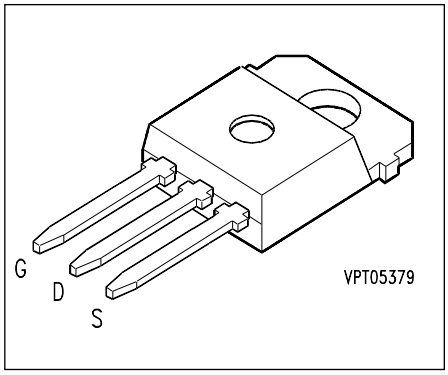
SIEMENS

SIPMOS® Power Transistors

BUZ 355
BUZ 356

- N channel
- Enhancement mode



Type	V_{DS}	I_D	T_C	$R_{DS\ (on)}$	Package [1]	Ordering Code
BUZ 355	800 V	6.0 A	29 ˚C	1.5 Ω	TO-218 AA	C67078-A3107-A2
BUZ 356	800 V	5.3 A	25 ˚C	2.0 Ω	TO-218 AA	C67078-A3108-A2

Maximum Ratings

Parameter	Symbol	BUZ		Unit
		355	356	
Continuous drain current	I_D	**6.0**	**5.3**	A
Pulsed drain current, T_C = 25 ˚C	$I_{D\ puls}$	**21**		
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 355 BUZ 356	$R_{DS\ (on)}$	 – –	 1.3 1.6	 1.5 2.0	Ω
Dynamic characteristics					
Forward transconductance V_{DS} ≥ 2 x I_D x $R_{DS(on)max}$, 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	$t_{d\ (on)}$	–	60	90	ns
	t_r	–	90	140	
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	$t_{d\ (off)}$	–	330	430	
	t_f	–	110	140	

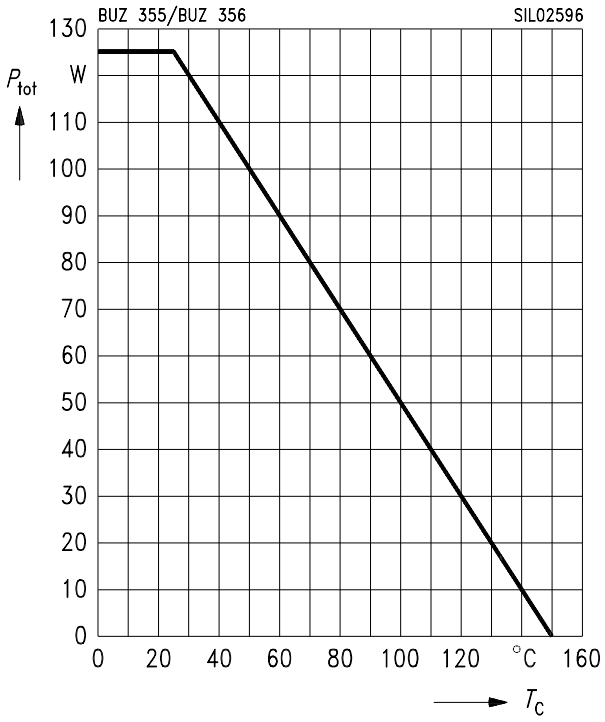
Electrical Characteristics (cont'd)
at T_j = 25 ˚C, unless otherwise specified.

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
Reverse diode					
Continuous reverse drain current T_C = 25 ˚C BUZ 355 BUZ 356	I_S	 – –	 – –	 6.0 5.3	A
Pulsed reverse drain current T_C = 25 ˚C BUZ 355 BUZ 356	I_{SM}	 – –	 – –	 24 21	
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

