

Description

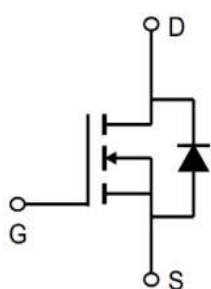
The SX5N20HY is silicon N-channel Enhanced VDMOSFETs, is obtained by the self-aligned planar Technology which reduce the conduction loss, improve switching performance and enhance the avalanche energy. The transistor can be used in various power switching circuit for system miniaturization and higher efficiency.

General Features

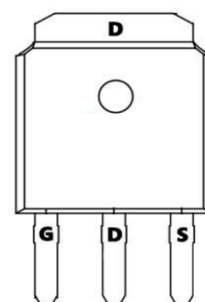
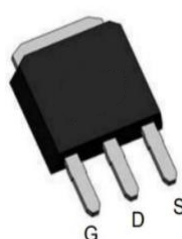
$V_{DS} = 200V, I_D = 5A$
 $R_{DS(ON)} < 600m\Omega @ V_{GS} = 10V$

Application

Uninterruptible Power Supply(UPS)
 Power Factor Correction (PFC)



TO-251S-3L



Absolute Maximum Ratings $T_C = 25^\circ C$, unless otherwise noted

Symbol	Parameter	Value	Unit
V_{DS}	Drain-Source Voltage ($V_{GS} = 0V$)	200	V
I_D	Continuous Drain Current	5	A
I_{DM}	Pulsed Drain Current	20	A
V_{GSS}	Gate-Source Voltage	± 20	V
E_{AS}	Single Pulse Avalanche Energy	45	mJ
I_{AR}	Avalanche Current	3	A
E_{AR}	Repetitive Avalanche Energy	3.2	mJ
P_D	Power Dissipation ($T_C = 25^\circ C$)	46	W
R_{thJC}	Thermal Resistance, Junction-to-Case	2.7	$^\circ C/W$
R_{thJA}	Thermal Resistance, Junction-to-Ambient	60	$^\circ C/W$
T_J, T_{stg}	Operating Junction and Storage Temperature Range	$-55 \sim +150$	$^\circ C$

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

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V(BR)DSS	Drain-Source Breakdown Voltage	V _{GS} = 0V, I _D = 250μA	200	221	--	V
IDSS	Zero Gate Voltage Drain Current	V _{DS} = 200V, V _{GS} = 0V, T _J = 25°C	--	--	5	μA
IDSS		V _{DS} = 160V, V _{GS} = 0V, T _J = 125°C	--	--	100	
IGSS	Gate-Source Leakage	V _{GS} = ±20V	--	--	±100	nA
VGS(th)	Gate-Source Threshold Voltage	V _{DS} = V _{GS} , I _D = 250μA	2.5	3.1	4.0	V
RDS(on)	Drain-Source On-Resistance (Note3)	V _{GS} = 10V, I _D = 2.5A	--	530	600	mΩ
Ciss	Input Capacitance	V _{GS} = 0V, V _{DS} = 25V, f = 1.0MHz	--	228	--	pF
Coss	Output Capacitance		--	48	--	
Crss	Reverse Transfer Capacitance		--	17	--	
Qg	Total Gate Charge	V _{DD} = 160V, I _D = 5.0A, V _{GS} = 10V	--	18	--	nC
Qgs	Gate-Source Charge		--	1.5	--	
Qgd	Gate-Drain Charge		--	9.5	--	
td(on)	Turn-on Delay Time	V _{DD} = 100V, I _D = 5.0A, R _G = 25 Ω	--	10	--	ns
tr	Turn-on Rise Time		--	19	--	
td(off)	Turn-off Delay Time		--	43	--	
tr	Turn-off Fall Time		--	32	--	
Is	Continuous Body Diode Current	T _C = 25 °C	--	--	5	A
ISM	Pulsed Diode Forward Current		--	--	20	
VSD	Body Diode Voltage	T _J = 25°C, I _{SD} = 5A, V _{GS} = 0V	--	--	1.4	V
trr	Reverse Recovery Time	V _{GS} = 0V, I _S = 5A, di _F /dt = 100A/μs	--	160	--	ns
Qrr	Reverse Recovery Charge		--	1.5	--	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 = 3A, VDD = 50V, RG = 25 Ω, Starting T_J = 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

