上海贝岭 SHANGHAI BELLING

BLM8205E

Power MOSFET

1. Description

➢ Advantages

The BLM8205E uses advanced trench technology to provide excellent $R_{DS(ON)}$,low gate charge and operation with gate voltages as low as 0.7V.This device is suitable for use as a Battery protection or other switching application.

➢ Key Characteristics

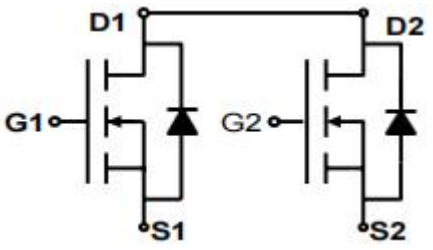
Parameter$_{SOT23-6}$	Value	Unit
V_{DS}	19.5	V
I_D	6	A
$R_{DS(ON)}$@4.5V$_{.Typ}$	18	mΩ
$R_{DS(ON)}$@2.5V$_{.Typ}$	22	mΩ

➢ Features

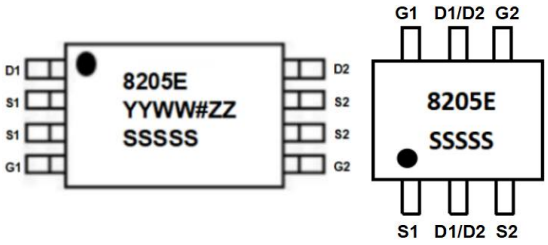
- High power and current handing capability
- Lead free product is acquired
- RoHS product
- Surface mount package

➢ Applications

- PWM applications
- Load switch
- Power management



Schematic diagram



Marking and pin assignment

Top view

➢ Ordering Informations

Device Marking	Ordering Codes	Package	Product Code	Packing
8205E	BLM8205E-J	TSSOP-8	BLM8205E	Reel
8205E	BLM8205E-G	SOT23-6	BLM8205E	Reel

BLM8205E-J,G

(2) Package type

(1) Chip name

(1)BLM8205E:19.5V 23.5mΩ
(2)J:TSSOP-8 G:SOT23-6

8205E：Device Marking
YYWW：Year&Week
ZZ：Assembly Code
SSSSS：Lot Code

2. Absolute Ratings

at T_C = 25°C, unless otherwise specified

Symbol	Parameter	Rating	Units
V_{DSS}	Drain-to-Source Voltage	19.5	V
I_D	Continuous Drain Current	6	A
	Continuous Drain Current T_C = 100 °C	4	A
I_{DM}	Pulsed Drain Current(Note1)	24	A
P_D	Power Dissipation	2.3	W
V_{GS}	Gate-to-Source Voltage	±12	V
T_J， T_{stg}	Operating Junction and Storage Temperature Range	150，-55 to 150	℃

3. Thermal Characteristics

Symbol	Parameter	Rating	Units
$R_{\theta JA}$	Junction-to-Ambient	55	℃/W

4. Electrical Characteristics

at T_C = 25°C, unless otherwise specified

OFF Characteristics

Symbol	Parameter	Test Conditions	Values			Units
			Min.	Typ.	Max.	
V_{DSS}	Drain to Source Breakdown Voltage	V_{GS}=0V, I_D=250μA	19.5	--	--	V
I_{DSS}	Drain to Source Leakage Current	V_{DS} =19V, V_{GS}= 0V	--	--	1	μA
I_{GSS}	Gate to Source Forward Leakage	V_{GS} =±12V	--	--	±100	nA

ON Characteristics

Symbol	Parameter	Test Conditions	Values			Units
			Min.	Typ.	Max.	
$R_{DS(ON)}$	Drain-to-Source On-Resistance SOT23-6	V_{GS}=4.5V,I_D=4A(Note2)	--	18	23.5	mΩ
		V_{GS}=2.5V,I_D=3A(Note2)	--	22	28	mΩ
	Drain-to-Source On-Resistance TSSOP-8	V_{GS}=4.5V,I_D=4A(Note2)	--	21	26	mΩ
		V_{GS}=2.5V,I_D=3A(Note2)	--	25	30	mΩ
$V_{GS(TH)}$	Gate Threshold Voltage	V_{DS} = V_{GS}, I_D=250μA(Note3)	0.4	0.7	1.0	V

