

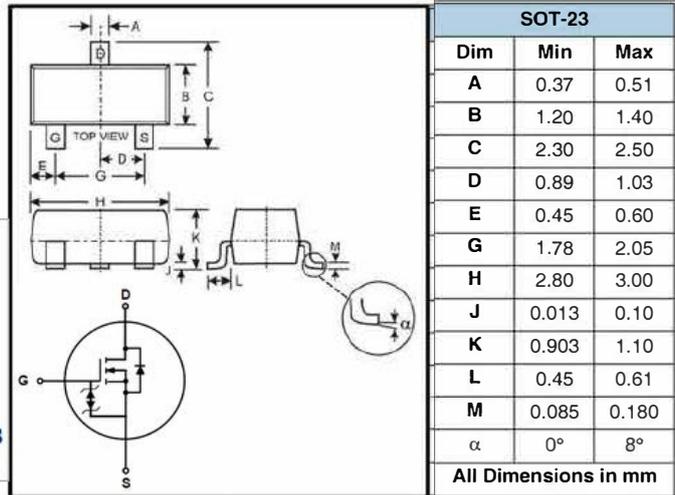
## N-CHANNEL ENHANCEMENT MODE FIELD EFFECT TRANSISTOR

### ● Features

- Low Gate Threshold Voltage
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- High Drain-Source Voltage Rating
- ESD protected (HBM > 2KV)

### ● Mechanical Data

- Case: SOT-23, Molded Plastic
- Case material - UL Flammability Rating 94V-0
- Moisture sensitivity: Level 1 per J-STD-020A
- Terminals: Solderable per MIL-STD-202, Method 208
- Terminal Connections: See Diagram
- Marking: K23 (See Page 3)
- Ordering & Date Code Information: See Page 3
- Weight: 0.008 grams (approx.)



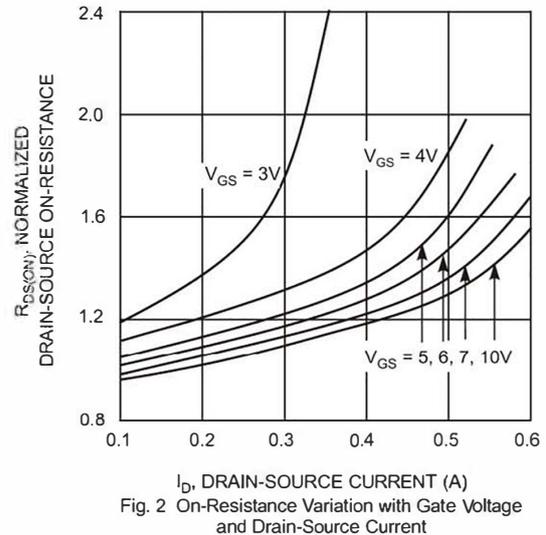
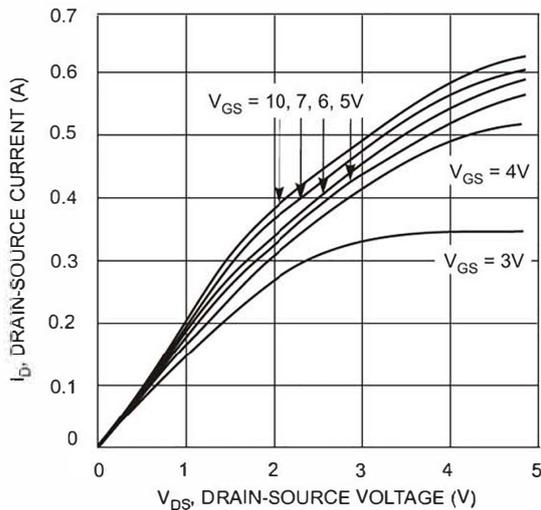
### ● Maximum Ratings @ $T_A = 25^\circ\text{C}$ unless otherwise specified

