

Description

The SX1N60MSI is silicon N-channel Enhanced VDMOSFETs, is obtained by the self-aligned planar Technology which reduce the conduction loss, improve switching performance and enhance the avalanche energy. The transistor can be used in various power switching circuit for system miniaturization and higher efficiency.

General Features

$V_{DS} = 600V, I_D = 1A$

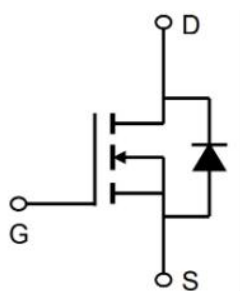
$R_{DS(ON)} < 11\Omega @ V_{GS} = 10V$

Application

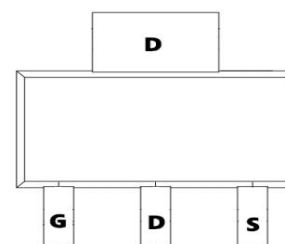
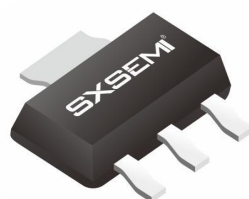
Uninterruptible Power

Supply(UPS) Power Factor

Correction (PFC)



SOT-223



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

Symbol	Parameter	Value	Unit
V_{DS}	Drain-source Voltage	600	V
V_{GS}	gate-source Voltage	± 30	V
I_D	Continuous Drain Current $T_C = 25^\circ\text{C}$	1.0	A
I_D	Continuous Drain Current $T_C = 100^\circ\text{C}$	0.6	A
I_{DM}	Drain Current — Pulsed	4.0	A
P_D	Power Dissipation ($T_L = 25^\circ\text{C}$)	20	W
T_j	Junction Temperature	150	$^\circ\text{C}$
T_{STG}	Storage Temperature	-55-150	$^\circ\text{C}$
E_{AS}	Single Pulse Avalanche Energy	14	mJ

Electrical Characteristics (T_A=25°C unless otherwise noted)

Symbol	Parameter	Testcondition	Min	Typ	Max	Unit
BVDSS	Drain-source Breakdown Voltage	VGS=0V, ID=250μA	600			V
ΔBVDSS/ ΔTj	Breakdown Voltage Temperature Coefficient	ID=250uA, Referenced to 25°C		0.6		V/°C
VGS(TH)	Gate Threshold Voltage	VGS=VDS, ID=250μA	2.0		4.0	V
RDS(ON)	Static Drain-source On Resistance	VGS =10V, ID=0.5A ③		8.5	11	Ω
Ciss	Input Capacitance	VGS = 0V, VDS = 25V F = 1.0MHZ		150		pF
Coss	Output Capacitance			25		pF
Crss	Reverse transfer Capacitance			5.4		pF
Td(off)	Turn -Off Delay Time	VDD=300V, ID =1.0A RG= 25Ω ③		13		ns
Qg	Total Gate Charge	ID =1.0A, VDS = 480V VGS = 10V ③		4.8		nC
Qgs	Gate-to-Source Charge			0.7		nC
Qgd	Gate-to-Drain Charge			2.7		nC
IS	Continuous Diode Forward Current				1.0	A
IDSS	Drain-source Leakage Current	VDS =600V, VGS =0V, Tj=25°C			25	μA
		VDS =480V, VGS =0V, Tj=125°C			250	μA
gfs	Forward Transconductance	VDS =40V, ID=0.5A ③	0.5			S
IGSS	Gate-body Leakage Current (VDS = 0)	VGS =±30V			±100	nA
VSD	Diode Forward Voltage	Tj=25°C, Is=0.5A VGS =0V ③			1.4	V
trr	Reverse Recovery Time	Tj=25°C, If=1.0A di/dt=100A/μs ③		190		ns
Qrr	Reverse Recovery Charge			0.53		uC

(Notes):

