Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

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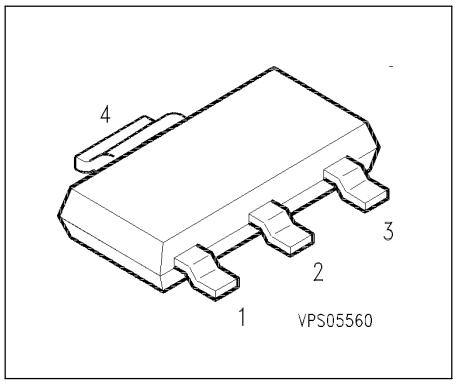
BSP 88

SIPMOS ® Small-Signal Transistor

- N channel
- Enhancement mode
- Logic Level
- $V_{GS(th)}$ = 0.6...1.2V



Pin 1	Pin 2	Pin 3	Pin 4
G	D	S	D

Type	V_{DS}	I_D	$R_{DS(on)}$	Package	Marking
BSP 88	240 V	0.32 A	8 Ω	SOT-223	BSP 88

Type	Ordering Code	Tape and Reel Information
BSP 88	Q67000-S070	E6327

Maximum Ratings

Parameter	Symbol	Values	Unit
Drain source voltage	V_{DS}	240	V
Drain-gate voltage R_{GS} = 20 kΩ	V_{DGR}	240	
Gate source voltage	V_{GS}	± 20	
ESD Sensitivity (HBM) as per MIL-STD 883		Class 1	
Continuous drain current T_A = 25 ˚C	I_D	0.32	A
DC drain current, pulsed T_A = 25 ˚C	I_{Dpuls}	1.28	
Power dissipation T_A = 25 ˚C	P_{tot}	1.7	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	R_{thJA}	≤ 72	K/W
Thermal resistance, junction-soldering point [1)]	R_{thJS}	≤ 12	
DIN humidity category, DIN 40 040		E	
IEC climatic category, DIN IEC 68-1		55 / 150 / 56	

1) Transistor on epoxy pcb 40 mm x 40 mm x 1,5 mm with 6 cm^2 copper area for drain connection

Electrical Characteristics, at T_j = 25˚C, unless otherwise specified

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
Static Characteristics					
Drain- source breakdown voltage	$V_{(BR)DSS}$				V
V_{GS} = 0 V, I_D = 0.25 mA, T_j = 25 ˚C		240	-	-	
Gate threshold voltage	$V_{GS(th)}$				
V_{GS}=V_{DS}, I_D = 1 mA		0.6	0.8	1.2	
Zero gate voltage drain current	I_{DSS}				
V_{DS} = 240 V, V_{GS} = 0 V, T_j = 25 ˚C		-	0.1	1	µA
V_{DS} = 240 V, V_{GS} = 0 V, T_j = 125 ˚C		-	10	100	
V_{DS} = 100 V, V_{GS} = 0 V, T_j = 25 ˚C		-	-	100	nA
Gate-source leakage current	I_{GSS}				nA
V_{GS} = 20 V, V_{DS} = 0 V		-	10	100	
Drain-Source on-state resistance	$R_{DS(on)}$				Ω
V_{GS} = 4.5 V, I_D = 0.32 A		-	4	8	
V_{GS} = 2.8 V, I_D = 14 mA		-	6	15	

