BSS123

N-CHANNEL ENHANCEMENT MODE FIELD EFFECT TRANSISTOR

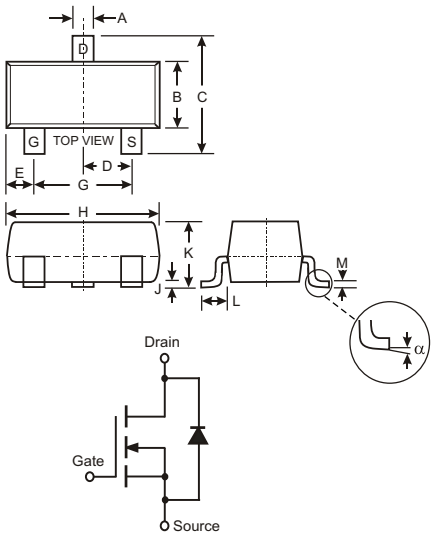
NEW PRODUCT

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 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 , 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.

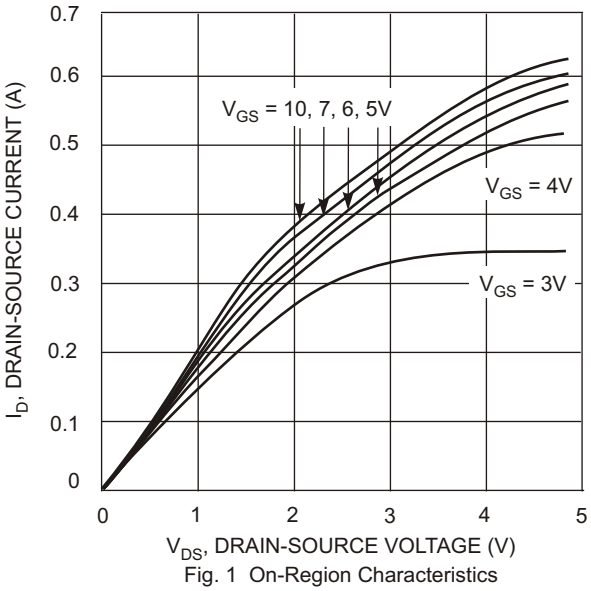


Fig. 1 On-Region Characteristics

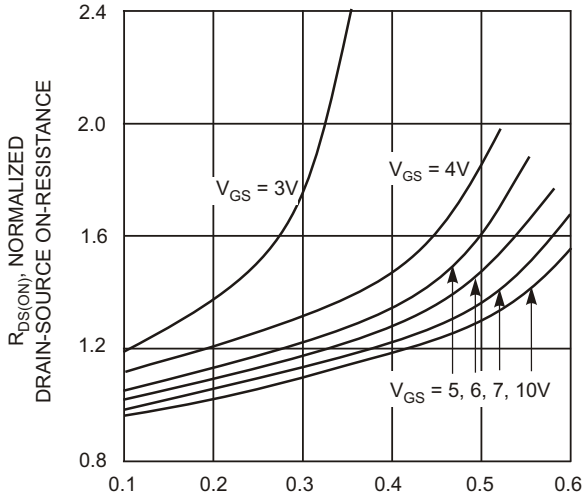


Fig. 2 On-Resistance Variation with Gate Voltage and Drain-Source Current

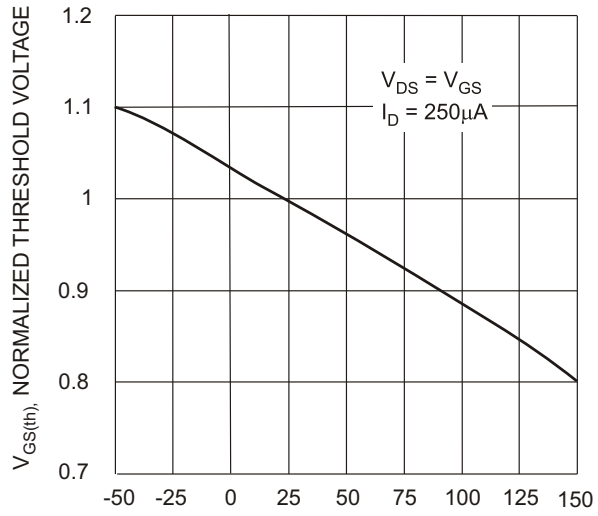


Fig. 3 Gate Threshold Variation with Temperature

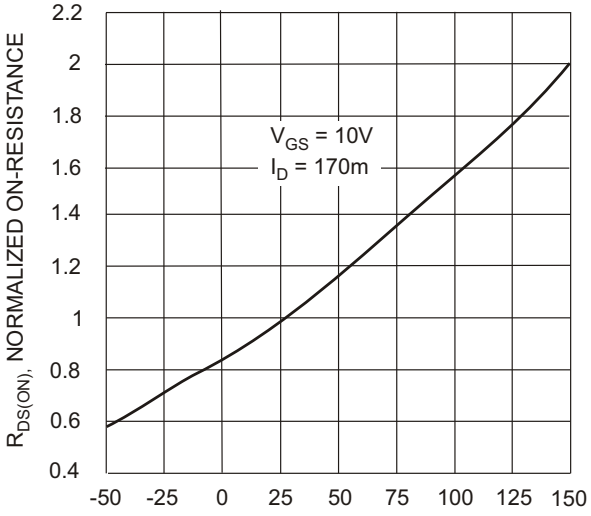


Fig. 4 On-Resistance Variation with Temperature

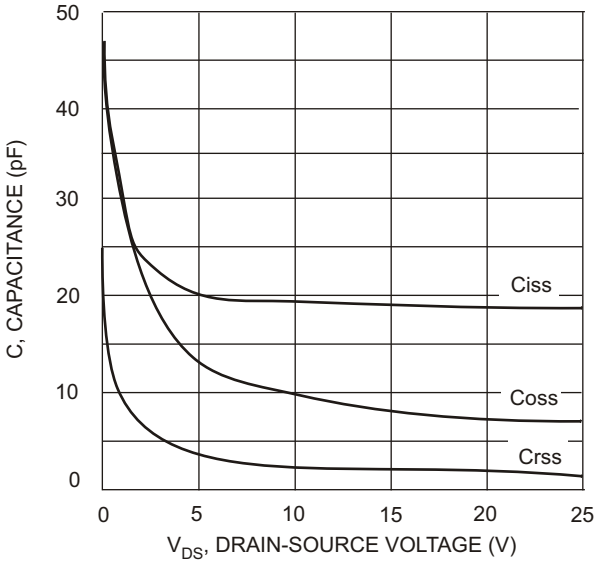


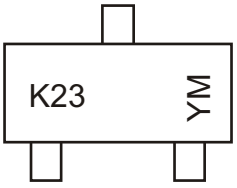
Fig. 5 Typical Capacitance

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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