

Description

The SX1N40MI 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.

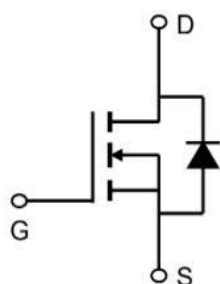
General Features

$V_{DS} = 400V$ $I_D = 1A$

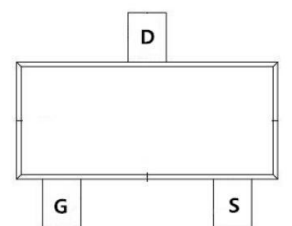
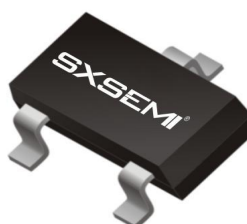
$R_{DS(ON)} < 8500m\Omega$ @ $V_{GS}=10V$

Application

LED



SOT-23-3L



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

Symbol	Parameter	Value	Unit
VDSS	Drain-Source Voltage ($V_{GS} = 0V$)	400	V
ID	Continuous Drain Current	1	A
IDM	Pulsed Drain Current (note1)	4	A
VGS	Gate-Source Voltage	± 20	V
EAS	Single Pulse Avalanche Energy (note2)	15	mJ
Pd	Power Dissipation ($T_c = 25^{\circ}C$)	33.2	W
TJ, Tstg	Operating Junction and Storage Temperature Range	$-55 \sim +150$	$^{\circ}C$
RthJC	Thermal Resistance, Junction-to-Case	5	$^{\circ}C/W$
RthJA	Thermal Resistance, Junction-to-Ambient	125	$^{\circ}C/W$

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

Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} = 0 V, I _D = 250 μA	400	450		V
ΔBV _{DSS} / ΔT _J	Breakdown Voltage TemperatureCoefficient	I _D =250μA, Referenced to 25°C		0.43		V/°C
IDSS	Zero Gate Voltage Drain Current	V _{DS} =400 V, V _{GS} = 0 V			1	μA
		V _{DS} = 320V, TC = 125°C			10	μA
IGSSF	Gate-Body Leakage Current, Forward	V _{GS} = 20 V, V _{DS} = 0 V			100	nA
IGSSR	Gate-Body Leakage Current, Reverse	V _{GS} = -20 V, V _{DS} = 0 V			-100	nA
VGS(TH)	Gate Threshold voltage	V _{DS} =V _{GS} , I _D =250 uA	1.2	1.8	2.5	V
RDS(On)	Drain-Source on-state resistance	V _{GS} =10V, I _D = 0.5A, T _J =25°C		7200	8500	mΩ
C _{iss}	Input capacitance	V _{DS} = 25V, V _{GS} =0V, f=1.0MHz		83		pF
C _{oss}	Output capacitance			8.9		pF
C _{rss}	Reverse transfer capacitance			1		pF
td(on)	Turn On Delay Time	V _{DD} =320 V, I _D =1A, R _G =25Ω		29		ns
t _r	Rising Time			6		ns
td(off)	Turn Off Delay Time			42		ns
t _f	Fall Time			31		ns
Q _g	Total Gate Charge	V _{DD} =320 V, I _D =1A,		9.6		nC
Q _{gs}	Gate-Source Charge			3.0		nC
Q _{gd}	Gate-Drain Charge			2.5		nC
ISM	Maximum Pulsed Drain-Source Diode Forward Current				1	A
V _{SD}	Diode Forward Voltage	V _{GS} =0V, I _S =0.5A			1.4	V
t _{rr}	Reverse Recovery Time	V _{GS} =0V, I _S = 1 A, dI _F / dt = 100 A/μs		180		ns
Q _{rr}	Reverse Recovery Charge			0.28		μC

Note :

- 1、 The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.
- 2、 The test condition is Pulse Test: Pulse width ≤ 300μs, Duty Cycle ≤ 1%
- 3、 The power dissipation is limited by 150°C junction temperature
- 4、 The data is theoretically the same as ID and IDM , in real applications , should be limited by total power dissipation.

