

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
300V	$5\Omega@10V$	1A

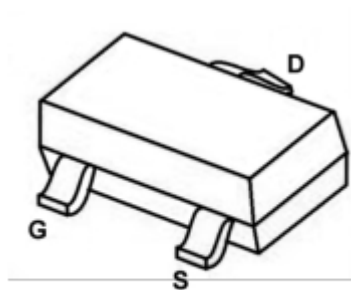
Feature

- Fast Switching
- Low Gate Charge and $R_{DS(on)}$
- 100% Single Pulse avalanche energy Test

Application

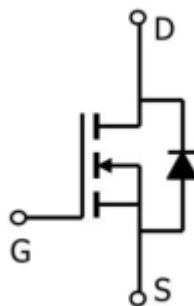
- DC-DC Converter
- Ideal for high-frequency switching and synchronous rectification

Package

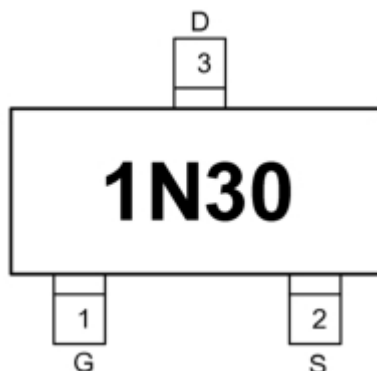


SOT-23

Circuit diagram



Marking



Absolute maximum ratings

($T_a=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	300	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ($T_C = 25^{\circ}\text{C}$)	I_D	1	A
Pulsed Drain Current ²	I_{DM}	4	A
Total Power Dissipation($T_C = 25^{\circ}\text{C}$)	P_D	0.36	W
Thermal Resistance Junction- Ambient ¹	$R_{\theta JA}$	347	$^{\circ}\text{C}/\text{W}$
Storage Temperature Range	T_{STG}	-55~ +150	$^{\circ}\text{C}$
Operating Junction Temperature Range	T_J	-55~ +150	$^{\circ}\text{C}$

Electrical characteristics

($T_A=25^{\circ}\text{C}$, unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	$BV_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	300			V
Drain-Source Leakage Current	I_{DSS}	$V_{DS} = 240V, V_{GS} = 0V$ $T_J = 25^{\circ}C$			1	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V$			± 100	μA
Gate threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	1.1	1.6	2.1	V
Static Drain-Source on-Resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 0.5A$		5	6.3	Ω
Dynamic characteristics						
Input Capacitance	C_{iss}	$V_{DS} = 25V, V_{GS} = 0V,$ $f = 1MHz$		59		pF
Output Capacitance	C_{oss}			7.5		
Reverse Transfer Capacitance	C_{rss}			3		
Switching Characteristics						
Total Gate Charge	Q_g	$V_{DS} = 192V, V_{GS} = 10V,$ $I_D = 1A$		0.15		nC
Gate-Source Charge	Q_{gS}			0.9		
Gate-Drain Charge	Q_{gd}			2		
Turn-On Delay Time	$T_{d(on)}$	$V_{DD} = 120V, V_{GS} = 10V,$ $I_D = 1A$		3.4		nS
Rise Time	T_r			3		
Turn-Off Delay Time	$T_{d(off)}$			14		
Fall Time	T_f			64		

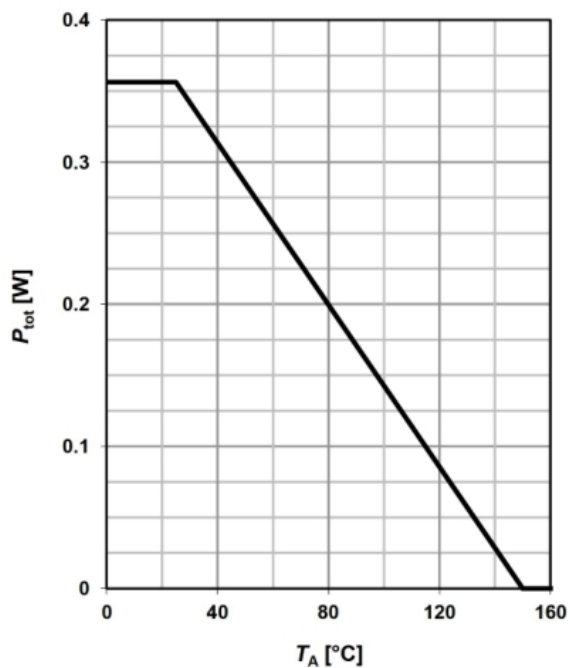
Notes:

