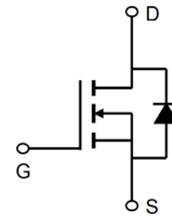
宇芯微
YSMICRO
东莞市宇芯电子有限公司
DONGGUAN YUSHIN ELECTRONICS CO.,LTD
电话：0769-89027776/81885205/81885153

AP90N25MP

250V N-Channel Enhancement Mode MOSFET



Description

The AP90N25MP 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

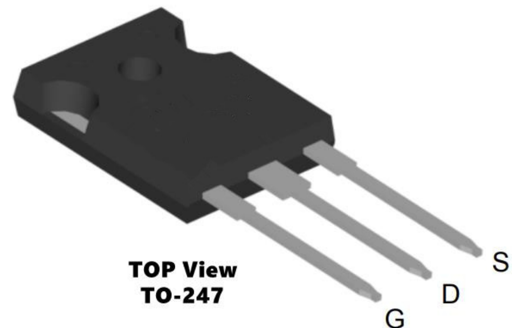
V_{DS} = 200V I_D =90A

$R_{DS(ON)}$ < 35mΩ @ V_{GS}=10V （**Type：30mΩ**）

Application

Uninterruptible Power Supply(UPS)

Power Factor Correction (PFC)



Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
AP90N25MP	TO-247-3L	AP90N25MP XXX YYYY	300

Absolute Maximum Ratings (T_C=25℃unless otherwise noted)

Symbol	Parameter	Value	Unit
VDSS	Drain-Source Voltage (V_{GS} = 0V)	250	V
ID	Continuous Drain Current	90	A
IDM	Pulsed Drain Current	360	A
VGSS	Gate-Source Voltage	±20	V
EAS	Single Pulse Avalanche Energy	2000	mJ
IAS	Avalanche Current	20	A
EAR	Repetitive Avalanche Energy	8	mJ
P_D	Power Dissipation (T_C = 25ºC)	140	W
TJ, Tstg	Operating Junction and Storage Temperature Range	-55~+150	ºC
RthJC	Thermal Resistance, Junction-to-Case	0.89	ºC/W
RthJA	Thermal Resistance, Junction-to-Ambient	40	ºC/W

Electrical Characteristics (T_J=25℃, unless otherwise noted)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Units
V(BR)DSS	Drain-SourceBreakdown Voltage	V_{GS} = 0V, I_D = 250μA	250	285	--	V
IDSS	Zero Gate Voltage Drain Current	V_{DS} = 250V, V_{GS} = 0V, T_J = 25ºC	--	--	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-SourceOn-Resistance (Note3)	V_{GS}=10V, I_D =40A	--	30	35	mΩ
Ciss	Input Capacitance	V_{GS} = 0V, V_{DS} = 25V, f= .0MHz	--	5784	--	pF
Coss	Output Capacitance		--	893	--	
Crss	Reverse Transfer Capacitance		--	561	--	
Q_g	Total Gate Charge	V_{DD} = 200V, I_D = 80A, V_{GS} = 10V	--	376	--	nC
Q_{gs}	Gate-Source Charge		--	33.8	--	
Q_{gd}	Gate-Drain Charge		--	177	--	
td(on)	Turn-on Delay Time	V_{DD} = 125V, I_D =80A, R_G = 25Ω	--	55	--	ns
t_r	Turn-on Rise Time		--	165	--	
td(off)	Turn-off Delay Time		--	1050	--	
t_f	Turn-off Fall Time		--	367	--	
IS	Continuous Body Diode Current	T_C = 25 ºC	--	--	90	A
ISM	Pulsed Diode Forward Current		--	--	320	A
VSD	Body Diode Voltage	T_J = 25ºC, I_{SD} = 22.5A, V_{GS} = 0V	--	--	1.4	V
trr	Reverse Recovery Time	V_{DD}=125V V_{GS} = 0V,I_S = 30A, dI_F/dt =100A /μs	--	360	--	ns
Q_{rr}	Reverse Recovery Charge		--	5.61	--	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 = 20A, VDD = 50V, RG = 25 Ω, Starting TJ = 25 ºC