Dynamic Characteristics

Symbol	Parameter	Test Conditions	Values			Units
			Min.	Typ.	Max.	
C_{iss}	Input Capacitance	V_{GS} = 0V V_{DS} = 10V f = 1.0MHz	--	450	--	pF
C_{oss}	Output Capacitance		--	65	--	
C_{rss}	Reverse Transfer Capacitance		--	50	--	

Switching Characteristics

Symbol	Parameter	Test Conditions	Values			Units
			Min.	Typ.	Max.	
$t_{d(ON)}$	Turn-on Delay Time	I_D =3A V_{DD} = 10V V_{GS} = 4.5V R_G =3Ω	--	4	--	ns
t_r	Rise Time		--	28	--	
$t_{d(OFF)}$	Turn-Off Delay Time		--	66	--	
t_f	Fall Time		--	50	--	
Q_g	Total Gate Charge	I_D =3A V_{DD} =10V V_{GS} = 4.5V	--	5.2	--	nC
Q_{gs}	Gate to Source Charge		--	0.9	--	
Q_{gd}	Gate to Drain (“Miller”)Charge		--	1.1	--	

Source-Drain Diode Characteristics

Symbol	Parameter	Test Conditions	Values			Units
			Min.	Typ.	Max.	
I_S	Continuous Source Current (Body Diode)	T_C=25 °C	--	--	6	A
I_{SM}	Maximum Pulsed Current (Body Diode)		--	--	24	A
V_{SD}	Diode Forward Voltage	I_S=6A, V_{GS}=0V	--	--	1.2	V
T_{rr}	Reverse Recovery Time	I_S=5A, T_j = 25°C dIF/dt=100A/us, V_{GS}=0V	--	4.7	--	ns
Q_{rr}	Reverse Recovery Charge		--	0.8	--	nC

Note1: Pulse width limited by maximum junction temperature
Note2: Pulse width tp≤300μs, δ≤2%