Electrical Characteristics, at T_j = 25˚C, unless otherwise specified

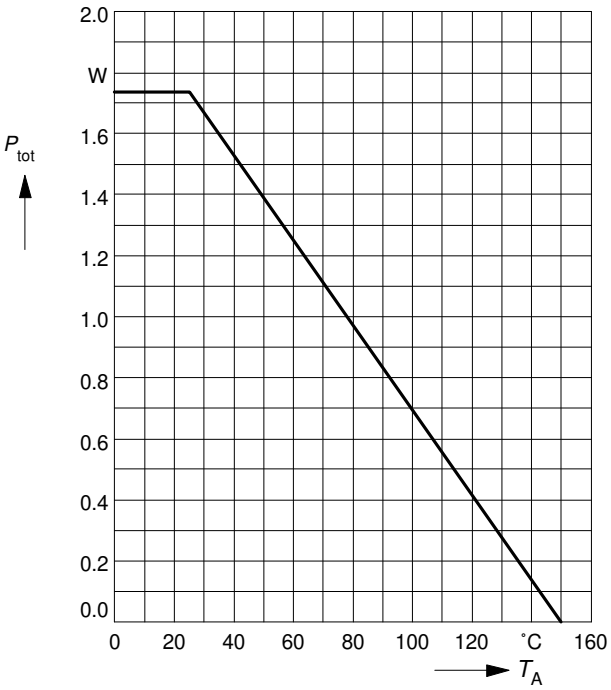
Parameter	Symbol	Values			Unit
		min.	typ.	max.	
Dynamic Characteristics					
Transconductance $V_{DS} \geq 2 * I_D * R_{DS(on)max}$, I_D = 0.32 A	g_{fs}	0.14	0.34	-	S
Input capacitance V_{GS} = 0 V, V_{DS} = 25 V, f = 1 MHz	C_{iss}	-	80	110	pF
Output capacitance V_{GS} = 0 V, V_{DS} = 25 V, f = 1 MHz	C_{oss}	-	15	25	
Reverse transfer capacitance V_{GS} = 0 V, V_{DS} = 25 V, f = 1 MHz	C_{rss}	-	8	12	
Turn-on delay time V_{DD} = 30 V, V_{GS} = 10 V, I_D = 0.28 A R_{GS} = 50 Ω	$t_{d(on)}$	-	5	8	ns
Rise time V_{DD} = 30 V, V_{GS} = 10 V, I_D = 0.28 A R_{GS} = 50 Ω	t_r	-	10	15	
Turn-off delay time V_{DD} = 30 V, V_{GS} = 10 V, I_D = 0.28 A R_{GS} = 50 Ω	$t_{d(off)}$	-	30	40	
Fall time V_{DD} = 30 V, V_{GS} = 10 V, I_D = 0.28 A R_{GS} = 50 Ω	t_f	-	25	35	

Electrical Characteristics, at T_j = 25˚C, unless otherwise specified

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
Reverse Diode					
Inverse diode continuous forward current T_A = 25 ˚C	I_S	-	-	0.32	A
Inverse diode direct current,pulsed T_A = 25 ˚C	I_{SM}	-	-	1.28	
Inverse diode forward voltage V_{GS} = 0 V, I_F = 0.5 A, T_j = 25 ˚C	V_{SD}	-	1.05	1.3	V