- 1.The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.
- 2.The data tested by pulsed , pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$
- 3.The EAS data shows Max. rating . The test condition is $R_G = 25\Omega$, $L = 64\text{mH}$, $V_{DD} = 50V$

Typical Characteristics

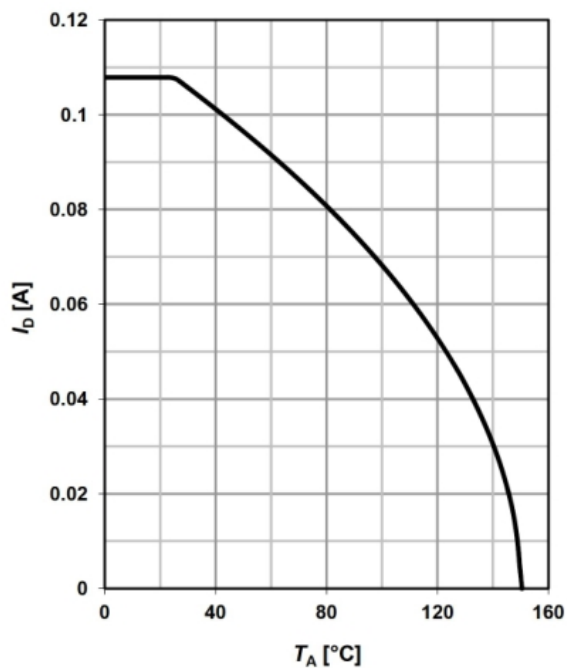
Power dissipation

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



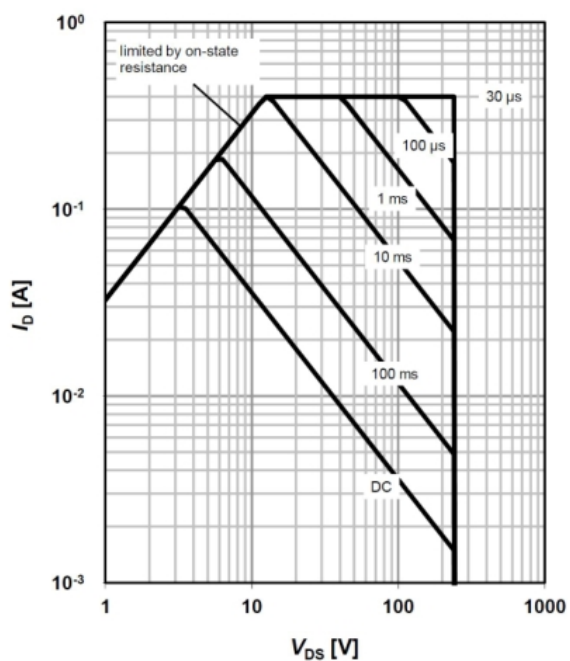
Drain current

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



Safe operating area

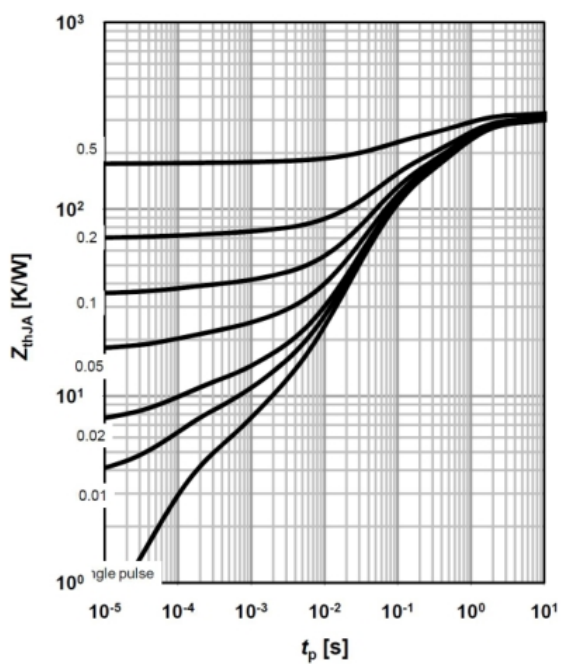
$$I_D = f(V_{DS}); T_A = 25 \text{ °C}; D = 0 \text{ parameter: } t_p$$



