

Description

The SX10N10S 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

$V_{DS} = 100V$ $I_D = 12.3A$

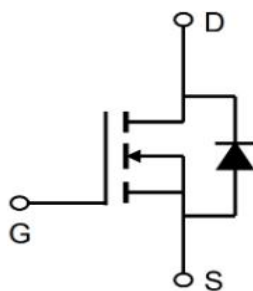
$R_{DS(ON)} < 110m\Omega @ V_{GS}=10V$

Application

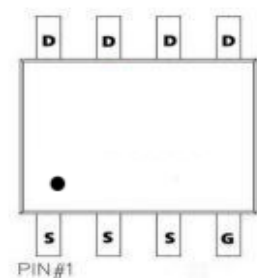
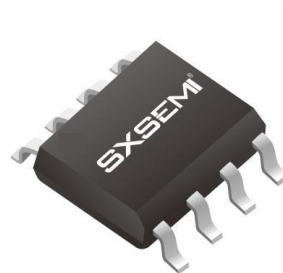
Automotive lighting

Load switch

PSE



SOP-8



Absolute Maximum Ratings (TC=25°C unless otherwise noted)

Symbol	Parameter	Rating	Units
VDS	Drain-Source Voltage	100	V
VGS	Gate-Source Voltage	±20	V
$I_D @ T_C=25^\circ C$	Drain Current, $V_{GS} @ 10V$	12.3	A
$I_D @ T_C=100^\circ C$	Drain Current, $V_{GS} @ 10V$	6.5	A
IDM	Pulsed Drain Current ¹	24	A
$P_D @ T_C=25^\circ C$	Total Power Dissipation	30	W
$P_D @ T_A=25^\circ C$	Total Power Dissipation ³	2.7	W
TSTG	Storage Temperature Range	-55 to 150	°C
TJ	Operating Junction Temperature Range	-55 to 150	°C
RθJA	Maximum Thermal Resistance, Junction-ambient	85	°C/W
RθJC	Maximum Thermal Resistance, Junction-case	5.1	°C/W

Electrical Characteristics@T_j=25°C(unless otherwise specified)

Symbol	Parameter	Test Condition	Min.	Type	Max.	Units
V(BR)DSS	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250μA	100	107	-	V
IDSS	Zero Gate Voltage Drain Current	V _{DS} =100V, V _{GS} =0V,	-	-	1.0	μA
IGSS	Gate to Body Leakage Current	V _{DS} =0V, V _{GS} =±20V	-	-	±100	nA
VGS(th)	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250μA	1.0	1.5	2.5	V
RDS(on)	Static Drain-Source on-Resistance	V _{GS} =10V, I _D =5A	-	93	110	mΩ
		V _{GS} =4.5V, I _D =3A	-	100	140	mΩ
Ciss	Input Capacitance	V _{DS} =25V, V _{GS} =0V, f=1.0MHz	-	645	-	pF
Coss	Output Capacitance		-	38	-	pF
Crss	Reverse Transfer Capacitance		-	33	-	pF
Qg	Total Gate Charge	V _{DS} =30V, I _D =5A, V _{GS} =10V	-	12	-	nC
Qgs	Gate-Source Charge		-	2.2	-	nC
Qgd	Gate-Drain("Miller") Charge		-	2.5	-	nC
td(on)	Turn-on Delay Time	V _{DS} =30V, I _D =10A, R _G =1.8Ω, V _{GS} =10V	-	7	-	ns
tr	Turn-on Rise Time		-	5	-	ns
td(off)	Turn-off Delay Time		-	16	-	ns
tr	Turn-off Fall Time		-	6	-	ns
IS	Maximum Continuous Drain to Source Diode Forward Current		-	-	10	A
ISM	Maximum Pulsed Drain to Source Diode Forward Current		-	-	40	A
VSD	Drain to Source Diode Forward Voltage	V _{GS} =0V, I _S =10A	-	-	1.2	V
trr	Body Diode Reverse Recovery Time	I _F =10A, dI/dt=100A/μs	-	21	-	ns
Qrr	Body Diode Reverse Recovery Charge		-	21	-	nC

Note :

- 1、The data tested by surface mounted on a 1 inch 2 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

