

Description

The SX5N10BSI uses advanced Trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 4.5V. This device is suitable for use as a Battery protection or in other Switching application.

General Features

$V_{DS} = 100V$ $I_D = 5A$

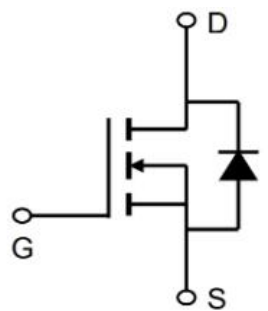
$R_{DS(ON)} < 140m\Omega$ @ $V_{GS}=10V$

Application

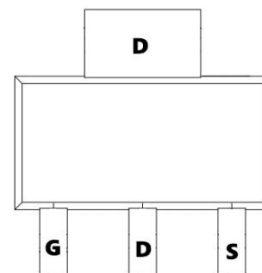
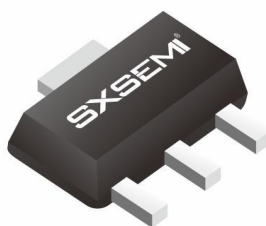
LED lighting

Load switch

Atomizer



SOT-89-3L



Absolute Maximum Ratings ($T_C=25^{\circ}C$ unless otherwise noted)

Symbol	Parameter	Value	Unit
V_{DS}	Drain source voltage	100	V
V_{GS}	Gate source voltage	± 20	V
I_D	Continuous drain current ¹⁾ , $T_C=25^{\circ}C$	5	A
I_{DM}	Pulsed drain current ²⁾ , $T_C=25^{\circ}C$	15	A
P_D	Power dissipation ³⁾ , $T_C=25^{\circ}C$	0.5	W
EAS	Single pulsed avalanche energy ⁵⁾	1.2	mJ
T_{stg} , T_J	Operation and storage temperature	-55 to 150	$^{\circ}C$
$R_{\theta JC}$	Thermal resistance, junction-case	7.4	$^{\circ}C/W$
$R_{\theta JA}$	Thermal resistance, junction-ambient ⁴⁾	250	$^{\circ}C/W$

Electrical Characteristics (T_J=25°C, unless otherwise noted)

Symbol	Parameter	Test condition	Min.	Typ.	Max.	Unit
BVDSS	Drain-source breakdown voltage	V _{GS} =0 V, I _D =250 μA	100			V
V _{GS(th)}	Gate threshold voltage	V _{DS} =V _{GS} , I _D =250 μA	1.2	1.5	2.5	V
R _{DS(ON)}	Drain-source on-state resistance	V _{GS} =10 V, I _D =5 A		110	140	mΩ
R _{DS(ON)}	Drain-source on-state resistance	V _{GS} =4.5 V, I _D =3 A		160	250	mΩ
I _{GSS}	Gate-source leakage current	V _{GS} =20 V			100	nA
		V _{GS} =-20 V			-100	
I _{DSS}	Drain-source leakage current	V _{DS} =100 V, V _{GS} =0 V			1	uA
C _{iss}	Input capacitance	V _{GS} =0 V, V _{DS} =50 V, f=100 kHz		206.1		pF
C _{oss}	Output capacitance			28.9		pF
C _{rss}	Reverse transfer capacitance			1.4		pF
t _{d(on)}	Turn-on delay time	V _{GS} =10 V, V _{DS} =50 V, R _G =2 Ω, I _D =5 A		14.7		ns
t _r	Rise time			3.5		ns
t _{d(off)}	Turn-off delay time			20.9		ns
t _f	Fall time			2.7		ns
Q _g	Total gate charge	I _D =5 A, V _{DS} =50 V, V _{GS} =10 V		4.3		nC
Q _{gs}	Gate-source charge			1.5		nC
Q _{gd}	Gate-drain charge			1.1		nC
V _{plateau}	Gate plateau voltage			5.0		V
I _S	Diode forward current	V _{GS} <V _{th}			7	A
I _{SP}	Pulsed source current				21	
V _{SD}	Diode forward voltage	I _S =7 A, V _{GS} =0 V			1.0	V
t _{rr}	Reverse recovery time	I _S =5 A, di/dt=100 A/μs		32.1		ns
Q _{rr}	Reverse recovery charge			39.4		nC
I _{rrm}	Peak reverse recovery current			2.1		A

Note :

- 1、The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.
- 2、The data tested by pulsed , pulse width .The EAS data shows Max. rating .
- 4、The power dissipation is limited by 150°C junction temperature
- 5、The data is theoretically the same as ID and IDM , in real applications , should be limited by total power dissipation.

