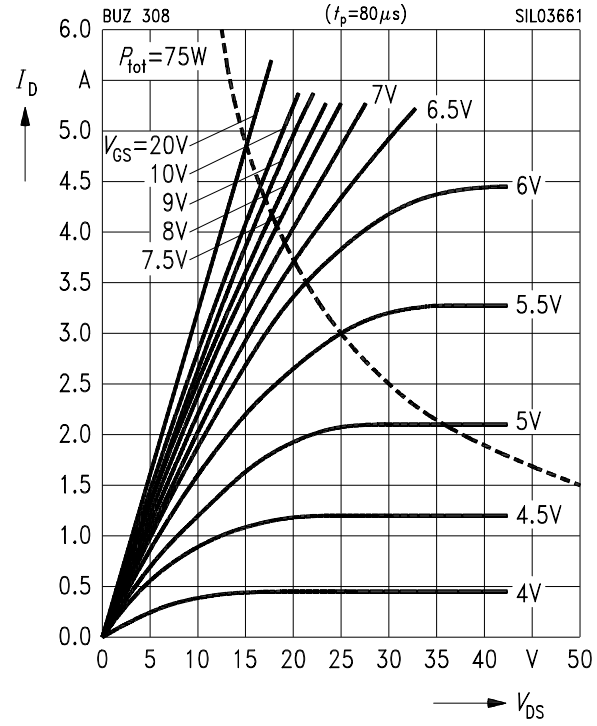
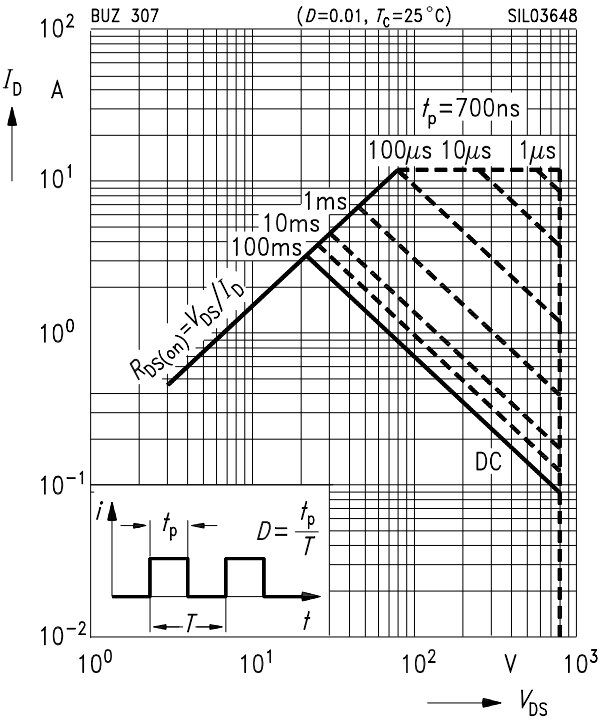


