

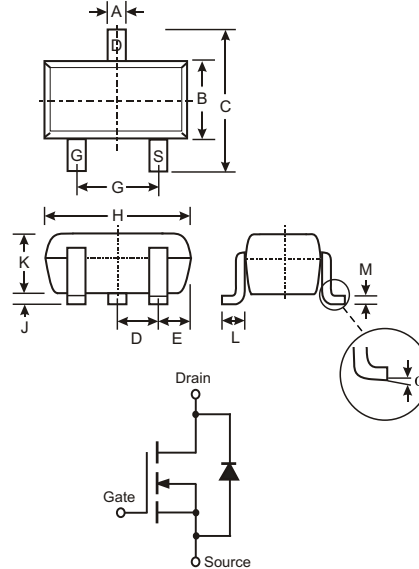
N-CHANNEL ENHANCEMENT MODE FIELD EFFECT TRANSISTOR

Features

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

Mechanical Data

- Case: SOT-323
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020C
- Terminal Connections: See Diagram
- Terminals: Solderable per MIL-STD-202, Method 208
- Also Available in Lead Free Plating (Matte Tin Finish annealed over Alloy 42 leadframe). Please see Ordering Information, Note 5, on Page 3
- Marking: Date Code and Type Code, See Page 3
- Type Code: K23
- Weight: 0.006 grams (approximate)



SOT-323		
Dim	Min	Max
A	0.25	0.40
B	1.15	1.35
C	2.00	2.20
D	0.65 Nominal	
E	0.30	0.40
G	1.20	1.40
H	1.80	2.20
J	0.0	0.10
K	0.90	1.00
L	0.25	0.40
M	0.10	0.18
	0	8
All Dimensions in mm		

Maximum Ratings @ T_A = 25 °C unless otherwise specified

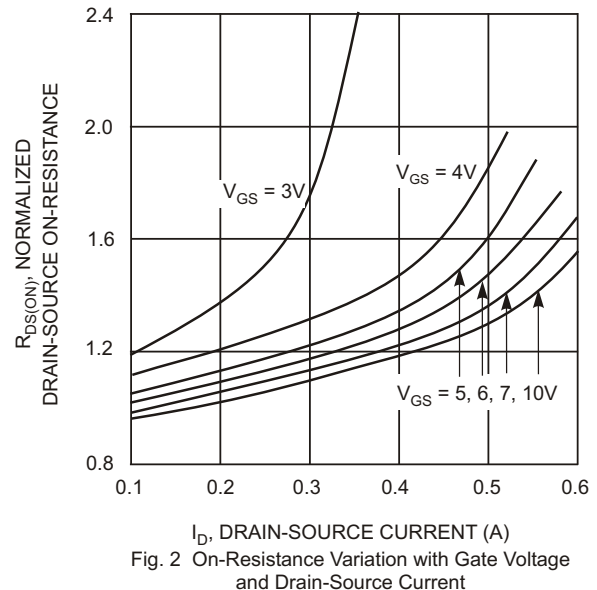
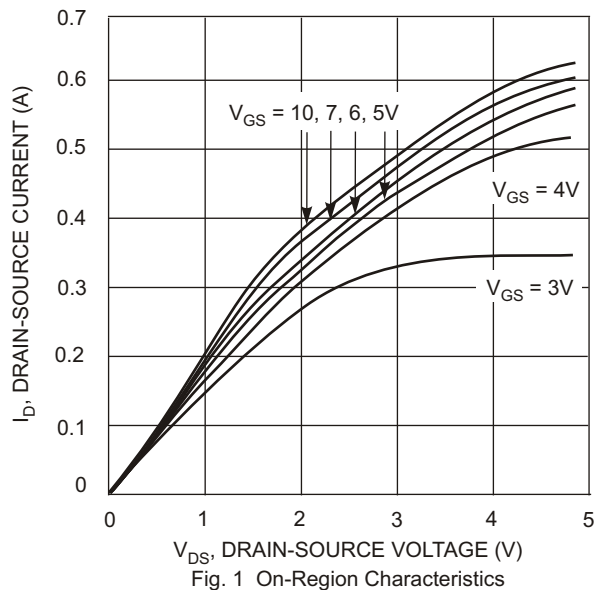
Characteristic	Symbol	Value	Units
Drain-Source Voltage	V _{DS}	100	V
Drain-Gate Voltage R _{GS} 20K	V _{DGR}	100	V
Gate-Source Voltage Continuous	V _{GSS}	20	V
Drain Current (Note 1) Continuous	I _D	170	mA
Drain Current (Note 1) Pulsed	I _{DM}	680	mA
Total Power Dissipation (Note 1)	P _d	200	mW
Thermal Resistance, Junction to Ambient (Note 1)	R _{JA}	625	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C

- Notes:
- Device mounted on FR-4 PC board with recommended pad layout, which can be found on our website at <http://www.diodes.com/datasheets/ap02001.pdf>.
 - 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 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	

Notes: 3. Short duration test pulse used to minimize self-heating effect.