Max. transient thermal impedance

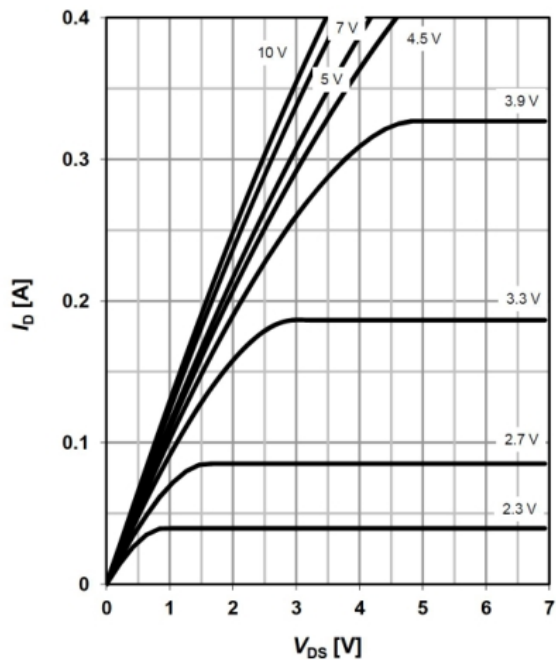
$$Z_{\text{thJA}} = f(t_p)$$

$$\text{parameter: } D = t_p / T$$



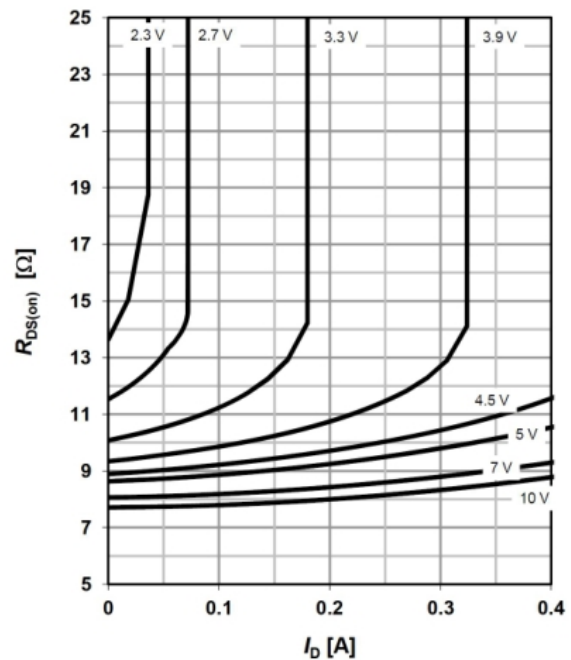
Typ. output characteristics $I_D=f(V_{DS})$;

