

Product Summary

BV _{DSS}	R _{DS(ON)}	I _D T _A = +25 °C
100V	6.0Q @ V _{GS} = 10V	0.17A

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)
- For automotive applications requiring specific change control (i.e.: parts qualified to AEC-Q100/101/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please refer to the related automotive grade (Q-suffix) part. A listing can be found at <https://www.diodes.com/products/automotive/automotive-products/>.

- This part is qualified to JEDEC standards (as references in AEC-Q) for High Reliability. <https://www.diodes.com/quality/product-definitions/>

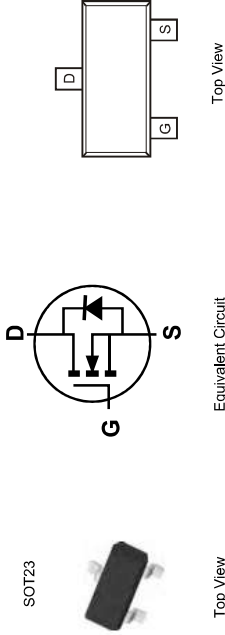
Mechanical Data

- Case: SOT23
- Case Material: Molded Plastic, UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish Annealed over Alloy 42 Leadframe (Lead Free Plating). Solderable per MIL-STD-202, Method 208
- Terminal Connections: See Diagram
- Weight: 0.008 grams (Approximate)

Description and Applications

These N-Channel enhancement mode field effect transistors are produced using Diodes Incorporated's proprietary, high density and advanced trench technology. These products have been designed to minimize on-state resistance while providing rugged, reliable and fast switching performance. These products are particularly suited for low voltage, low current applications such as:

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

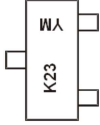


Ordering Information (Note 4)

Part Number	Case	Packaging
BSS123-7-F	SOT23	3,000/Tape & Reel
BSS123-13-F	SOT23	10,000/Tape & Reel

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
 2. See <https://www.diodes.com/quality/lead-free/> 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. For packaging details, go to our website at <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

Marking Information



K23 = Product Type Marking Code
YM = Date Code Marking
Y or Y = Year (ex: 1 = 2021)
M = Month (ex: 9 = September)

Date Code Key

Year Code	2002	...	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
	O	...	I	J	K	L	M	N	O	P	R	S
Month Code	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	1	2	3	4	5	6	7	8	9	O	N	D

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

Characteristic	Symbol	Value	Unit
Drain-Source Voltage	V _{DSS}	100	V
Gate-Source Voltage	V _{GSS}	±20	V
Continuous Drain Current (Note 5) V _{GS} = 10V	I _D	0.17	A
	I _{DM}	0.88	A

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

Characteristic	Symbol	Max	Unit
Power Dissipation (Note 5)	P _D	300	mW
Thermal Resistance, Junction to Ambient @T _A = +25 °C (Note 5)	R _{θJA}	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	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 6)						
Drain-Source Breakdown Voltage	BV _{DSS}	100	—	—	V	V _{GS} = 0V, I _D = 250μA
Zero Gate Voltage Drain Current	I _{DSS}	—	—	0.1	μA	V _{GS} = 100V, V _{DS} = 0V
		—	—	30	μA	V _{DS} = 100V, V _{GS} = 0V @ T _A = +150 °C (Note 7)
		—	—	10	nA	V _{DS} = 20V, V _{GS} = 0V
Gate-Source Leakage, Forward	I _{SSS} F	—	—	50	nA	V _{GS} = 20V, V _{DS} = 0V
ON CHARACTERISTICS (Note 6)						
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)}	—	3.2	6.0	Ω	V _{GS} = 10V, I _D = 0.17A
		—	3.8	10	Ω	V _{GS} = 4.5V, I _D = 0.17A
Forward Transfer Admittance	g _{FS}	80	370	—	ms	V _{DS} = 10V, I _D = 0.17A, f = 1.0kHz
Diode Forward Voltage	V _{SD}	—	0.84	1.3	V	V _{GS} = 0V, I _S = 0.34A
DYNAMIC CHARACTERISTICS (Note 7)						
Input Capacitance	C _{iss}	—	22	60	pF	V _{DS} = 25V, V _{GS} = 0V, f = 1.0MHz
Output Capacitance	C _{oss}	—	3.5	15	pF	
Reverse Transfer Capacitance	C _{rss}	—	2.0	6	pF	
SWITCHING CHARACTERISTICS (Note 7)						
Turn-On Delay Time	t _{D(ON)}	—	—	8	ns	V _{GS} = 10V, V _{DD} = 30V
Turn-On Rise Time	t _r	—	—	8	ns	I _D = 0.28A, R _{GEN} = 50Q
Turn-Off Delay Time	t _{D(OFF)}	—	—	13	ns	
Turn-Off Fall Time	t _f	—	—	16	ns	

- Notes:
5. Part mounted on FR-4 board with recommended pad layout, which can be found on our website at <http://www.diodes.com/package-outlines.html>.
 6. Short duration pulse test used to minimize self-heating effect.
 7. Guaranteed by design. Not subject to production testing.