

英飞凌MOSFET小信号晶体管

英飞凌 BSS126I SIPMOS® 600V N沟道小信号晶体管

特性

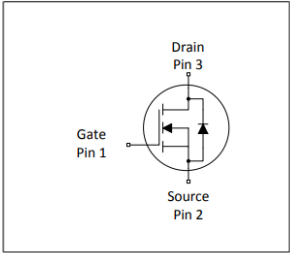
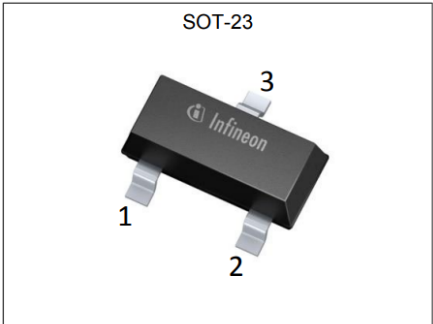
- N沟道
- 耗尽模式
- dv/dt 额定
- 无铅镀层；符合RoHS标准
- 符合 IEC61249-2-21 标准的无卤素

产品验证

完全符合 JEDEC 工业应用标准

表 1 主要性能参数

Parameter	Value	Unit
V_{DS}	600	V
$R_{DS(on),max}$	700	Ω
$I_{DSS,min}$	0.007	A



RoHS

Type / Ordering Code	Package	Marking	Related Links
BSS126I	PG-SOT23	SHs	-

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1 最大额定值

除非另有规定, $T_A = 25\text{ }^{\circ}\text{C}$

表 2 最大额定值

Parameter	Symbol	Values			Unit	Note / Test Condition
		Min.	Typ.	Max.		
Continuous drain current	I_D	-	-	0.021 0.017	A	$T_A = 25\text{ }^{\circ}\text{C}$ $T_A = 70\text{ }^{\circ}\text{C}$
Pulsed drain current	$I_{D,pulse}$	-	-	0.085	A	$T_A = 25\text{ }^{\circ}\text{C}$
Reverse diode dv/dt	dv/dt	-	-	6	kV/ μs	$I_D = 0.016\text{ A}$, $V_{DS} = 20\text{ V}$, $di/dt = 200\text{ A}/\mu\text{s}$, $T_{j,max} = 150\text{ }^{\circ}\text{C}$
Gate source voltage	V_{GS}	-20	-	20	V	-
ESD sensitivity (HBM) as per JESD22-A114	-	-	-	Class 0 <250V	-	-
Power dissipation	P_{tot}	-	-	0.50	W	$T_A = 25\text{ }^{\circ}\text{C}$
Operating and storage temperature	T_j, T_{stg}	-55	-	150	$^{\circ}\text{C}$	-

2 热特性

表3 热特性

Parameter	Symbol	Values			Unit	Note / Test Condition
		Min.	Typ.	Max.		
Thermal resistance, junction - ambient, minimal footprint	R_{thJA}	-	-	250	K/W	-

3 电气特性

除非另有规定, $T_j = 25\text{ }^{\circ}\text{C}$

表4 静态特性

Parameter	Symbol	Values			Unit	Note / Test Condition
		Min.	Typ.	Max.		
Drain-source breakdown voltage	$V_{(BR)DSS}$	600	-	-	V	$V_{GS} = -5\text{ V}$, $I_D = 250\text{ }\mu\text{A}$
Gate threshold voltage	$V_{GS(th)}$	-2.7	-2.0	-1.6	V	$V_{DS} = 3\text{ V}$, $I_D = 8\text{ }\mu\text{A}$
Drain-source cutoff current	$I_{D(off)}$	-	-	0.1 10	μA	$V_{DS} = 600\text{ V}$, $V_{GS} = -5\text{ V}$, $T_j = 25\text{ }^{\circ}\text{C}$ $V_{DS} = 600\text{ V}$, $V_{GS} = -5\text{ V}$, $T_j = 125\text{ }^{\circ}\text{C}$
Gate-source leakage current	I_{GSS}	-	-	100	nA	$V_{GS} = 20\text{ V}$, $V_{DS} = 0\text{ V}$
On-state drain current	I_{DSS}	7	-	-	mA	$V_{GS} = 0\text{ V}$, $V_{DS} = 25\text{ V}$
Drain-source on-state resistance	$R_{DS(on)}$	-	320 280	700 500	Ω	$V_{GS} = 0\text{ V}$, $I_D = 3\text{ mA}$ $V_{GS} = 10\text{ V}$, $I_D = 16\text{ mA}$
Transconductance	g_{fs}	0.008	0.017	-	S	$ V_{DS} > 2 I_D R_{DS(on)max}$, $I_D = 0.01\text{ A}$

