

Description

The SXG40N10S uses advanced technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 10V. This device is suitable for use as a Battery protection or in other Switching application.

General Features

$V_{DS} = 100V$ $I_D = 40A$

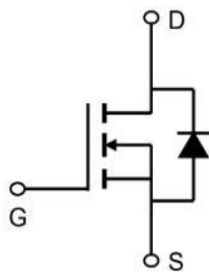
$R_{DS(ON)} < 20m\Omega$ @ $V_{GS}=10V$

Application

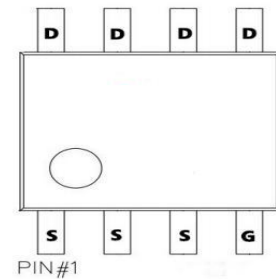
DC/DC Converter

LED Backlighting

Power Management Switches



SOP-8L



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

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	100	V
V_{GS}	Gate-Source Voltage	± 20	V
$I_D @ T_c=25^\circ\text{C}$	Continuous Drain Current, V_{GS} @ 10V	40	A
$I_D @ T_c=100^\circ\text{C}$	Continuous Drain Current, V_{GS} @ 10V	18	A
I_{DM}	Pulsed Drain Current	120	A
E_{AS}	Single Pulse Avalanche Energy	57	mJ
I_{AS}	Avalanche Current	53.4	A
$P_D @ T_c=25^\circ\text{C}$	Total Power Dissipation ⁴	71	W
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ\text{C}$
T_J	Operating Junction Temperature Range	-55 to 150	$^\circ\text{C}$
$R_{\theta JA}$	Thermal Resistance Junction-Ambient	1.76	$^\circ\text{C/W}$
$R_{\theta JC}$	Thermal Resistance Junction-Case	85	$^\circ\text{C/W}$

Electrical Characteristics (T_c=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	107		V
VGS(th)	Gate threshold voltage	V _{DS} =V _{GS} , I _D =250 μA	1.2	1.5	2.5	V
RDS(ON)	Drain-source on-state resistance	V _{GS} =10 V, I _D =10 A		14	25.0	mΩ
RDS(ON)	Drain-source on-state resistance	V _{GS} =4.5 V, I _D =7 A		18	30.0	mΩ
IGSS	Gate-source leakage current	V _{GS} =±20 V			±100	nA
IDSS	Drain-source leakage current	V _{DS} =100 V, V _{GS} =0 V			1	uA
Ciss	Input capacitance	V _{GS} =0 V, V _{DS} =50 V, f=100 kHz		1003.9		pF
Coss	Output capacitance			185.4		pF
Crss	Reverse transfer capacitance			9.8		pF
td(on)	Turn-on delay time	V _{GS} =10 V, V _{DS} =50 V, R _G =10 Ω, I _D =5 A		16.6		ns
t _r	Rise time			3.8		ns
td(off)	Turn-off delay time			75.5		ns
t _f	Fall time			46		ns
Q _g	Total gate charge	I _D =5 A, V _{DS} =50V, V _{GS} =10V		16.2		nc
Q _{gs}	Gate-source charge			2.8		nc
Q _{gd}	Gate-drain charge			4.1		nc
V _{plateau}	Gate plateau voltage			3		V
I _S	Diode forward current	V _{GS} <V _{th}		30		A
ISP	Pulsed source current			90		A
t _{rr}	Reverse recovery time	I _S =1A, di/dt=100 A/μs	49			ns
Q _{rr}	Reverse recovery charge		61.8			nc
I _{rrm}	Peak reverse recovery current		2.4			A

Notes:

- 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 ≤ 300us , duty cycle ≤ 2%
- 3、The power dissipation is limited by 150°C junction temperature
- 4、The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.