Power dissipation

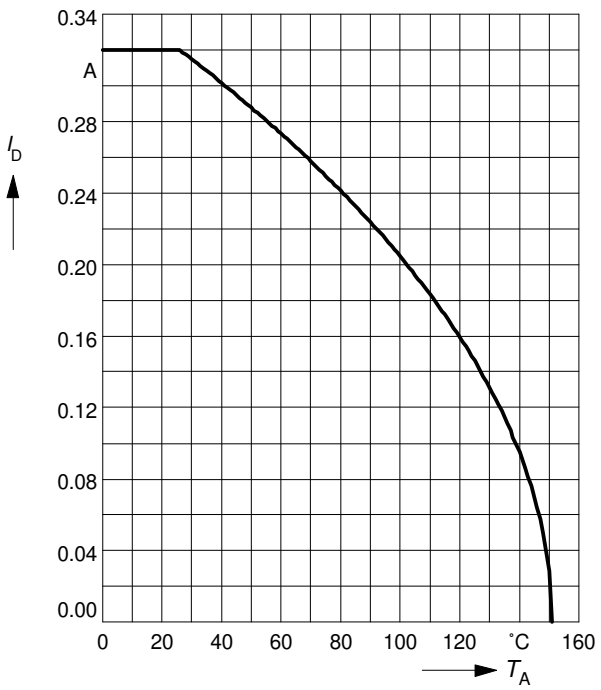
$P_{tot} = f(T_A)$



Drain current

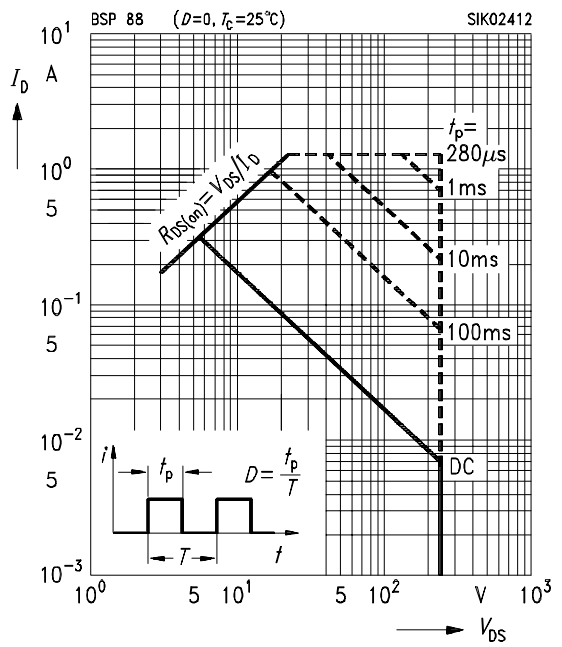
$I_D = f(T_A)$

parameter: $V_{GS} \geq 4$ V



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

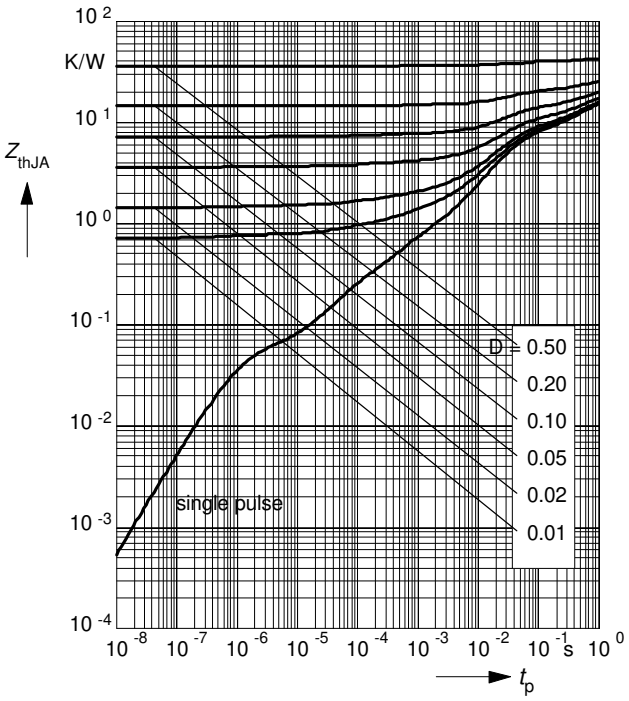
parameter : D = 0, T_C=25˚C



Transient thermal impedance

$Z_{th\ JA} = f(t_p)$

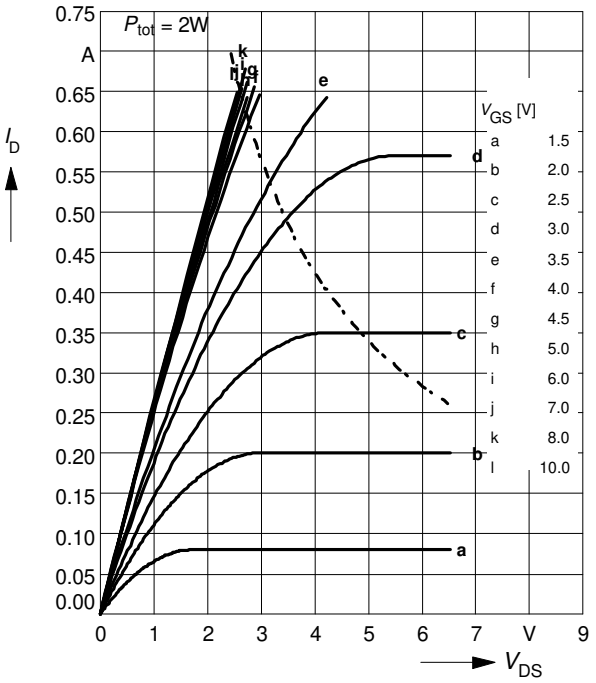