5. Characteristics Curves

Figure 1 Output Characteristics

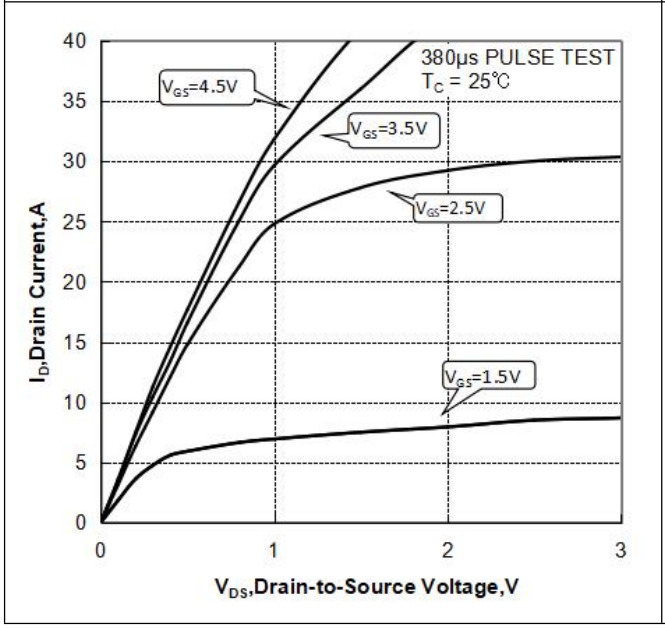


Figure 2 Transfer Characteristics

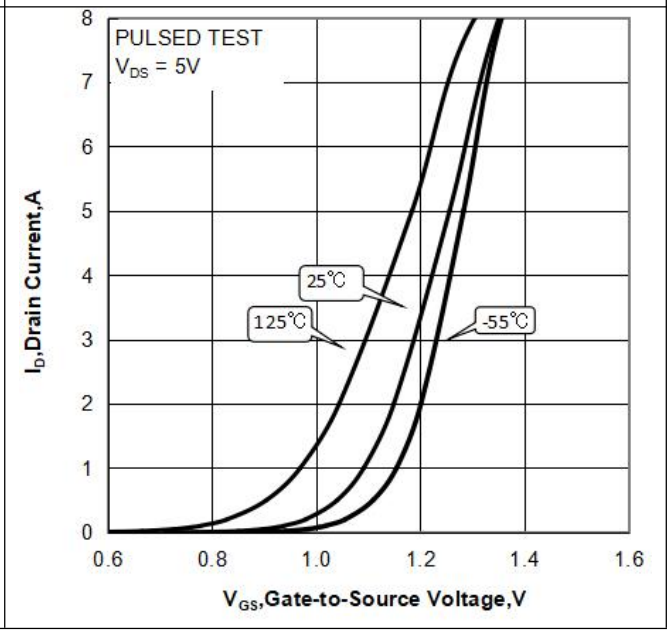


Figure 3 On-Resistance vs. I_D

