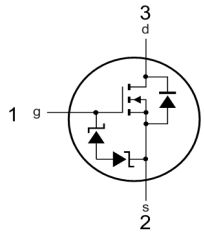
N-Channel 50V MOSFET

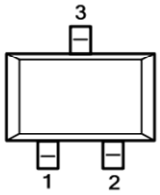
Features:

- Surface-mounted package
- High Density Cell Design
- Low Threshold Voltage
- Halogen free
- ESD protected 1500V

Application

- DC-DC
- Portable appliance
- Power management





Top View
SOT23S-3L

B_{VDSS}= 50V ,
$R_{DS(ON)}$< 10Ω@VGS= 2.75V
$R_{DS(ON)}$< 3.5Ω@VGS= 5.0V
I_D= 200mA

Absolute Maximum Ratings (TA=25℃ Unless Otherwise Noted)

Parameter		Symbol	BSS138K	Unit
		Marking	J2	
Drain-Source Voltage		V_{DSS}	50	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current	Ta=25℃	I_D	200	mA
Pulsed Drain Current(t_p≦10us)		I_{DM}	800	mA
Power Dissipation	Ta=25℃	P_D	225	mW
Operating Junction and Storage Temperature Range		T_J, T_{stg}	-55 to150	℃

Thermal Characteristics

Symbol	Characteristic	Max.	Units
$R_{\theta JA}$	Junction-to-Ambient	556	℃/W

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Electrical Characteristics (T_A =25℃ Unless Otherwise Specified)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
Static(1)						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V,I_D=250μA	50	--	--	V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS},I_D=1mA	0.5	--	1.5	V
I_{GSS}	Gate-Body Leakage	V_{DS} =0V,V_{GS}=±20V	--	--	±10	uA
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} =25V,V_{GS}=0V	--	--	0.1	μA
		V_{DS} =50V,V_{GS}=0V	--	--	0.5	
$R_{DS(ON)}$	Drain-Source On-Resistance	V_{GS}=2.75V, I_D=200mA	--	--	10	Ω
		V_{GS}=5.0V, I_D=200mA	--	--	3.5	Ω
g_{FS}	Forward Transconductance	I_D=200mA, V_{DS}=25V	100	--	--	mmhos
Dynamic(2)						
C_{iss}	Input Capacitance	V_{DS}=25V, V_{GS}=0V, f=1.0MHz	--	40	50	pF
C_{oss}	Output Capacitance		--	12	25	
C_{rss}	Reverse Transfer Capacitance		--	3.5	5.0	
$t_{d(on)}$	Turn-On Delay Time	V_{DS}=30V, I_D =0.2A	--	5	20	nSs
$t_{d(off)}$	Turn-Off Delay Time		--	5	20	

Note：

(1) Pulse test: pulse width<= 300us, duty cycle<=2%

(2) Switching characterisitics are independent of operating junction temperature.

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TYPICAL ELECTRICAL CHARACTERISTICS