Safe operating area

$I_D = f(V_{DS})$ **BUZ 307**

parameter: D = 0.01, T_C = 25 °C



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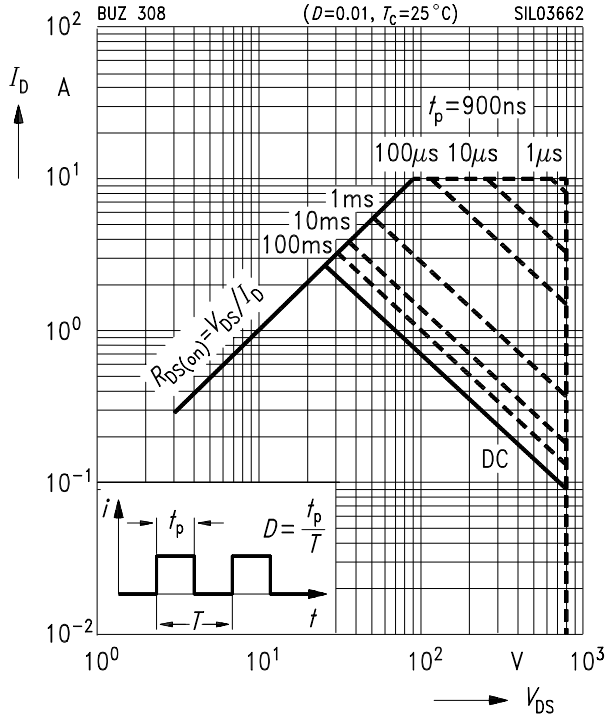
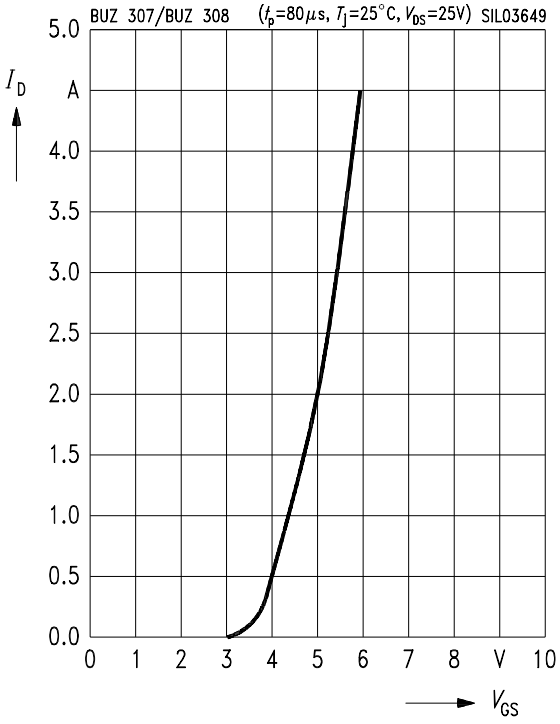