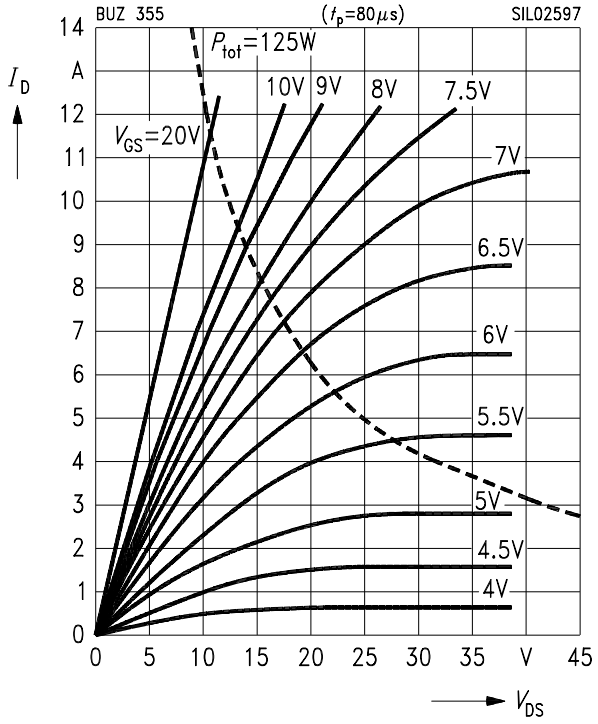
$P_{tot} = f(T_C)$



Typ. output characteristics

$I_D = f(V_{DS})$ **BUZ 355**

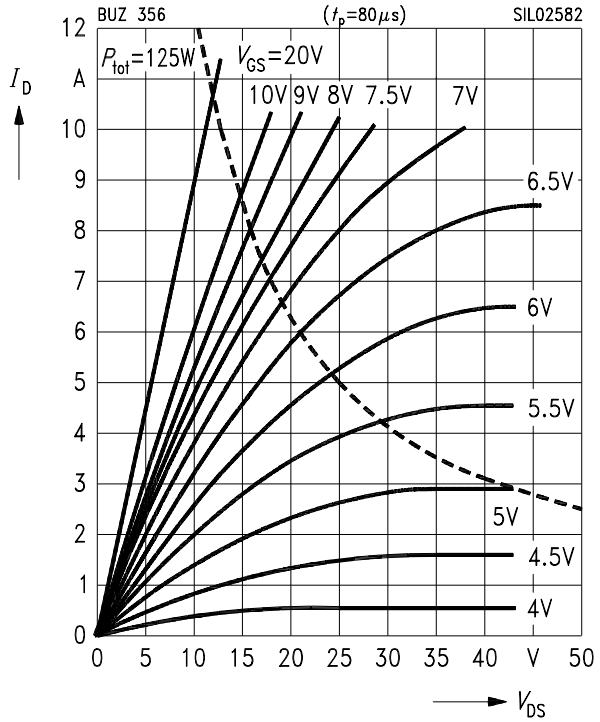
parameter: t_p = 80 µs



Typ. output characteristics

$I_D = f(V_{DS})$ **BUZ 356**

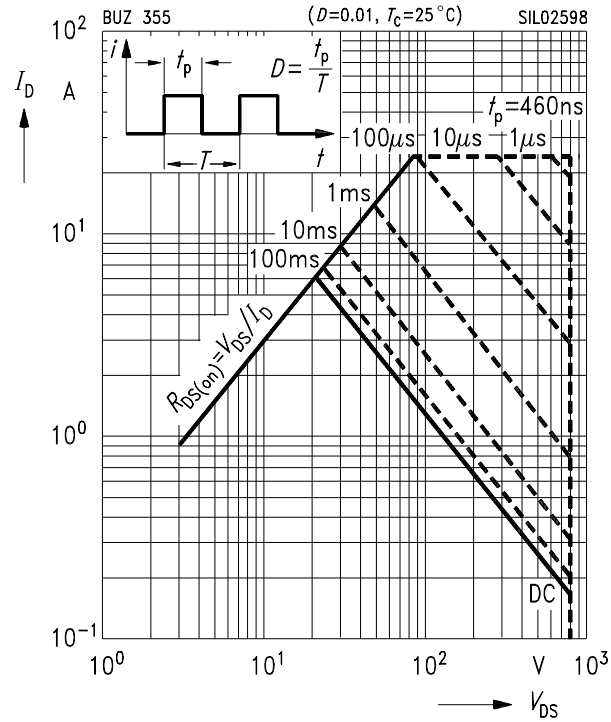