3、The test condition is Pulse Test: Pulse width ≤ 300μs, Duty Cycle ≤ 1%

4、The power dissipation is limited by 150℃ 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

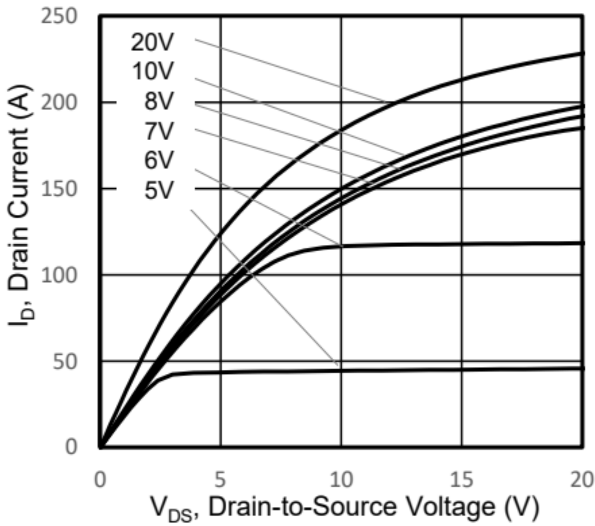


Figure 1. Output Characteristics

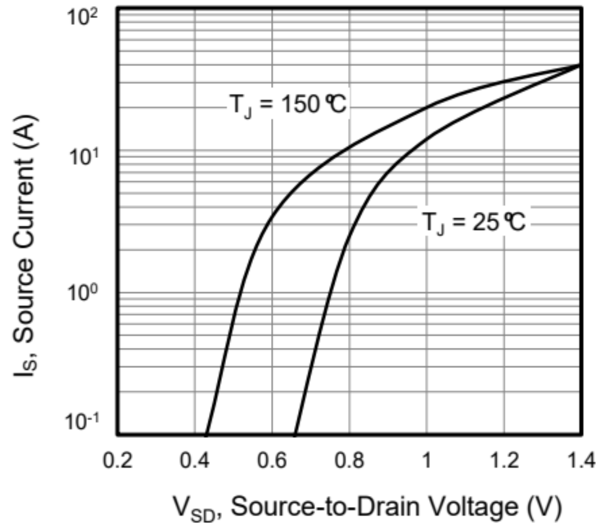


Figure 2. Body Diode Forward Voltage