Typical Characteristics

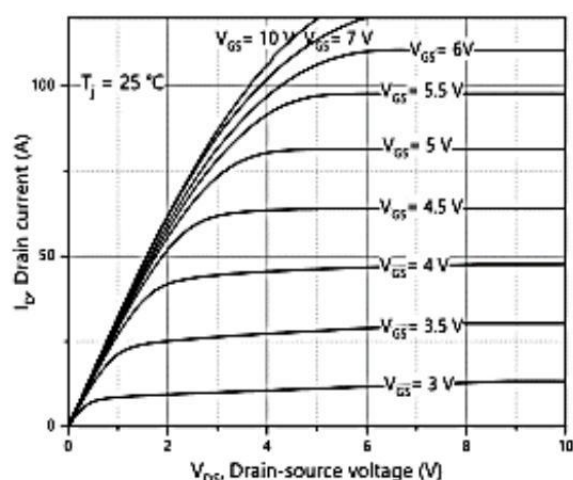


Figure 1, Typ. output characteristics

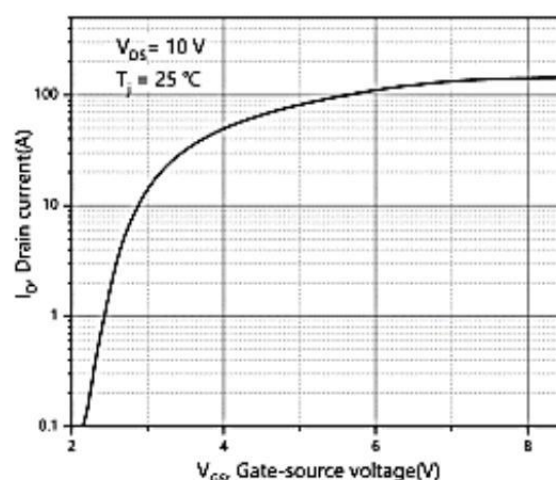


Figure 2, Typ. transfer characteristics

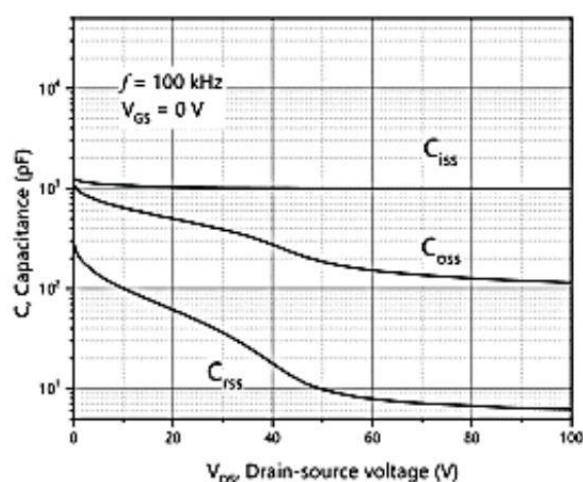


Figure 3, Typ. capacitances

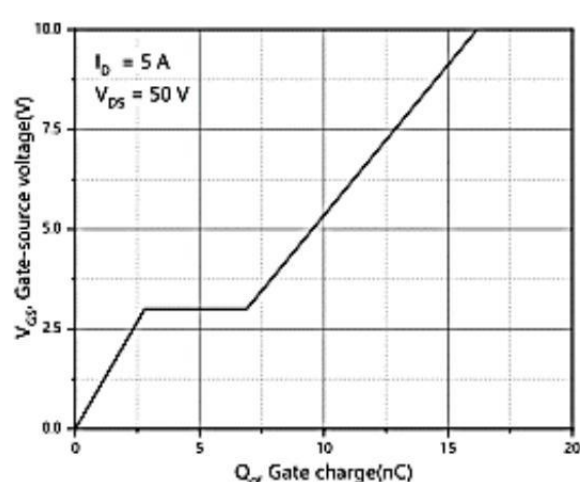


Figure 4, Typ. gate charge

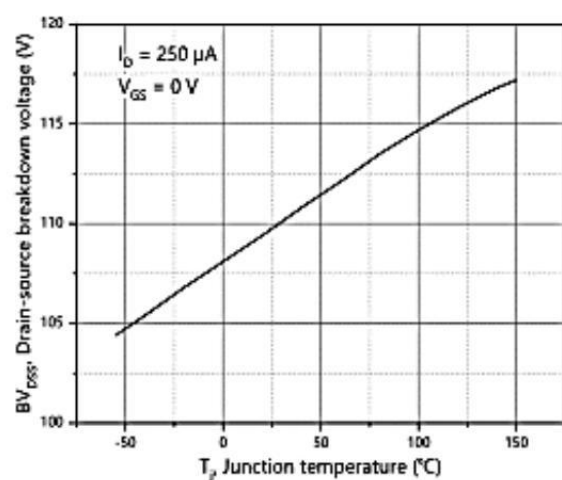


Figure 5, Drain-source breakdown voltage

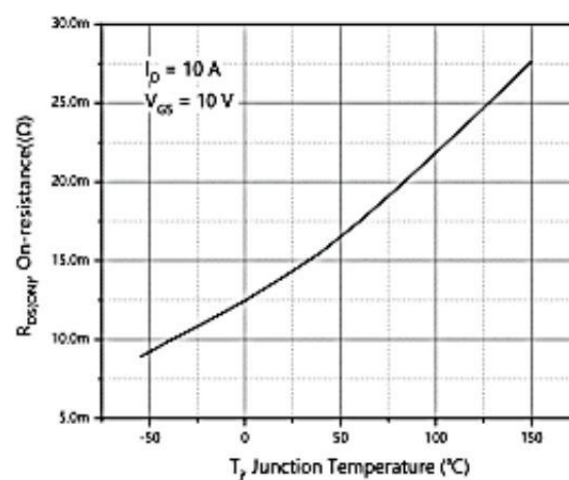


Figure 6, Drain-source on-state resistance

