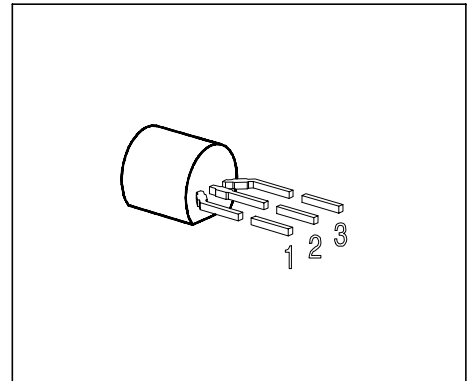


SIPMOS[®] Small-Signal Transistor

- N channel
- Enhancement mode
- $V_{GS(th)} = 1.5 \dots 2.5 \text{ V}$



Pin 1	Pin 2	Pin 3
G	D	S

Type	V_{DS}	I_D	$R_{DS(on)}$	Package	Marking
BSS 124	400 V	0.12 A	28 Ω	TO-92	SS 124

Type	Ordering Code	Tape and Reel Information
BSS 124	Q67000-S172	E6288

Maximum Ratings

Parameter	Symbol	Values	Unit
Drain source voltage	V_{DS}	400	V
Drain-gate voltage $R_{GS} = 20 \text{ k}\Omega$	V_{DGR}	400	
Gate source voltage	V_{GS}	± 14	
Gate-source peak voltage, aperiodic	V_{gs}	± 20	
Continuous drain current $T_A = 37 \text{ }^\circ\text{C}$	I_D	0.12	A
DC drain current, pulsed $T_A = 25 \text{ }^\circ\text{C}$	I_{Dpuls}	0.48	
Power dissipation $T_A = 25 \text{ }^\circ\text{C}$	P_{tot}	1	W

Maximum Ratings

Parameter	Symbol	Values	Unit
Chip or operating temperature	T_j	-55 ... + 150	°C
Storage temperature	T_{stg}	-55 ... + 150	
Thermal resistance, chip to ambient air ¹⁾	R_{thJA}	≤ 125	K/W
DIN humidity category, DIN 40 040		E	
IEC climatic category, DIN IEC 68-1		55 / 150 / 56	

Electrical Characteristics, at $T_j = 25^\circ\text{C}$, unless otherwise specified

Parameter	Symbol	Values			Unit
		min.	typ.	max.	

Static Characteristics

Drain- source breakdown voltage $V_{GS} = 0 \text{ V}$, $I_D = 0.25 \text{ mA}$, $T_j = 25 \text{ }^\circ\text{C}$	$V_{(BR)DSS}$	400	-	-	V
Gate threshold voltage $V_{GS} = V_{DS}$, $I_D = 1 \text{ mA}$	$V_{GS(th)}$	1.5	2	2.5	
Zero gate voltage drain current $V_{DS} = 400 \text{ V}$, $V_{GS} = 0 \text{ V}$, $T_j = 25 \text{ }^\circ\text{C}$ $V_{DS} = 400 \text{ V}$, $V_{GS} = 0 \text{ V}$, $T_j = 125 \text{ }^\circ\text{C}$	I_{DSS}	-	0.1 8	1 50	μA
Gate-source leakage current $V_{GS} = 20 \text{ V}$, $V_{DS} = 0 \text{ V}$	I_{GSS}	-	10	100	nA
Drain-Source on-state resistance $V_{GS} = 10 \text{ V}$, $I_D = 0.12 \text{ A}$	$R_{DS(on)}$	-	16	28	Ω

Electrical Characteristics, at $T_j = 25^\circ\text{C}$, unless otherwise specified

Parameter	Symbol	Values			Unit
		min.	typ.	max.	