- 1、Repetitive rating: Pulse width limited by maximum junction temperature
- 2、Starting Tj=25°C, VDD =50V, L=30mH, RG =25Ω, IAS=1.0A
- 3、Pulse Test : Pulse width ≤ 300μs, Duty cycle ≤ 2%erating Area

Typical Characteristics

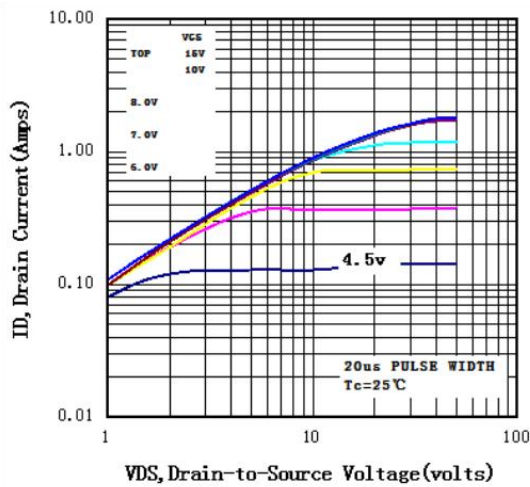


Fig1 Typical Output Characteristics, Tc=25°C

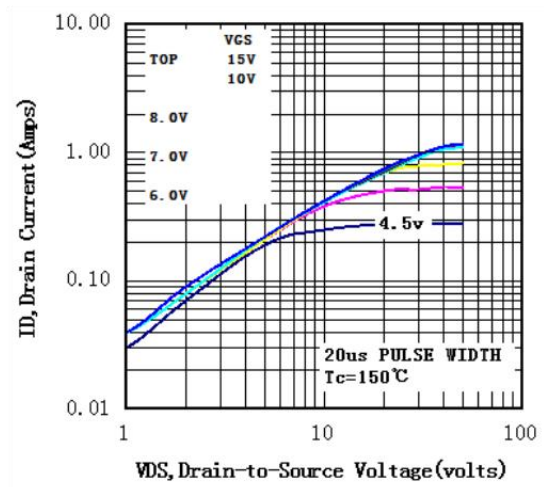


Fig2 Typical Output Characteristics, Tc=150°C

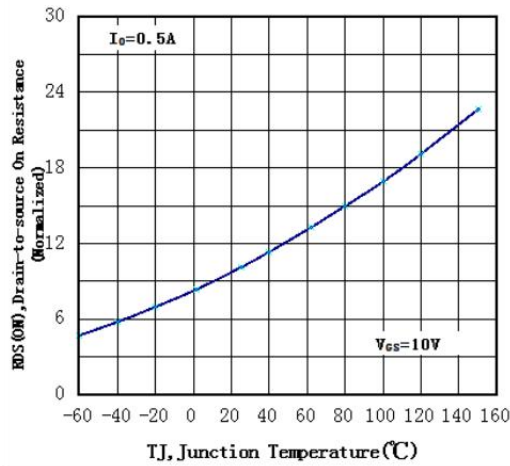


Fig3 Normalized On-Resistance Vs. Temperature