Typical Characteristics

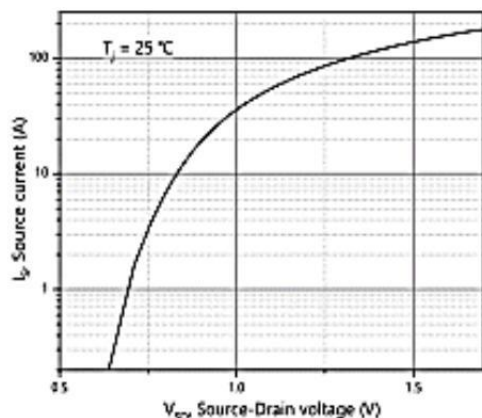


Figure 7, Forward characteristic of body diode

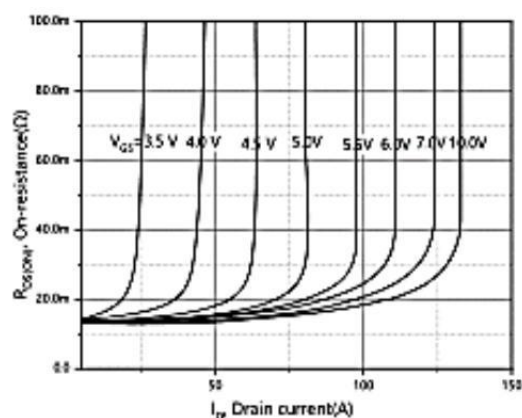


Figure 8, Drain-source on-state resistance

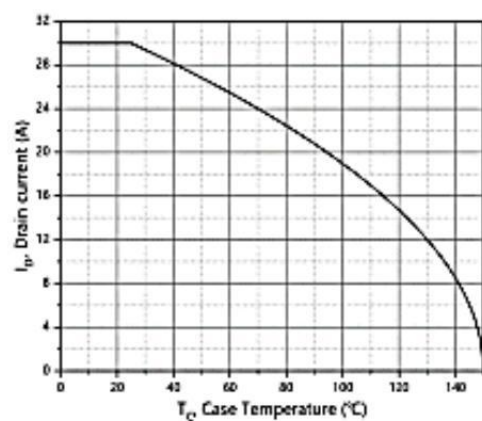


Figure 9, Drain current

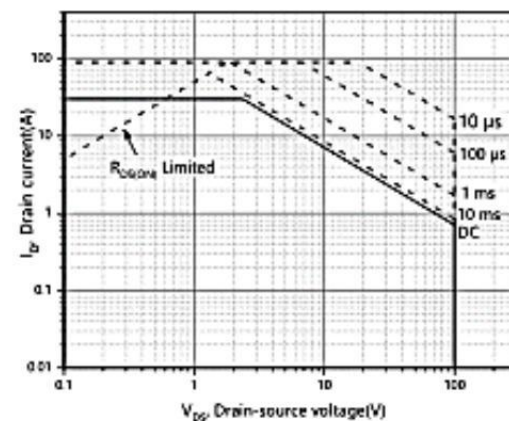


Figure 10, Safe operation area $T_C=25\text{ }^{\circ}\text{C}$

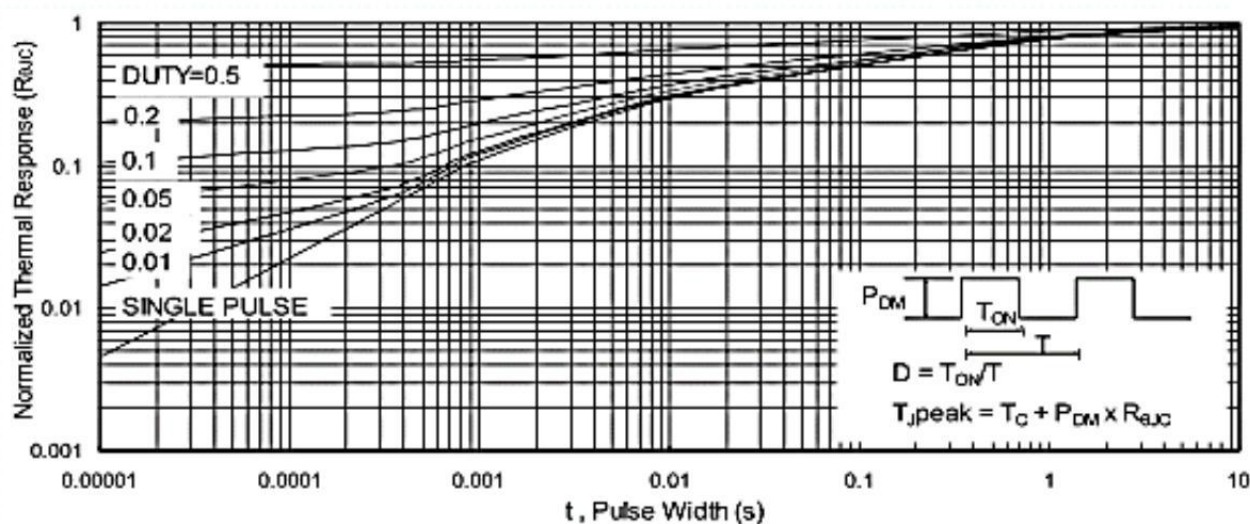
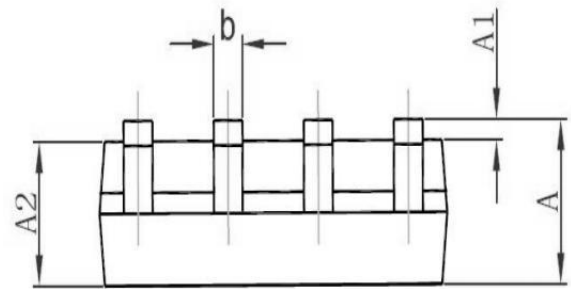
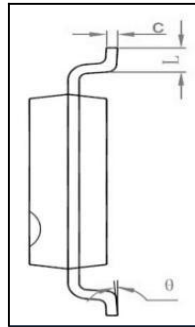