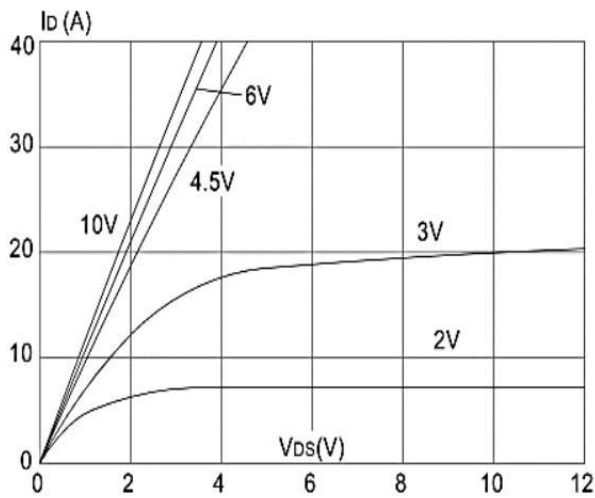


Figure 1: Output Characteristics

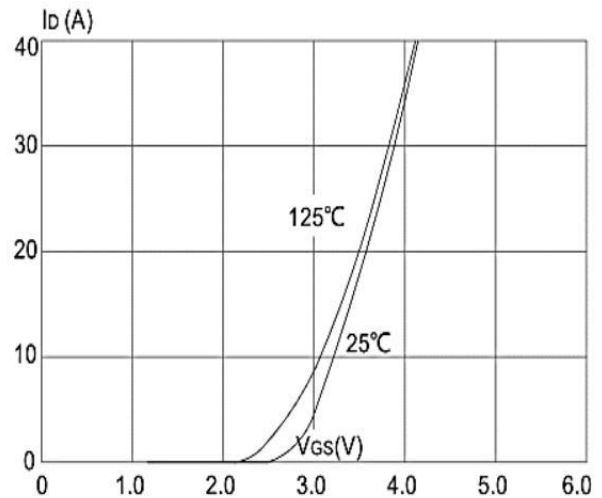


Figure 2: Typical Transfer Characteristics

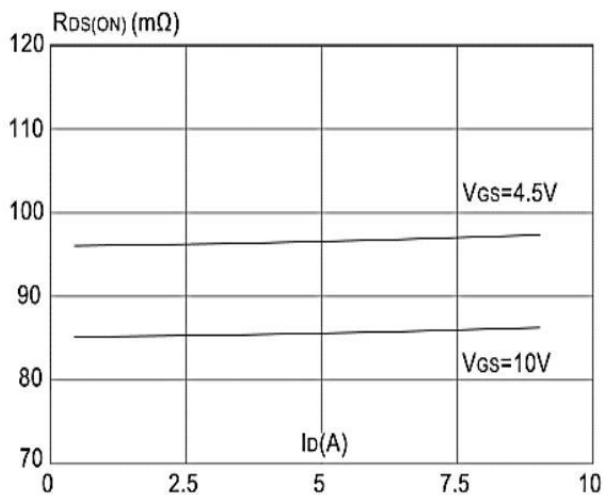


Figure 3: On-resistance vs. Drain Current

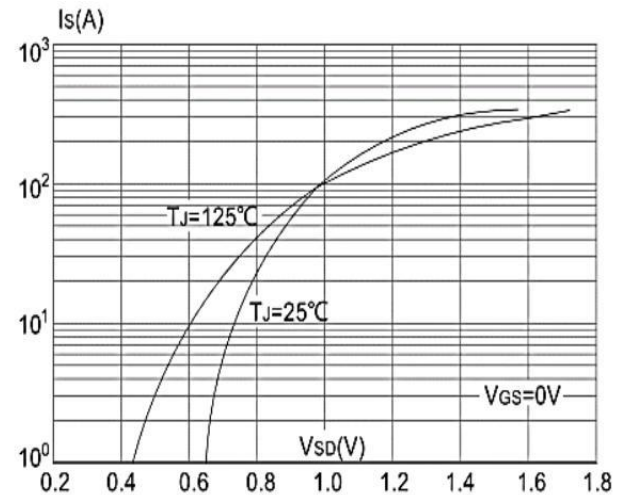


Figure 4: Body Diode Characteristics

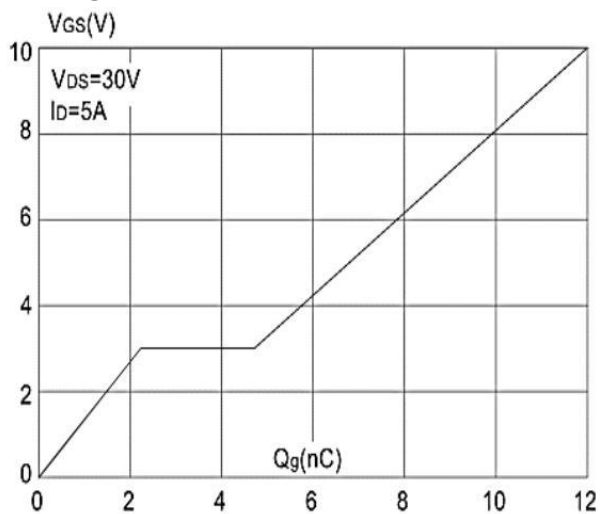


Figure 5: Gate Charge Characteristics

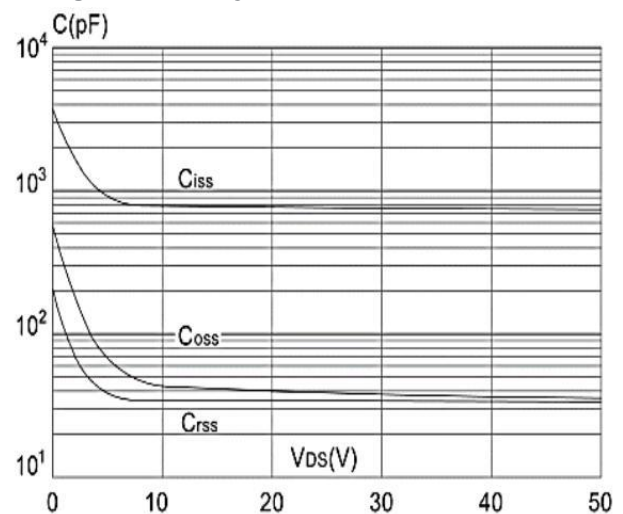


