

EVVOSEMI[®]

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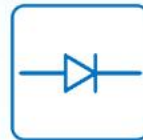
TVS



MOS



LDO



Diode



Sensor



DC-DC

Product Specification

▶ Domestic	Part Number	SI1304BDL
▶ Overseas	Part Number	SI1304BDL
▶ Equivalent	Part Number	SI1304BDL

EV is the abbreviation of name EVVO

N-Channel Enhancement Mode Field Effect Transistor

General Description

- Trench Power LV MOSFET technology
- High density cell design for low $R_{DS(ON)}$
- High Speed switching

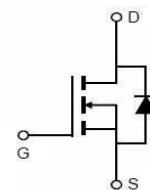
Applications

- Battery protection
- Load switch
- Power management

Product Summary

- V_{DS} 30V
- I_D 5.8A
- $R_{DS(ON)}$ (at $V_{GS}=10V$) <28 mohm
- $R_{DS(ON)}$ (at $V_{GS}=4.5V$) <33 mohm
- $R_{DS(ON)}$ (at $V_{GS}=2.5V$) <51 mohm

SOT-23 Pin Configuration



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

Parameter		Symbol	Limit	Unit
Drain-source Voltage		V_{DS}	30	V
Gate-source Voltage		V_{GS}	± 12	V
Drain Current	$T_A=25^{\circ}\text{C}$ @ Steady State	I_D	5.8	A
	$T_A=70^{\circ}\text{C}$ @ Steady State		4.5	
Pulsed Drain Current ^A		I_{DM}	23	A
Total Power Dissipation @ $T_A=25^{\circ}\text{C}$		P_D	1.2	W
Thermal Resistance Junction-to-Ambient @ Steady State ^B		$R_{\theta JA}$	104	$^{\circ}\text{C} / \text{W}$
Junction and Storage Temperature Range		T_J, T_{STG}	-55~+150	$^{\circ}\text{C}$

N-Channel Enhancement Mode Field Effect Transistor

Electrical Characteristics (T_J=25°C unless otherwise noted)