parameter: $D = t_p / T$



Typ. output characteristics

$I_D = f(V_{DS})$

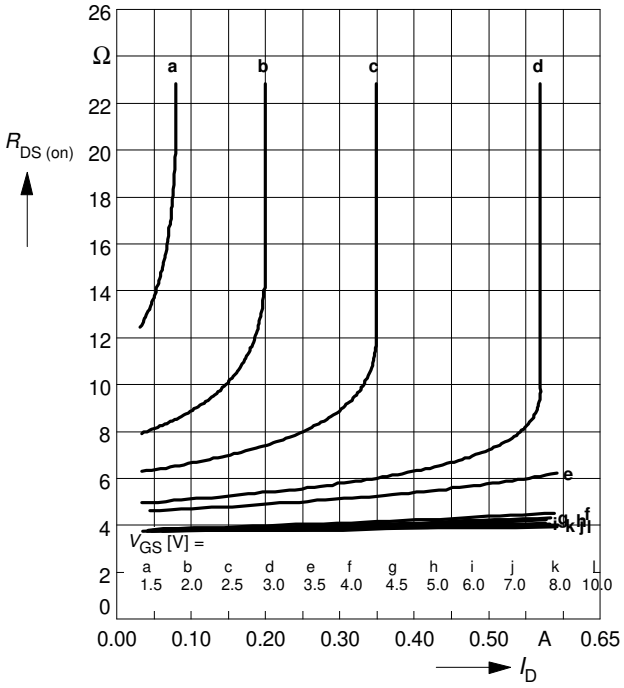
parameter: t_p = 80 µs , T_j = 25 ˚C



Typ. drain-source on-resistance

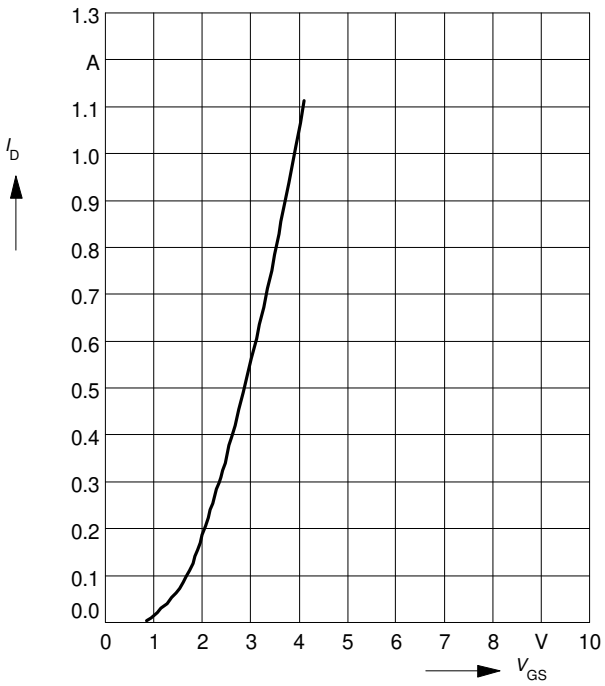
$R_{DS\,(on)} = f(I_D)$

parameter: t_p = 80 µs, T_j = 25 ˚C



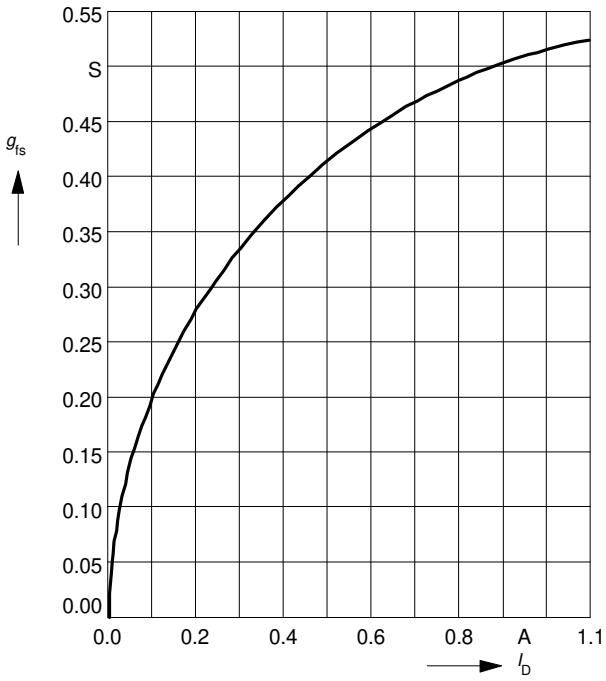
Typ. transfer characteristics $I_D = f\,(V_{GS})$