Typical Characteristics

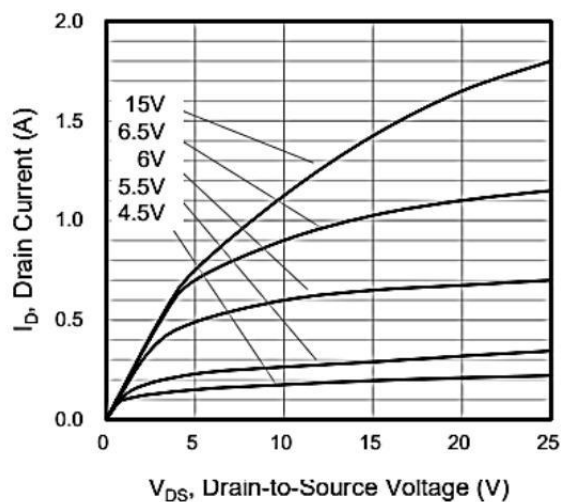


Figure 1. Output Characteristics

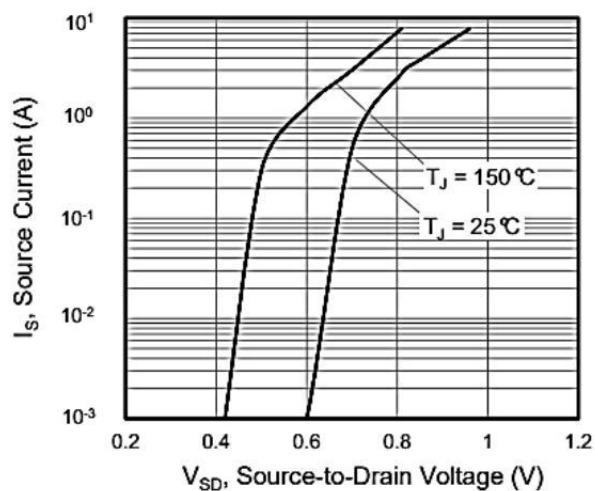


Figure 2. Body Diode Forward Voltage

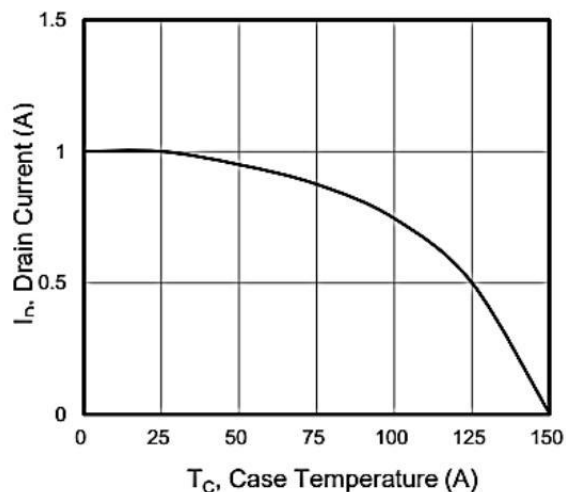


Figure3.Drain Current vs. Temperature

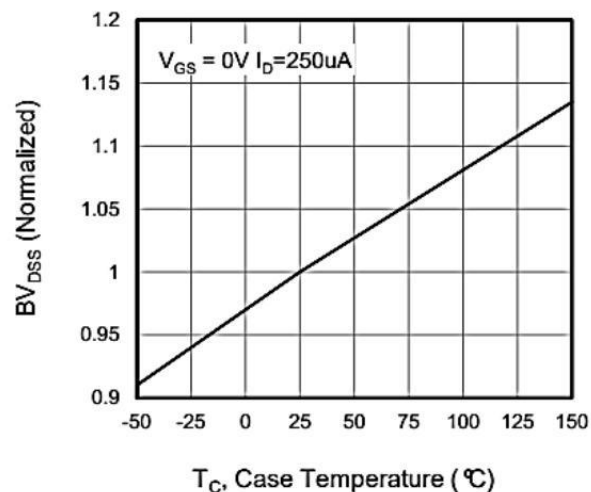


Figure4.BVDSS Variation vs. Temperature

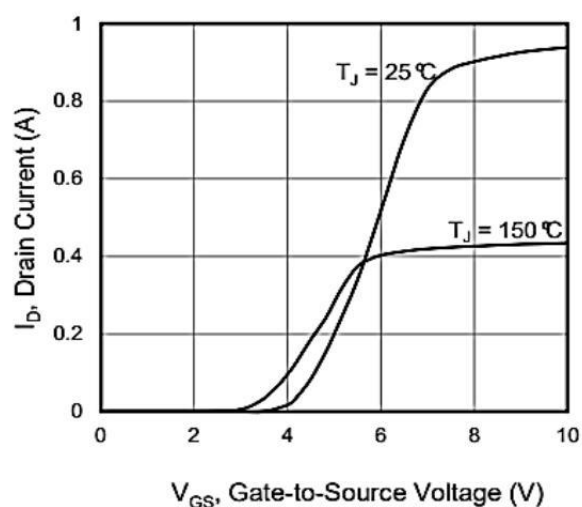