parameter: t_p = 80 µs



Safe operating area

$I_D = f(V_{DS})$ **BUZ 355**

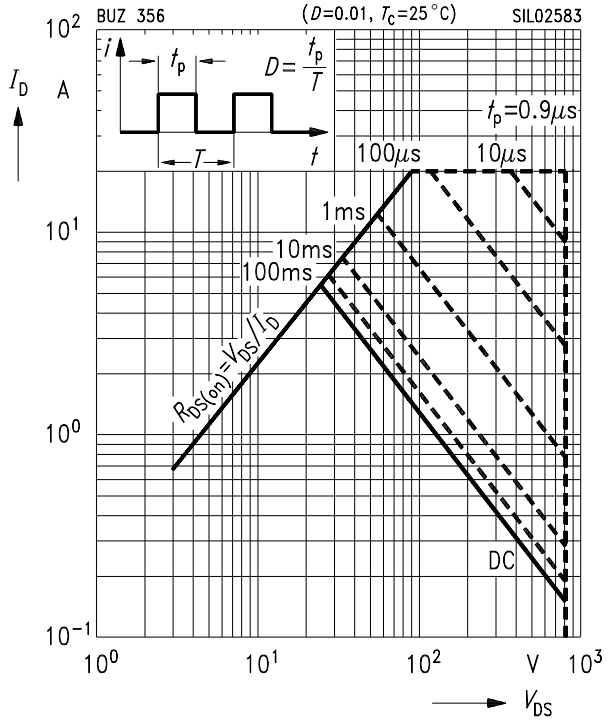
parameter: D = 0.01, T_C = 25 ˚C



Safe operating area

$I_D = f(V_{DS})$ **BUZ 356**

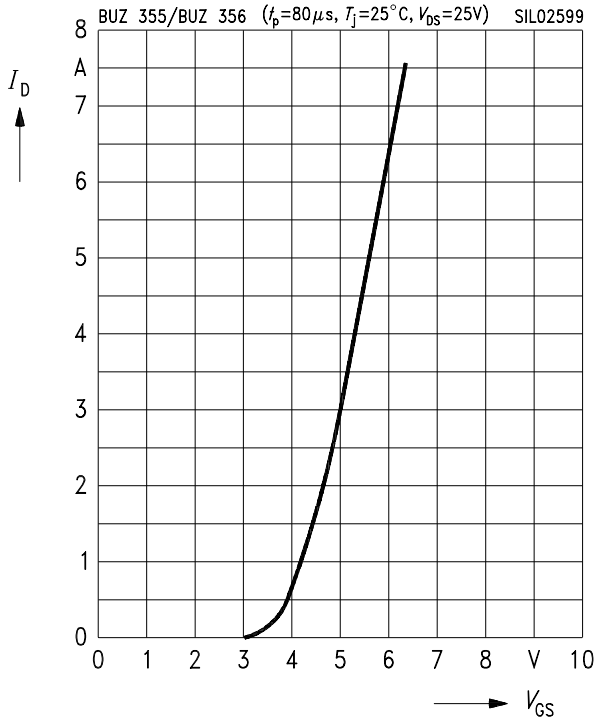
parameter: $D = 0.01$, $T_C = 25\,^{\circ}C$



