



BSS123

N-CHANNEL ENHANCEMENT MODE FIELD EFFECT TRANSISTOR

Features

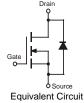
- Low Gate Threshold Voltage
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- High Drain-Source Voltage Rating
- Lead, Halogen and Antimony Free, RoHS Compliant "Green" Device (Notes 2 and 4)

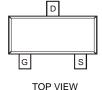
Mechanical Data

- 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 Information: See Page 3
- Ordering Information: See Page 3
- Weight: 0.008 grams (approximate)



SOT-23





Maximum Ratings @T_A = 25°C unless otherwise specified

Characte	ristic	Symbol	Value	Units
Drain-Source Voltage		V _{DSS}	100	V
Drain-Gate Voltage R _{GS} ≤ 20KΩ		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

Thermal Characteristics @TA = 25°C unless otherwise specified

Characteristic	Symbol	Value	Units
Total Power Dissipation (Note 1)	P_d	300	mW
Thermal Resistance, Junction to Ambient (Note 1)	$R_{ heta JA}$	417	°C/W
Operating and Storage Temperature Range	T_j , T_{STG}	-55 to +150	°C

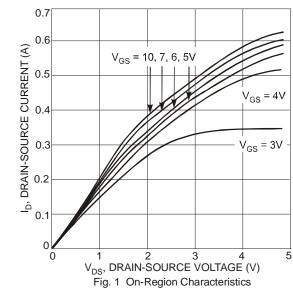
Electrical Characteristics @T_A = 25°C unless otherwise specified

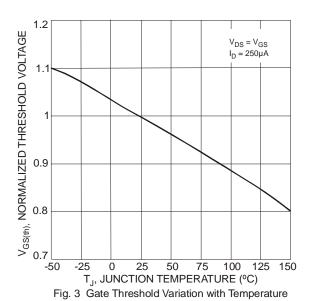
Characteristic	Symbol	Min	Тур	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 3)						
Drain-Source Breakdown Voltage	BV_{DSS}	100		_	V	$V_{GS} = 0V, I_D = 250 \mu A$
Zero Gate Voltage Drain Current	I _{DSS}	_		1.0	μΑ	$V_{DS} = 100V, V_{GS} = 0V$
Zero Gale Voltage Drain Current				10	nΑ	$V_{DS} = 20V, V_{GS} = 0V$
Gate-Body Leakage, Forward	I _{GSSF}			50	nΑ	$V_{GS} = 20V, V_{DS} = 0V$
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	D		_	6.0	Ω	$V_{GS} = 10V, I_D = 0.17A$
Static Drain-Source On-Nesistance	R _{DS} (ON)	—	—	10		$V_{GS} = 4.5V, I_D = 0.17A$
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	
Output Capacitance	Coss		10	15	pF	$V_{DS} = 25V, V_{GS} = 0V, f = 1.0MHz$
Reverse Transfer Capacitance	Crss		2	6	pF	
SWITCHING CHARACTERISTICS						
Turn-On Rise Time	t _r	_	_	8	ns	
Turn-Off Fall Time	t _f			16	ns	$V_{DD} = 30V, I_D = 0.28A,$
Turn-On Delay Time	t _{D(ON)}			8	ns	$R_{GEN} = 50\Omega$, $V_{GS} = 10V$
Turn-Off Delay Time	t _{D(OFF)}	_	_	13	ns	

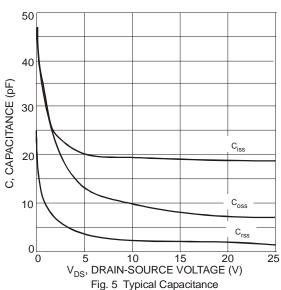
Notes:

- 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. Halogen and Antimony Free.
- 3. Short duration pulse test used to minimize self-heating effect.
- Product manufactured with Data Code V9 (week 33, 2008) and newer are built with Green Molding Compound. Product manufactured prior to Date Code V9 are built with Non-Green Molding Compound and may contain Halogens or Sb₂O₃ Fire Retardants.









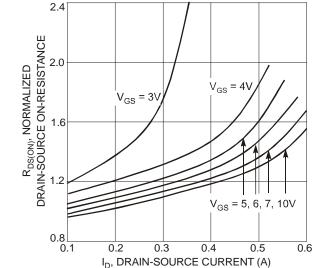


Fig. 2 On-Resistance Variation with Gate Voltage and Drain-Source Current

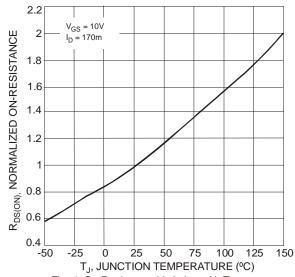


Fig. 4 On-Resistance Variation with Temperature

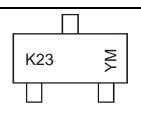


Ordering Information (Note 5)

Part Number	Case	Packaging
BSS123-7-F	SOT-23	3000/Tape & Reel

Notes: 5. For packaging details, go to our website at http://www.diodes.com/datasheets/ap02007.pdf.

Marking Information

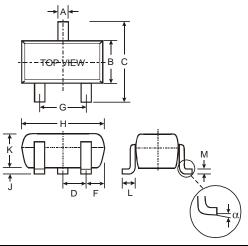


K23 = Product Type Marking Code YM = Date Code Marking Y = Year ex: T = 2006 M = Month ex: 9 = September

Date Code Key

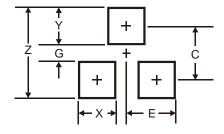
Year	200	6	2007		2008	20	09	2010		2011	2	2012
Code	Т		U		V	V	٧	Х		Υ		Z
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	0	N	D

Package Outline Dimensions



SOT-23				
Dim	Min	Max		
Α	0.37	0.51		
В	1.20	1.40		
С	2.30	2.50		
D	0.89	1.03		
F	0.45	0.60		
G	1.78	2.05		
Н	2.80	3.00		
J	0.013	0.10		
K	0.903	1.10		
L	0.45	0.61		
M	0.085	0.180		
α	0°	8°		
All Dimensions in mm				

Suggested Pad Layout



Dimensions	Value (in mm)
Z	3.4
G	0.7
X	0.9
Υ	1.4
С	2.0
E	0.9

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