Figure 6: Capacitance Characteristics

Typical Characteristics

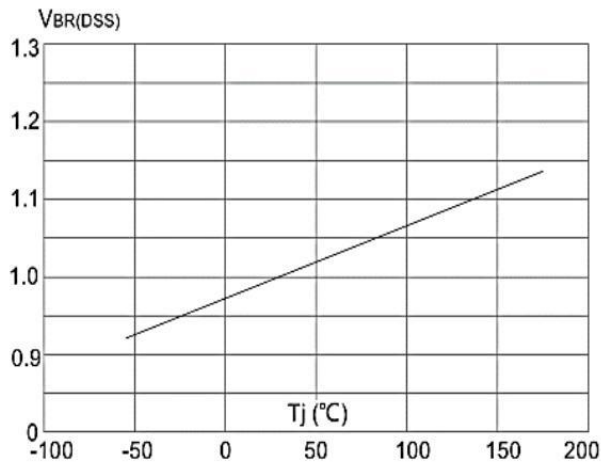


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

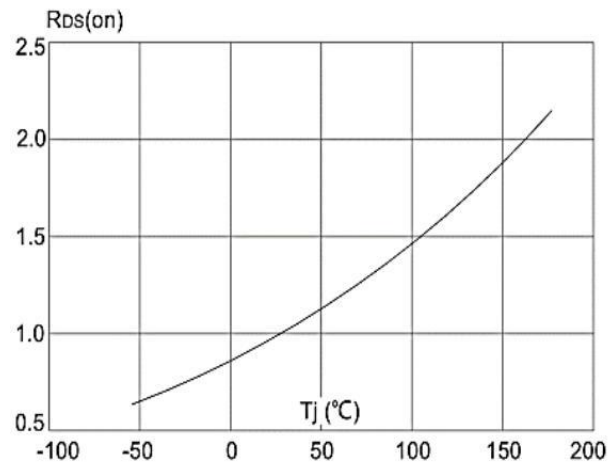


Figure 8: Normalized on Resistance vs. Junction Temperature

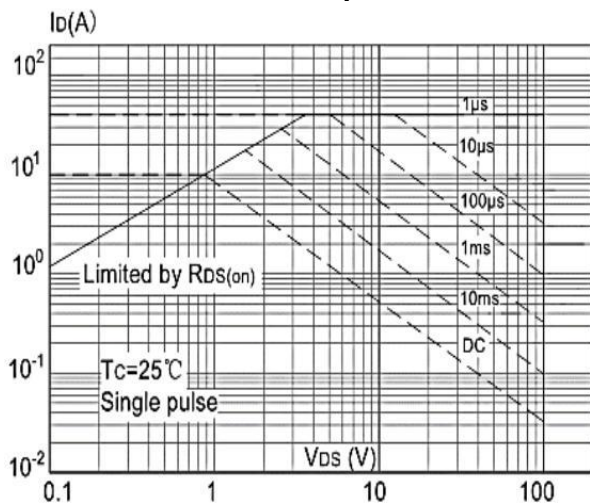


Figure 9: Maximum Safe Operating Area

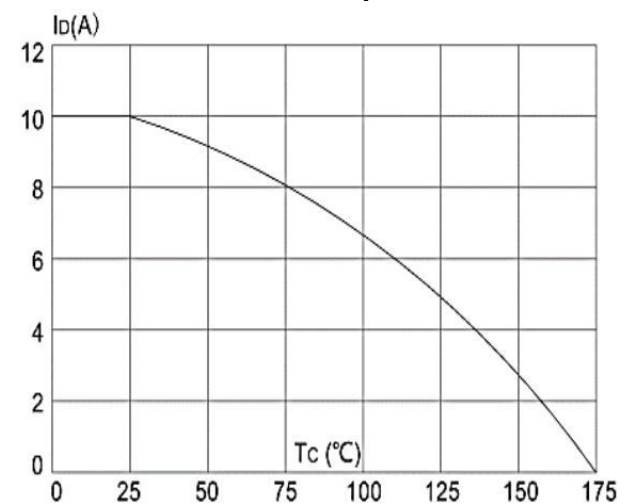


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