Dynamic Characteristics

Transconductance $V_{DS} \geq 2 * I_D * R_{DS(on)max}, I_D = 0.12 \text{ A}$	g_{fs}	0.1	0.19	-	S
Input capacitance $V_{GS} = 0 \text{ V}, V_{DS} = 25 \text{ V}, f = 1 \text{ MHz}$	C_{iss}	-	90	120	pF
Output capacitance $V_{GS} = 0 \text{ V}, V_{DS} = 25 \text{ V}, f = 1 \text{ MHz}$	C_{oss}	-	10	15	
Reverse transfer capacitance $V_{GS} = 0 \text{ V}, V_{DS} = 25 \text{ V}, f = 1 \text{ MHz}$	C_{rss}	-	4	6	
Turn-on delay time $V_{DD} = 30 \text{ V}, V_{GS} = 10 \text{ V}, I_D = 0.21 \text{ A}$ $R_G = 50 \Omega$	$t_{d(on)}$	-	5	8	ns
Rise time $V_{DD} = 30 \text{ V}, V_{GS} = 10 \text{ V}, I_D = 0.21 \text{ A}$ $R_G = 50 \Omega$	t_r	-	10	15	
Turn-off delay time $V_{DD} = 30 \text{ V}, V_{GS} = 10 \text{ V}, I_D = 0.21 \text{ A}$ $R_G = 50 \Omega$	$t_{d(off)}$	-	18	25	
Fall time $V_{DD} = 30 \text{ V}, V_{GS} = 10 \text{ V}, I_D = 0.21 \text{ A}$ $R_G = 50 \Omega$	t_f	-	15	20	

Electrical Characteristics, at $T_j = 25^\circ\text{C}$, unless otherwise specified

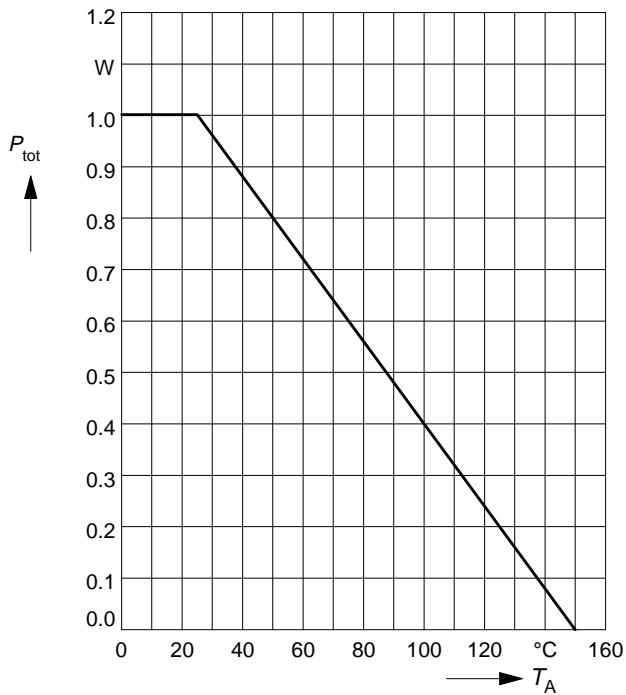
Parameter	Symbol	Values			Unit
		min.	typ.	max.	

Reverse Diode

Inverse diode continuous forward current $T_A = 25^\circ\text{C}$	I_S	-	-	0.12	A
Inverse diode direct current, pulsed $T_A = 25^\circ\text{C}$	I_{SM}	-	-	0.48	
Inverse diode forward voltage $V_{GS} = 0\text{ V}, I_F = 0.24\text{ A}$	V_{SD}	-	0.85	1.3	V