Typ. transfer characteristics

$I_D = f(V_{GS})$

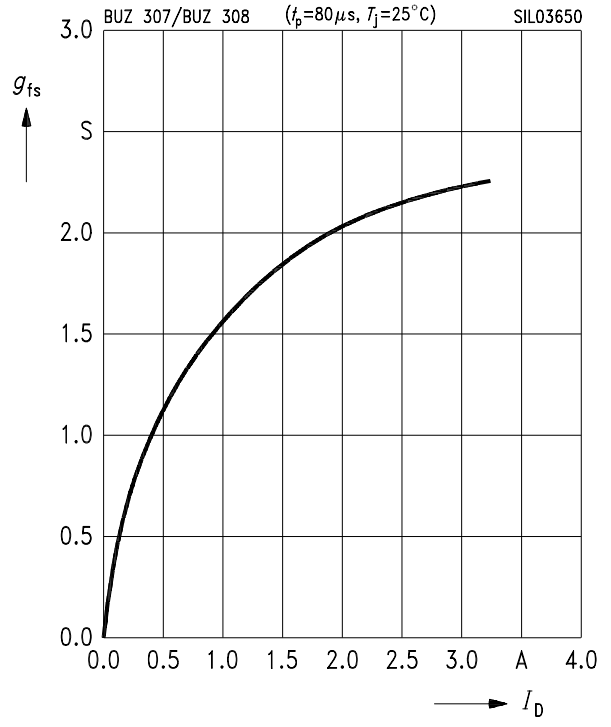
parameter: t_p = 80 µs, V_{DS} = 25 V



Typ.forward transconductance

$g_{fs} = f(I_D)$

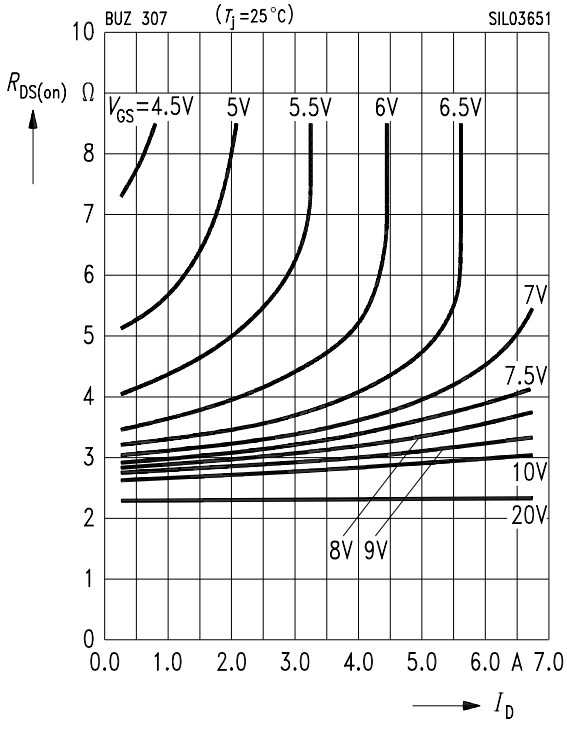
parameter: t_p = 80 µs



Typ. drain-source on-resistance

$R_{DS\,(on)} = f(I_D)$ **BUZ 307**

parameter: V_{GS}



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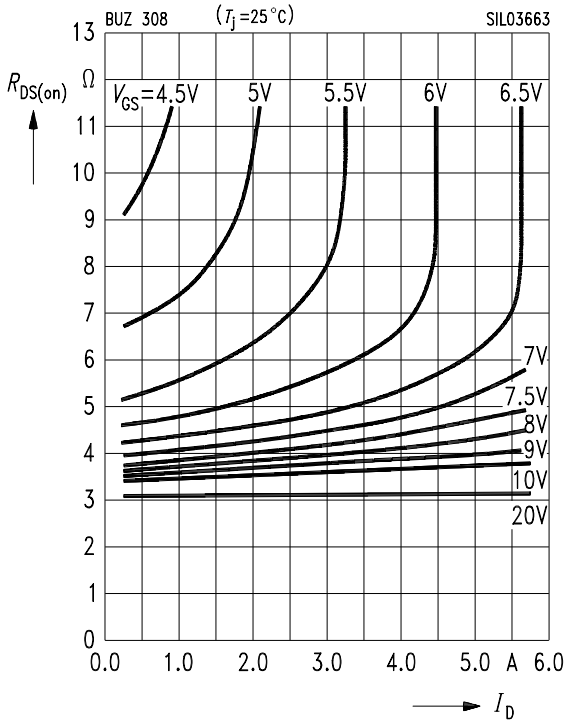
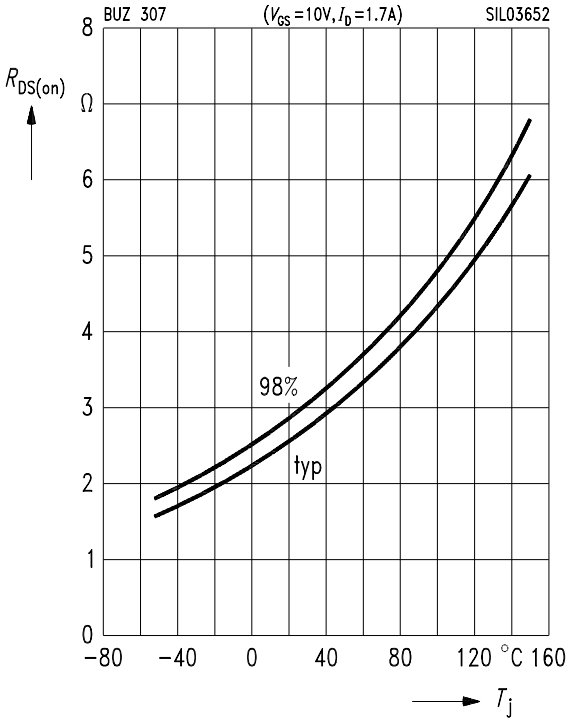


Drain-source on-resistance

$R_{DS\,(on)} = f\,(T_j)$ **BUZ 307**

parameter: I_D = 1.7 A, V_{GS} = 10 V, (spread)



