

Description

The SX50N25MP 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

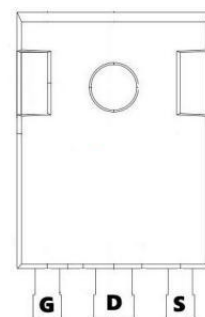
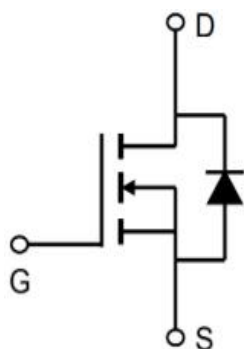
$V_{DS} = 250V$ $I_D = 50A$

$R_{DS(ON)} < 85m\Omega$ @ $V_{GS}=10V$

Application

Uninterruptible Power Supply(UPS)

Power Factor Correction (PFC)



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

Symbol	Parameter	Value	Unit
VDSS	Drain-Source Voltage ($V_{GS} = 0V$)	250	V
ID	Continuous Drain Current	50	A
IDM	Pulsed Drain Current	180	A
VGSS	Gate-Source Voltage	± 30	V
EAS	Single Pulse Avalanche Energy	973	mJ
IAS	Avalanche Current	36	A
EAR	Repetitive Avalanche Energy	584	mJ
P _D	Power Dissipation ($T_c = 25^{\circ}C$)	65	W
T _J , T _{stg}	Operating Junction and Storage Temperature Range	-55~+150	$^{\circ}C$
R _{thJC}	Thermal Resistance, Junction-to-Case	1.6	$^{\circ}C/W$
R _{thJA}	Thermal Resistance, Junction-to-Ambient	40	$^{\circ}C/W$

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

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Units
V(BR)DSS	Drain-Source Breakdown Voltage	V _{GS} = 0V, I _D = 250μA	250	275	--	V
IDSS	Zero Gate Voltage Drain Current	V _{DS} = 250V, V _{GS} = 0V, T _J = 25°C	--	--	1	μA
IGSS	Gate-Source Leakage	V _{GS} = ±30V	--	--	±100	nA
VGS(th)	Gate-Source Threshold Voltage	V _{DS} = V _{GS} , I _D = 250μA	2.0	3.0	4.0	V
RDS(on)	Drain-Source On-Resistance (Note3)	V _{GS} = 10V, I _D = 22.5A	--	70	85	mΩ
Ciss	Input Capacitance	V _{GS} = 0V, V _{DS} = 25V, f = 1.0MHz	--	3539	--	pF
Coss	Output Capacitance		--	535	--	
Crss	Reverse Transfer Capacitance		--	309	--	
Q _g	Total Gate Charge	V _{DD} = 200V, I _D = 45A, V _{GS} = 10V	--	244	--	nC
Q _{gs}	Gate-Source Charge		--	16	--	
Q _{gd}	Gate-Drain Charge		--	143	--	
td(on)	Turn-on Delay Time	V _{DD} = 125V, I _D = 45A, R _G = 25 Ω	--	57	--	ns
t _r	Turn-on Rise Time		--	145	--	
td(off)	Turn-off Delay Time		--	960	--	
t _f	Turn-off Fall Time		--	235	--	
IS	Continuous Body Diode Current	T _C = 25 °C	--	--	45	A
ISM	Pulsed Diode Forward Current		--	--	180	A
VSD	Body Diode Voltage	T _J = 25°C, I _{SD} = 22.5A, V _{GS} = 0V	--	--	1.4	V
trr	Reverse Recovery Time	V _{GS} = 0V, I _S = 10A, di _F /dt = 100A/μs	--	264	--	ns
Q _{rr}	Reverse Recovery Charge		--	3	--	μC

Note :

- 1、The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.
- 2、The EAS data shows Max. rating . IAS = 36A, VDD = 50V, RG = 25 Ω, Starting TJ = 25 °C
- 3、The test condition is Pulse Test: Pulse width ≤ 300μs, Duty Cycle ≤ 1%
- 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