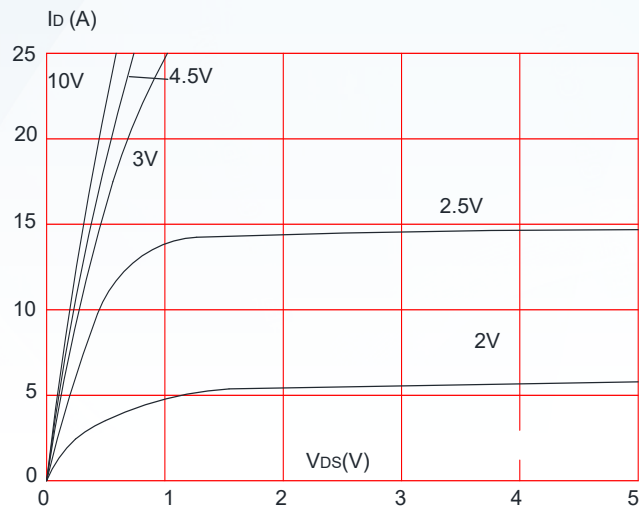
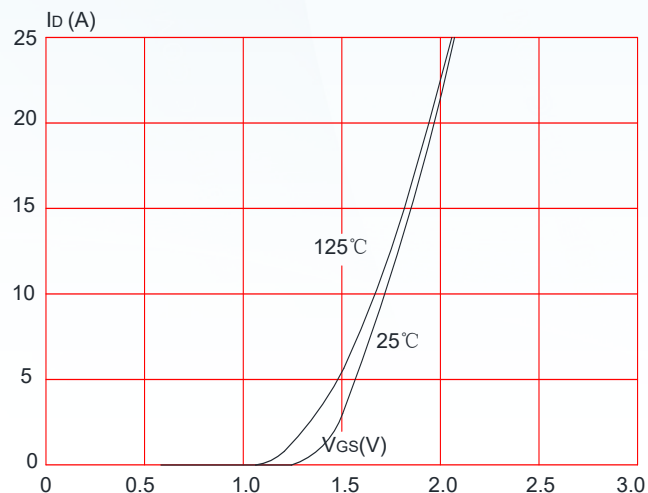
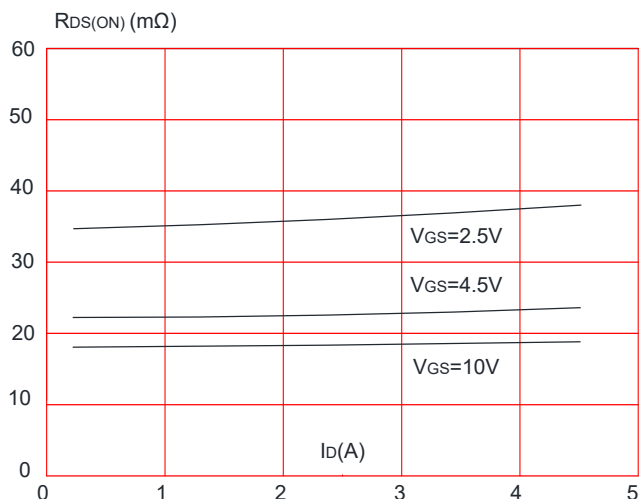
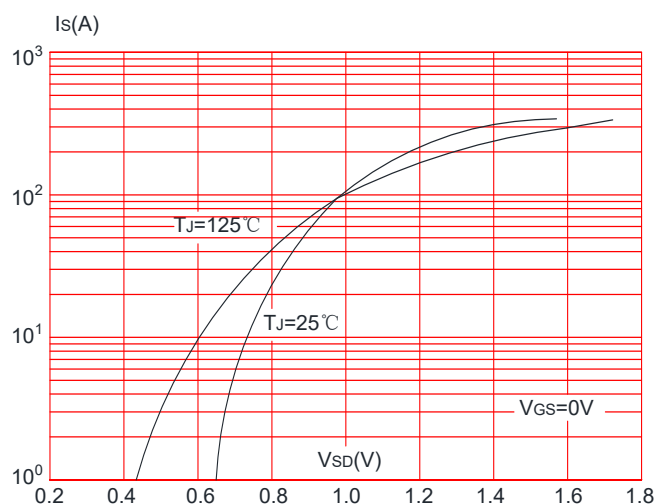
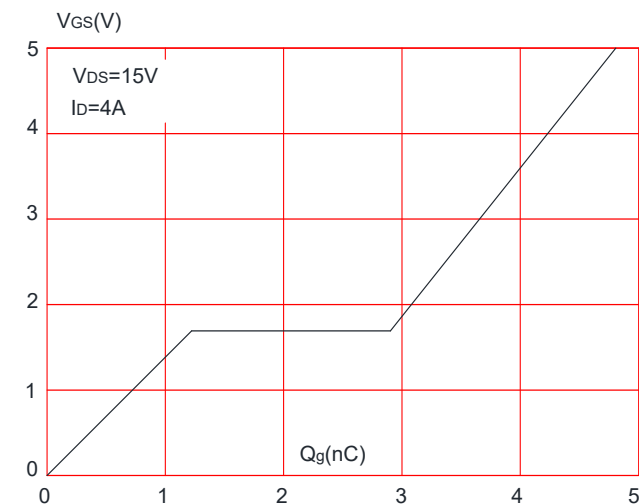
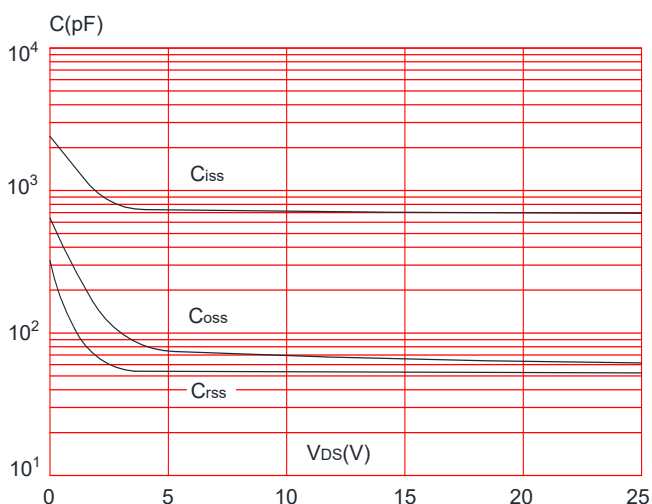
Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static Parameter						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0V, I _D =250μA	30			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =30V, V _{GS} =0V			1	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} = ±20V, V _{DS} =0V			±100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D =250μA	0.65	0.9	1.5	V
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =5.6A		21	28	mΩ
		V _{GS} = 4.5V, I _D =5.0A		25	33	
		V _{GS} =2.5V, I _D =3.0A		33	51	
Diode Forward Voltage	V _{SD}	I _S =5.8A, V _{GS} =0V		0.8	1.2	V
Maximum Body-Diode Continuous Current	I _S				5.8	A
Dynamic Parameters						
Input Capacitance	C _{iss}	V _{DS} =15V, V _{GS} =0V, f=1MHZ		535		pF
Output Capacitance	C _{oss}			130		
Reverse Transfer Capacitance	C _{rss}			36		
Switching Parameters						
Total Gate Charge	Q _g	V _{GS} =4.5V, V _{DS} =15V, I _D =5.8A		4.8		nC
Gate Source Charge	Q _{gs}			1.2		
Gate Drain Charge	Q _{gd}			1.7		
Turn-on Delay Time	t _{D(on)}	V _{GS} =4.5V, V _{DD} =15V, I _D =1A, R _{GEN} =2.8Ω		12		ns
Turn-on Rise Time	t _r			52		
Turn-off Delay Time	t _{D(off)}			17		
Turn-off Fall Time	t _f			10		