Figure 5. Transfer Characteristics

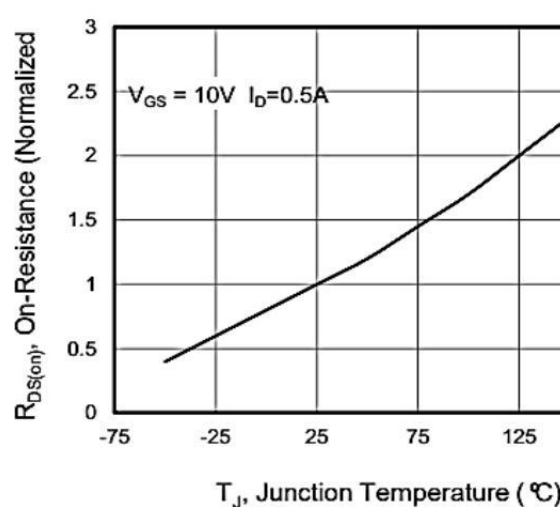


Figure 6. On-Resistance vs. Temperature

Typical Characteristics

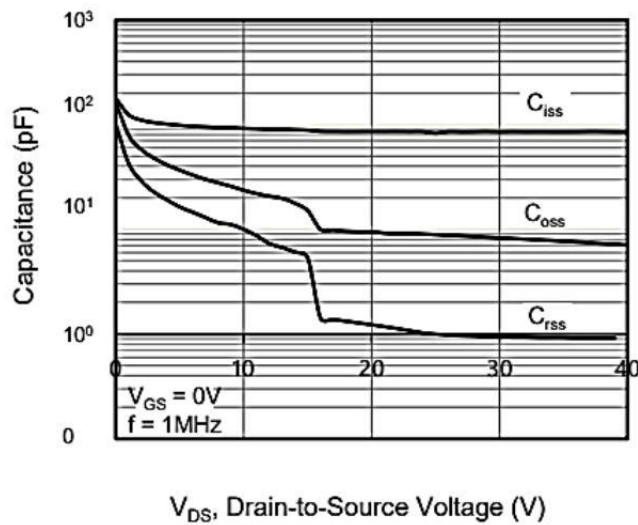


Figure 7. Capacitance

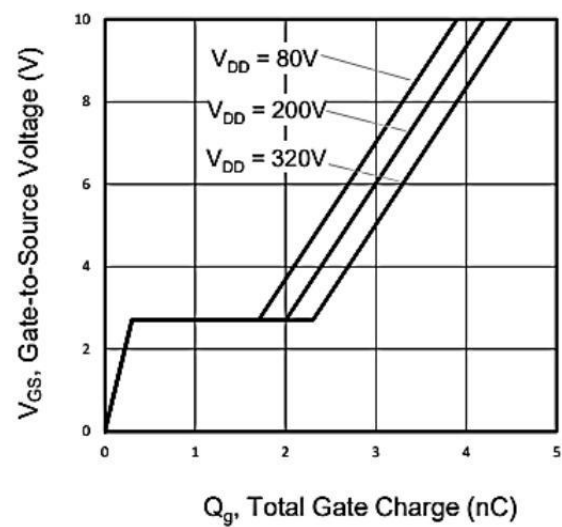


Figure 8. Gate Charge

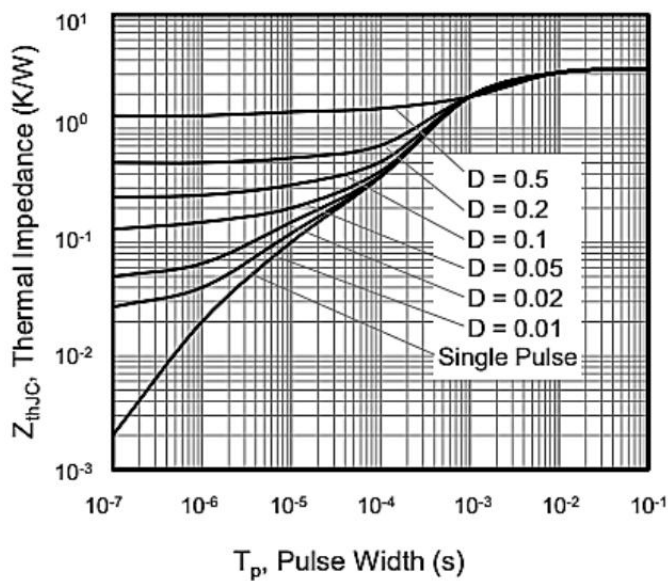
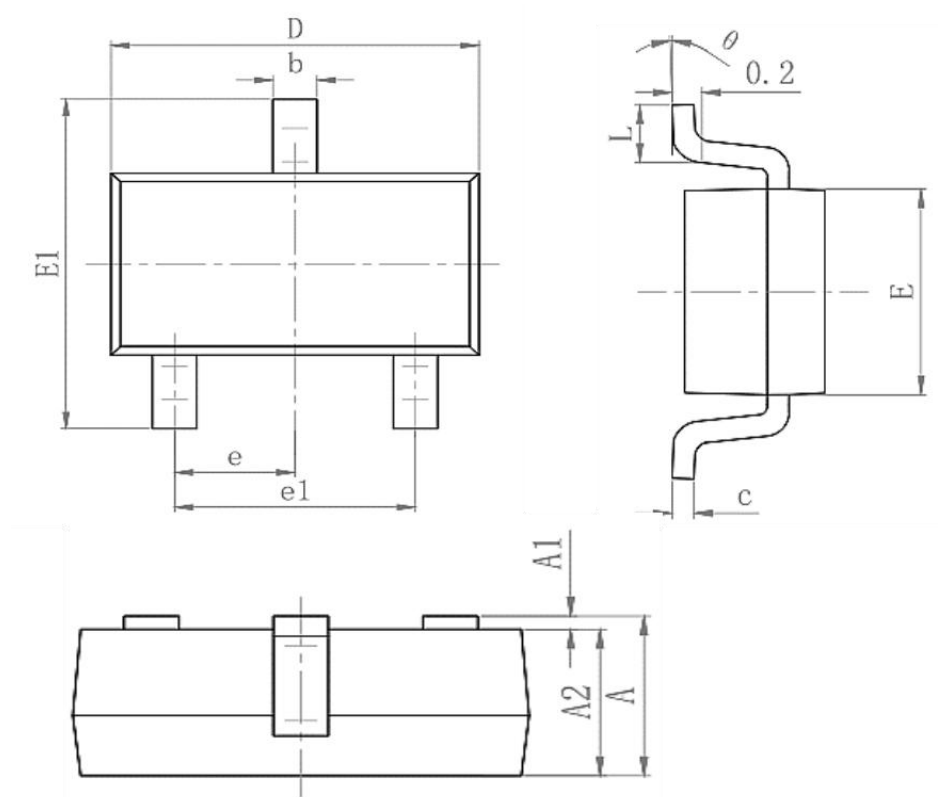


Figure 9. Transient Thermal Impedance

Package Mechanical Data-SOT23-3-XC-Single



Symbol	Dimensions In Millimeters	
	Min.	Max.
A	1.050	1.250
A1	0.000	0.100
A2	1.050	1.150
b	0.25	0.45
c	0.100	0.200
D	2.820	3.020
E	1.5	1.7
E1	2.650	2.950
e	0.950(BSC)	
e1	1.800	2.000
L	0.300	0.500
θ	0°	8°

Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
TAPING	SOT23-3L		3000