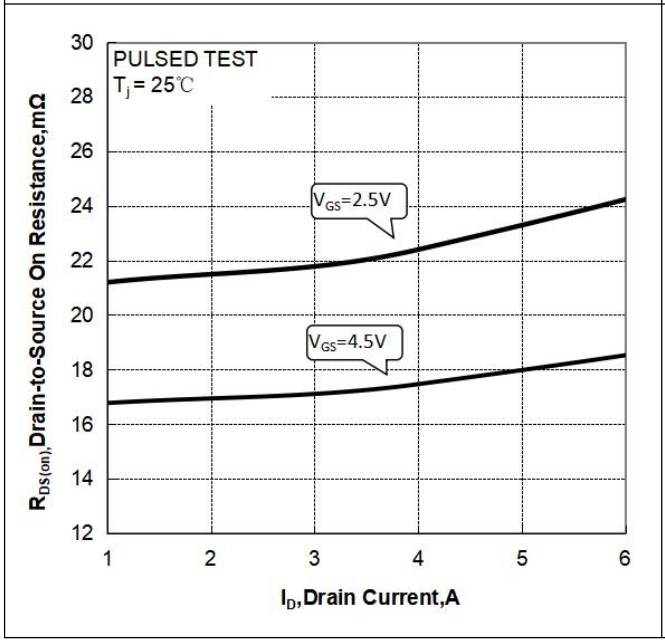


Figure 4 On-Resistance vs. Junction Temperature

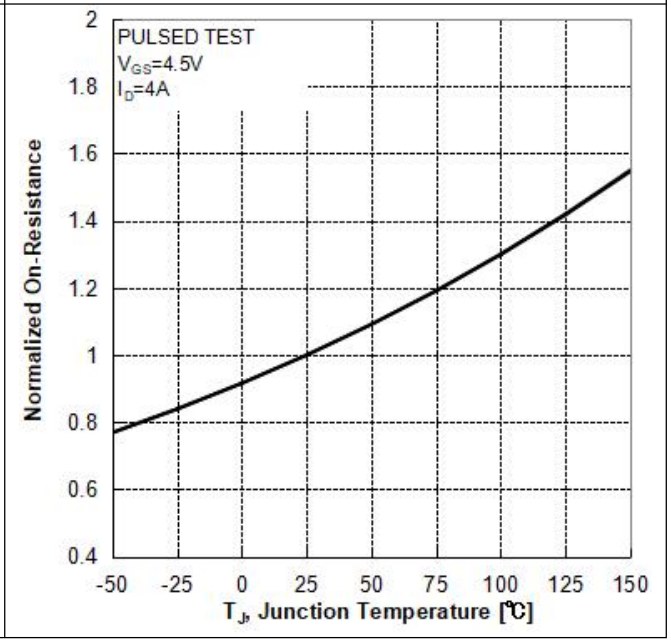


Figure 5 BV vs Junction Temperature

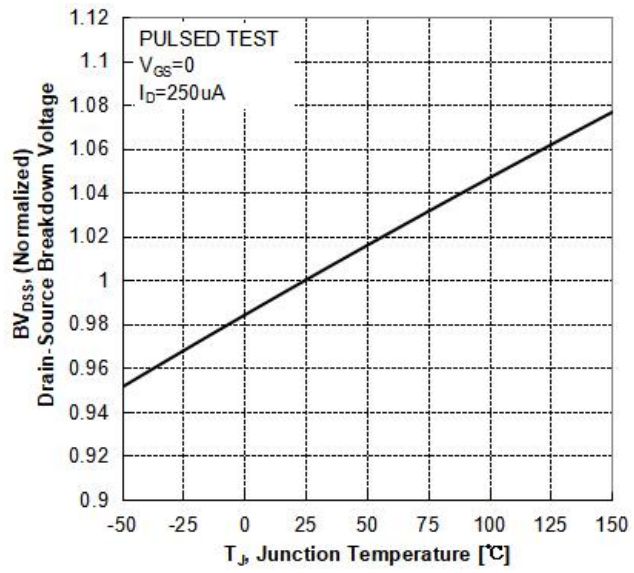


Figure 6 Vth vs Junction Temperature

