

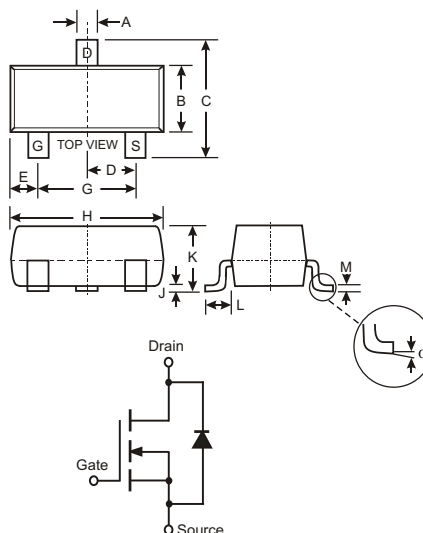
N-CHANNEL ENHANCEMENT MODE FIELD EFFECT TRANSISTOR

Features

- Low Gate Threshold Voltage
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- High Drain-Source Voltage Rating
- Lead Free/RoHS Compliant (Note 2)**

Mechanical Data

- Case: SOT-23
Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
Moisture Sensitivity: Level 1 per J-STD-020C
Terminals: Solderable per MIL-STD-202, Method 208
Lead Free Plating (Matte Tin Finish annealed over Alloy 42 leadframe).
Terminal Connections: See Diagram
Marking: K23 (See Page 3)
Ordering & Date Code Information: See Page 3
Weight: 0.008 grams (approximate)



SOT-23		
Dim	Min	Max
A	0.37	0.51
B	1.20	1.40
C	2.30	2.50
D	0.89	1.03
E	0.45	0.60
G	1.78	2.05
H	2.80	3.00
J	0.013	0.10
K	0.903	1.10
L	0.45	0.61
M	0.085	0.180
	0	8
All Dimensions in mm		

Maximum Ratings @ T_A = 25 °C unless otherwise specified

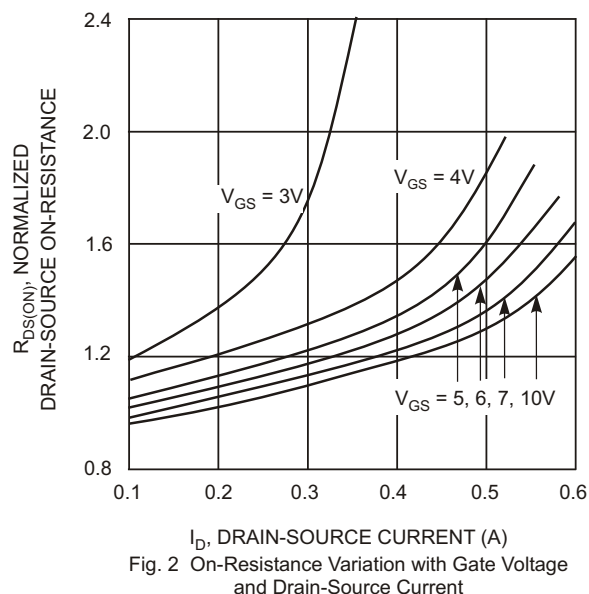
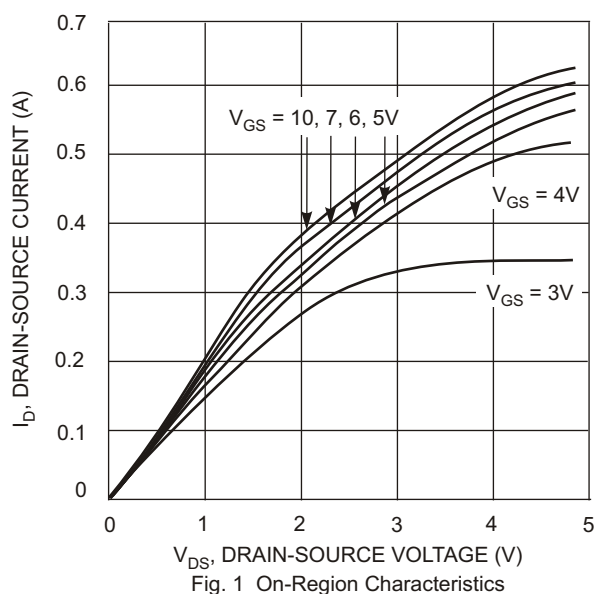
Characteristic	Symbol	BSS123	Units
Drain-Source Voltage	V _{DSS}	100	V
Drain-Gate Voltage R _{GS} = 20K	V _{DGR}	100	V
Gate-Source Voltage Continuous	V _{GSS}	20	V
Drain Current (Note 1) Continuous Pulsed	I _D I _{DM}	170 680	mA
Total Power Dissipation (Note 1)	P _d	300	mW
Thermal Resistance, Junction to Ambient (Note 1)	R _{JA}	417	C/W
Operating and Storage Temperature Range	T _j , T _{STG}	-55 to +150	C

- Note: 1. Part mounted on FR-4 board with recommended pad layout, which can be found on our website at <http://www.diodes.com/datasheets/ap02001.pdf>.
2. No purposefully added lead.