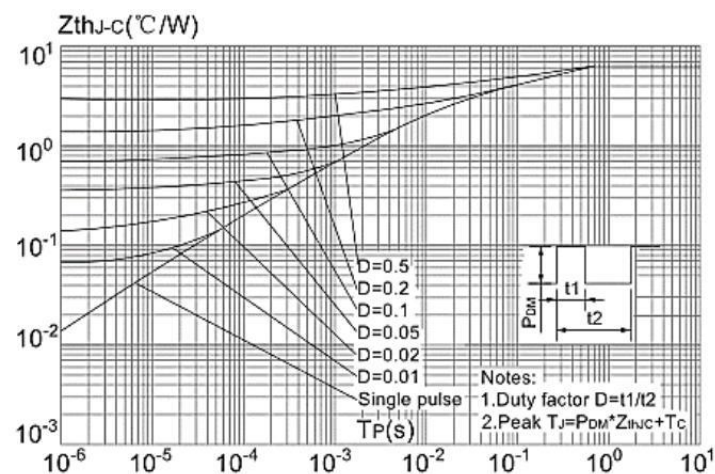
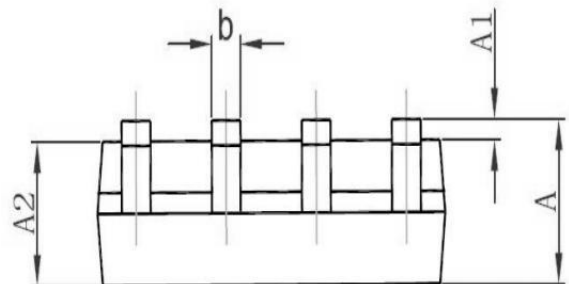
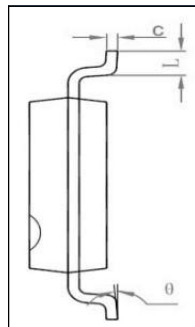
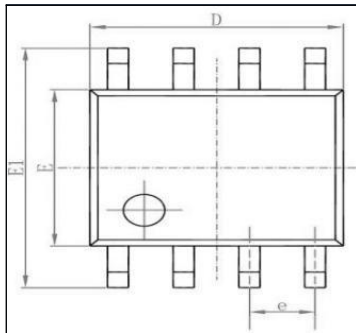
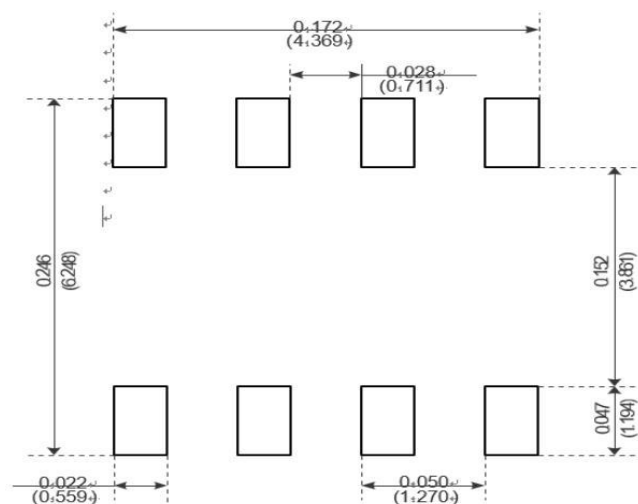


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case

Package Mechanical Data-SOP-8



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°



Package Marking and Ordering Information

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