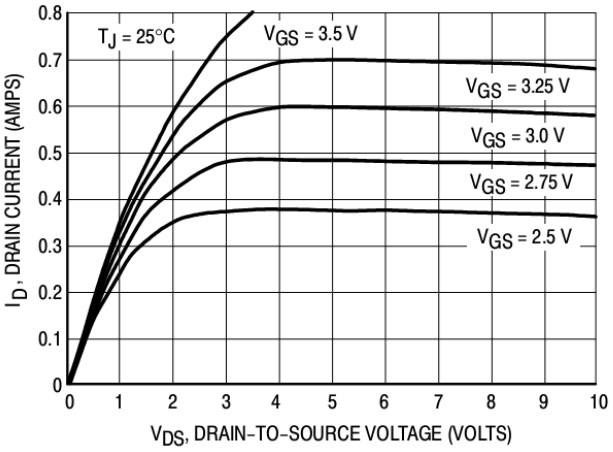

Figure 1. On–Region Characteristics

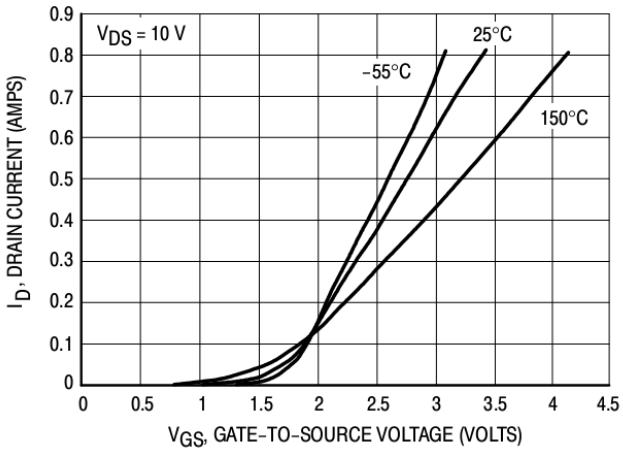

Figure 2. Transfer Characteristics

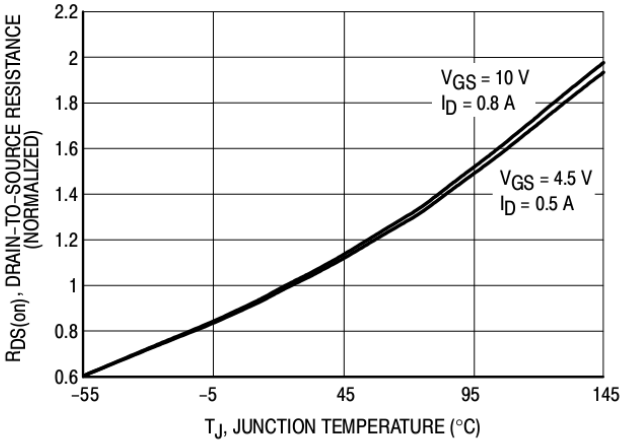

Figure 3. On–Resistance Variation with Temperature

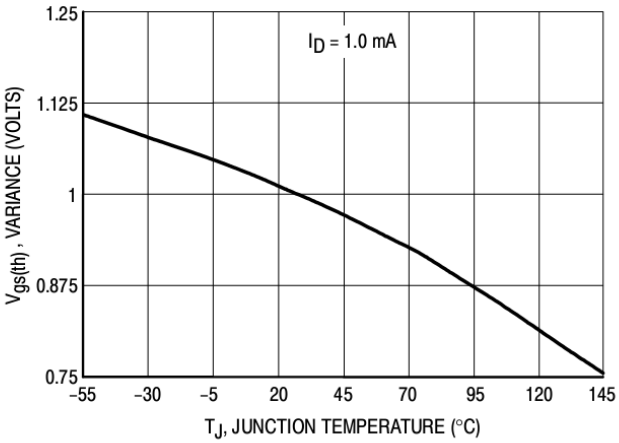

Figure 4. Threshold Voltage Variation with Temperature

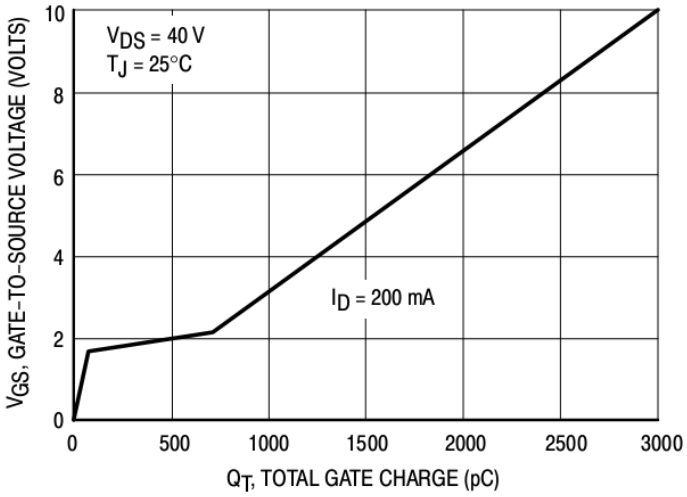

Figure 5. Gate Charge