Typ. transfer characteristics

$I_D = f(V_{GS})$

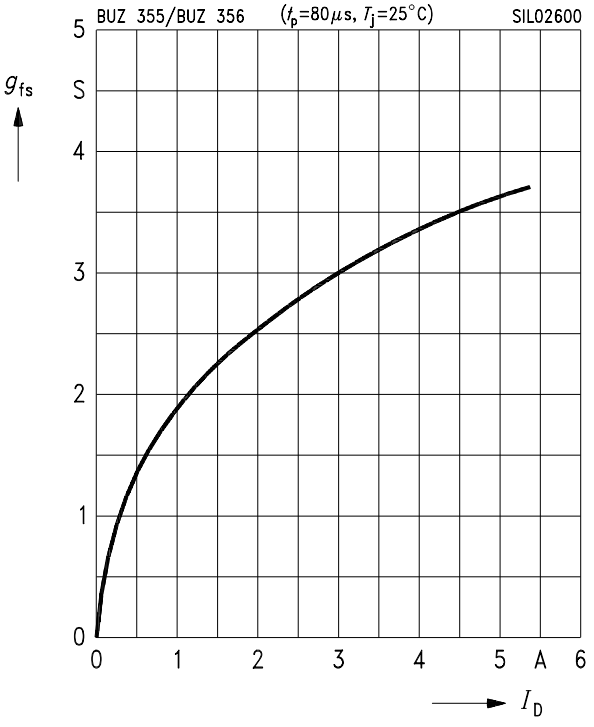
parameter: t_p = 80 µs, V_{DS} = 25 V



Typ. forward transconductance

$g_{fs} = f(I_D)$

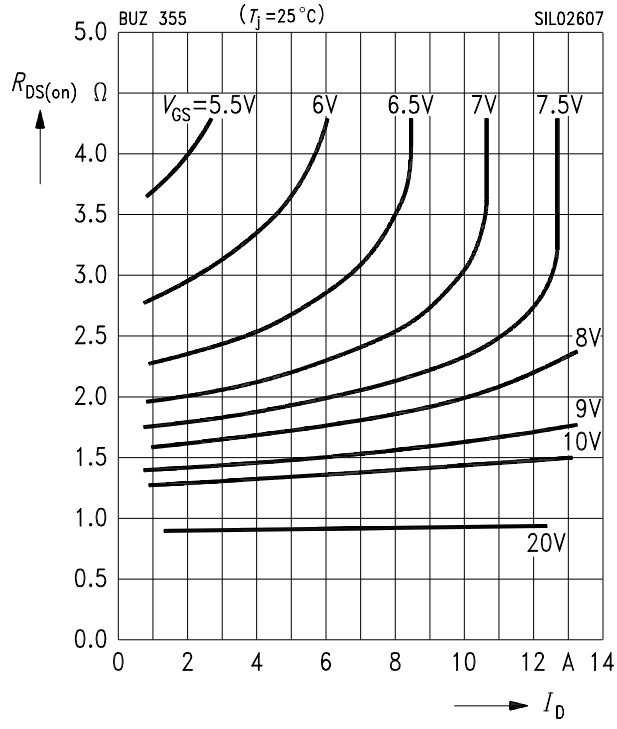
parameter: t_p = 80 µs



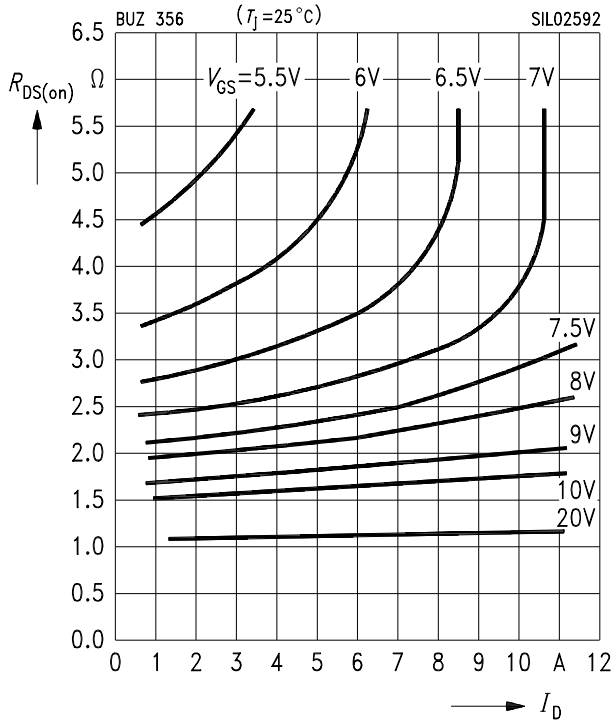
