

BSR802N

OptiMOS™ 2 Small-Signal-Transistor

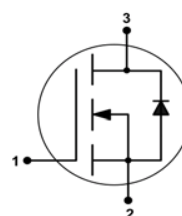
Features

- N-channel
- Enhancement mode
- Ultra Logic level (1.8V rated)
- Avalanche rated
- Footprint compatible to SOT23
- Qualified according to AEC Q101
- 100% lead-free; RoHS compliant

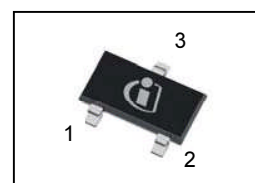


Product Summary

V_{DS}		20	V
$R_{DS(on),max}$	$V_{GS}=2.5\text{ V}$	23	mΩ
	$V_{GS}=1.8\text{ V}$	32	
I_D		3.7	A



PG-SC59



Type	Package	Tape and Reel Information	Marking	Lead Free	Packing
BSR802N	PG-SC59	L6327 = 3000 pcs. / reel	LFs	Yes	Non dry

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

Parameter	Symbol	Conditions	Value	Unit
Continuous drain current	I_D	$T_A=25\text{ °C}$	3.7	A
		$T_A=25\text{ °C}$	2.9	
Pulsed drain current	$I_{D,pulse}$	$T_A=70\text{ °C}$	14.8	
Avalanche energy, single pulse	E_{AS}	$I_D=3.8\text{ A}$, $R_{GS}=25\text{ }\Omega$	30	mJ
Reverse diode dv/dt	dv/dt	$I_D=3.8\text{ A}$, $V_{DS}=16\text{ V}$, $di/dt=200\text{ A}/\mu\text{s}$, $T_{j,max}=150\text{ °C}$	6	kV/ μs
Gate source voltage	V_{GS}		± 8	V
Power dissipation ¹⁾	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 ¹⁾	-	-	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	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=30\text{ }\mu\text{A}$	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	μA
		$V_{DS}=20\text{ V}, V_{GS}=0\text{ V}, T_j=150\text{ °C}$	-	-	100	
Gate-source leakage current	I_{GSS}	$V_{GS}=8\text{ V}, V_{DS}=0\text{ V}$	-	-	100	nA
Drain-source on-state resistance	$R_{DS(on)}$	$V_{GS}=1.8\text{ V}, I_D=3.2\text{ A}$	-	22	32	$\text{m}\Omega$
		$V_{GS}=2.5\text{ V}, I_D=3.7\text{ A}$	-	17	23	
Transconductance	g_{fs}	$ V_{DS} >2 I_D R_{DS(on)max}, I_D=2.9\text{ A}$		16	-	S

¹⁾ Performed on 40mm² FR4 PCB. The traces are 1mm wide, 70 μm 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}	$V_{GS}=0\text{ V}, V_{DS}=10\text{ V},$ $f=1\text{ MHz}$	-	1013	1447	pF
Output capacitance	C_{oss}		-	290	414	
Reverse transfer capacitance	C_{rss}		-	51	73.0	
Turn-on delay time	$t_{d(on)}$	$V_{DD}=10\text{ V}, V_{GS}=2.5\text{ V},$ $I_D=3.7\text{ A}, R_G=6\ \Omega$	-	9.8	-	ns
Rise time	t_r		-	18	-	
Turn-off delay time	$t_{d(off)}$		-	26	-	
Fall time	t_f		-	4.1	-	

Gate Charge Characteristics

Gate to source charge	Q_{gs}	$V_{DD}=10\text{ V}, I_D=3.7\text{ A},$ $V_{GS}=0\text{ to }2.5\text{ V}$	-	1.4	-	nC
Gate to drain charge	Q_{gd}		-	1.5	-	
Gate charge total	Q_g		-	4.7	-	
Gate plateau voltage	$V_{plateau}$		-	1.4	-	V

Reverse Diode

Diode continuous forward current	I_S	$T_A=25\text{ }^\circ\text{C}$	-	-	0.5	A
Diode pulse current	$I_{S,pulse}$		-	-	15	
Diode forward voltage	V_{SD}	$V_{GS}=0\text{ V}, I_F=3.7\text{ A},$ $T_j=25\text{ }^\circ\text{C}$	-	0.78	1.1	V
Reverse recovery time	t_{rr}	$V_R=10\text{ V}, I_F=3.7\text{ A},$ $di_F/dt=100\text{ A}/\mu\text{s}$	-	15	-	ns
Reverse recovery charge	Q_{rr}		-	5.2	-	nC