



N-CHANNEL ENHANCEMENT MODE MOSFET

Product Summary

V _{(BR)DSS}	R _{DS(ON)}	I _D T _A = +25°C
100V	6.0Ω @ V _{GS} = 10V	170mA

Description

This MOSFET is designed to minimize the on-state resistance ($R_{DS(ON)}$) and yet maintain superior switching performance, making it ideal for high efficiency power management applications.

Applications

- Small Servo Motor Control
- Power MOSFET Gate Drivers
- Switching Applications

Features and Benefits

- Low Gate Threshold Voltage
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- High Drain-Source Voltage Rating
- Totally Lead-Free & Fully RoHS compliant (Notes 1 & 2)
- Halogen and Antimony Free. "Green" Device (Note 3)
- Qualified to AEC-Q101 Standards for High Reliability
- PPAP Capable (Note 4)

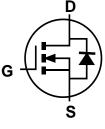
Mechanical Data

- Case: SOT323
- Case Material: Molded Plastic, "Green" Molding Compound, UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminal Connections: See Diagram
- Terminals: Matte Tin Finish annealed over Alloy 42 Leadframe (Lead Free Plating). Solderable per MIL-STD-202, Method 208⁽³⁾ Weight: 0.006 grams (approximate)

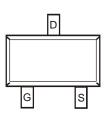


SOT323

Top View



Equivalent Circuit



Top View

Ordering Information (Notes 4 & 5)

Part Number	Compliance	Case	Packaging
BSS123WQ-7-F	Automotive	SOT323	3000/Tape & Reel

Notes: 1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.

 See http://www.diodes.com/quality/lead_free.html for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.

3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.

4. Automotive products are AEC-Q101 qualified and are PPAP capable. Automotive, AEC-Q101 and standard products are electrically and thermally the

same, except where specified. For more information, please refer to http://www.diodes.com/quality/product_grade_definitions/.

5. For packaging details, go to our website at http://www.diodes.com/products/packages.html

Marking Information

K	23	ΥM
		Г

K23 = Product Type Marking Code YM = Date Code Marking Y = Year (ex: B = 2014) M = Month (ex: 9 = September)

Date Code Key

Ballo Obao														
Year	2002	2003	2004	2005	2006	i	2014	2015	2016	2017	2018	2019	2020	2021
Code	Ν	Р	R	S	Т		В	С	D	E	F	G	Н	I
Month	Jan	Feb	M	ar	Apr	Мау	Jun	Jul	Aug	Se	p (Oct	Nov	Dec
Code	1	2	3	3	4	5	6	7	8	9		0	Ν	D



Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

Charact	eristic	Symbol	Value	Units
Drain-Source Voltage		V _{DSS}	100	V
Drain-Gate Voltage $R_{GS} \le 20K\Omega$		V _{DGR}	100	V
Gate-Source Voltage	Continuous	V _{GSS}	±20	V
Drain Current (Note 6)	Continuous Pulsed	I _D I _{DM}	170 680	mA

Thermal Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Units
Total Power Dissipation (Note 6)	PD	200	mW
Thermal Resistance, Junction to Ambient (Note 6)	R _{0JA}	625	°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	Мах	Unit	Test Condition	
OFF CHARACTERISTICS (Note 7)	Cymson		. 76	Шах	•••••		
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	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 7)						-	
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	Ω	$V_{GS} = 10V, I_D = 0.17A$ $V_{GS} = 4.5V, I_D = 0.17A$	
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 (Note 8)			•	•	•	•	
Input Capacitance	Ciss	_	29	60	pF		
Output Capacitance	C _{oss}	_	10	15	pF	$V_{DS} = 25V, V_{GS} = 0V, f = 1.0MHz$	
Reverse Transfer Capacitance	C _{rss}	_	2	6	pF	1	
SWITCHING CHARACTERISTICS(Note 8)			•	•	•	·	
Turn-On Rise Time	tr	_	_	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	$R_{GEN} = 6.0\Omega, V_{GS} = 10V$	
Turn-Off Delay Time	t _{D(OFF)}			13	ns	<u>1</u>	

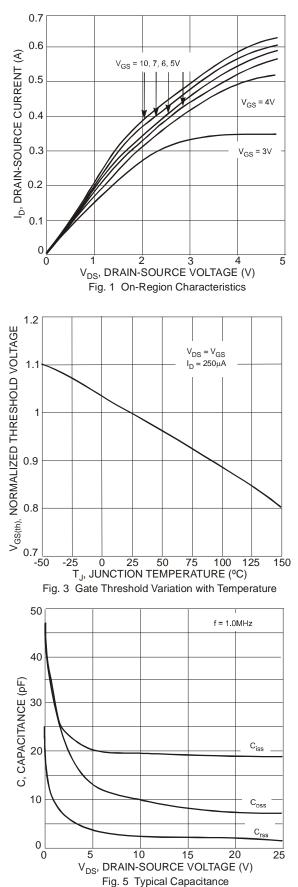
Notes: 6. Part mounted on FR-4 board with recommended pad layout, which can be found on our website at http://www.diodes.com.

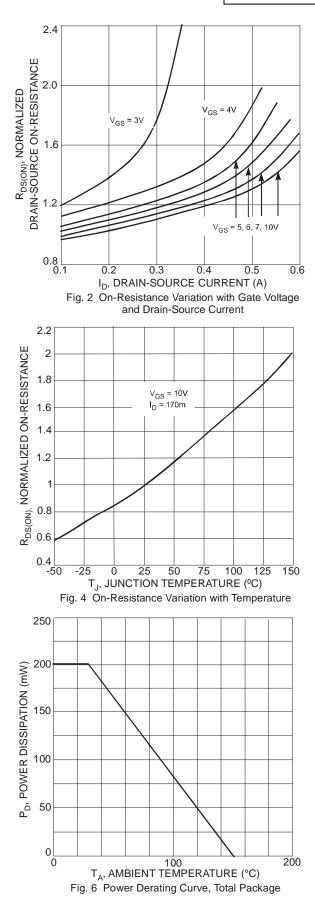
7. Short duration pulse test used to minimize self-heating effect.

8. Guaranteed by design. Not subject to production testing.





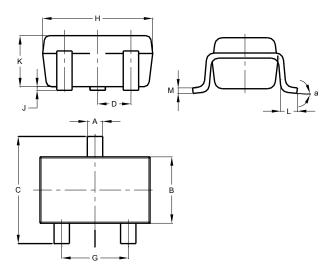






Package Outline Dimensions

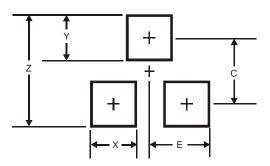
Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for latest version.



	SOT323							
Dim	Min	Max	Тур					
Α	0.25	0.40	0.30					
В	1.15	1.35	1.30					
С	2.00	2.20	2.10					
D	0.	.650 BS	С					
F	0.375	0.475	0.425					
G	1.20	1.40	1.30					
Н	1.80	2.20	2.15					
J	0.00	0.10	0.05					
Κ	0.90	1.00	0.95					
L	0.25	0.40	0.30					
Μ	0.10	0.18	0.11					
а	8°C							
All I	Dimens	ions in	mm					

Suggested Pad Layout

Please see AP02001 at http://www.diodes.com/datasheets/ap02001.pdf for latest version.



Dimensions	Value (in mm)
Z	2.8
Х	0.7
Y	0.9
С	1.9
E	1.0



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