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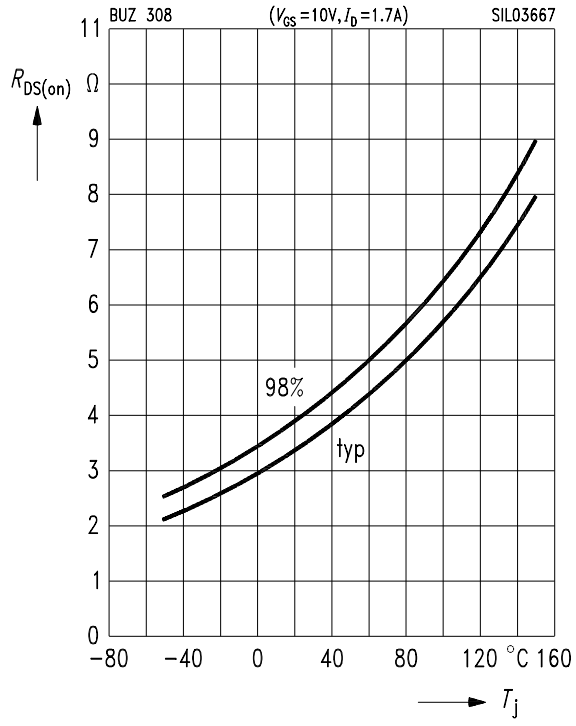
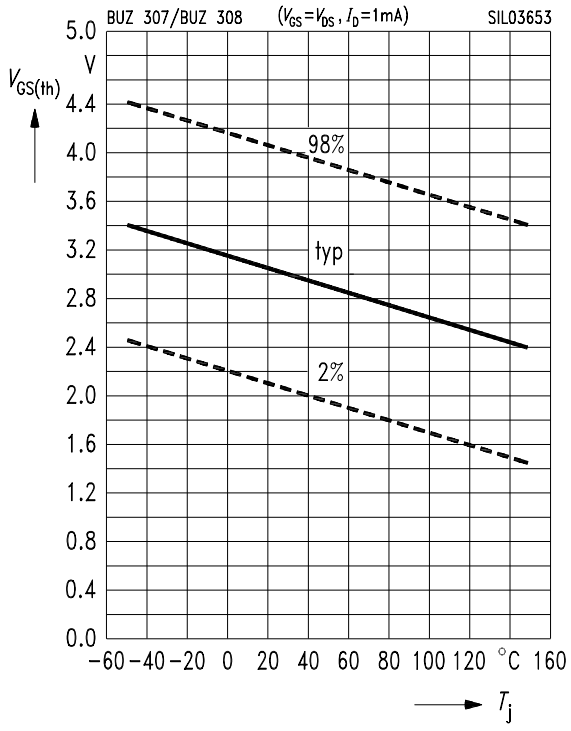


Gate threshold voltage

$V_{GS\,(th)} = f\,(T_j)$

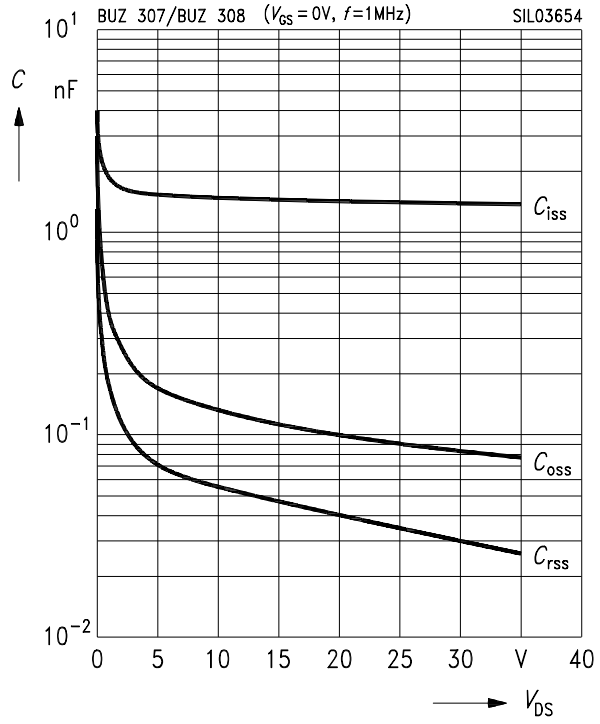
parameter: $V_{GS} = V_{DS}$, I_D = 1 mA, (spread)