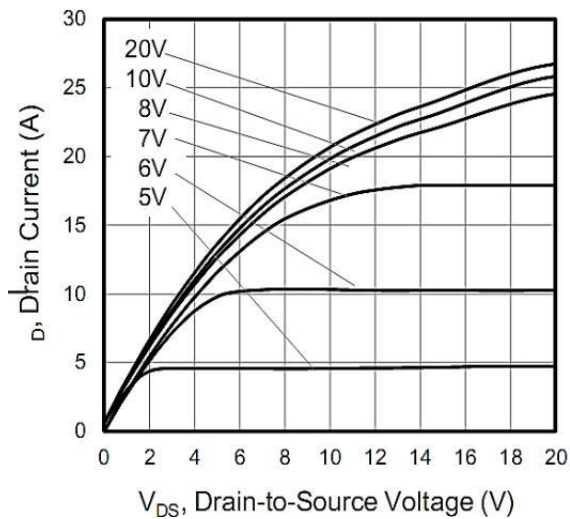


Figure 1. Output Characteristics

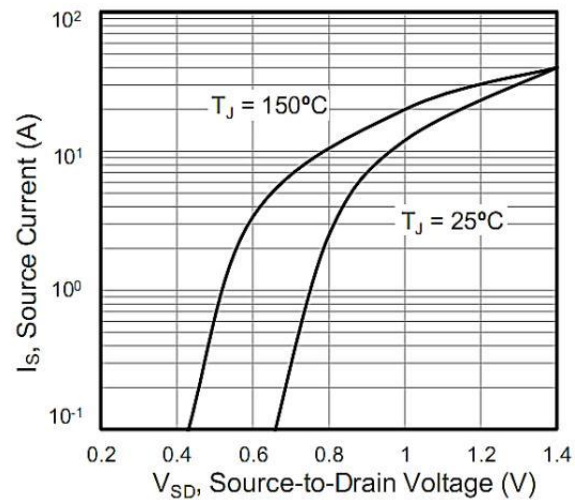


Figure 2. Body Diode Forward Voltage

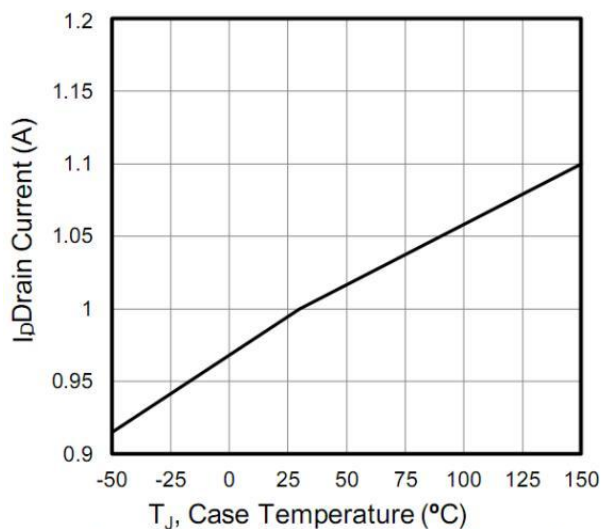


Figure 3. Drain Current vs. Temperature

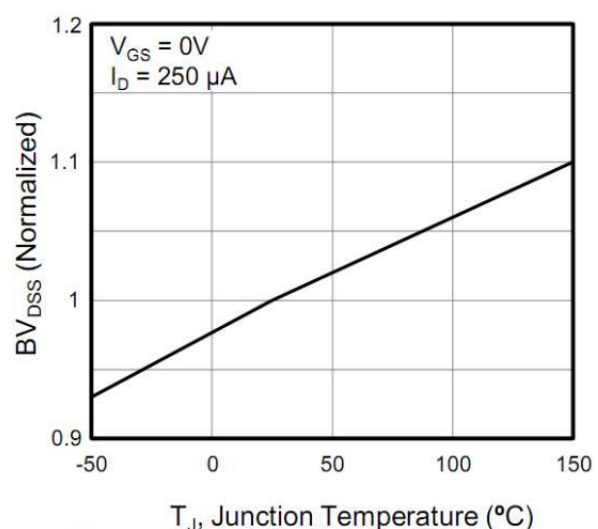


Figure 4. BV_{DSS} Variation vs. Temperature

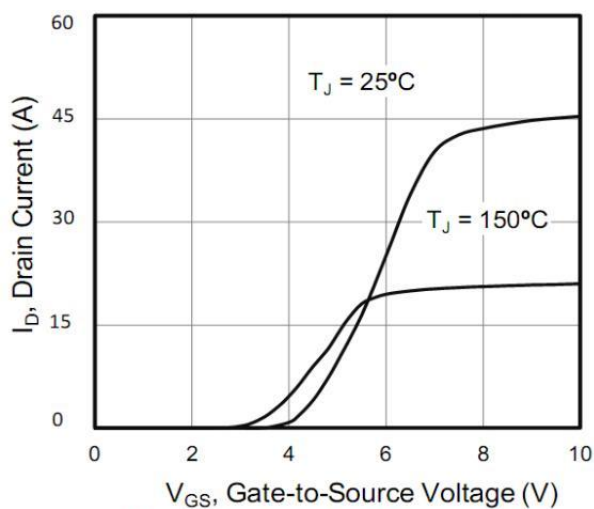


