

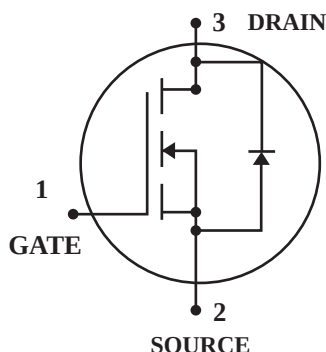
Small Signal MOSFET N-Channel

Features:

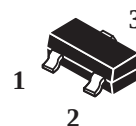
- *Low On-Resistance : 3.5Ω
- *Low Input Capacitance: 40PF
- *Low Out put Capacitance : 12PF
- *Low Threshold : 1.5V
- *Fast Switching Speed : 20ns

Application:

- * DC to DC Converter
- * Cellular & PCMCIA Card
- * Cordless Telephone
- * Power Management in Portable and Battery etc.



SOT-23



Maximum Ratings (TA=25°C Unless Otherwise Specified)

Rating	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	50	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current (TA=25°C)	I_D	200	mA
Pulsed Drain Current($t_p \leq 10\mu s$)	I_{DM}	800	mA
Power Dissipation (TA=25°C)	P_D	225	mW
Maximax Junction-to-Ambient	$R_{\theta JA}$	556	°C/W
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55 to 150	°C

Device Marking

BSS138=J1

Electrical Characteristics (TA=25 °C Unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
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Static⁽¹⁾

Drain-Source Breakdown Voltage V _{GS} =0V, I _D =250μA	V _{(BR)DSS}	50	-	-	V
Gate-Source Threshold Voltage V _{DS} =V _{GS} , I _D =1.0mA	V _{GS(th)}	0.5	-	1.5	V
Gate-Source Leakage Current V _{DS} =0V, V _{GS} =±20V	I _{GSS}	-	-	±0.1	uA
Zero Gate Voltage Drain Current V _{DS} =25V, V _{GS} =0V V _{DS} =50V, V _{GS} =0V	I _{DSS}	-	-	0.1 0.5	μA
Drain-Source On-Resistance V _{GS} =2.75V, I _D <200mA, TA=-40°C to +85°C V _{GS} =5.0V, I _D =200mA	r _{DS(on)}	-	5.6 -	10 3.5	Ω
Forward Transconductance V _{DS} =25V, I _D =200mA, f=1.0KHZ	g _{fs}	100	-	-	mS

Dynamic

Input Capacitance V _{DS} =25V, V _{GS} =0V, f=1MHZ	C _{iss}	-	40	50	PF
Output Capacitance V _{DS} =25V, V _{GS} =0V, f=1MHZ	C _{oss}	-	12	25	
Reverse Transfer Capacitance V _{DS} =25V, V _{GS} =0V, f=1MHZ	C _{rss}	-	3.5	5.0	

Switching (2)

Turn-On Time V _{DD} =30V, I _D =200mA	t _{d(on)}	-	-	20	nS
Turn-Off Time V _{DD} =30V, I _D =100mA	t _{d(off)}	-	-	20	

Note: 1. Pulse Test : PW≤300μs, Duty Cycle ≤2%
 2. Switching Time is Essentially Independent of Operating Temperature .

