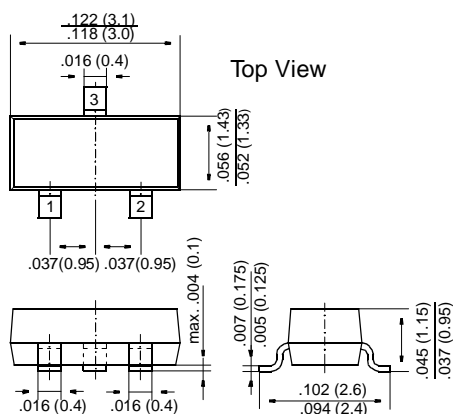


BS809

DMOS Transistors (N-Channel)

SOT-23



Dimensions in inches and (millimeters)

Pin configuration

1 = Gate, 2 = Source, 3 = Drain

FEATURES

- ◆ High input impedance
- ◆ Low gate threshold voltage
- ◆ Low drain-source ON resistance
- ◆ High-speed switching
- ◆ No minority carrier storage time
- ◆ CMOS logic compatible input
- ◆ No thermal runaway
- ◆ No secondary breakdown



MECHANICAL DATA

Case: SOT-23 Plastic Package

Weight: approx. 0.008 g

Marking

S09

MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25 °C ambient temperature unless otherwise specified

	Symbol	Value	Unit
Drain-Source Voltage	V_{DSS}	400	V
Drain-Gate Voltage	V_{DGS}	400	V
Gate-Source Voltage (pulsed)	V_{GS}	± 20	V
Drain Current (continuous) at $T_{SB} = 50\text{ }^{\circ}\text{C}$	I_D	100	mA
Power Dissipation at $T_{SB} = 50\text{ }^{\circ}\text{C}$	P_{tot}	310 ¹⁾	mW
Junction Temperature	T_j	150	$^{\circ}\text{C}$
Storage Temperature Range	T_S	-65 to +150	$^{\circ}\text{C}$

¹⁾ Device on fiberglass substrate, see layout

Inverse Diode

	Symbol	Value	Unit
Max. Forward Current (continuous) at $T_{amb} = 25\text{ }^{\circ}\text{C}$	I_F	300	mA
Forward Voltage Drop (typ.) at $V_{GS} = 0$, $I_F = 0.3\text{ A}$, $T_j = 25\text{ }^{\circ}\text{C}$	V_F	1.0	V

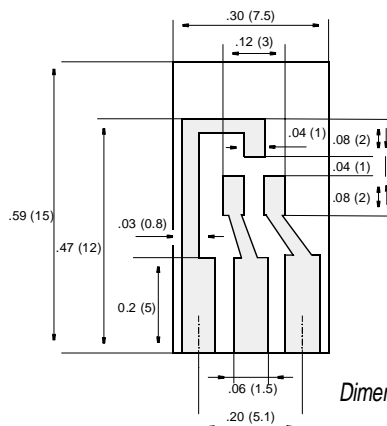
BS809

ELECTRICAL CHARACTERISTICS

Ratings at 25 °C ambient temperature unless otherwise specified

	Symbol	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage at $I_D = 100 \mu\text{A}$, $V_{GS} = 0 \text{ V}$	$V_{(BR)DSS}$	400	430	–	V
Gate-Body Leakage Current, Forward at $V_{GSF} = 20 \text{ V}$, $V_{DS} = 0 \text{ V}$	I_{GSSF}	–	–	100	nA
Gate-Body Leakage Current, Reverse at $V_{GSR} = 20 \text{ V}$, $V_{DS} = 0 \text{ V}$	I_{GSSR}	–	–	100	nA
Drain Cutoff Current at $V_{DS} = 400 \text{ V}$, $V_{GS} = 0 \text{ V}$	I_{DSS}	–	–	500	nA
Gate-Source Threshold Voltage at $V_{GS} = V_{DS}$, $I_D = 250 \mu\text{A}$	$V_{GS(th)}$	1	1.5	2.5	V
Drain-Source ON Resistance at $V_{GS} = 5 \text{ V}$, $I_D = 100 \text{ mA}$	$R_{DS(on)}$	–	18	22	Ω
Capacitances at $V_{DS} = 25 \text{ V}$, $V_{GS} = 0 \text{ V}$, $f = 1 \text{ MHz}$ Input Capacitance Output Capacitance Feedback Capacitance	C_{iSS} C_{OSS} C_{rS}	– – –	80 20 10	– – –	pF pF pF
Switching Times at $V_{GS} = 10 \text{ V}$, $V_{DS} = 10 \text{ V}$, $R_D = 100 \Omega$ Turn-On Time Turn-Off Time	t_{on} t_{off}	– –	10 50	– –	ns ns
Thermal Resistance Junction to Substrate Backside	R_{thSB}			320 ¹⁾	
Thermal Resistance Junction to Ambient Air	R_{thJA}	–	–	450 ¹⁾	K/W

1) Device on fiberglass substrate, see layout



Layout for R_{thJA} test

Thickness: Fiberglass 0.059 in (1.5 mm)
Copper leads 0.012 in (0.3 mm)

Dimensions in inches (millimeters)



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