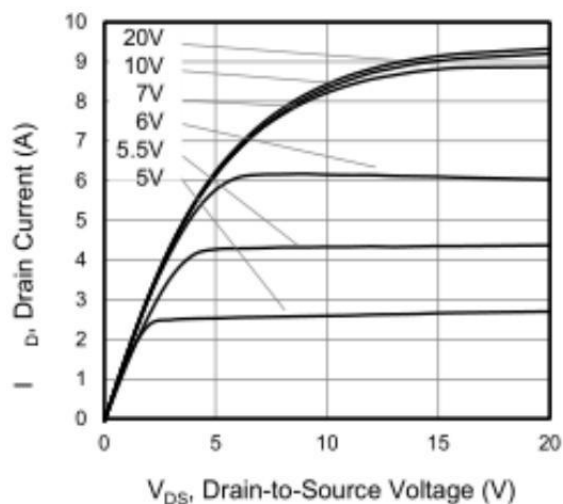


Figure 1. Output Characteristics ($T_J = 25^\circ\text{C}$)

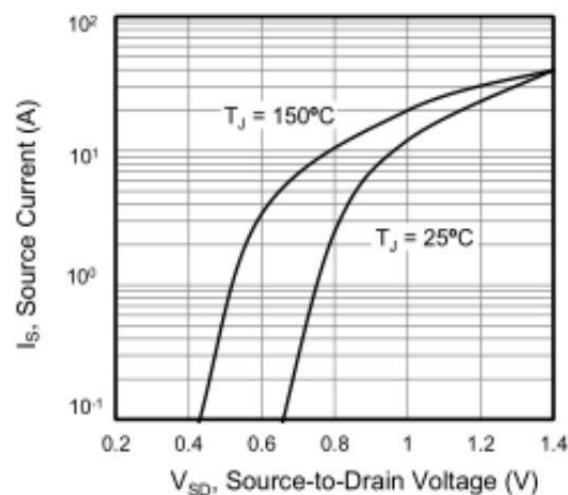


Figure 2. Body Diode Forward Voltage

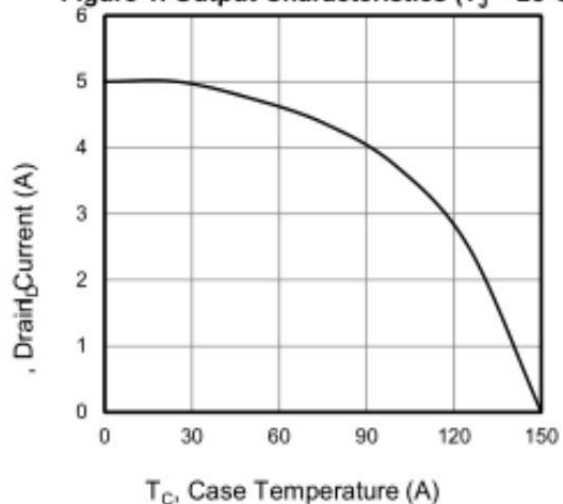


Figure 3. Drain Current vs. Temperature

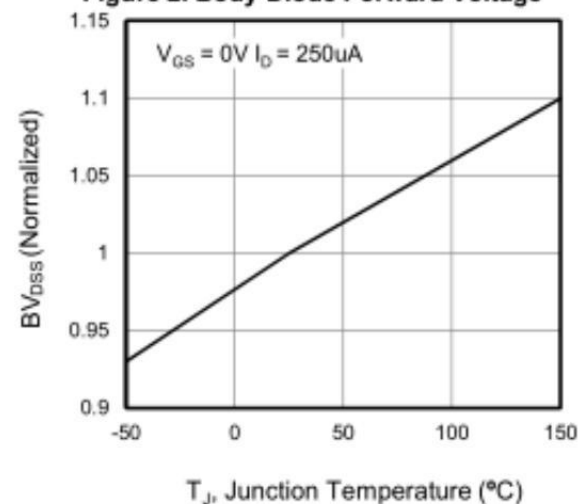


Figure 4. BV_{DS} Variation vs. Temperature

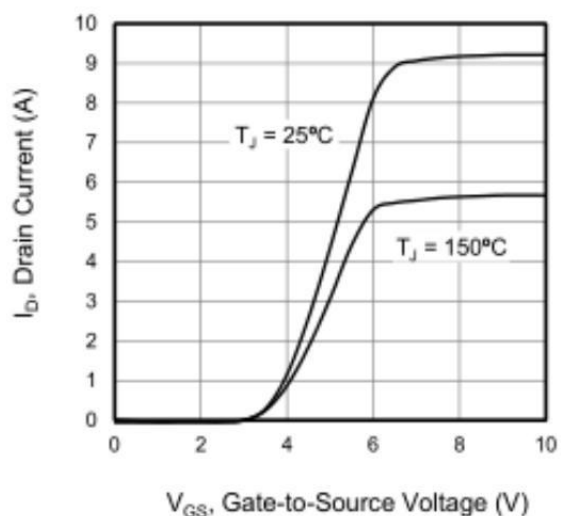