$T_J=25\text{ }^{\circ}\text{C}$ parameter: V_{GS}



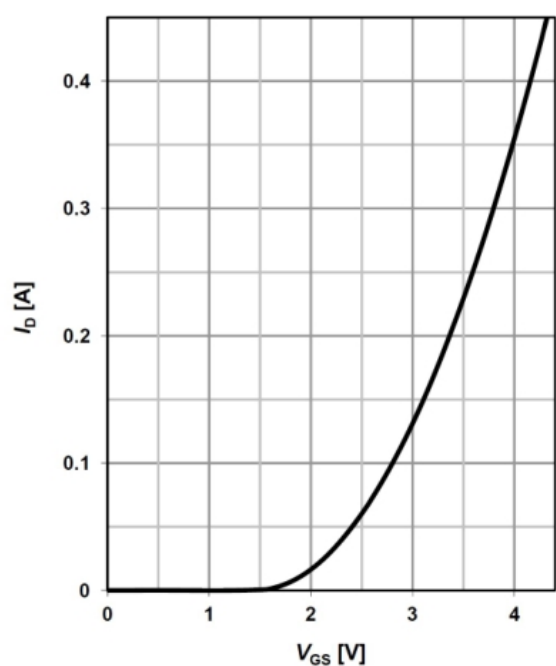
Typ. drain-source on resistance

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



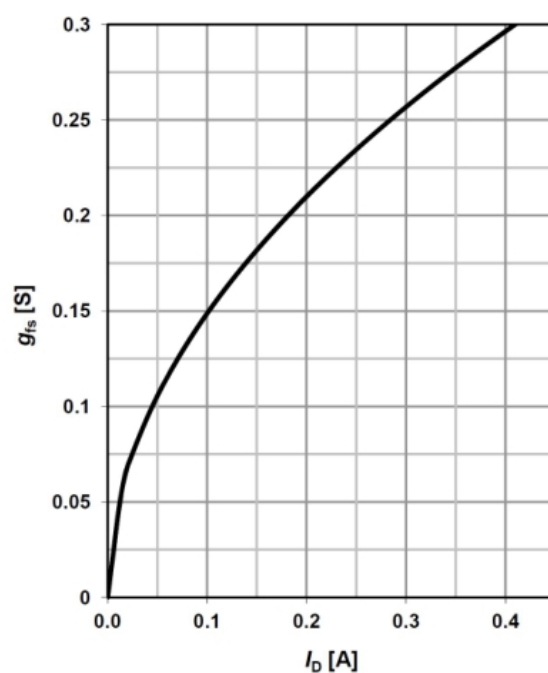
Typ. transfer characteristics

$I_D=f(V_{GS})$; $|V_{DS}|>2|I_D|R_{DS(on)max}$



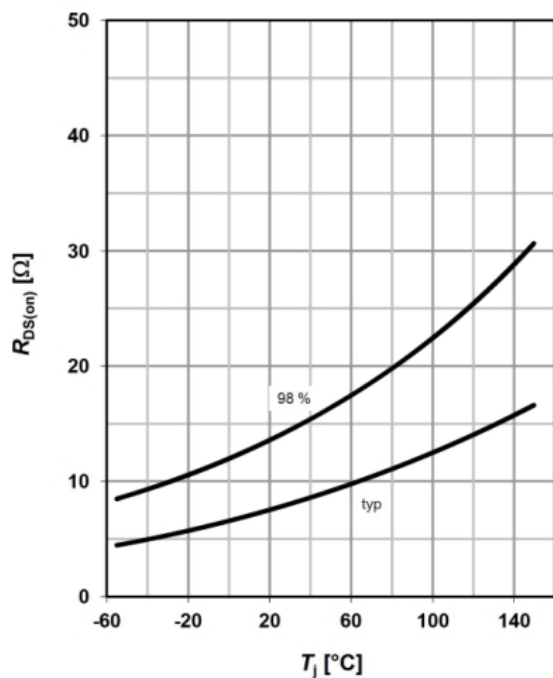
Typ. forward transconductance

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



Drain-source on-state resistance

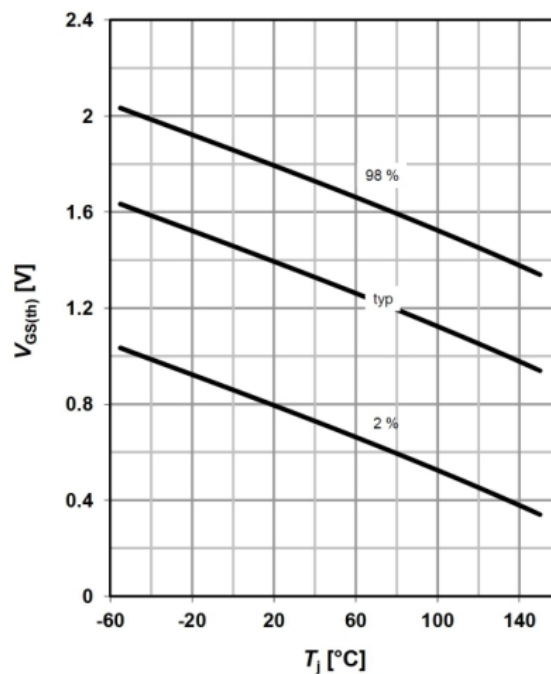
$$R_{DS(on)} = f(T_j); I_D = 0.1 \text{ A}; V_{GS} = 10 \text{ V}$$