表 5 动态特性

Parameter	Symbol	Values			Unit	Note / Test Condition
		Min.	Typ.	Max.		
Input capacitance	C_{iss}	-	21	-	pF	$V_{GS}=-5\text{ V}$, $V_{DS}=25\text{ V}$, $f=1\text{ MHz}$
Output capacitance	C_{oss}	-	2.4	-	pF	$V_{GS}=-5\text{ V}$, $V_{DS}=25\text{ V}$, $f=1\text{ MHz}$
Reverse transfer capacitance	C_{rss}	-	1.0	-	pF	$V_{GS}=-5\text{ V}$, $V_{DS}=25\text{ V}$, $f=1\text{ MHz}$
Turn-on delay time	$t_{d(on)}$	-	6.1	-	ns	$V_{DD}=300\text{ V}$, $V_{GS}=-3\text{ to }7\text{ V}$, $I_D=0.01\text{ A}$, $R_G=6\ \Omega$
Rise time	t_r	-	9.7	-	ns	$V_{DD}=300\text{ V}$, $V_{GS}=-3\text{ to }7\text{ V}$, $I_D=0.01\text{ A}$, $R_G=6\ \Omega$
Turn-off delay time	$t_{d(off)}$	-	14	-	ns	$V_{DD}=300\text{ V}$, $V_{GS}=-3\text{ to }7\text{ V}$, $I_D=0.01\text{ A}$, $R_G=6\ \Omega$
Fall time	t_f	-	115	-	ns	$V_{DD}=300\text{ V}$, $V_{GS}=-3\text{ to }7\text{ V}$, $I_D=0.01\text{ A}$, $R_G=6\ \Omega$

表6 栅极电荷特性

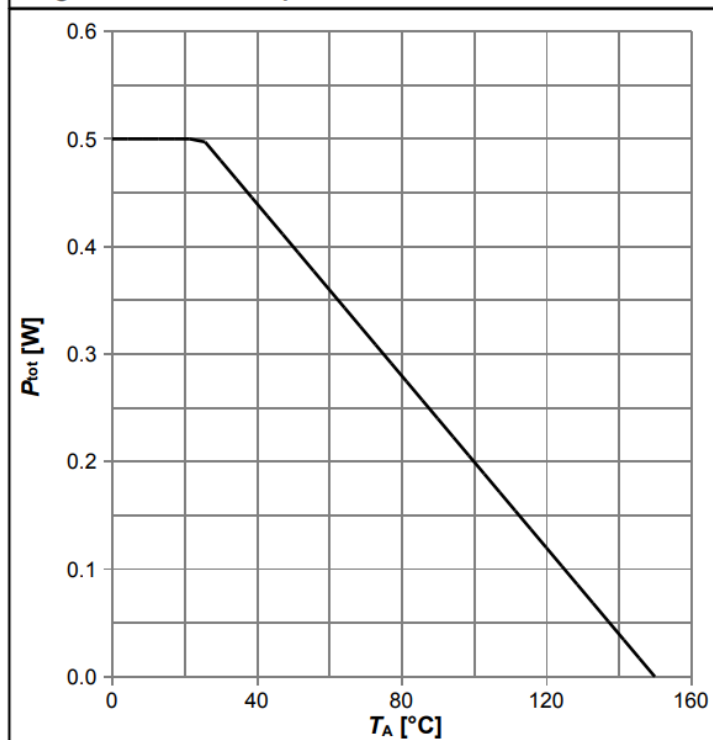
Parameter	Symbol	Values			Unit	Note / Test Condition
		Min.	Typ.	Max.		
Gate to source charge	Q_{gs}	-	0.05	-	nC	$V_{DD}=400\text{ V}$, $I_D=10\text{ mA}$, $V_{GS}=-3\text{ to }5\text{ V}$
Gate to drain charge	Q_{gd}	-	1.2	-	nC	$V_{DD}=400\text{ V}$, $I_D=10\text{ mA}$, $V_{GS}=-3\text{ to }5\text{ V}$
Gate charge total	Q_g	-	1.4	-	nC	$V_{DD}=400\text{ V}$, $I_D=10\text{ mA}$, $V_{GS}=-3\text{ to }5\text{ V}$
Gate plateau voltage	$V_{plateau}$	-	0.10	-	V	$V_{DD}=400\text{ V}$, $I_D=10\text{ mA}$, $V_{GS}=-3\text{ to }5\text{ V}$

表 7 反向二极管

Parameter	Symbol	Values			Unit	Note / Test Condition
		Min.	Typ.	Max.		
Diode continuous forward current	I_S	-	-	0.016	A	$T_A=25\text{ }^\circ\text{C}$
Diode pulse current	$I_{S,pulse}$	-	-	0.064	A	$T_A=25\text{ }^\circ\text{C}$
Diode forward voltage	V_{SD}	-	0.81	1.2	V	$V_{GS}=-5\text{ V}$, $I_F=16\text{ mA}$, $T_J=25\text{ }^\circ\text{C}$
Reverse recovery time	t_{rr}	-	160	-	ns	$V_R=300\text{ V}$, $I_F=0.01\text{ A}$, $di_F/dt=100\text{ A}/\mu\text{s}$
Reverse recovery charge	Q_{rr}	-	13.2	-	nC	$V_R=300\text{ V}$, $I_F=0.01\text{ A}$, $di_F/dt=100\text{ A}/\mu\text{s}$

