

**BSS806N**

**OptiMOS™ 2 Small-Signal-Transistor**

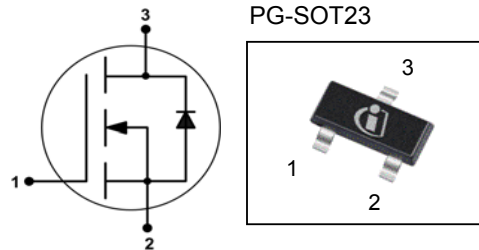
**Features**

- N-channel
- Enhancement mode
- Ultra Logic level (1.8V rated)
- Avalanche rated
- Qualified according to AEC Q101
- 100% lead-free; RoHS compliant
- Halogen-free according to IEC61249-2-21



**Product Summary**

$V_{DS}$		20	V
$R_{DS(on),max}$	$V_{GS}=2.5\text{ V}$	57	mΩ
	$V_{GS}=1.8\text{ V}$	82	
$I_D$		2.3	A



Type	Package	Tape and Reel Information	Marking	Lead Free	Packing
BSS806N	SOT23	H6327: 3000 pcs/ reel	YES	Yes	Non dry

Maximum ratings, at  $T_j=25\text{ °C}$ , unless otherwise specified

Parameter	Symbol	Conditions	Value	Unit
Continuous drain current	$I_D$	$T_A=25\text{ °C}$	2.3	A
		$T_A=70\text{ °C}$	1.9	
Pulsed drain current	$I_{D,pulse}$	$T_A=25\text{ °C}$	9.3	
Avalanche energy, single pulse	$E_{AS}$	$I_D=2.3\text{ A}$ , $R_{GS}=25\text{ }\Omega$	10.8	mJ
Reverse diode $dv/dt$	$dv/dt$	$I_D=2.3\text{ A}$ , $V_{DS}=16\text{ V}$ , $di/dt=200\text{ A}/\mu\text{s}$ , $T_{j,max}=150\text{ °C}$	6	kV/ $\mu\text{s}$
Gate source voltage	$V_{GS}$		$\pm 8$	V
Power dissipation <sup>1)</sup>	$P_{tot}$	$T_A=25\text{ °C}$	0.5	W
Operating and storage temperature	$T_j$ , $T_{stg}$		-55 ... 150	°C
ESD Class		JESD22-A114 -HBM	0(<250V)	
Soldering Temperature			260 °C	
IEC climatic category; DIN IEC 68-1			55/150/56	

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Parameter	Symbol	Conditions	Values			Unit
			min.	typ.	max.	

**Thermal characteristics**

Thermal resistance, junction - ambient	$R_{thJA}$	minimal footprint <sup>1)</sup>	-	-	250	K/W
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**Electrical characteristics, at  $T_j=25\text{ °C}$ , unless otherwise specified**

**Static characteristics**

Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS}=0\text{ V}, I_D=250\text{ }\mu\text{A}$	20	-	-	V
Gate threshold voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=11\text{ }\mu\text{A}$	0.3	0.55	0.75	
Drain-source leakage current	$I_{DSS}$	$V_{DS}=20\text{ V}, V_{GS}=0\text{ V}, T_j=25\text{ °C}$	-	-	1	$\mu\text{A}$
		$V_{DS}=20\text{ V}, V_{GS}=0\text{ V}, T_j=150\text{ °C}$	-	-	100	
Gate-source leakage current	$I_{GSS}$	$V_{GS}=8\text{ V}, V_{DS}=0\text{ V}$	-	-	100	nA
Drain-source on-state resistance	$R_{DS(on)}$	$V_{GS}=1.8\text{ V}, I_D=1.3\text{ A}$	-	57	82	$\text{m}\Omega$
		$V_{GS}=2.5\text{ V}, I_D=2.3\text{ A}$	-	41	57	
Transconductance	$g_{fs}$	$ V_{DS} >2 I_D R_{DS(on)max}, I_D=1.9\text{ A}$		9	-	S

<sup>1)</sup> Performed on 40mm<sup>2</sup> FR4 PCB. The traces are 1mm wide, 70 $\mu\text{m}$  thick and 20mm long; they are present on both sides of the PCB.

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Parameter	Symbol	Conditions	Values			Unit
			min.	typ.	max.	

## Dynamic characteristics

Input capacitance	$C_{iss}$	$V_{GS}=0\text{ V}, V_{DS}=10\text{ V},$ $f=1\text{ MHz}$	-	370	529	pF
Output capacitance	$C_{oss}$		-	118	169	
Reverse transfer capacitance	$C_{rss}$		-	20	29	
Turn-on delay time	$t_{d(on)}$	$V_{DD}=10\text{ V}, V_{GS}=2.5\text{ V},$ $I_D=2.3\text{ A}, R_G=6\ \Omega$	-	7.5	-	ns
Rise time	$t_r$		-	9.9	-	
Turn-off delay time	$t_{d(off)}$		-	12.0	-	
Fall time	$t_f$		-	3.7	-	

## Gate Charge Characteristics

Gate to source charge	$Q_{gs}$	$V_{DD}=10\text{ V}, I_D=2.3\text{ A},$ $V_{GS}=0\text{ to }2.5\text{ V}$	-	0.55	-	nC
Gate to drain charge	$Q_{gd}$		-	0.58	-	
Gate charge total	$Q_g$		-	1.7	-	
Gate plateau voltage	$V_{plateau}$		-	1.5	-	V

## Reverse Diode

Diode continuous forward current	$I_S$	$T_A=25\text{ }^\circ\text{C}$	-	-	0.5	A
Diode pulse current	$I_{S,pulse}$		-	-	9.3	
Diode forward voltage	$V_{SD}$	$V_{GS}=0\text{ V}, I_F=2.3\text{ A},$ $T_j=25\text{ }^\circ\text{C}$	-	0.82	1.1	V
Reverse recovery time	$t_{rr}$	$V_R=10\text{ V}, I_F=2.3\text{ A},$ $di_F/dt=100\text{ A}/\mu\text{s}$	-	11	-	ns
Reverse recovery charge	$Q_{rr}$		-	3.3	-	