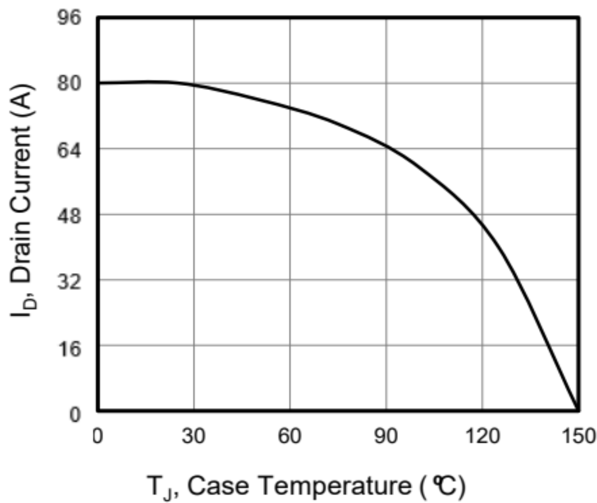


Figure3. Drain Current vs. Temperature

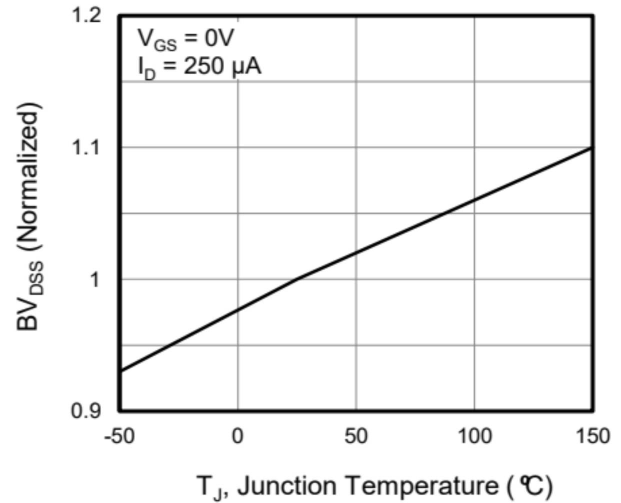


Figure4. BVDSS Variation vs. Temperature

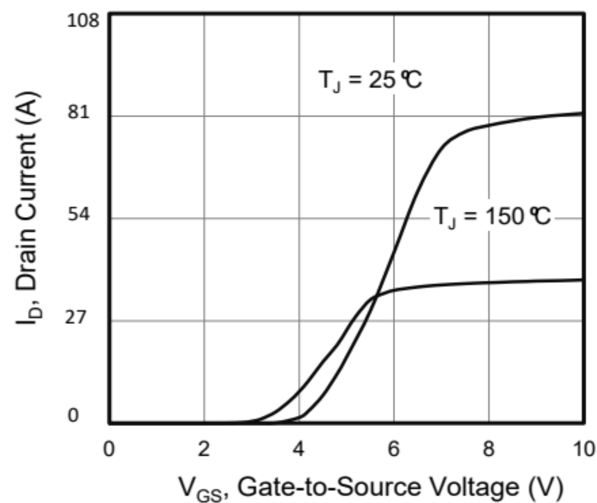


Figure 5. Transfer Characteristics

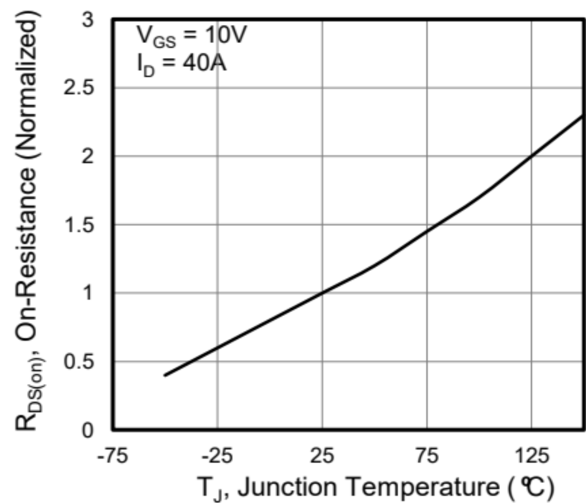


Figure 6. On-Resistance vs. Temperature