Typical Characteristics

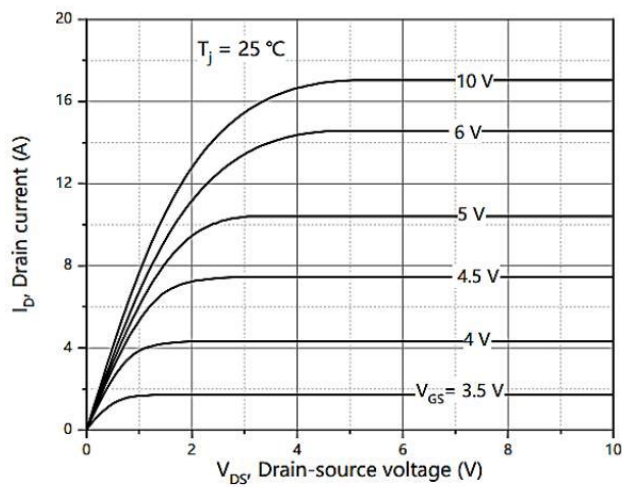


Figure 1. Typ. output characteristics

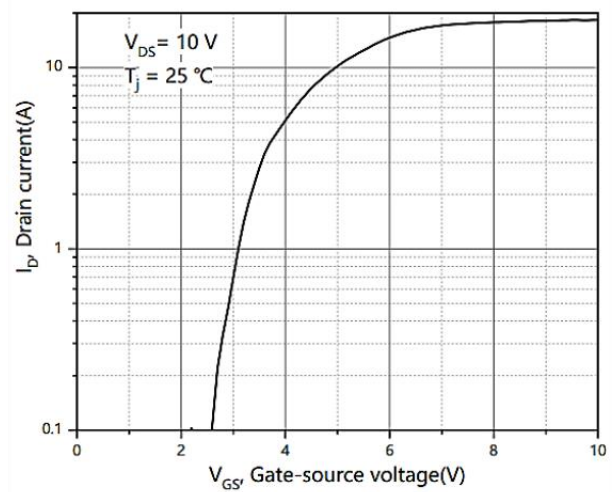


Figure 2. Typ. transfer characteristics

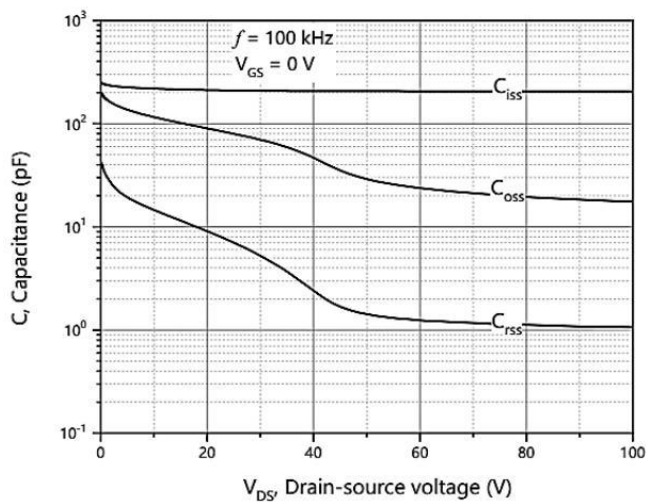


Figure 3. Typ. capacitances

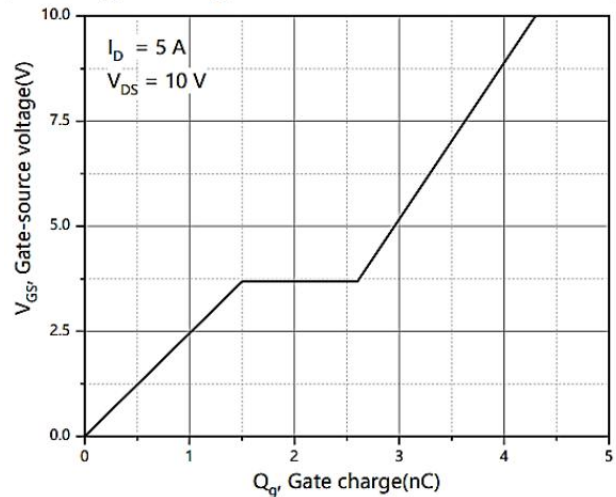


Figure 4. Typ. gate charge

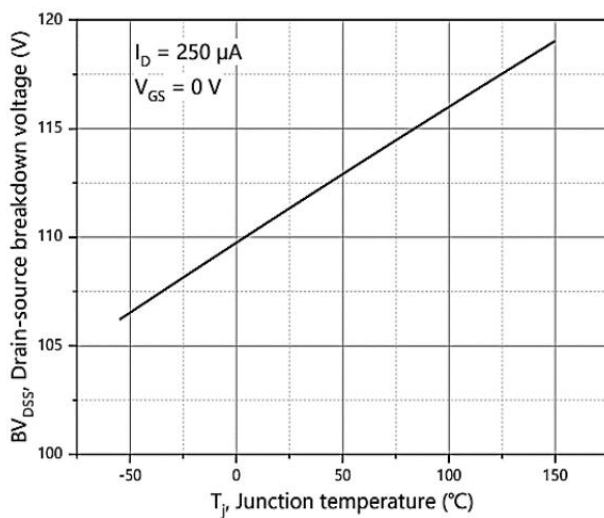


Figure 5. Drain-source breakdown voltage

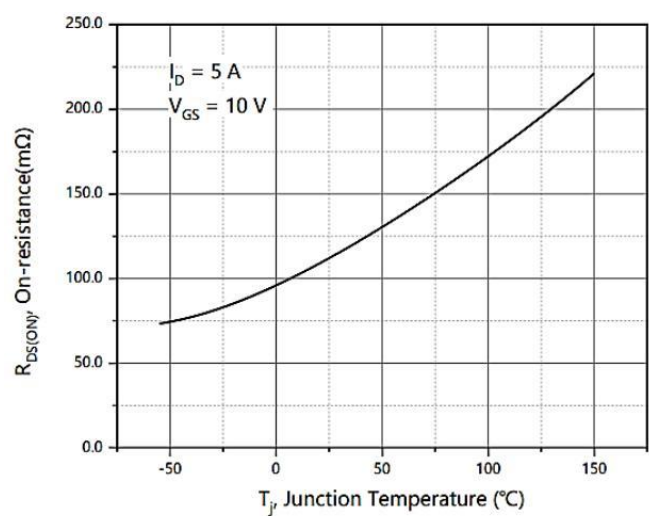