Power dissipation

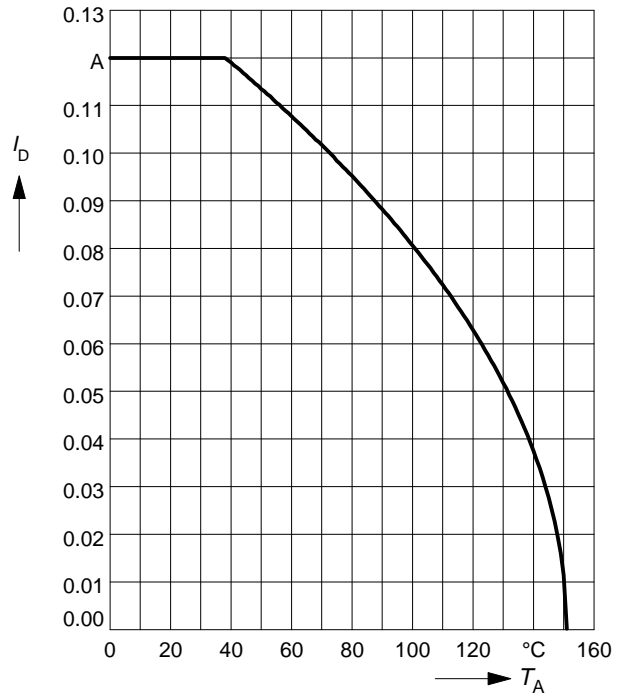
$$P_{\text{tot}} = f(T_A)$$



Drain current

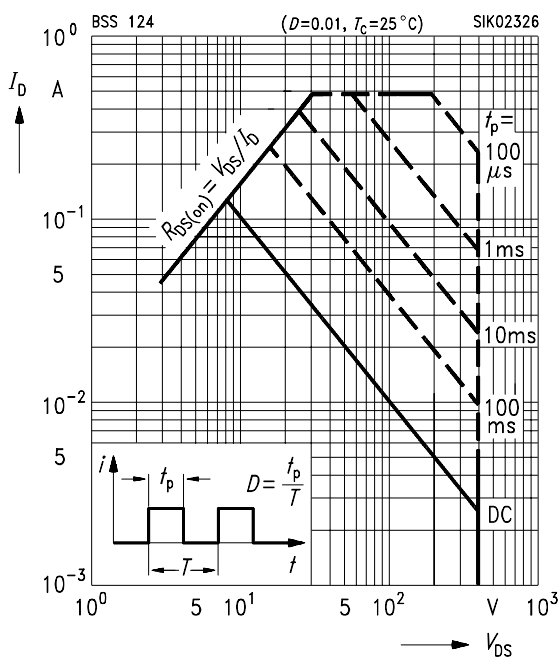
$$I_D = f(T_A)$$

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



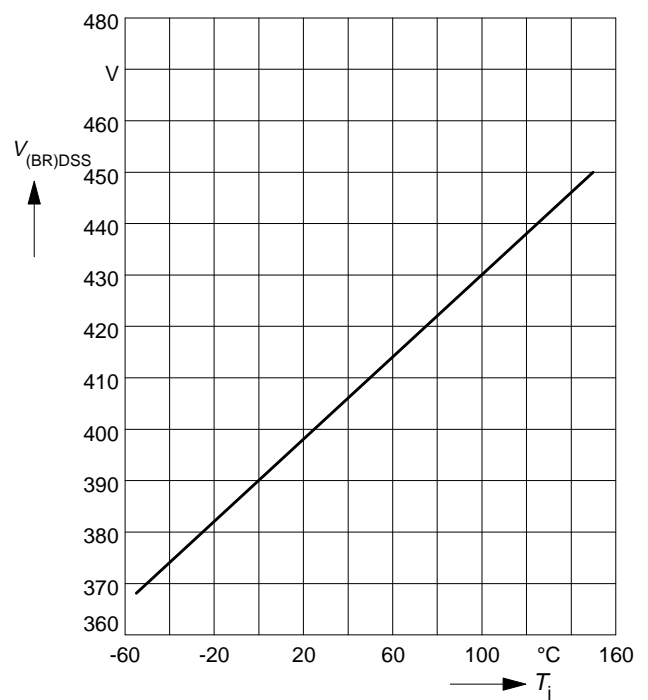
Safe operating area $I_D = f(V_{DS})$

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



Drain-source breakdown voltage