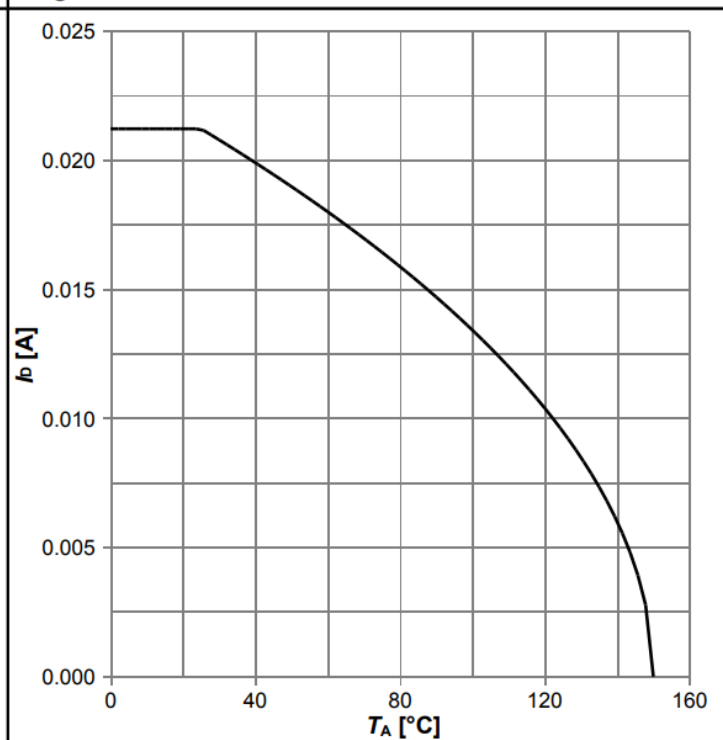
4 电气特性图

Diagram 1: Power dissipation



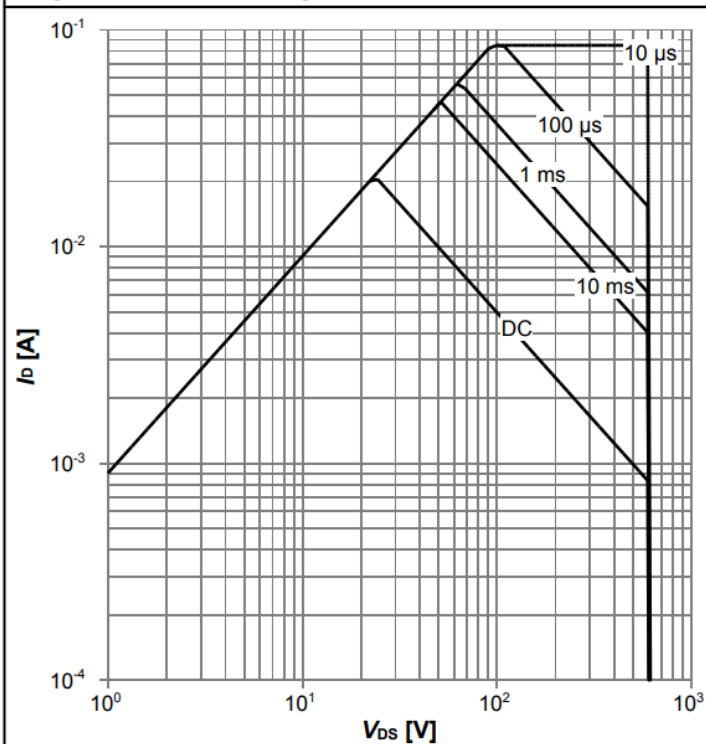
$$P_{tot}=f(T_A)$$

Diagram 2: Drain current



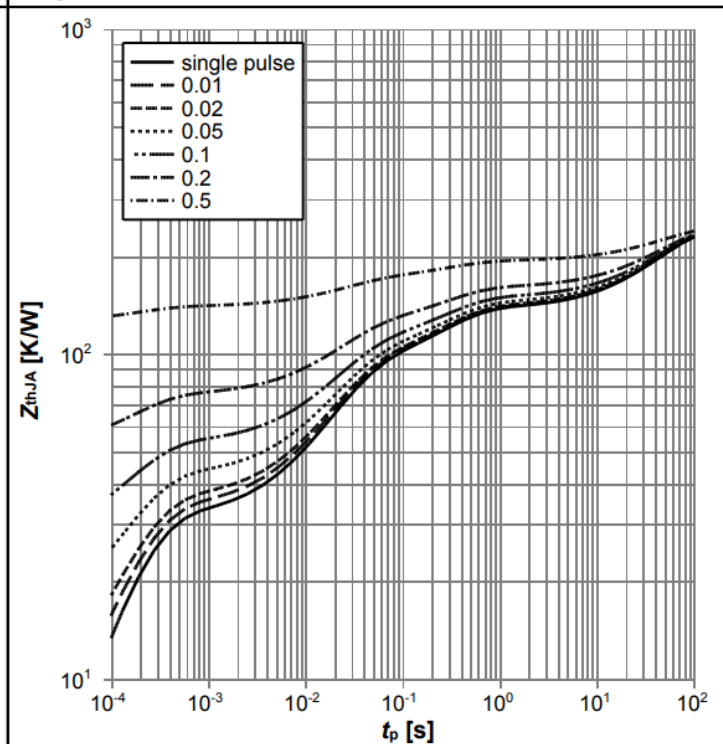
$$I_D=f(T_A); V_{GS} \geq 10 \text{ V}$$