Figure 6. Drain-source on-state resistance

Typical Characteristics

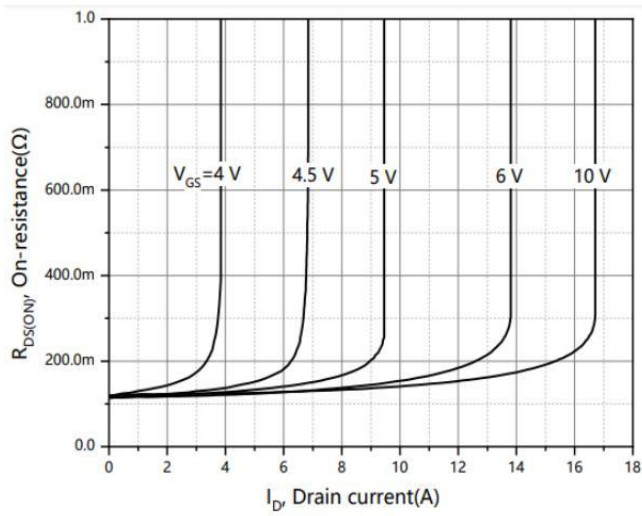


Figure 7. Drain-source on-state resistance

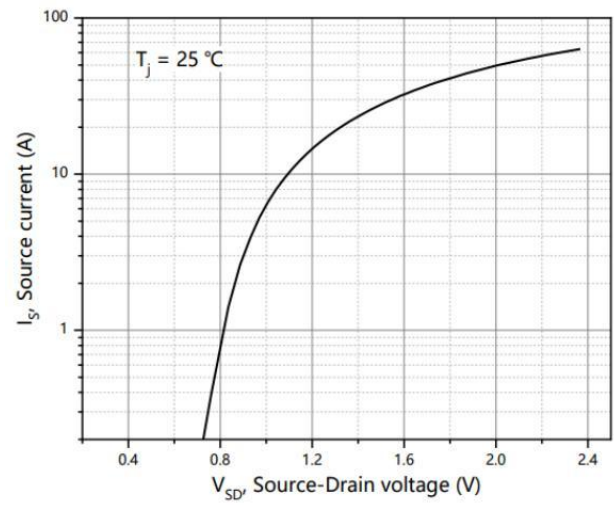


Figure 8. Forward characteristic of body diode

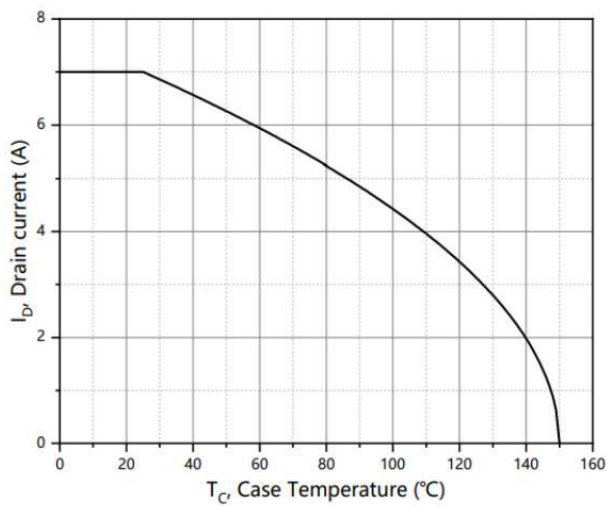


Figure 9. Drain current

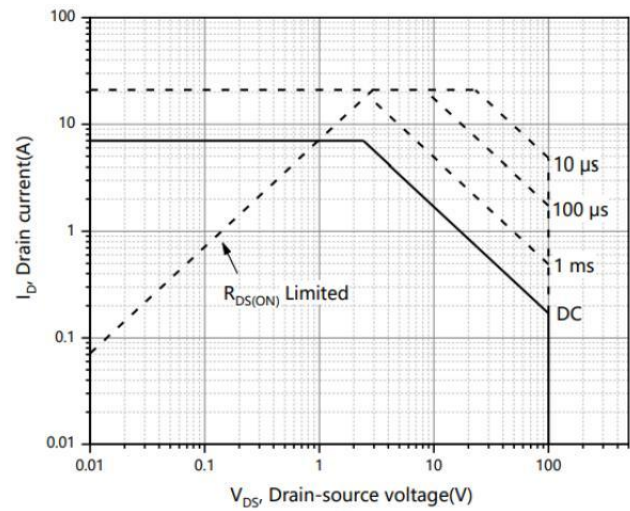
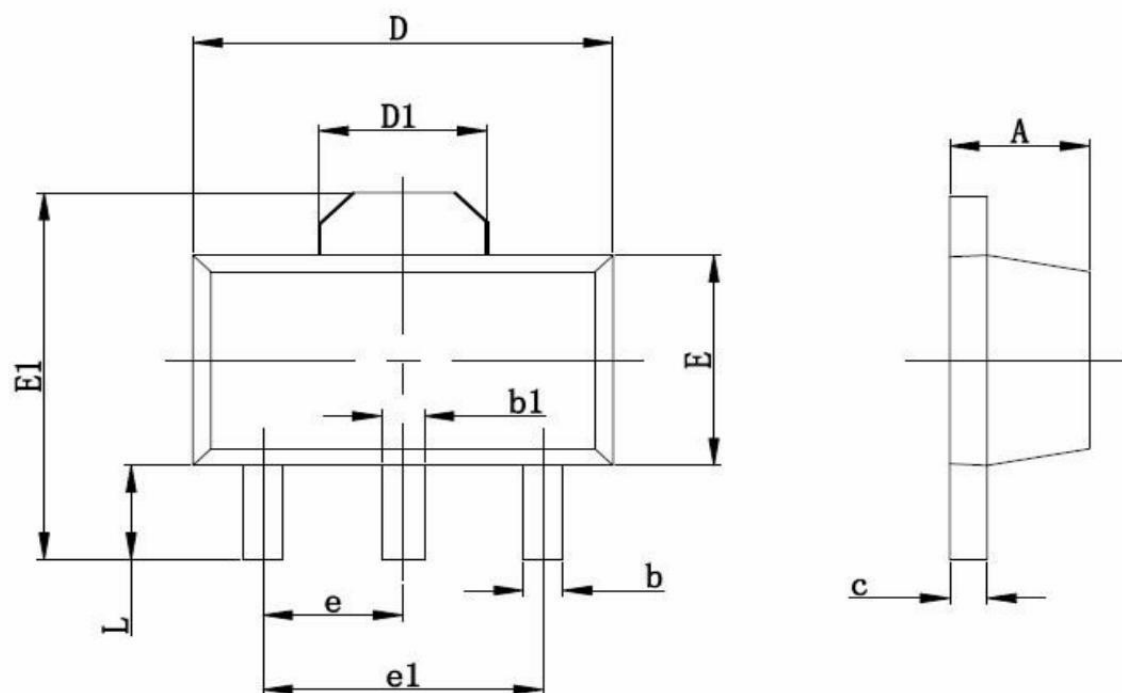


Figure 10. Safe operation area $T_C = 25^\circ\text{C}$

Package Mechanical Data:SOT89-3L


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.400	1.600	0.055	0.063
b	0.350	0.520	0.013	0.197
b1	0.400	0.580	0.016	0.023
c	0.350	0.440	0.014	0.017
D	4.400	4.600	0.173	0.181
D1	1.550 REF		0.061 REF	
E	2.350	2.550	0.091	0.102
E1	3.940	4.250	0.155	0.167
e	1.500 TYP		0.060TYP	
e1	3.000 TYP		0.118TYP	
L	0.900	1.100	0.035	0.047

Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
TAPING	SOT89-3L		3000