TYPICAL ELECTRICAL CHARACTERISTICS

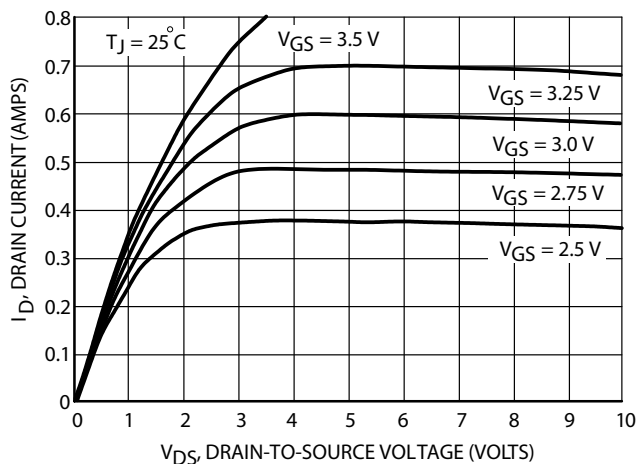


Figure 1. On-Region Characteristics

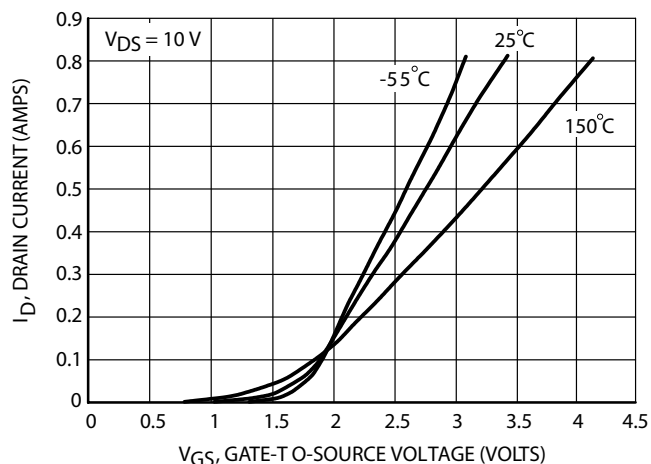


Figure 2. Transfer Characteristics

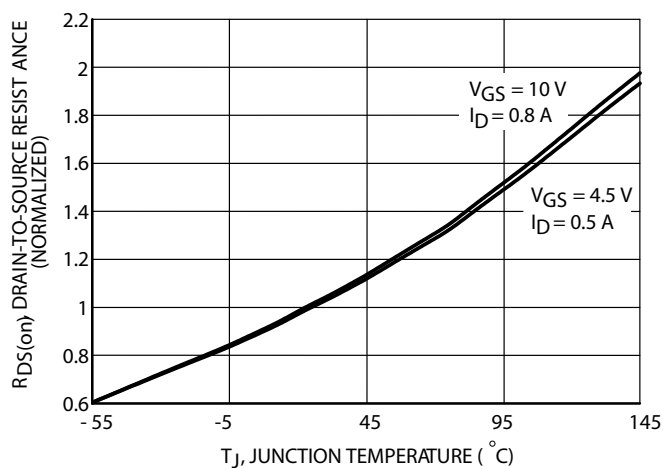


Figure 3. On-Resistance Variation with Temperature

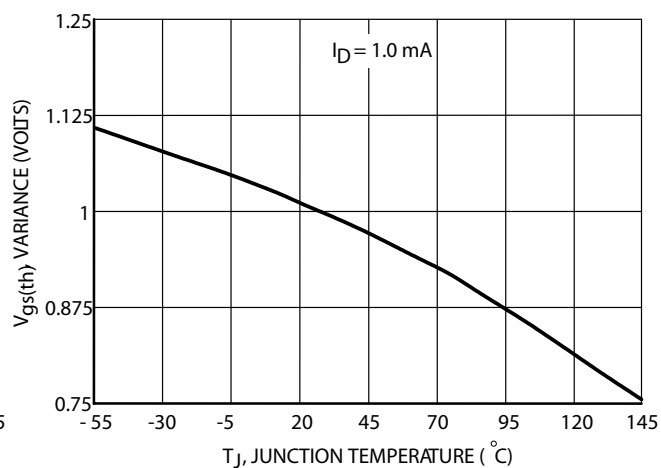


Figure 4. Threshold Voltage Variation with Temperature

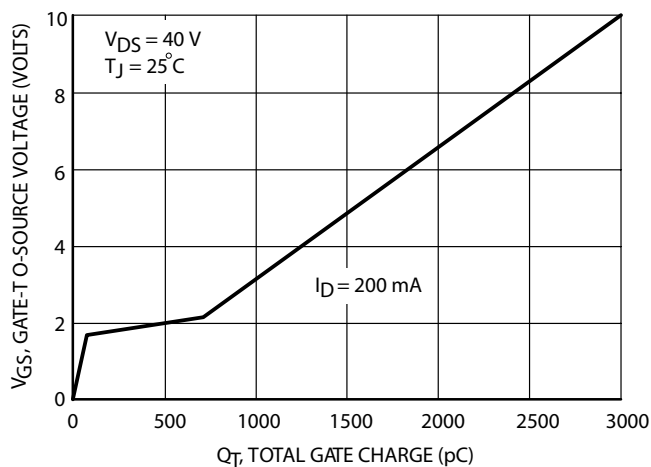


Figure 5. Gate Charge

TYPICAL ELECTRICAL CHARACTERISTICS