Diagram 3: Safe operating area



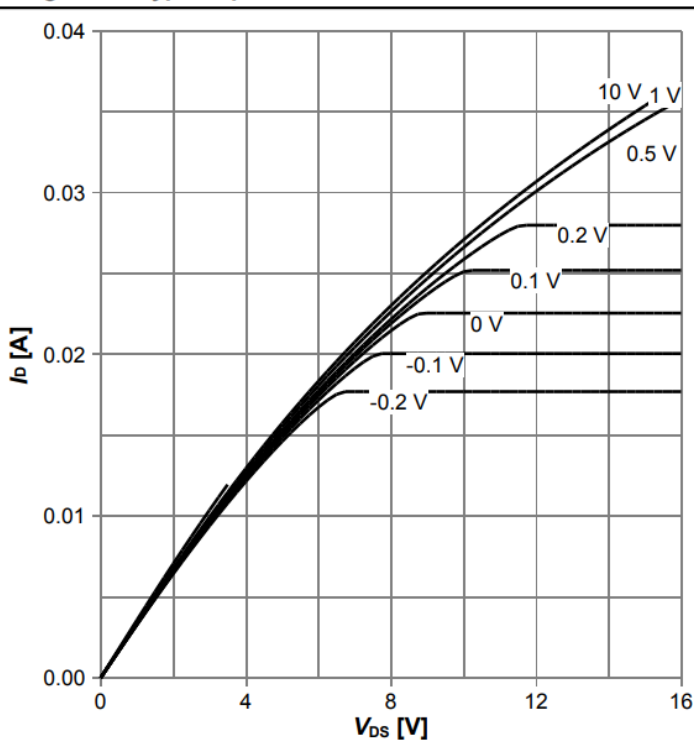
$$I_D=f(V_{DS}); T_A=25 \text{ °C}; D=0; \text{ parameter: } t_p$$

Diagram 4: Max. transient thermal impedance



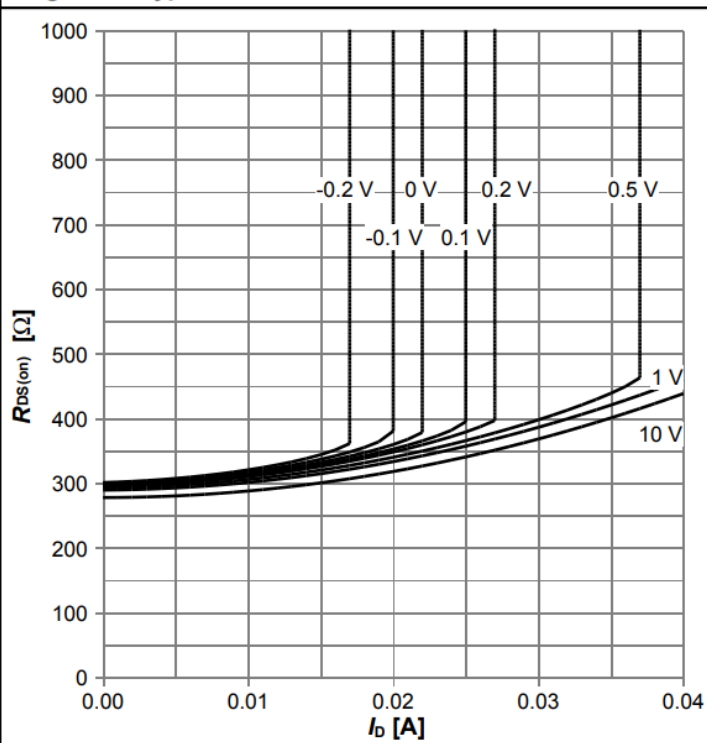
$$Z_{thJA}=f(t_p); \text{ parameter: } D=t_p/T$$