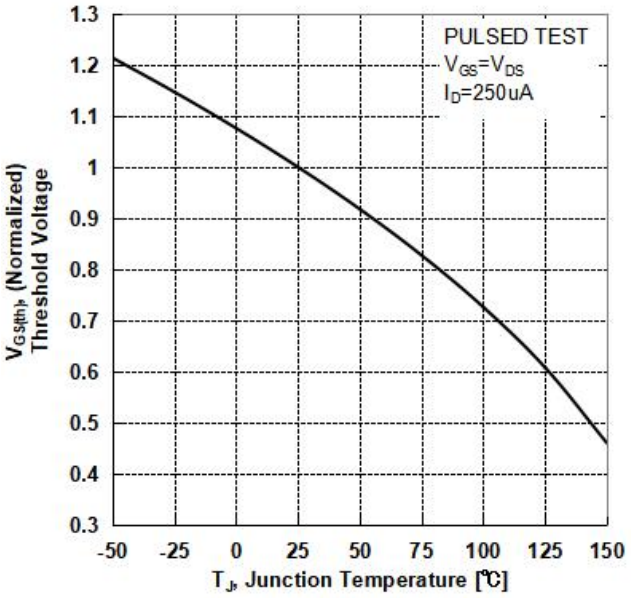


Figure 7 Gate-Charge Characteristics

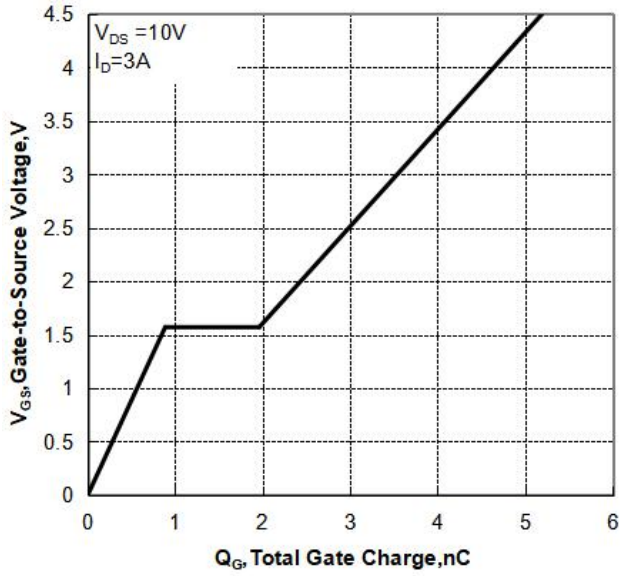


Figure 8 Capacitance Characteristics

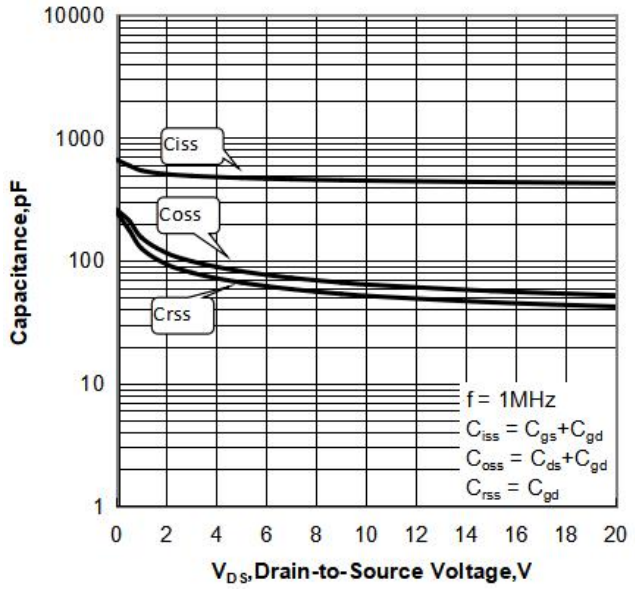