Typ. capacitances

$C = f(V_{DS})$

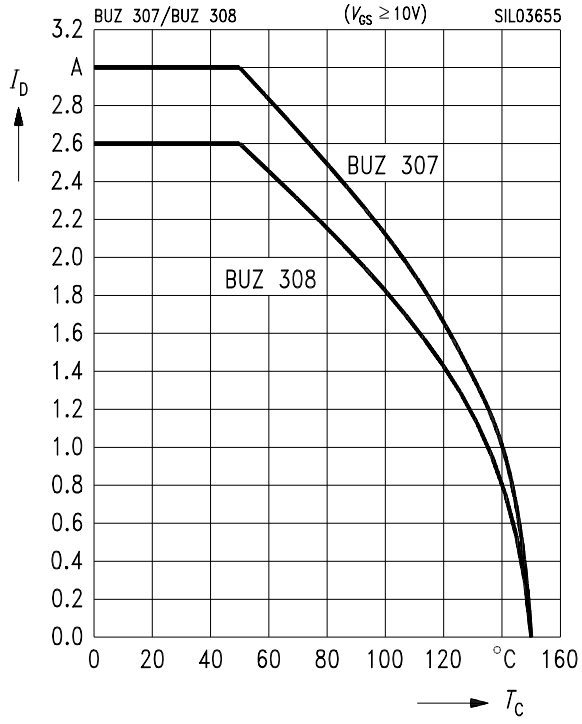
parameter: V_{GS} = 0 V, f = 1 MHz



Drain current

$I_D = f(T_C)$

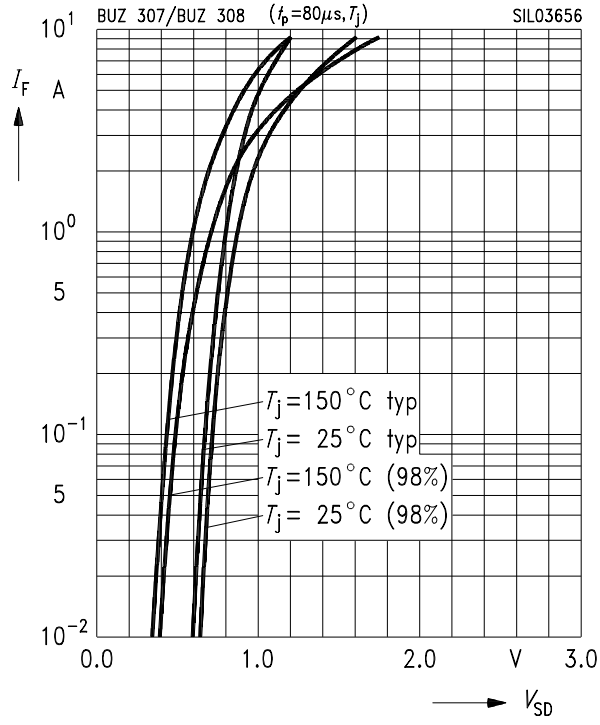
parameter: $V_{GS} \geq 10$ V



Forward characteristics of reverse diode

$I_F = f(V_{SD})$

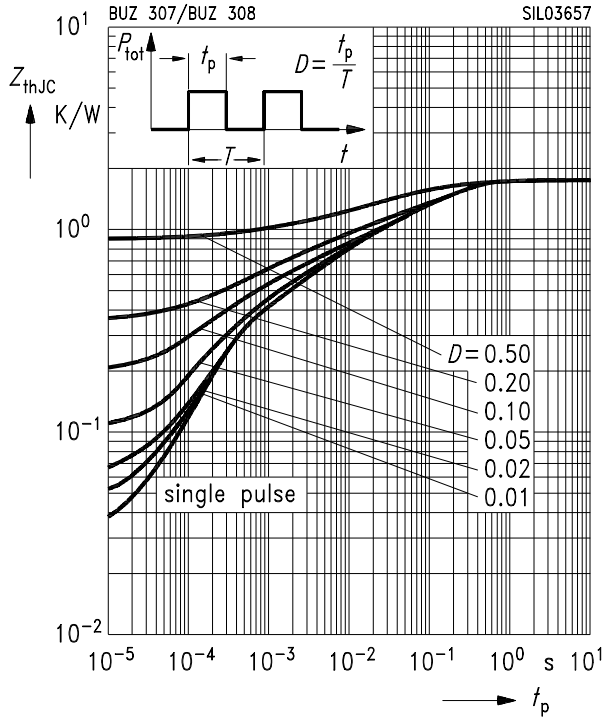
parameter: t_p = 80 µs, T_j



Transient thermal impedance

$Z_{th\,JC} = f(t_p)$

parameter: $D = t_p / T$



Typ. gate charge

$V_{GS} = f(Q_{Gate})$

parameter: $I_{D\ puls}$ = 5 A