Diagram 5: Typ. output characteristics



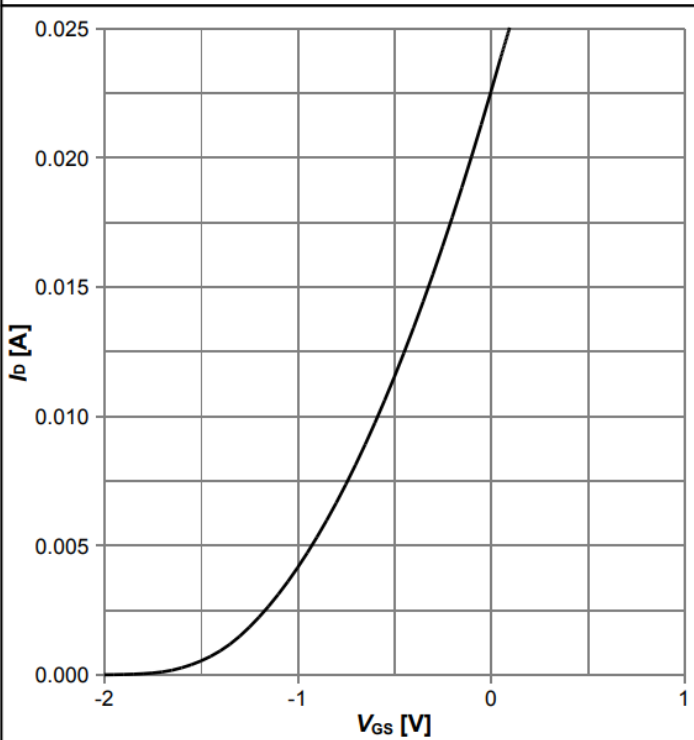
$I_D = f(V_{DS})$; $T_J = 25^\circ\text{C}$; parameter: V_{GS}

Diagram 6: Typ. drain-source on resistance



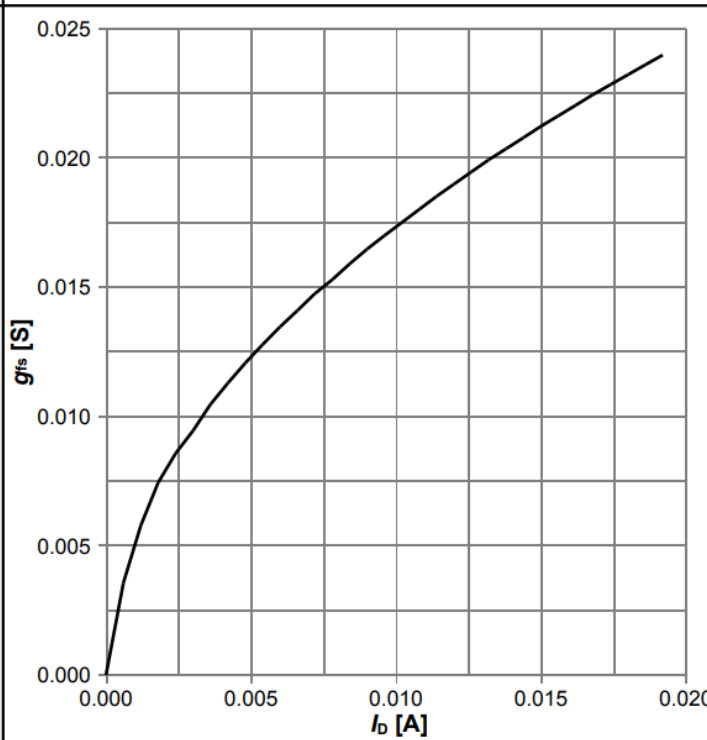
$R_{DS(on)} = f(I_D)$; $T_J = 25^\circ\text{C}$; parameter: V_{GS}

Diagram 7: Typ. transfer characteristics



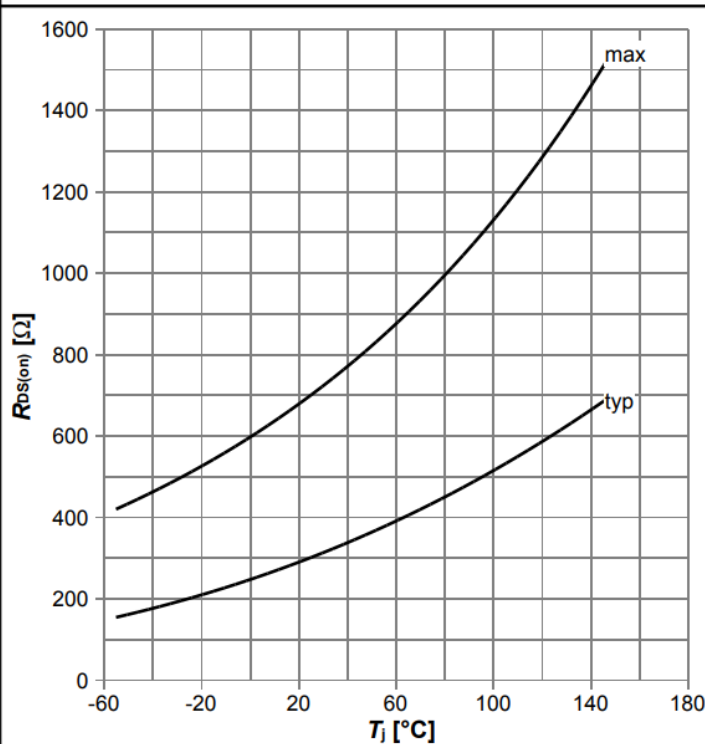
$I_D = f(V_{GS})$; $V_{DS} = 10$ V; $T_J = 25^\circ\text{C}$