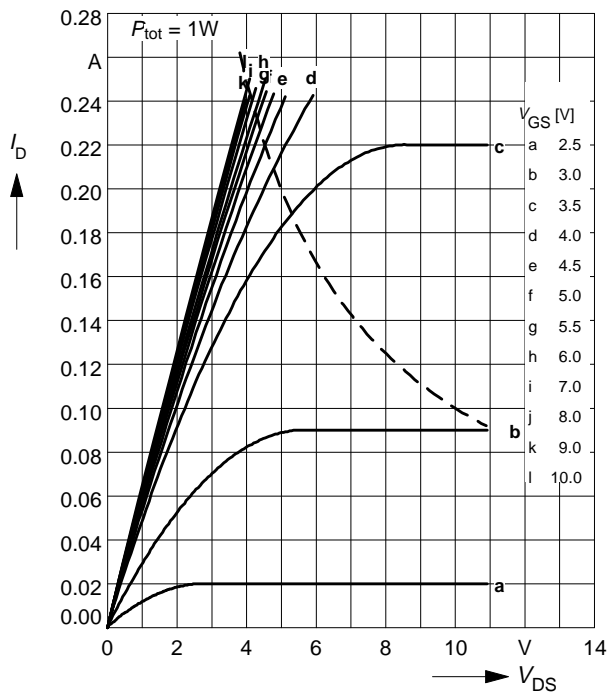
$$V_{(BR)DSS} = f(T_j)$$



Typ. output characteristics

$$I_D = f(V_{DS})$$

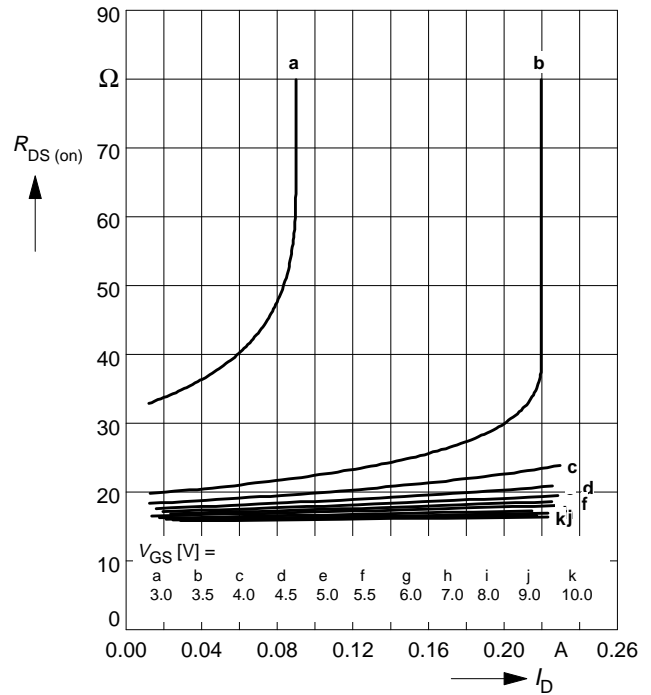
parameter: $t_p = 80 \mu s$, $T_j = 25 \text{ }^\circ\text{C}$



Typ. drain-source on-resistance

$$R_{DS(on)} = f(I_D)$$

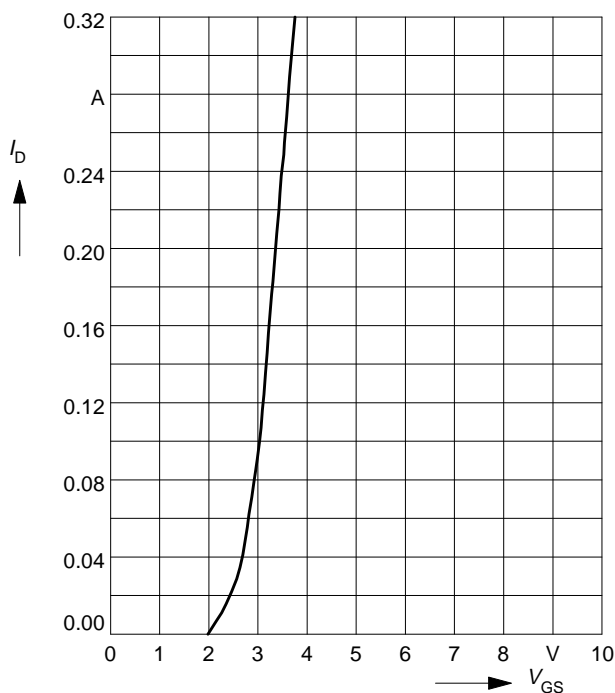
parameter: $t_p = 80 \mu s$, $T_j = 25 \text{ }^\circ\text{C}$