Figure 5. Transfer Characteristics

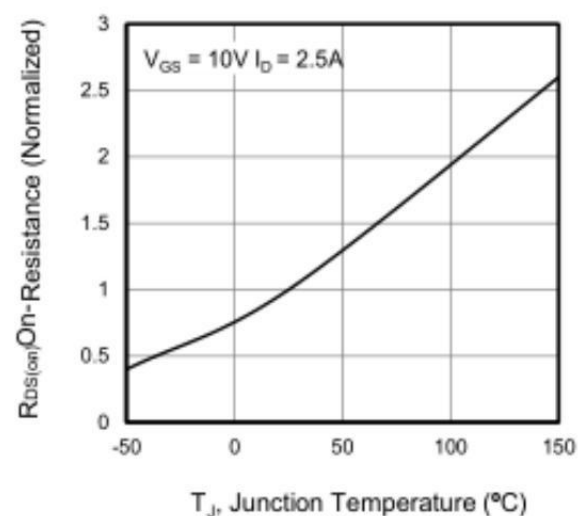


Figure 6. On-Resistance vs. Temperature

Typical Characteristics

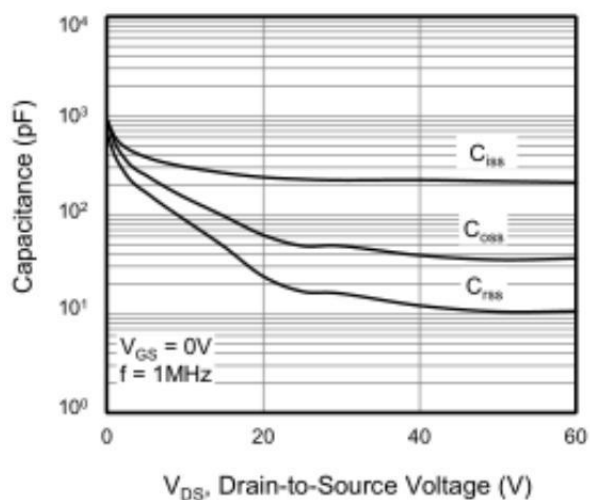


Figure 7. Capacitance

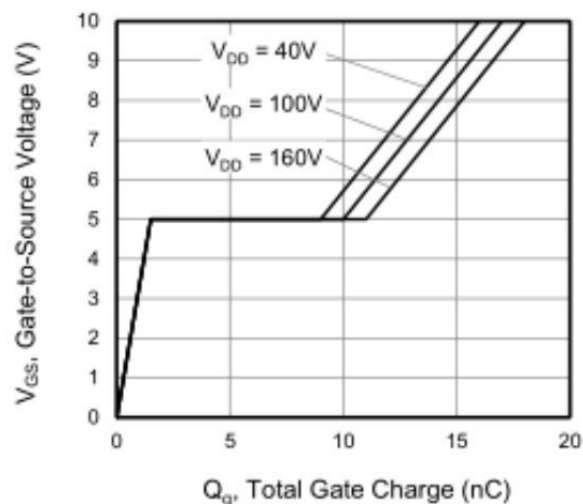


Figure 8. Gate Charge

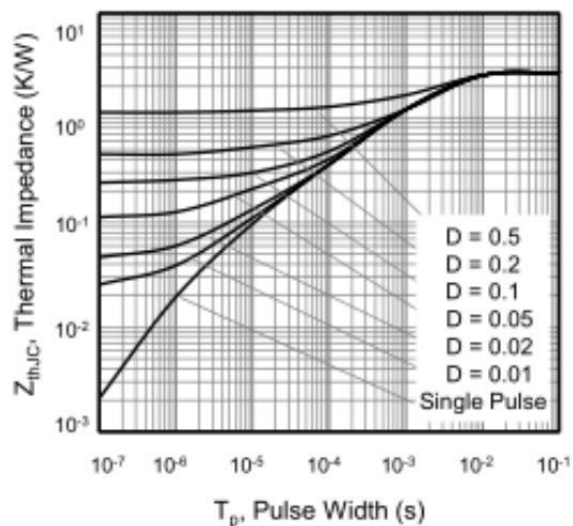
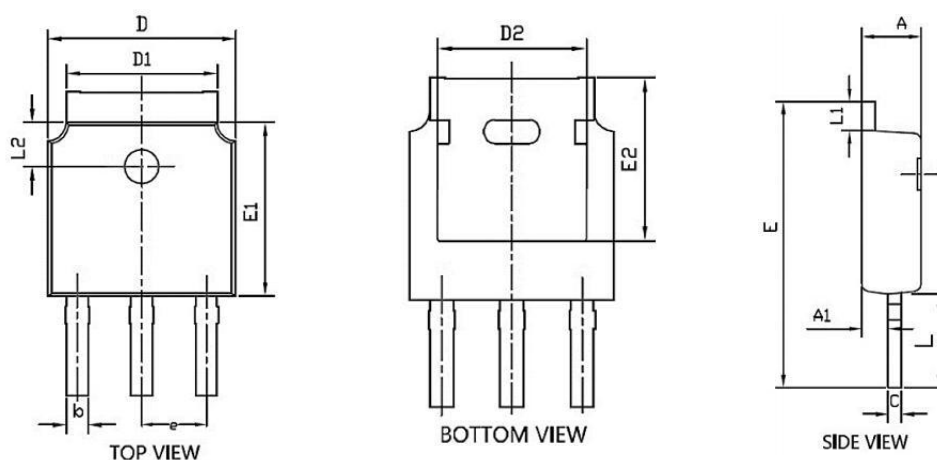


Figure 10. Transient Thermal Impedance

Package Mechanical Data-TO-251S-3L



Symbol	Common		
	mm		
	Mim	Nom	Max
A	2.2	2.3	2.4
A1	0.9	1.0	1.1
b	0.66	0.76	0.86
C	0.46	0.52	0.58
D	6.50	6.6	6.7
D1	5.15	5.3	5.45
D2	4.6	4.8	4.95
E	10.4	----	11.5
E1	6.0	6.1	6.2
E2	5.400REF		
e	2.286BSC		
L	3.5	4.0	4.3
L1	0.9	---	1.27
L2	1.4	---	1.9

Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
TAPING	TO-251S-3L		4000