Typ. drain-source on-resistance

$R_{DS\,(on)} = f(I_D)$ **BUZ 355**

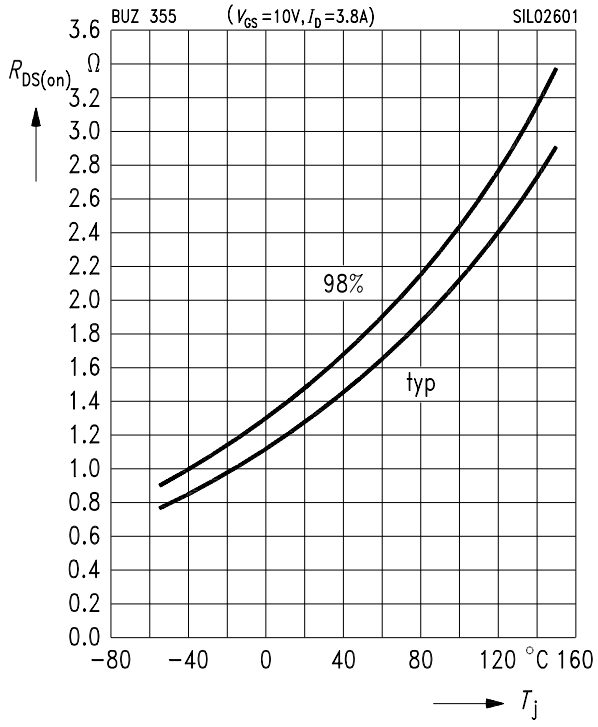
parameter: V_{GS}



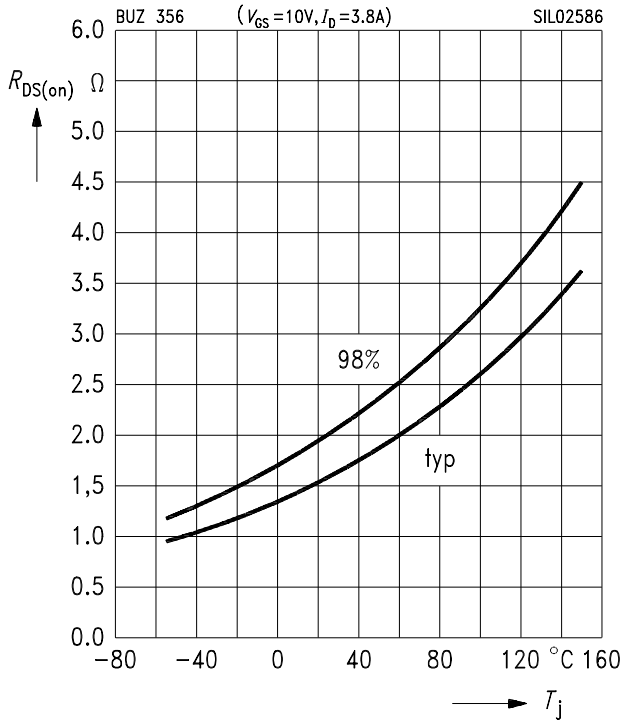
Typ. drain-source on-resistance
$R_{DS\ (on)} = f\ (I_D)$ **BUZ 356**
parameter: V_{GS}