Typ. gate threshold voltage

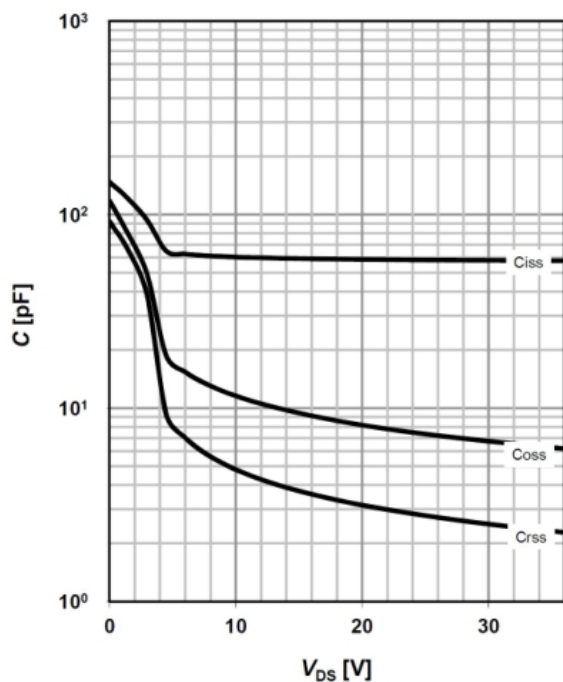
$$V_{GS(th)} = f(T_j); V_{DS} = V_{GS}; I_D = 56 \mu\text{A}$$

parameter: I_D



Typ. capacitances

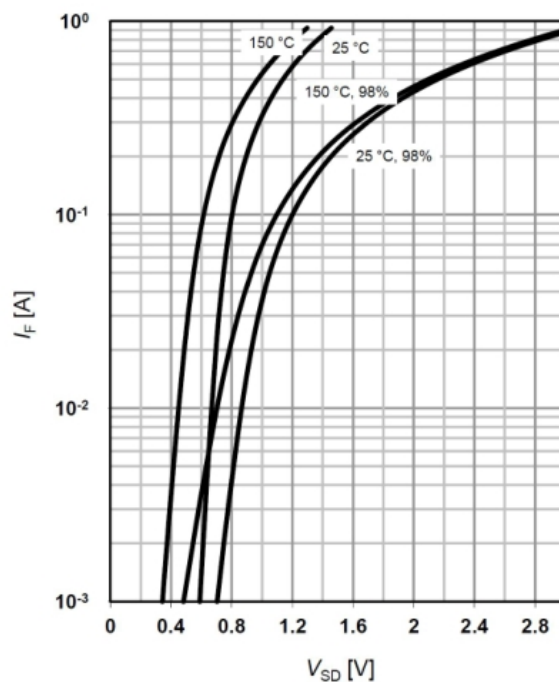
$$C = f(V_{DS}); V_{GS} = 0 \text{ V}; f = 1 \text{ MHz}; T_j = 25^\circ\text{C}$$