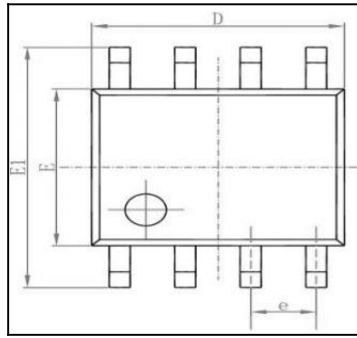
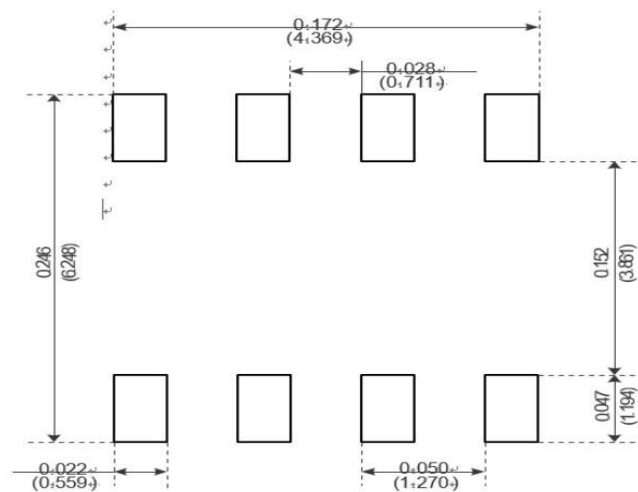


Figure 11, Normalized Maximum Transient Thermal Impedance

MOSFET Package Mechanical Data-SOP-8L



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.006	0.010
D	4.700	5.100	0.185	0.200
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.270 (BSC)		0.050 (BSC)	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°



Recommended Minimum Pads

Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
TAPING	SOP-8L		3000