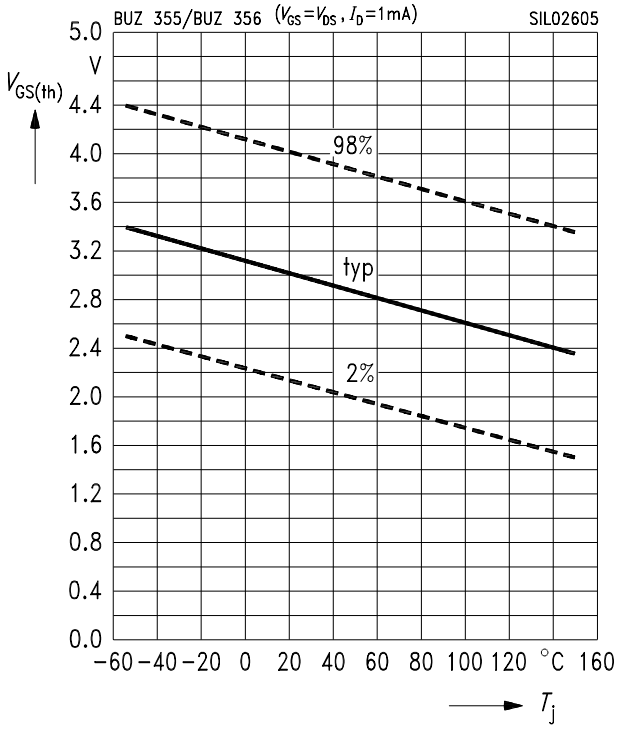
Drain-source on-resistance
$R_{DS\ (on)} = f\ (T_j)$ **BUZ 355**
parameter: I_D = 3.8 A, V_{GS} = 10 V, (spread)



Drain-source on-resistance
$R_{DS\ (on)} = f\ (T_j)$ **BUZ 356**
parameter: I_D = 3.8 A, V_{GS} = 10 V, (spread)



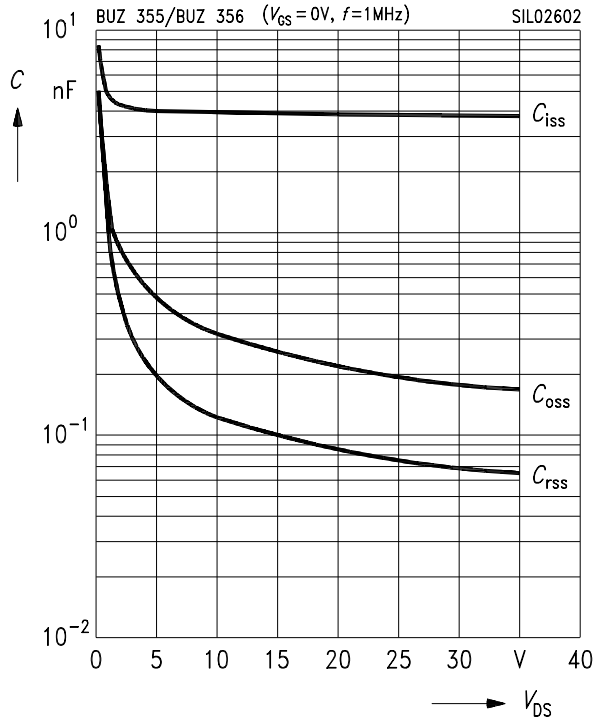
Gate threshold voltage
$V_{GS\ (th)} = f\ (T_j)$
parameter: $V_{GS} = V_{DS}$, I_D = 1 mA, (spread)