TYPICAL ELECTRICAL CHARACTERISTICS

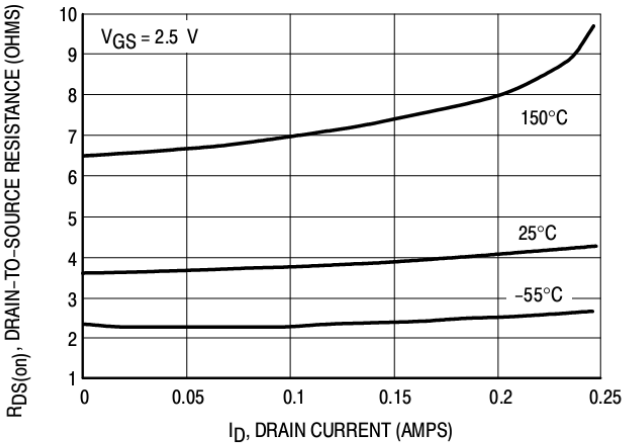

Figure 6. On–Resistance versus Drain Current

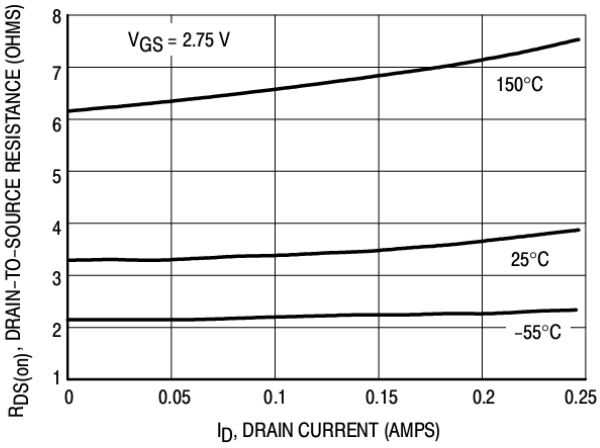

Figure 7. On–Resistance versus Drain Current

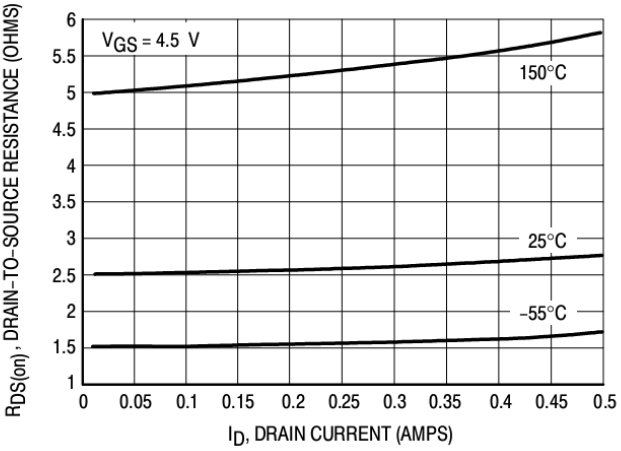

Figure 8. On–Resistance versus Drain Current

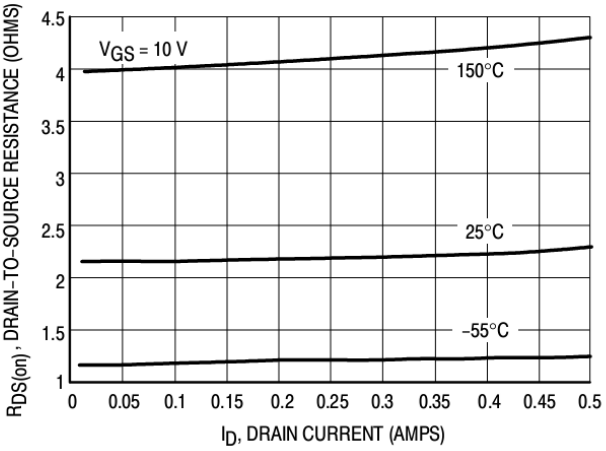

Figure 9. On–Resistance versus Drain Current

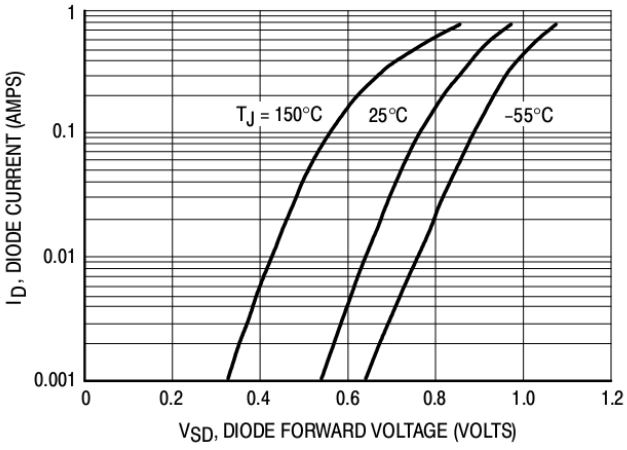