parameter: t_p = 80 µs



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

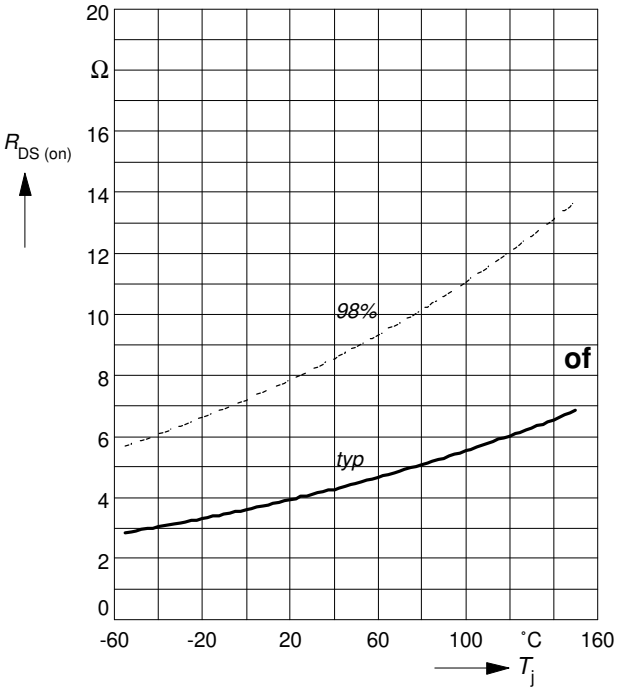
parameter: t_p = 80 µs,



Drain-source on-resistance

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

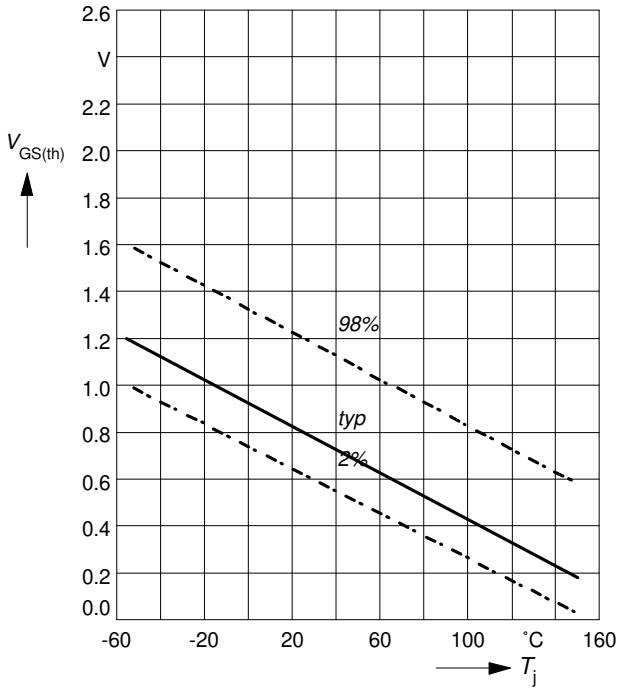
parameter: I_D = 0.32 A, V_{GS} = 4.5 V



Gate threshold voltage

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

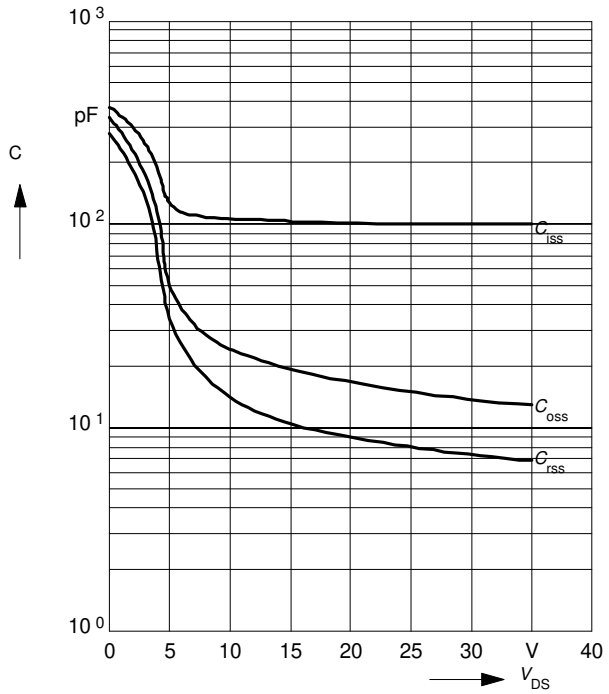