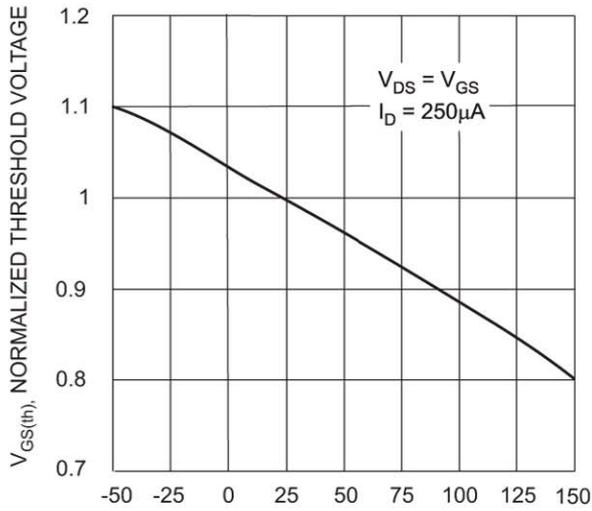
Characteristic	Symbol	BSS123	Units
Drain-Source Voltage	$V_{DS}$	100	V
Drain-Gate Voltage $R_{GS} \leq 20\text{K}\Omega$	$V_{DGR}$	100	V
Gate-Source Voltage	Continuous $V_{GS}$	$\pm 20$	V
Drain Current (Note 1)	Continuous $I_D$	170	mA
	Pulsed $I_{DM}$	680	
Total Power Dissipation (Note 1)	$P_d$	300	mW
Thermal Resistance, Junction to Ambient (Note 1)	$R_{\theta JA}$	417	$^\circ\text{C}/\text{W}$
Operating and Storage Temperature Range	$T_j, T_{STG}$	-55 to +150	$^\circ\text{C}$

● **Electrical Characteristics** @  $T_A = 25^\circ\text{C}$  unless otherwise specified

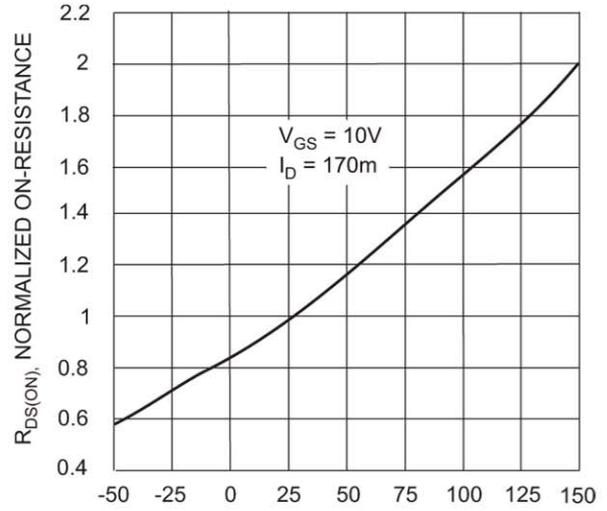
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS (Note 2)</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	100	—	—	V	$V_{GS} = 0V, I_D = 250\mu A$
Zero Gate Voltage Drain Current	$I_{DSS}$	—	—	1.0 10	$\mu A$ nA	$V_{DS} = 100V, V_{GS} = 0V$ $V_{DS} = 20V, V_{GS} = 0V$
Gate-Body Leakage, Forward	$I_{GSSF}$	—	—	320	nA	$V_{GS} = 20V, V_{DS} = 0V$
<b>ON CHARACTERISTICS (Note 2)</b>						
Gate Threshold Voltage	$V_{GS(th)}$	0.8	1.4	2.5	V	$V_{DS} = V_{GS}, I_D = 1mA$
Static Drain-Source On-Resistance	$R_{DS(on)}$	—	—	6.0 10	$\Omega$	$V_{GS} = 10V, I_D = 0.17A$ $V_{GS} = 4.5V, I_D = 0.17A$
Forward Transconductance	$g_{FS}$	80	370	—	mS	$V_{DS} = 10V, I_D = 0.17A, f = 1.0KHz$
Drain-Source Diode Forward Voltage	$V_{SD}$	—	0.84	1.3	V	$V_{GS} = 0V, I_S = 0.34A$
<b>DYNAMIC CHARACTERISTICS</b>						
Input Capacitance	$C_{iss}$	—	29	60	pF	$V_{DS} = 25V, V_{GS} = 0V$ $f = 1.0MHz$
Output Capacitance	$C_{oss}$	—	10	15	pF	
Reverse Transfer Capacitance	$C_{rss}$	—	2	6	pF	
<b>SWITCHING CHARACTERISTICS</b>						
Turn-On Rise Time	$t_r$	—	—	8	ns	$V_{DD} = 30V, I_D = 0.28A,$ $R_{GEN} = 50\Omega, V_{GS} = 10V$
Turn-Off Fall Time	$t_f$	—	—	16	ns	
Turn-On Delay Time	$t_{D(ON)}$	—	—	8	ns	
Turn-Off Delay Time	$t_{D(OFF)}$	—	—	13	ns	

Note: 2. Short duration test pulse used to minimize self-heating effect.





$T_J$ , JUNCTION TEMPERATURE ( $^{\circ}C$ )  
Fig. 3 Gate Threshold Variation with Temperature



$T_J$ , JUNCTION TEMPERATURE ( $^{\circ}C$ )  
Fig. 4 On-Resistance Variation with Temperature