Figure 9 Body Diode Forward Voltage

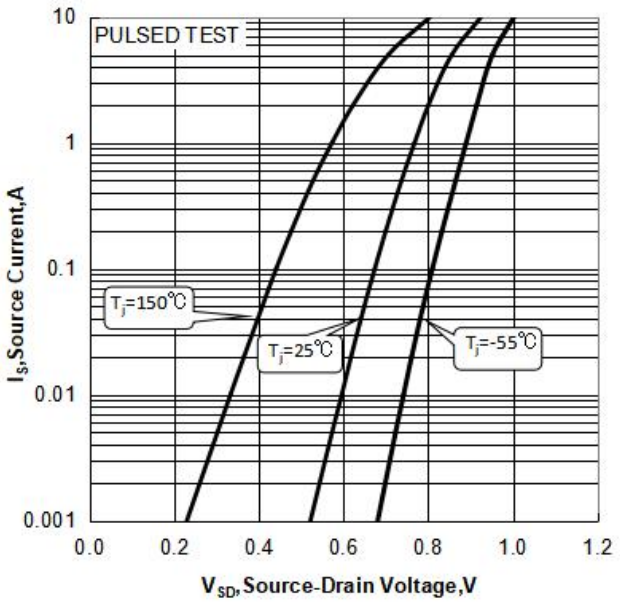


Figure 10 Maximum Safe Operating Area

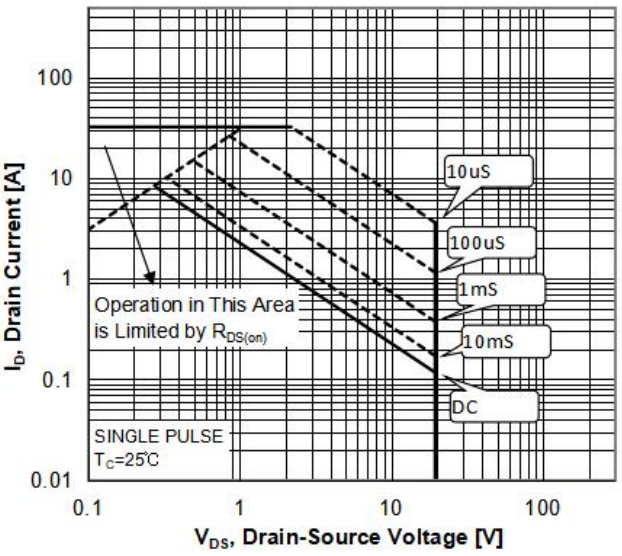
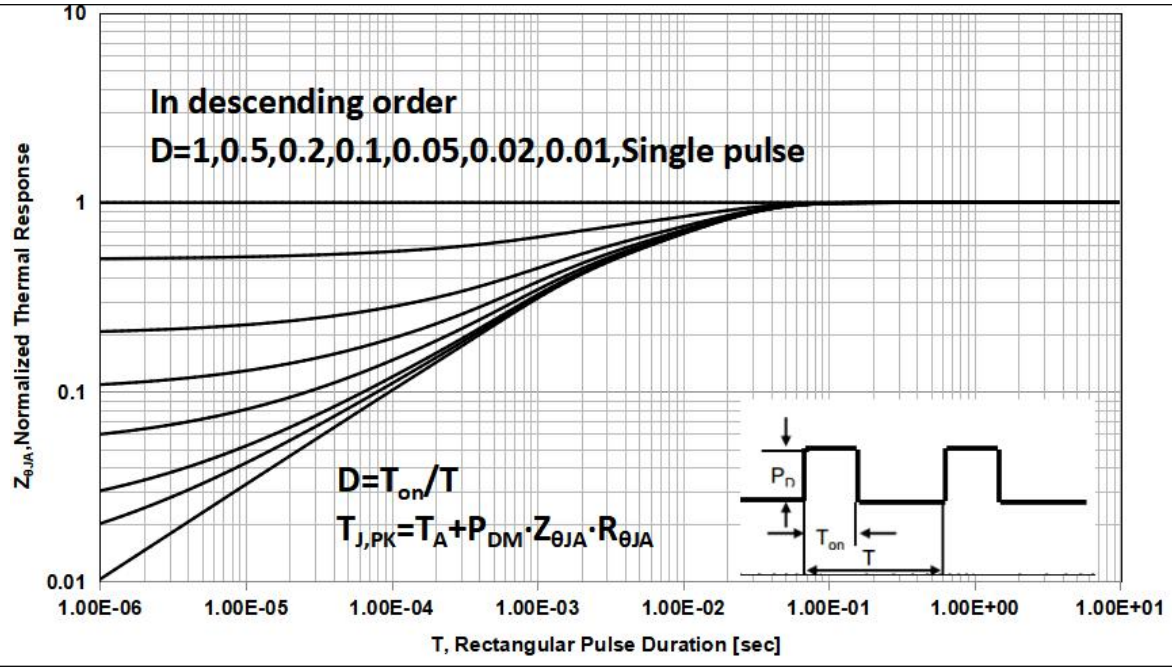
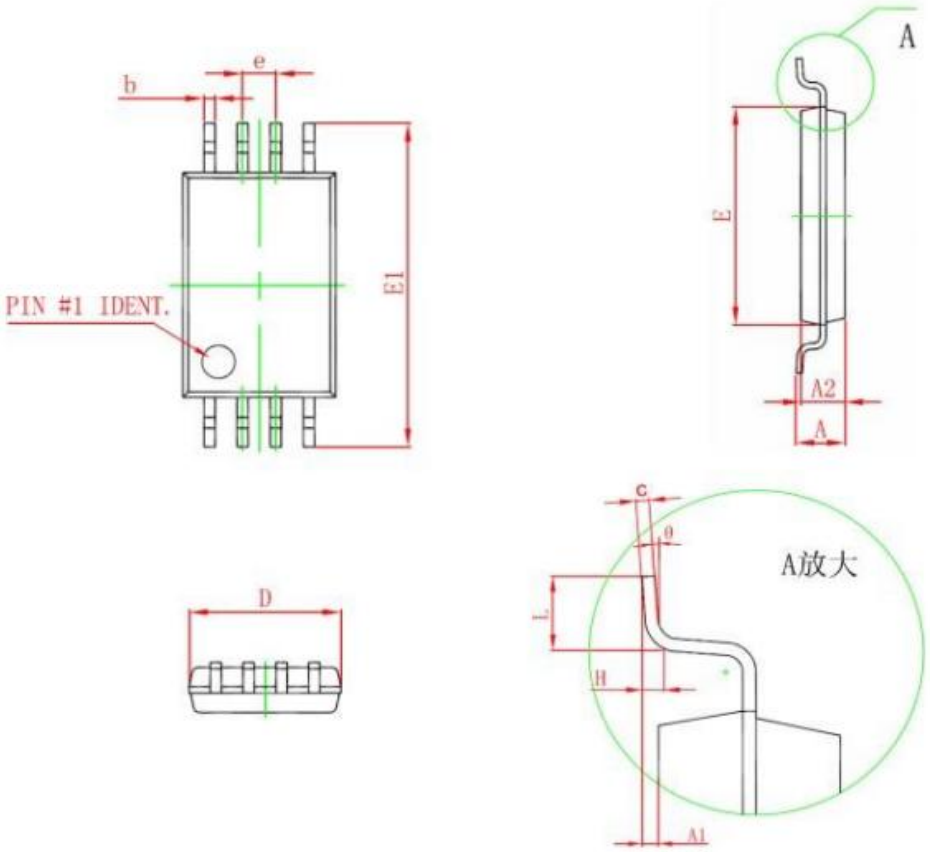