A. Pulse Test: Pulse Width ≤ 300μs, Duty cycle ≤ 2%.

B. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch.

N-Channel Enhancement Mode Field Effect Transistor

■ Typical Performance Characteristics

Figure1: Output Characteristics

Figure 2: Typical Transfer Characteristics

Figure 3: On-resistance vs. Drain Current

Figure 4: Body Diode Characteristics

Figure 5: Gate Charge Characteristics

Figure 6: Capacitance Characteristics


N-Channel Enhancement Mode Field Effect Transistor

Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

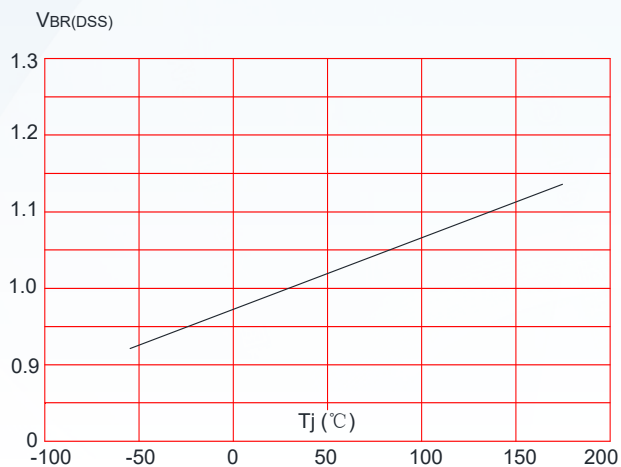


Figure 8: Normalized on Resistance vs. Junction Temperature

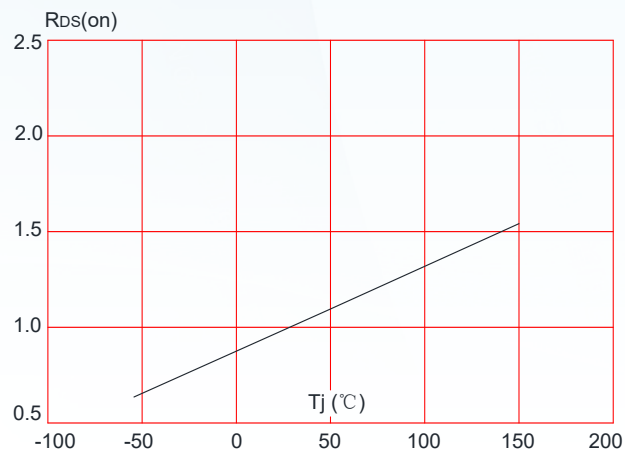


Figure 9: Maximum Safe Operating Area

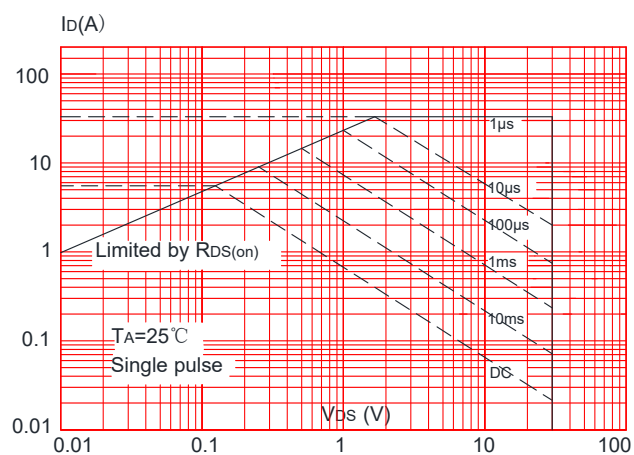
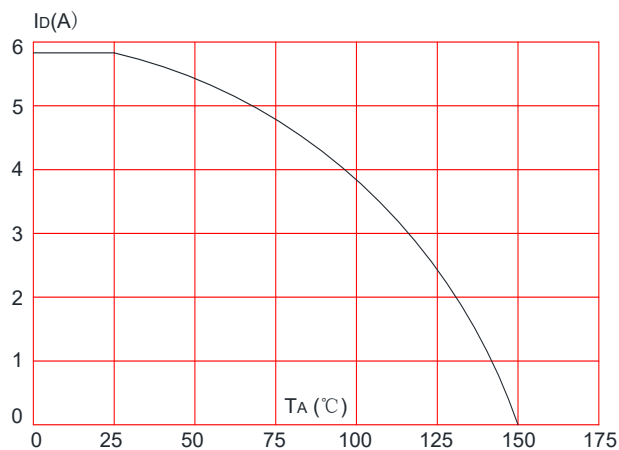
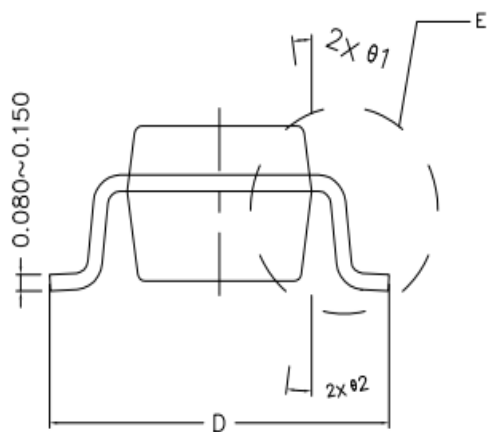
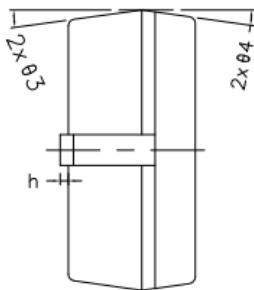
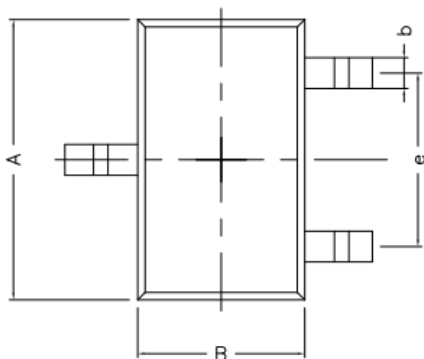


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

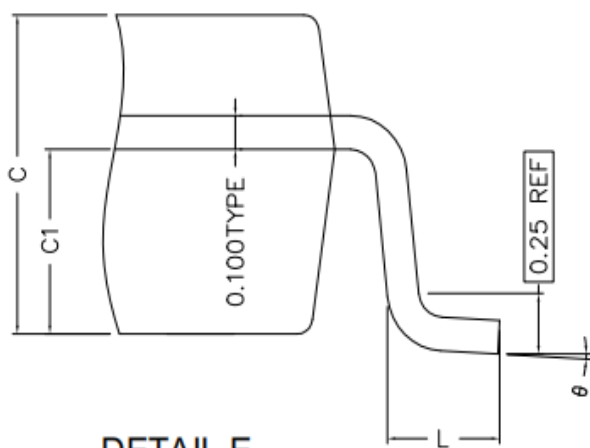


N-Channel Enhancement Mode Field Effect Transistor

SOT-323 Package Outline



SIDE VIEW



DETAIL E

COMMON DIMENSIONS (UNITS OF MEASURE IS mm)			
	MIN	NORMAL	MAX
A	2.000	2.100	2.200
B	1.150	1.250	1.350
C	0.900	0.950	1.000
C1	0.500	0.550	0.600
D	2.100	2.300	2.500
L	0.220	0.360	0.500
B b	0.200	0.250	0.400
h	0.020	0.050	0.100
e	1.300TYPE		
θ ₁	8° TYPE		
θ ₂	8° TYPE		
θ ₃	8° TYPE		
θ ₄	8° TYPE		
θ	0~8° TYPE		

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