Diagram 8: Typ. forward transconductance



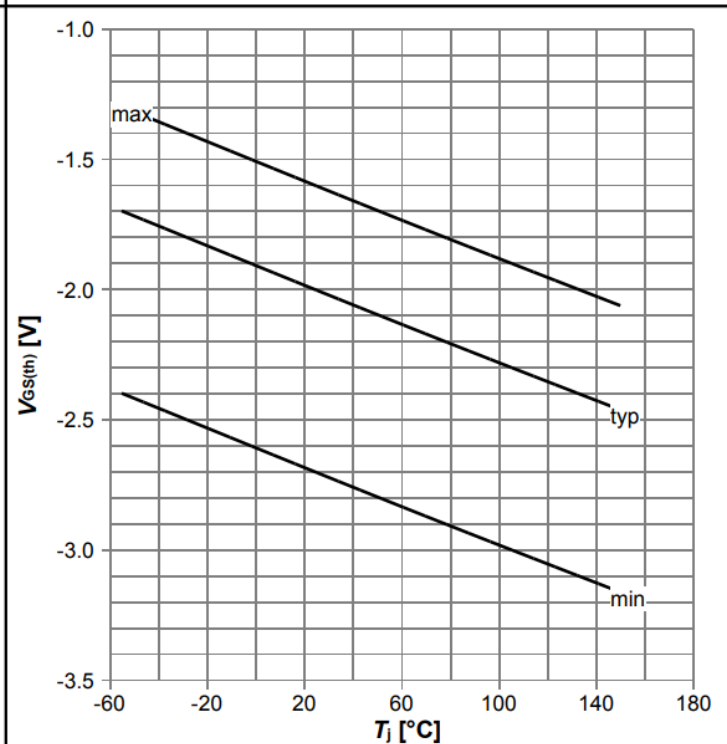
$g_{fs} = f(I_D)$; $T_J = 25^\circ\text{C}$

Diagram 9: Drain-source on-state resistance



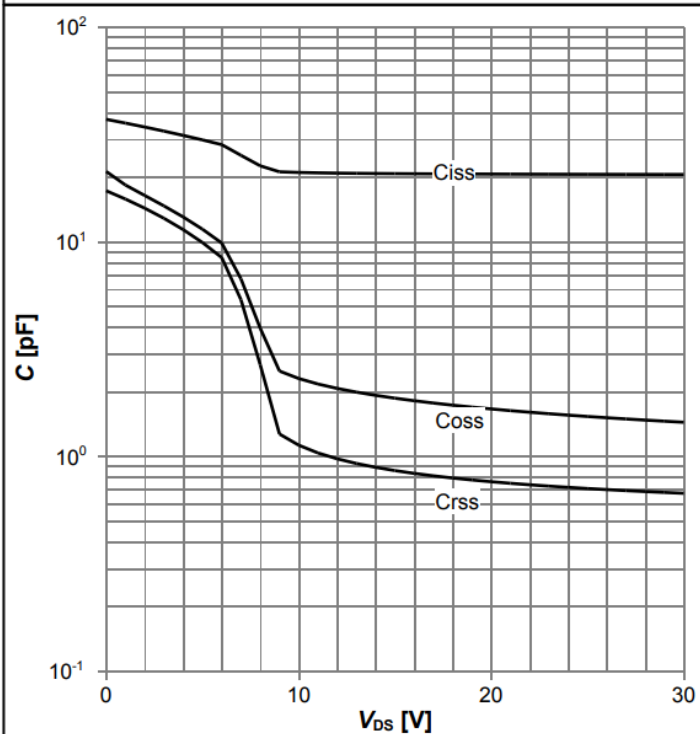
$R_{DS(on)} = f(T_j)$; $I_D = 3 \text{ mA}$; $V_{GS} = 0 \text{ V}$