Typ. capacitances

$C = f(V_{DS})$

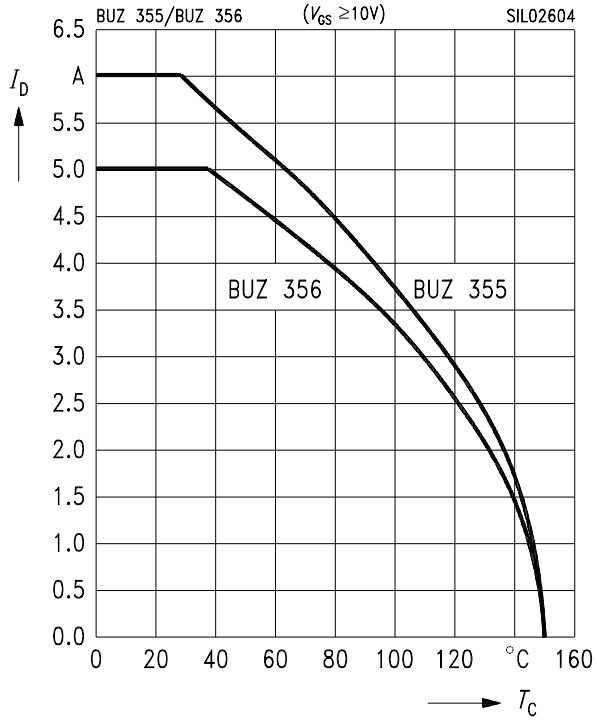
parameter: V_{GS} = 0 V, f = 1 MHz



Drain current

$I_D = f(T_C)$

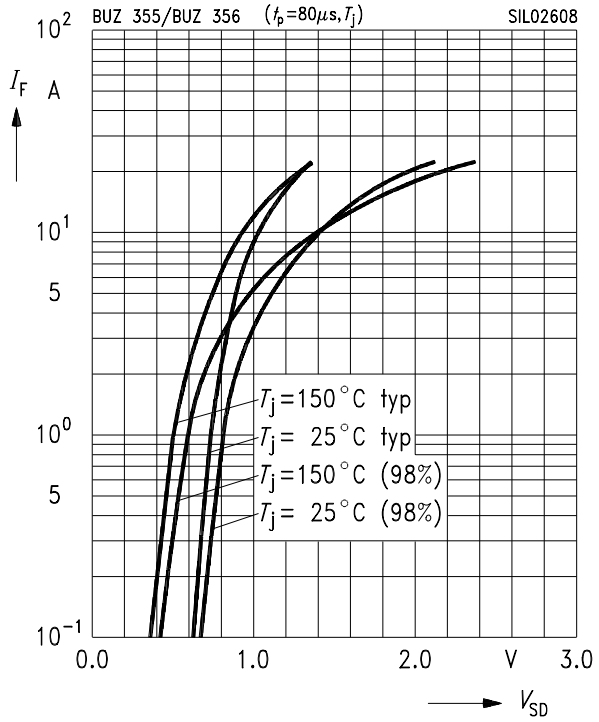
parameter: $V_{GS} \geq 10$ V



Forward characteristics of reverse diode

$I_F = f(V_{SD})$

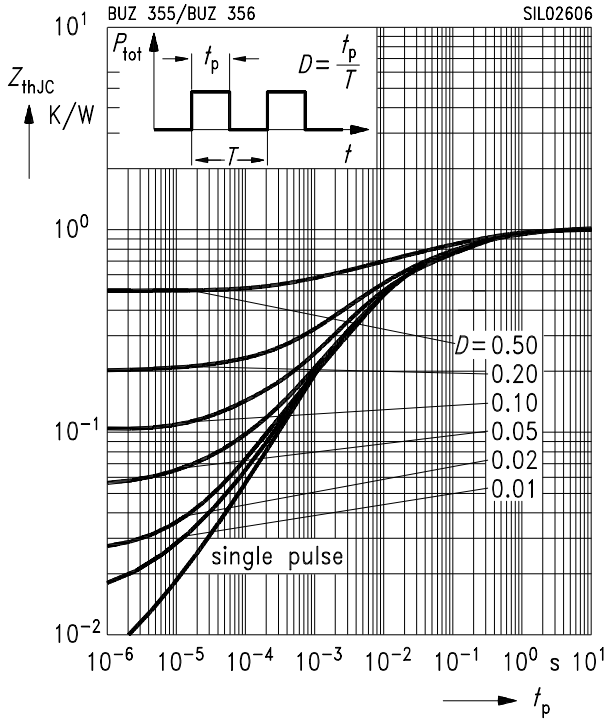
parameter: T_j , t_p = 80 µs, (spread)



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