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 3)						
Drain-Source Breakdown Voltage	BV _{DSS}	100			V	V _{GS} = 0V, I _D = 250 A
Zero Gate Voltage Drain Current	I _{DSS}			1.0 10	μA nA	V _{DS} = 100V, V _{GS} = 0V V _{DS} = 20V, V _{GS} = 0V
Gate-Body Leakage, Forward	I _{GSSF}			50	nA	V _{GS} = 20V, V _{DS} = 0V
ON CHARACTERISTICS (Note 3)						
Gate Threshold Voltage	V _{GS(th)}	0.8	1.4	2.0	V	V _{DS} = V _{GS} , I _D = 1mA
Static Drain-Source On-Resistance	R _{DS (ON)}			6.0 10		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
DYNAMIC CHARACTERISTICS						
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	
SWITCHING CHARACTERISTICS						
Turn-On Rise Time	t _r			8	ns	V _{DD} = 30V, I _D = 0.28A, R _{GEN} = 50 Ω, 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: 3. Short duration test pulse used to minimize self-heating effect.



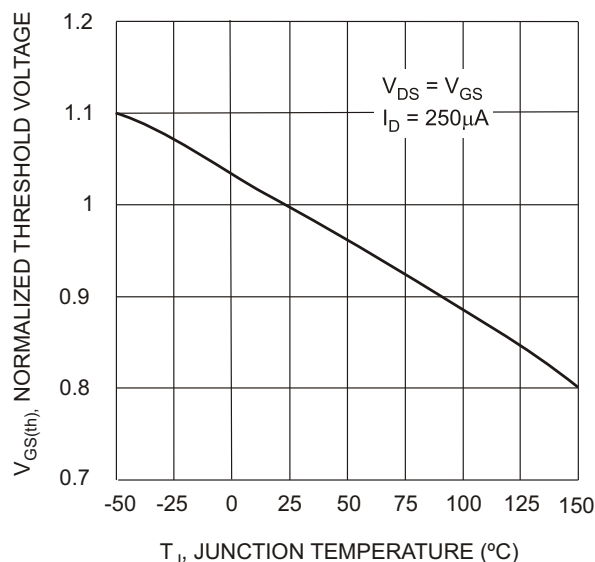


Fig. 3 Gate Threshold Variation with Temperature

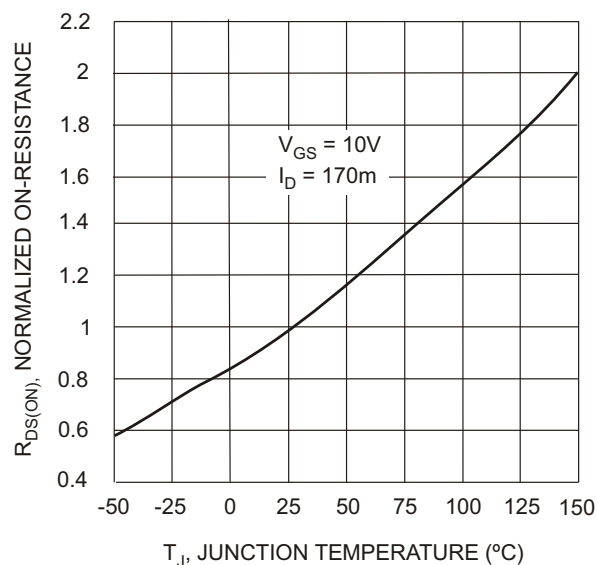


Fig. 4 On-Resistance Variation with Temperature

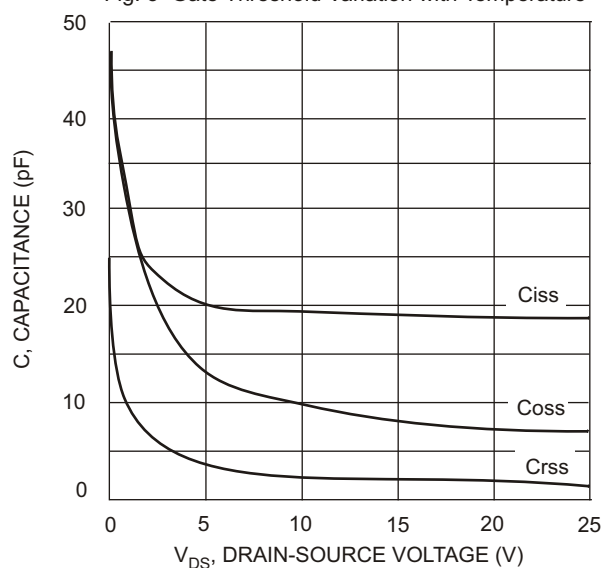


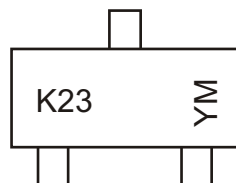
Fig. 5 Typical Capacitance

Ordering Information (Note 4)

Device	Packaging	Shipping
BSS123-7-F	SOT-23	3000/Tape & Reel

Notes: 4. For Packaging Details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

Marking Information



K23 = Product Type Marking Code
 YM = Date Code Marking
 Y = Year ex: N = 2002
 M = Month ex: 9 = September

Date Code Key

Year	2002	2003	2004	2005	2006	2007	2008	2009
Code	N	P	R	S	T	U	V	W

Month	Jan	Feb	March	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	O	N	D

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