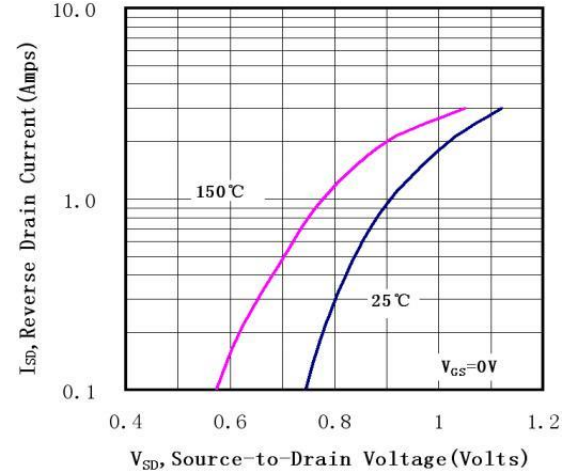


Fig4 Typical Source-Drain Diode Forward Voltage

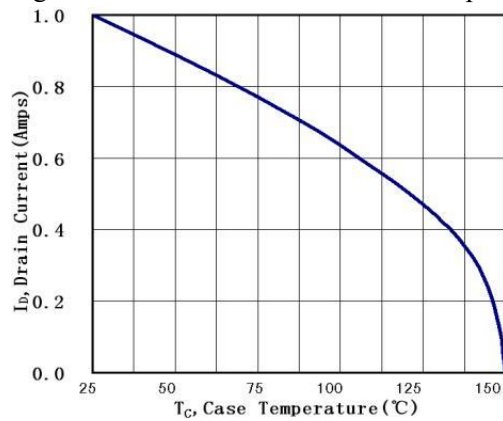


Fig5 Maximum Drain Current Vs. Case Temperature

Typical Characteristics

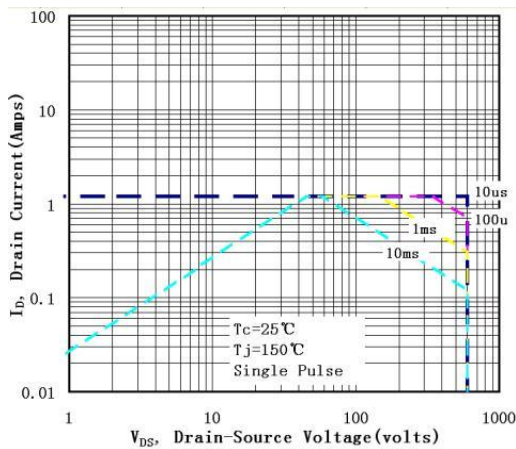


Fig6 Maximum Safe Operating Area

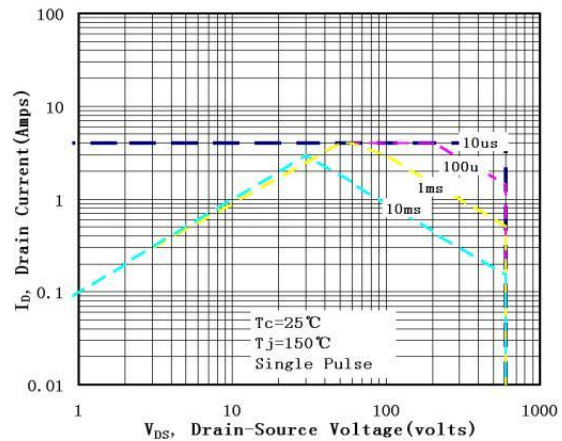


Fig 7 Maximum Safe Operating Area

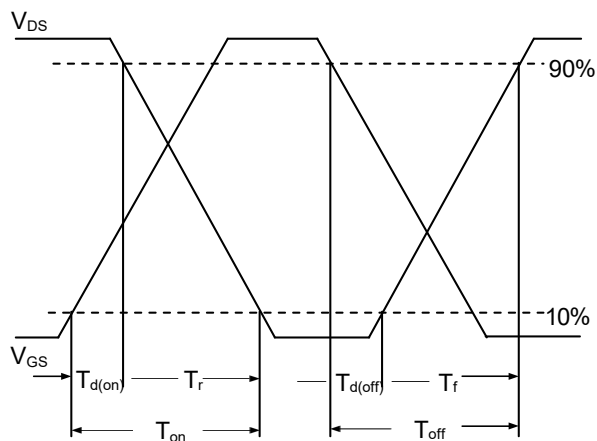


Fig.8 Switching Time Waveform

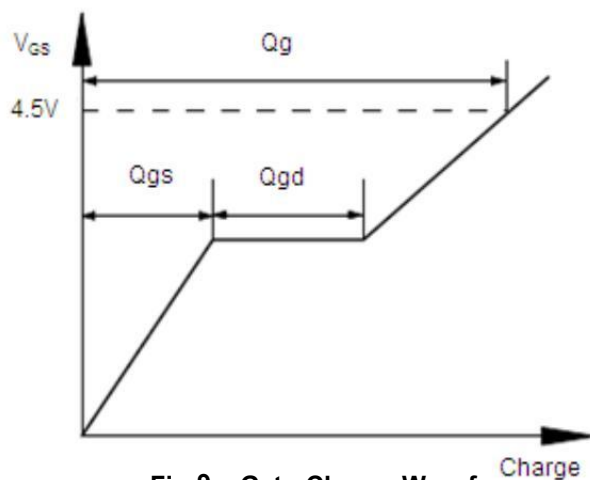
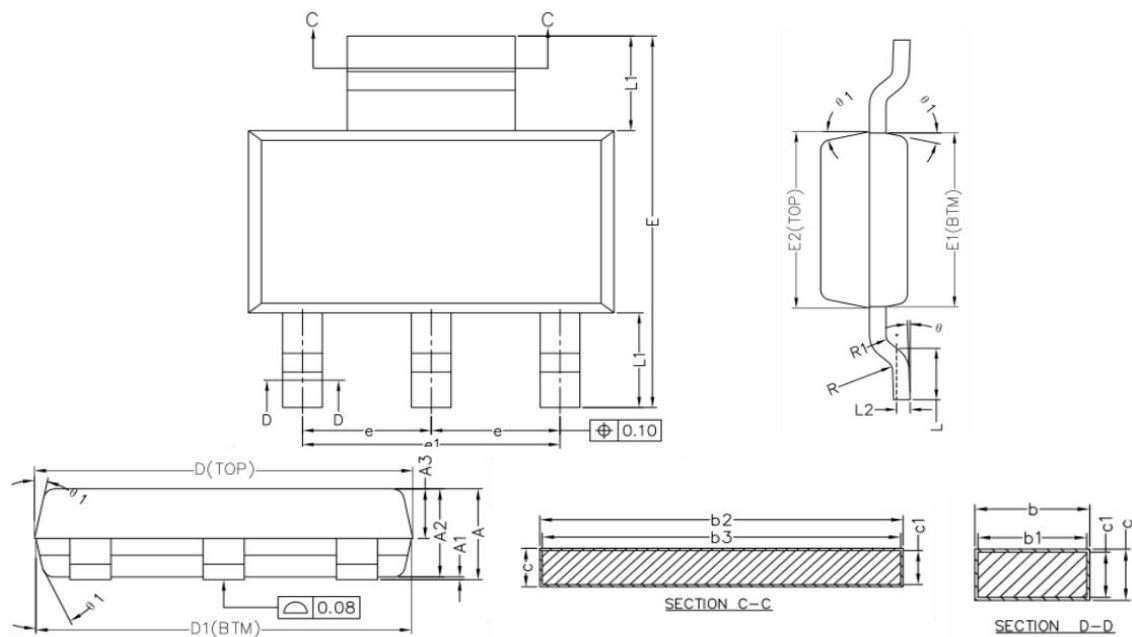


Fig.9 Gate Charge Waveform

Package Mechanical Data-SOT-223



Symbol	Min	Nom	Max
A	--	--	1.80
A1	0.02	--	0.10
A2	1.50	1.60	1.70
A3	0.80	0.90	1.00
b	0.67	--	0.80
b1	0.66	0.71	0.76
b2	2.96	--	3.09
b3	2.95	3.00	3.05
C	0.30	--	0.35
C1	0.29	0.30	0.31
D	6.48	6.53	6.58
D1	6.55	6.60	6.65
E	6.80	--	7.20
E1	3.40	3.50	3.60
E2	3.33	3.43	3.53
e	2.30BSC		
e1	4.60BSC		
L	0.80	1.00	1.20
L1	1.75REF		
L2	0.25BSC		
R	0.10	--	--
R1	0.10	--	--
θ	0°	--	8°
θ1	10°	12°	14°

Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
TAPING	SOT-223		3000