Diagram 10: Typ. gate threshold voltage



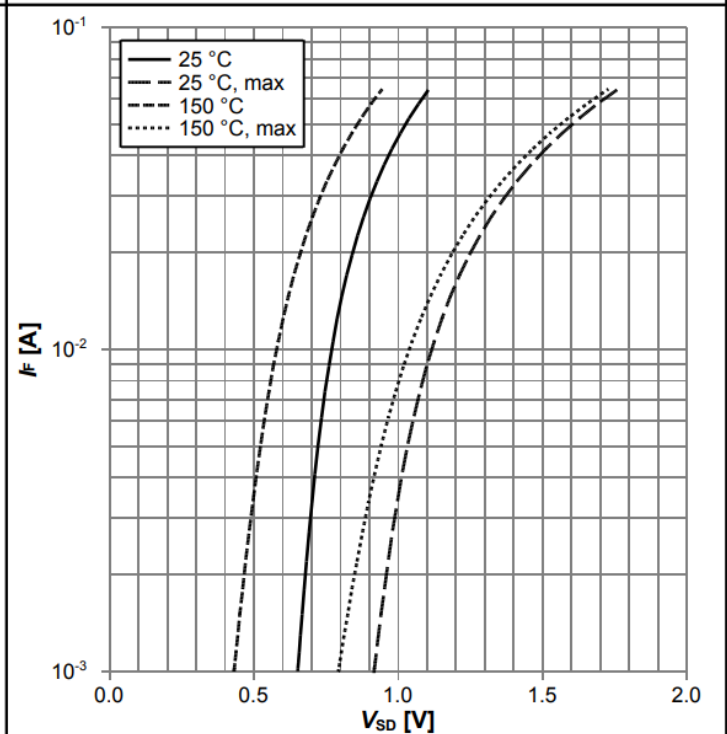
$V_{GS(th)} = f(T_j)$; $V_{DS} = 3 \text{ V}$; $I_D = 8 \text{ μA}$; parameter: I_D

Diagram 11: Typ. capacitances



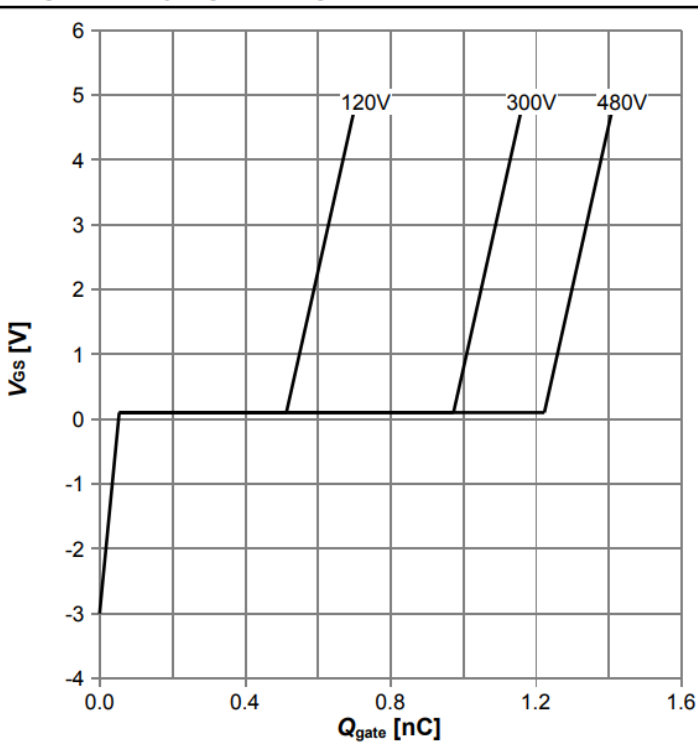
$C = f(V_{DS})$; $V_{GS} = -3 \text{ V}$; $f = 1 \text{ MHz}$