Figure 11 Transient Thermal Impedance

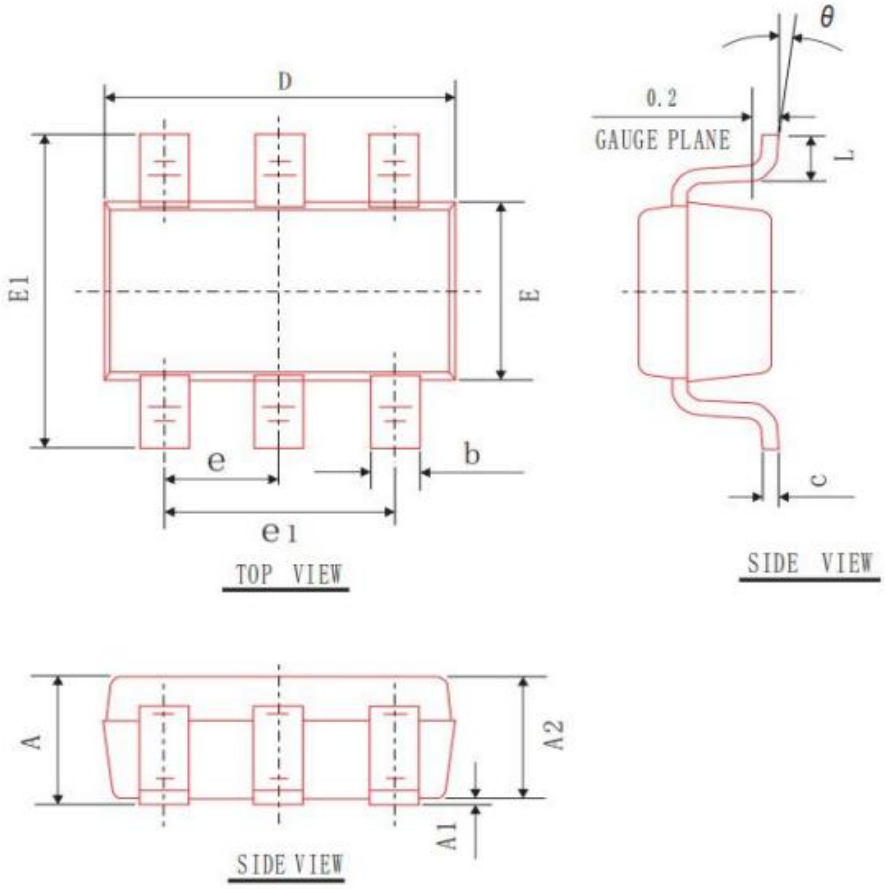


6. Package Description



Items	Values(mm)	
	MIN	MAX
D	2.900	3.100
E	4.300	4.500
b	0.190	0.300
c	0.090	0.200
E1	6.250	6.550
A		1.100
A2	0.800	1.000
A1	0.020	0.150
e	0.65(BSC)	
L	0.500	0.700
H	0.25(TYP)	
θ	1°	7°

TSSOP-8 Package



Items	Values(mm)		
	MIN	NOM	MAX
A	--	--	1.200
A1	0.000	0.050	0.100
A2	1.000	1.100	1.200
b	0.300	0.400	0.500
c	0.119	0.127	0.135
D	2.800	2.900	3.000
E	1.500	1.600	1.700
E1	2.600	2.800	3.000
e	0.950(BSC)		
e1	1.800	1.900	2.000
L	0.300	0.450	0.600
θ	0°	4°	8°

SOT23-6L Package

NOTE:

1. Exceeding the maximum ratings of the device in performance may cause damage to the device, even the permanent failure, which may affect the dependability of the machine. Please do not exceed the absolute maximum ratings of the device when circuit designing.
2. When installing the heat sink, please pay attention to the torsional moment and the smoothness of the heat sink.
3. MOSFETs is the device which is sensitive to the static electricity, it is necessary to protect the device from being damaged by the static electricity when using it.
4. Shanghai Belling reserves the right to make changes in this specification sheet and is subject to change without prior notice.

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