parameter: $V_{GS} = V_{DS}$, I_D = 1 mA



Typ. capacitances

$C = f(V_{DS})$

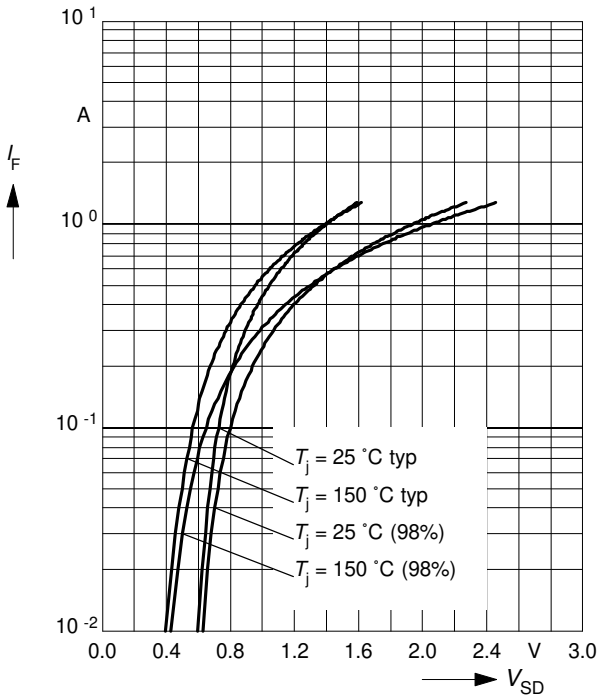
parameter: V_{GS}=0V, f = 1 MHz



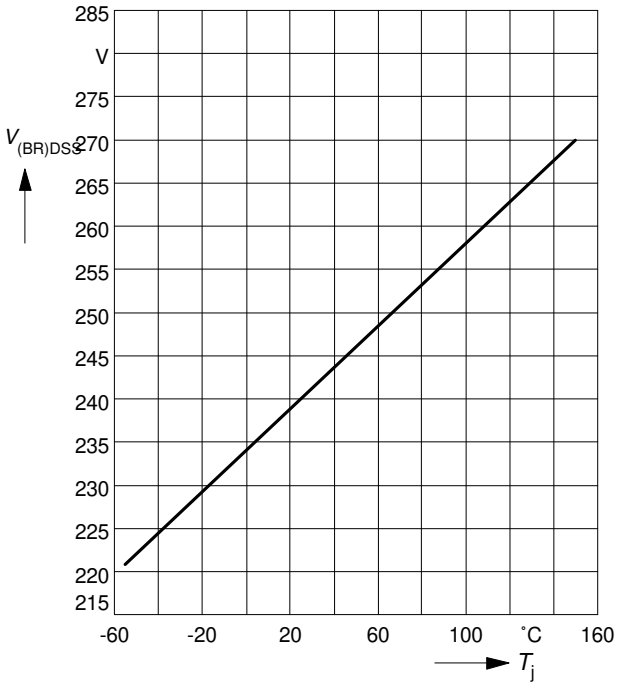
Forward characteristics of reverse diode

$I_F = f(V_{SD})$

parameter: T_j, t_p = 80 µs



Drain-source breakdown voltage
$V_{(BR)DSS} = f(T_j)$



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