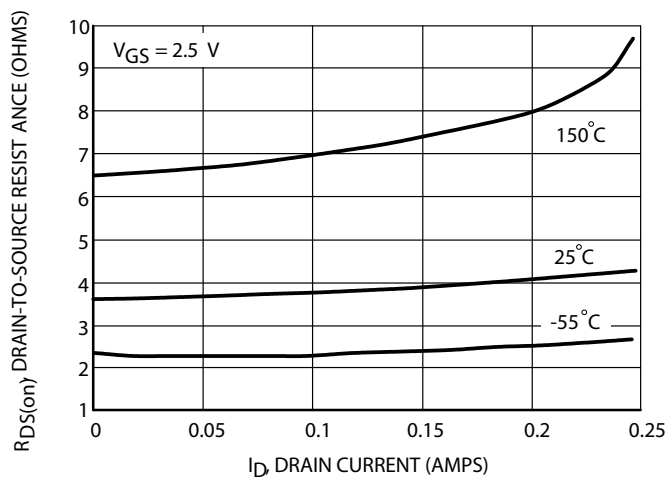


Figure 6. On-Resistance versus Drain Current

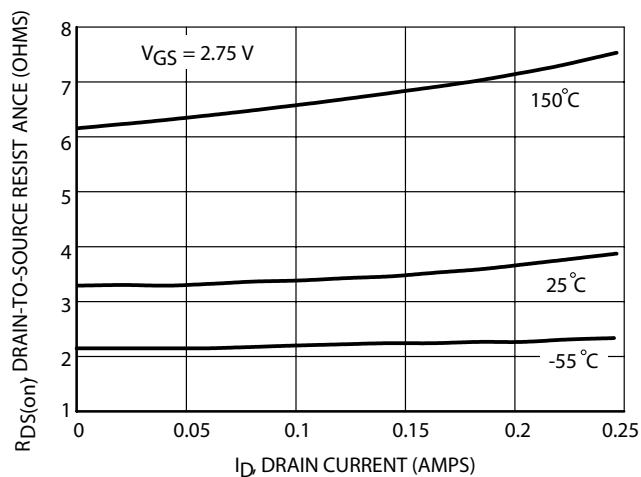


Figure 7. On-Resistance versus Drain Current

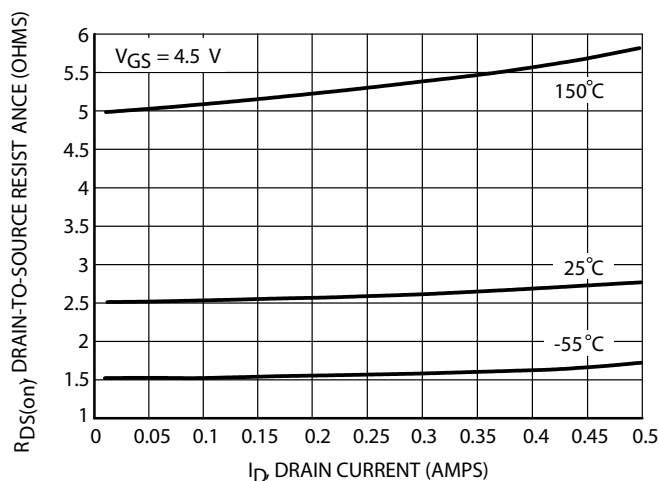


Figure 8. On-Resistance versus Drain Current

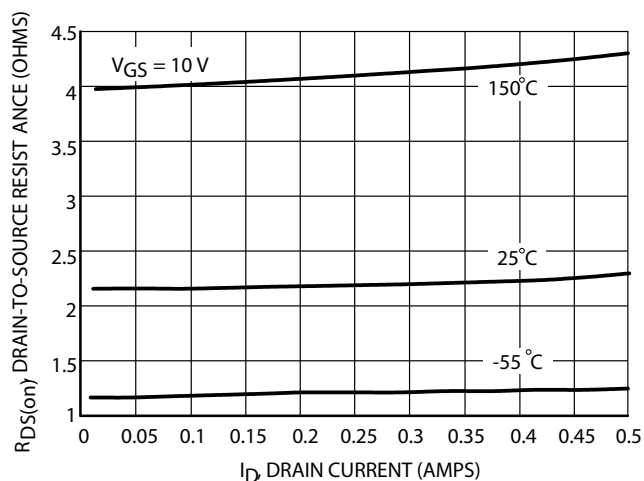


Figure 9. On-Resistance versus Drain Current

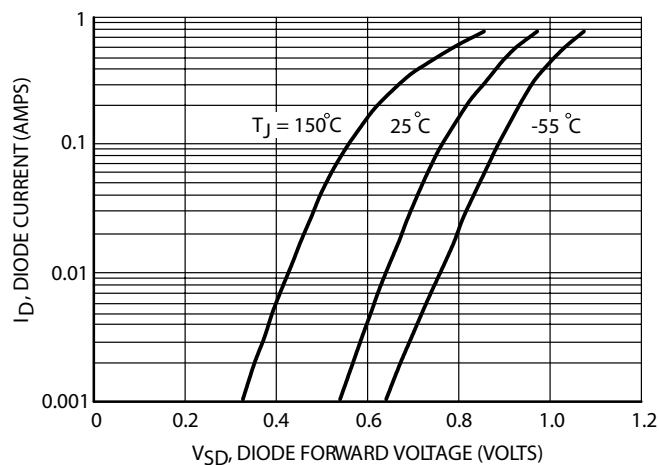


Figure 10. Body Diode Forward Voltage

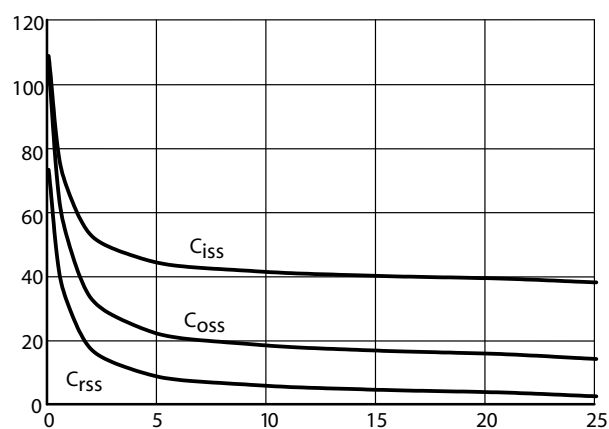


Figure 11. Capacitance