Forward characteristics of reverse diode

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

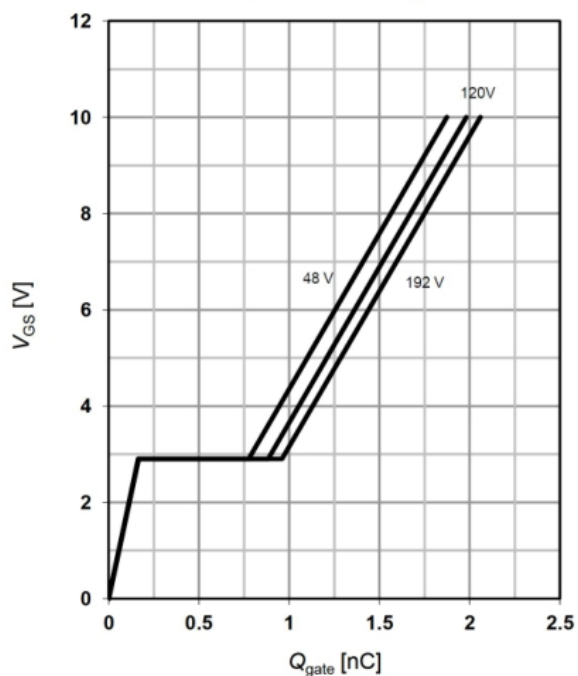
parameter: T_j



Typ. gate charge

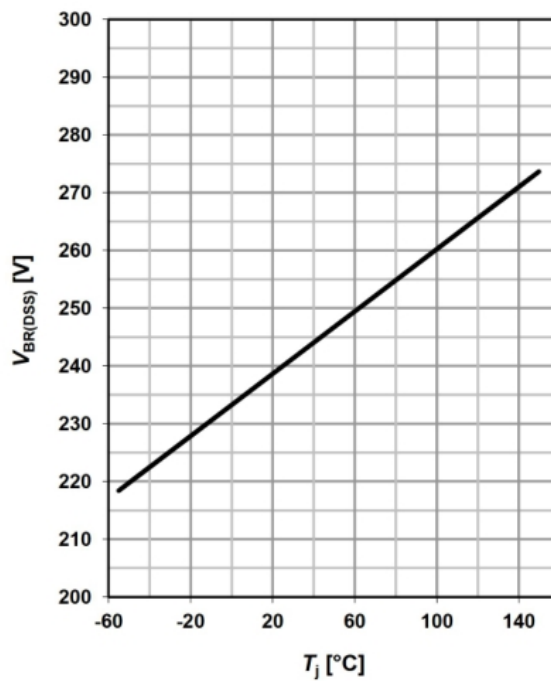
$V_{GS}=f(Q_{gate}); I_D=0.1\text{ A pulsed}$

parameter: V_{DD}

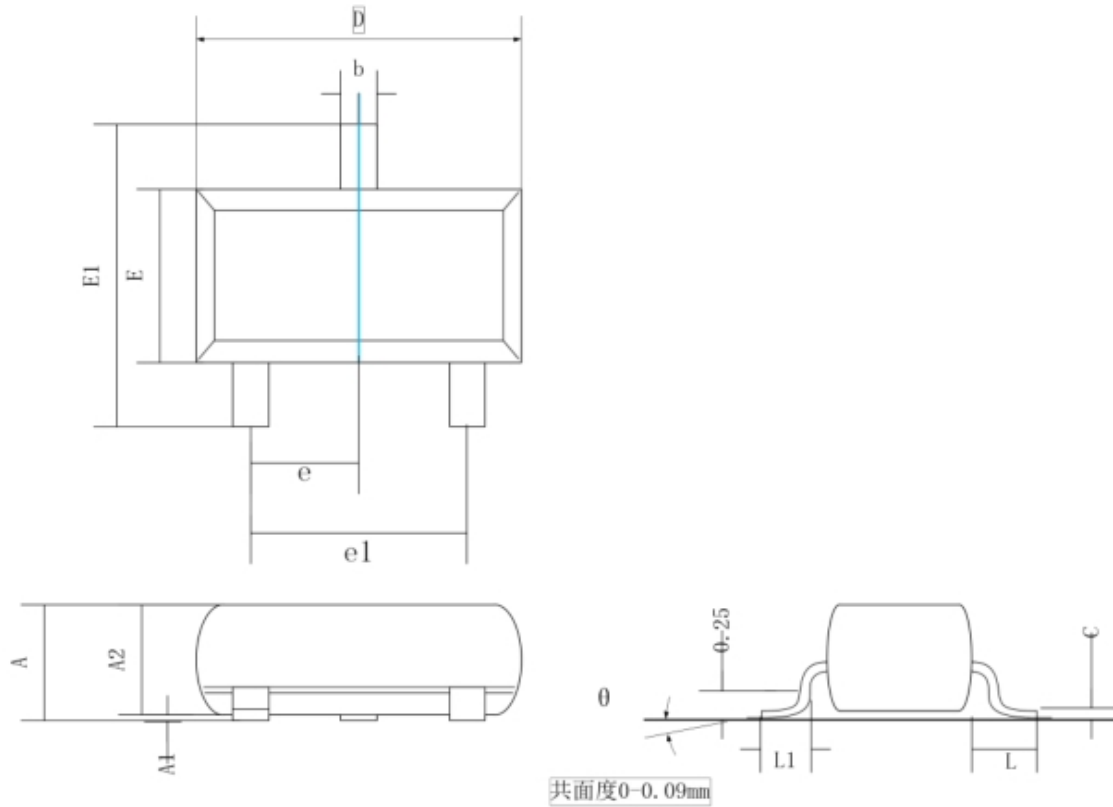


Drain-source breakdown voltage

$V_{BR(DSS)}=f(T_j); I_D=250\text{ }\mu\text{A}$



SOT-23 Package Information



Symbol	Dimensions In Millimeters	
	Min.	Max.
A	0.90	1.15
A1	0.00	0.10
A2	0.90	1.05
b	0.30	0.50
c	0.08	0.15
D	2.80	3.00
E	1.20	1.40
E1	2.25	2.55
e	0.95 REF.	
e1	1.80	2.00
L	0.55 REF.	
L1	0.30	0.50
θ	0°	8°