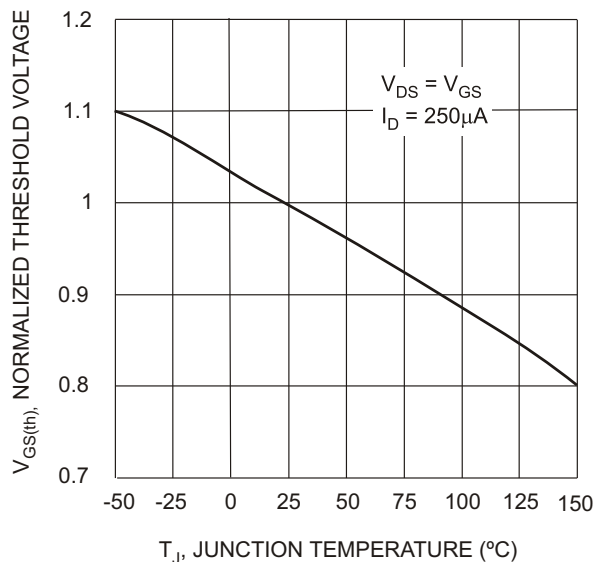


Fig. 3 Gate Threshold Variation with Temperature

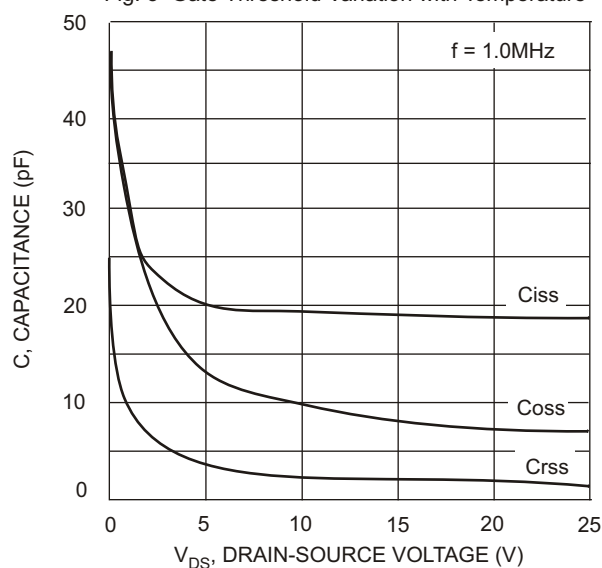


Fig. 5 Typical Capacitance

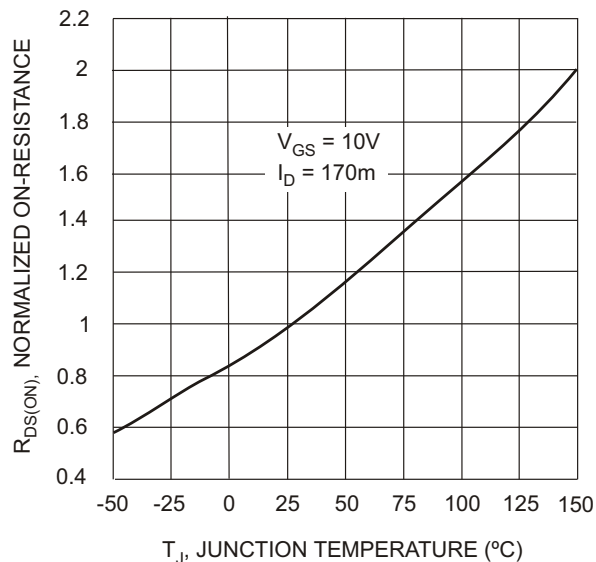


Fig. 4 On-Resistance Variation with Temperature

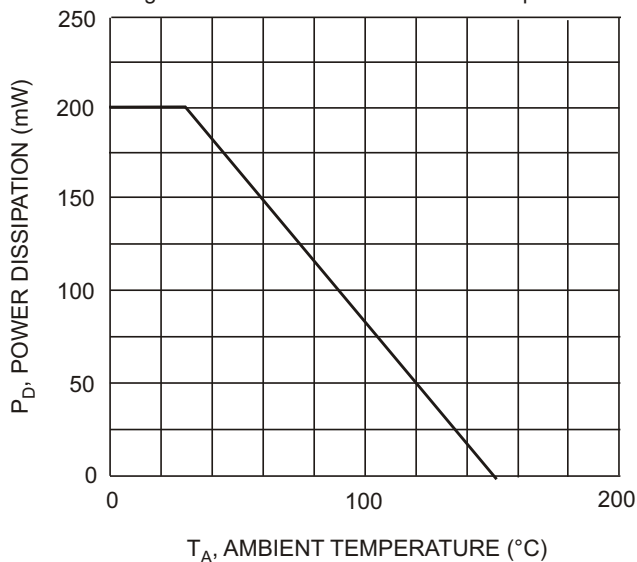


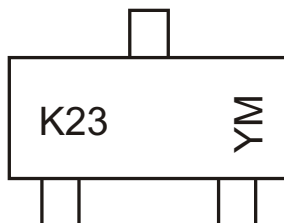
Fig. 6 Power Derating Curve, Total Package

Ordering Information (Note 4)

Device	Packaging	Shipping
BSS123W-7	SOT-323	3000/Tape & Reel

- Notes: 4. For Packaging Details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.
 5. For Lead Free/RoHS Compliant version part number, please add "-F" suffix to the part number above. Example: BSS123W-7-F.

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