Figure 10. Body Diode Forward Voltage

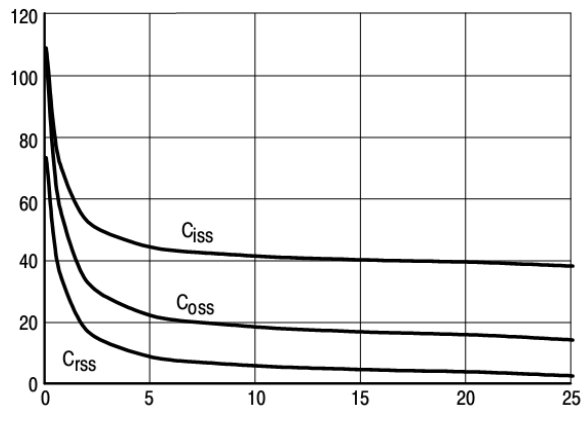

Figure 11. Capacitance

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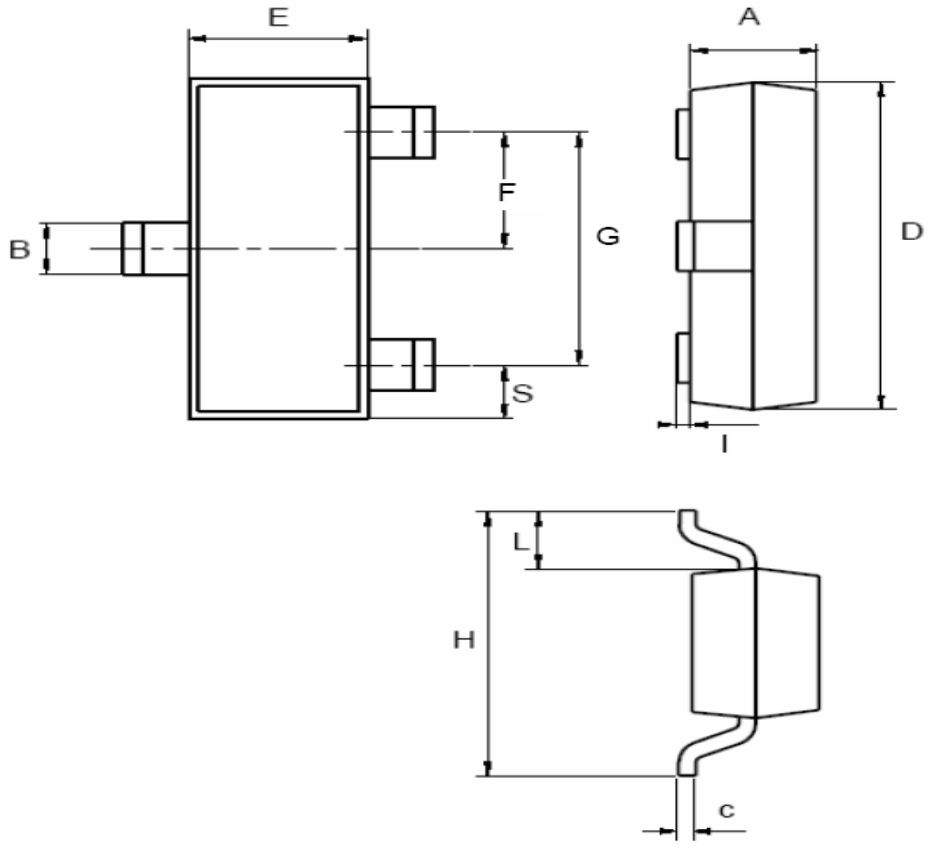

SOT-23		
DIM.	MIN.	MAX.
A	0.89	1.40
B	0.30	0.51
C	0.085	0.18
D	2.75	3.04
E	1.20	1.60
F	0.85	1.05
G	1.70	2.10
H	2.10	2.75
I	0.0	0.1
L	0.60 typ.	
S	0.35	0.65
All Dimensions in millimeter		

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