Figure 5. Transfer Characteristics

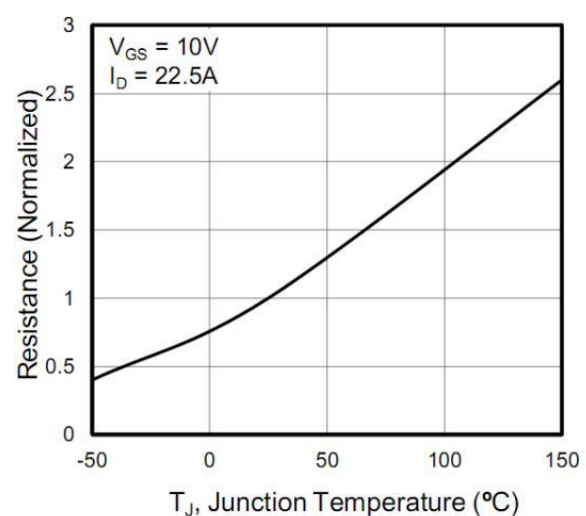


Figure 6. On-Resistance vs. Temperature

Typical Characteristics

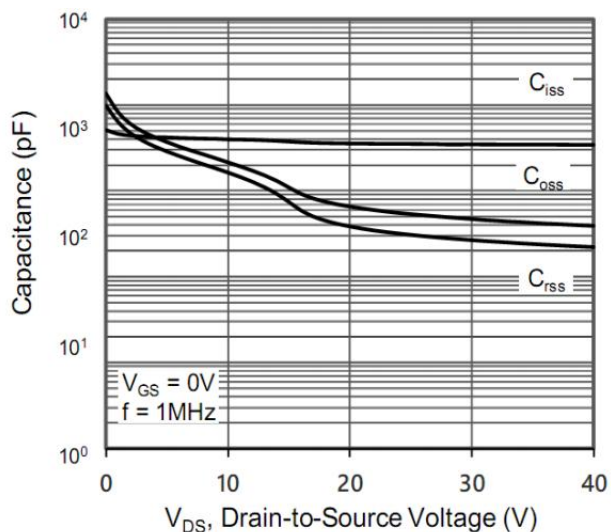


Figure 7. Capacitance

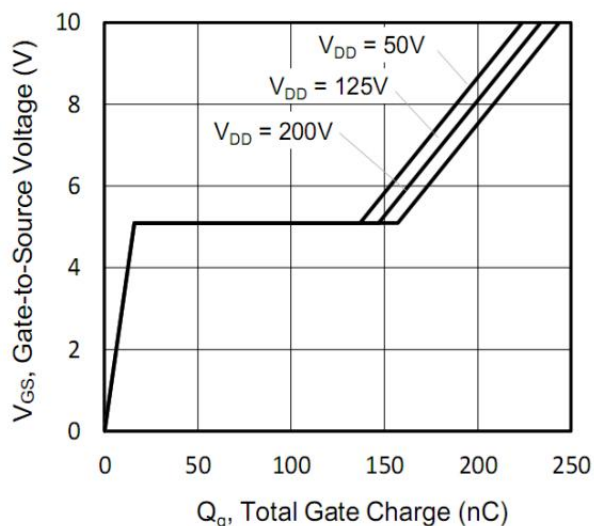


Figure 8. Gate Charge

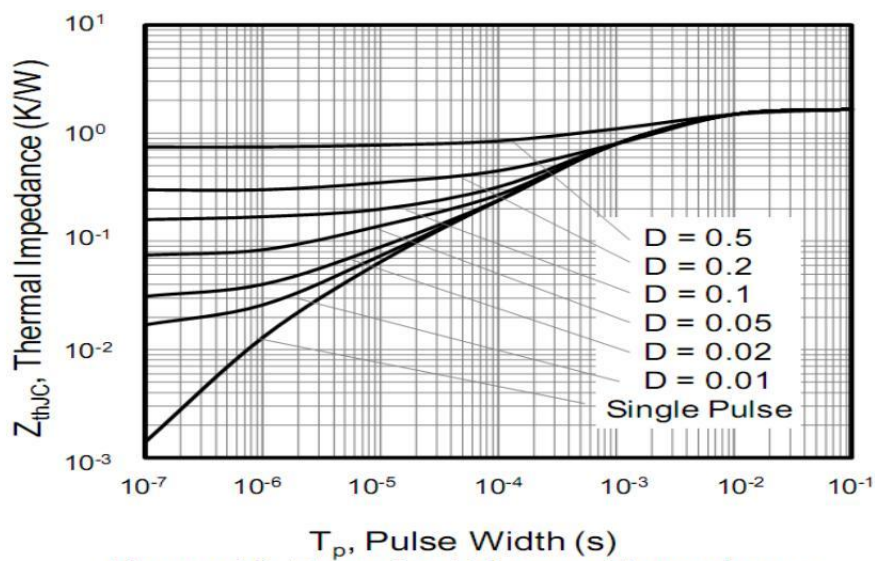
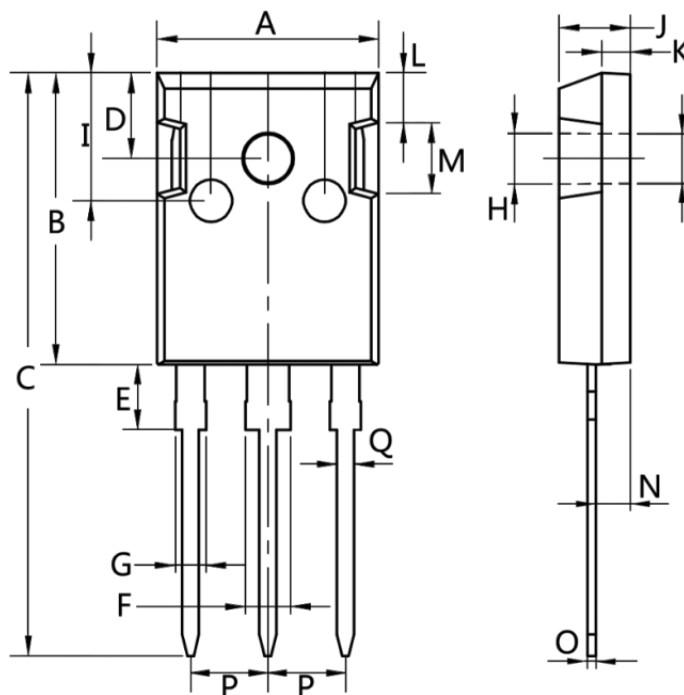


Figure 10. Transient Thermal Impedance

Package Mechanical Data-TO-247-3L



Dim.	Min.	Max.
A	15.0	16.0
B	20.0	21.0
C	41.0	42.0
D	5.0	6.0
E	4.0	5.0
F	2.5	3.5
G	1.75	2.5
H	3.0	3.5
I	8.0	10.0
J	4.9	5.1
K	1.9	2.1
L	3.5	4.0
M	4.75	5.25
N	2.0	3.0
O	0.55	0.75
P	Typ 5.08	
Q	1.2	1.3

Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
TAPING	TO-247-3L		330