Typ. transfer characteristics $I_D = f(V_{GS})$

parameter: $t_p = 80 \mu s$

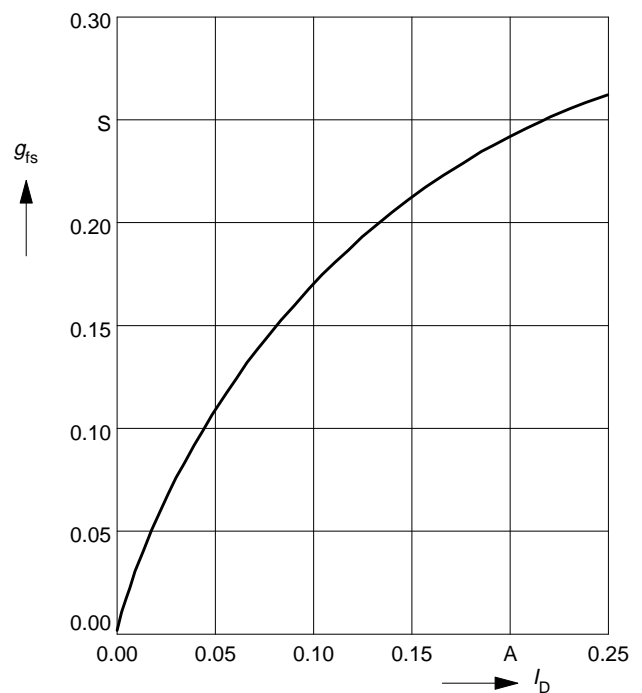
$V_{DS} \geq 2 \times I_D \times R_{DS(on)max}$



Typ. forward transconductance $g_{fs} = f(I_D)$

parameter: $t_p = 80 \mu s$,

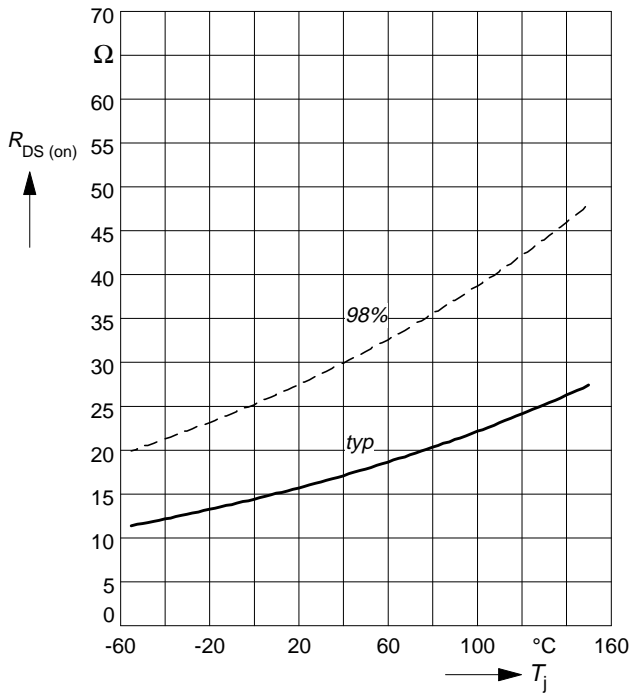
$V_{DS} \geq 2 \times I_D \times R_{DS(on)max}$



Drain-source on-resistance

$$R_{DS(on)} = f(T_j)$$

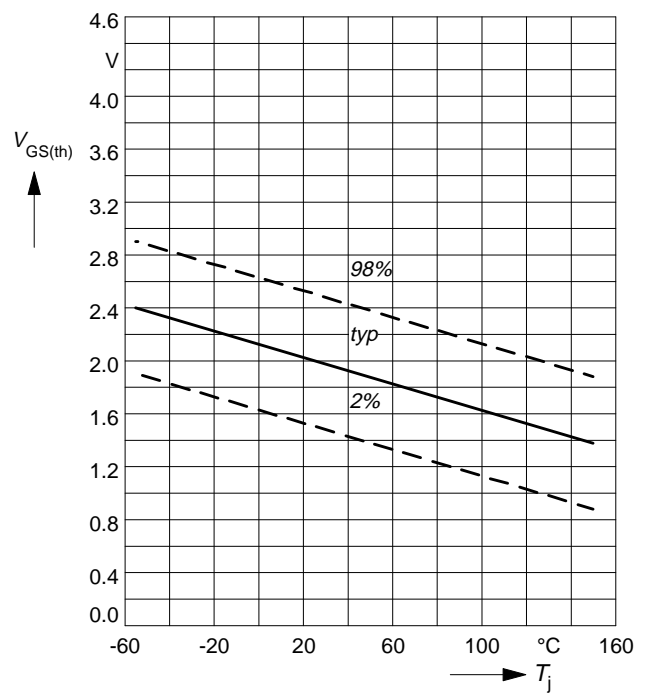
parameter: $I_D = 0.12 \text{ A}$, $V_{GS} = 10 \text{ V}$