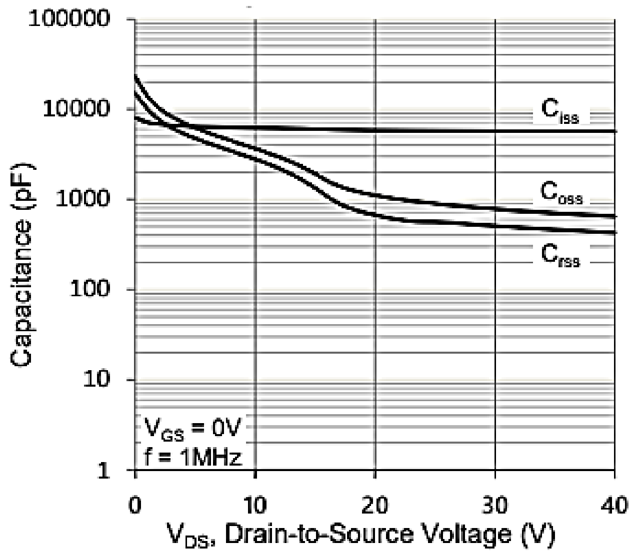


Figure 7. Capacitance

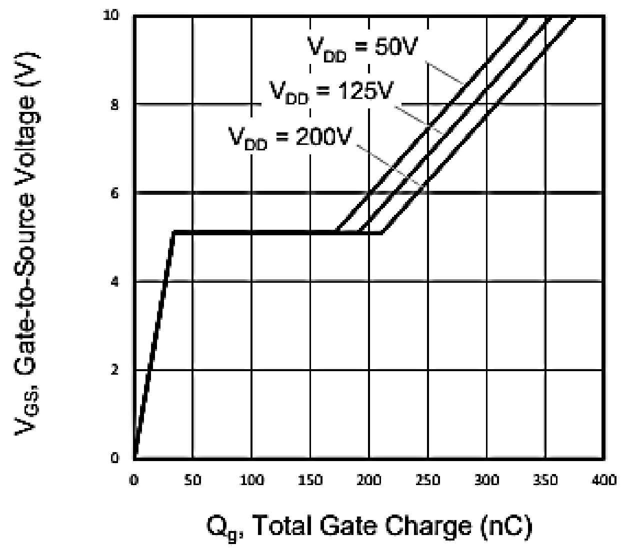


Figure 8. Gate Charge

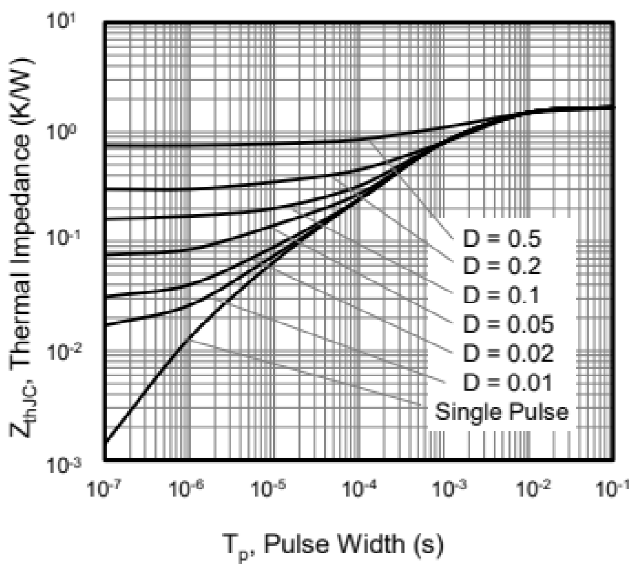
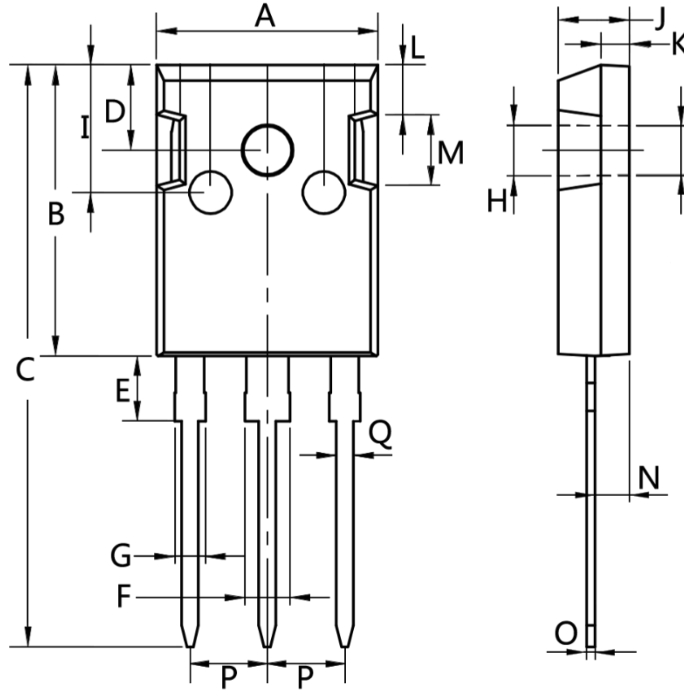


Figure 9. Transient Thermal Impedance

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