Diagram 12: Forward characteristics of reverse diode



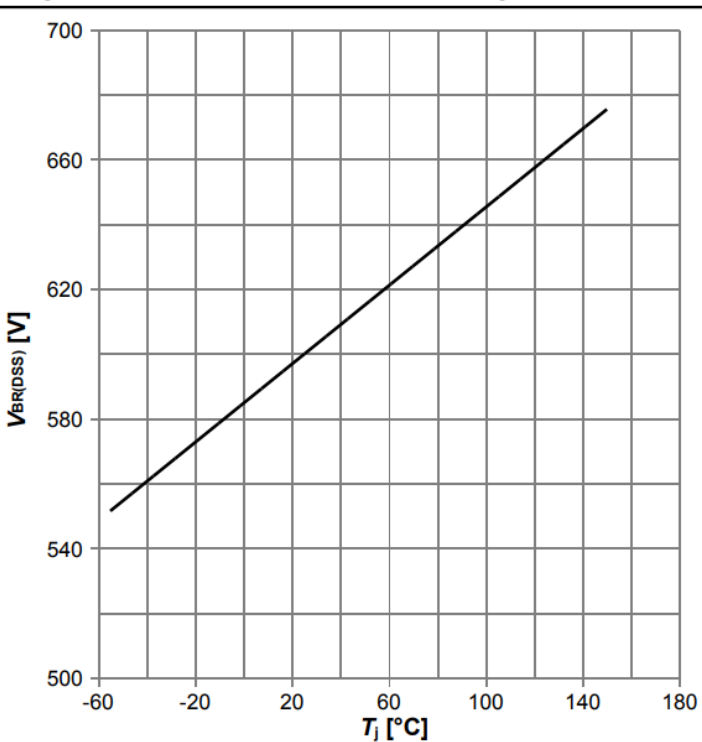
$I_R = f(V_{SD})$; parameter: T_j

Diagram 13: Typ. gate charge



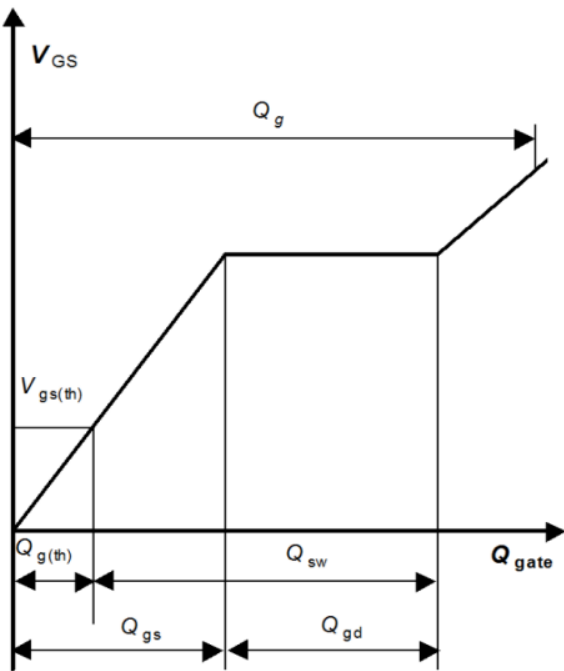
$V_{GS}=f(Q_{gate})$; $I_D=0.01$ A pulsed; parameter: V_{DD}

Diagram 14: Drain-source breakdown voltage



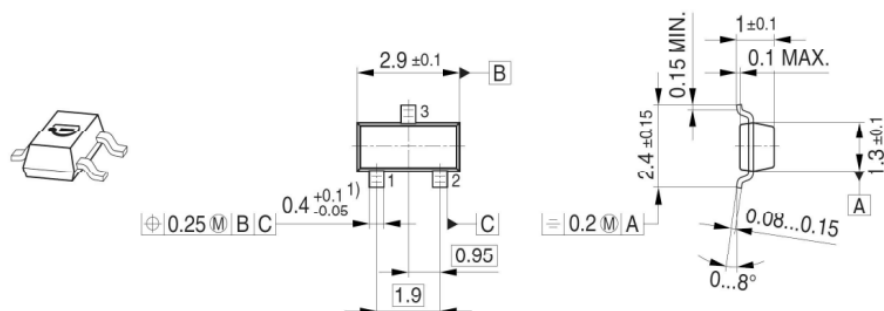
$I_D=f(V_{GS})$; $V_{GS}=-3$ V; $T_j=25$ °C

Diagram Gate charge waveforms



5 封装外形

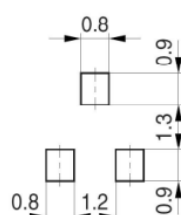
Package Outline



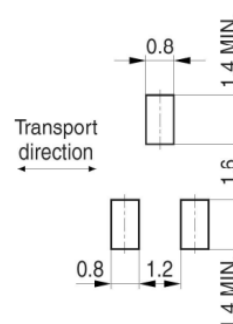
1) Lead width can be 0.6 max. in dambar area

Foot Print

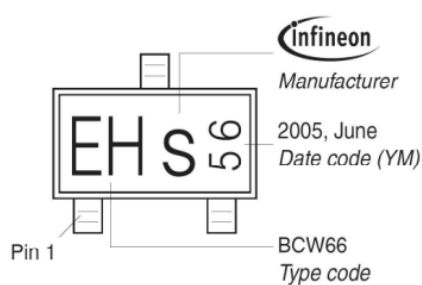
Soldering Type: Reflow Soldering



Soldering Type: Wave Soldering



Marking Layout (Example)



Tape and Reel

Reel ø180 mm: 3.000 Pieces/Reel
Reels/Box: 1 x 3.000 = 3.000
Reels/Box: 10 x 3.000 = 30.000

Reel ø330 mm: 10.000 Pieces/Reel
Reels/Box: 1 x 10.000 = 10.000

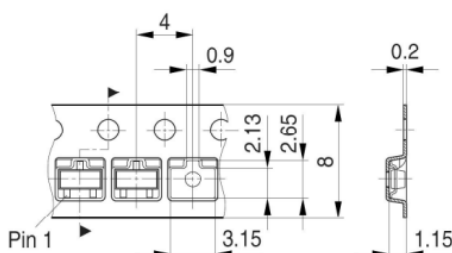


图 1 PG-SOT23 外形图，尺寸单位为毫米

修订记录

BSS126I

Revision: 2022-07-01, Rev. 2.2

历史修订版本

Revision	Date	Subjects (major changes since last revision)
2.0	2020-06-02	Release of final version
2.1	2020-11-30	Update Marking and typos
2.2	2022-07-01	Update "Marking"

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