Gate threshold voltage

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

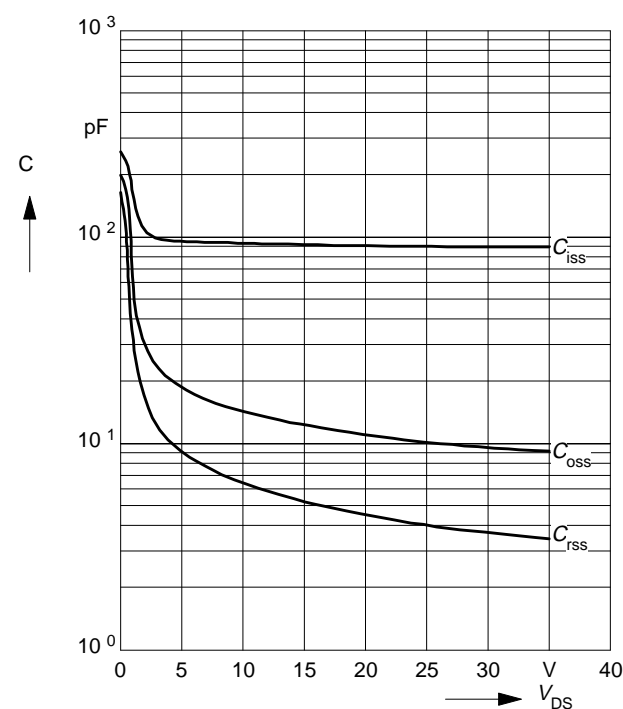
parameter: $V_{GS} = V_{DS}$, $I_D = 1 \text{ mA}$



Typ. capacitances

$$C = f(V_{DS})$$

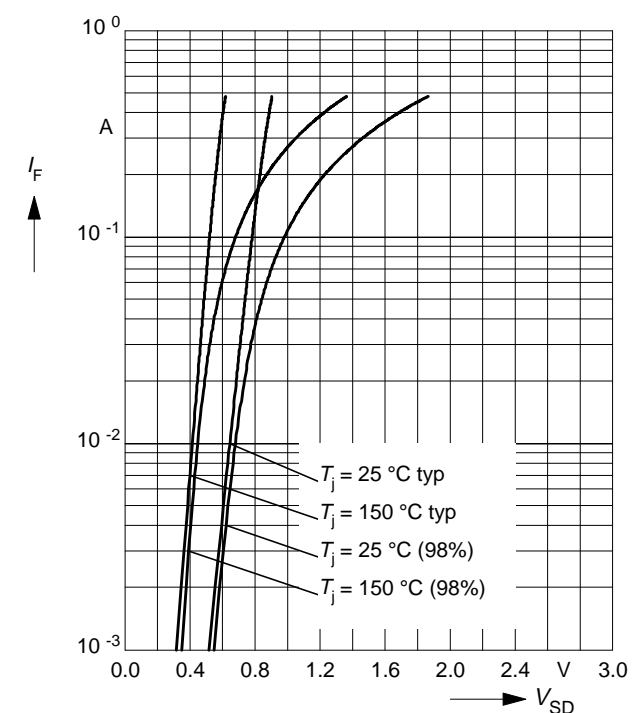
parameter: $V_{GS}=0\text{V}$, $f = 1 \text{ MHz}$



Forward characteristics of reverse diode

$$I_F = f(V_{SD})$$

parameter: $T_j, t_p = 80 \mu\text{s}$





LittleDiode supplies new, hard to find or obsolete electronic components and semiconductors all over the world.

With over two million different components listed you are sure to find the part you need.

Feel free to visit us today at our online store:

LittleDiode.com

Looking forward to providing you with the best possible service.