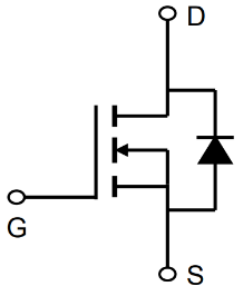
华半半导体
Huaban Semiconductor

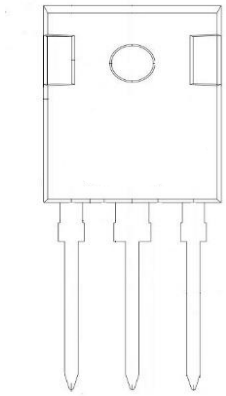
HN70N20MP

200V N-Channel Enhancement Mode MOSFET

Description

The HN70N20MP 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

VDS =200V,ID =70A

RDS(ON) <38mΩ@ VGS=10V

Application

Power amplifier

motor drive

Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
HN70N20MP	TO-247-3 Plus	HN70N20MP XXX YYYY	600
HN70N20MP	TO-247-3L	HN70N20MP XXX YYYY	600

Absolute Maximum Ratings T_C = 25ºC, unless otherwise noted

Symbol	Parameter	Rating	Units
VDSS	Drain-to-Source Voltage	200	V
ID	Continuous Drain Current TC = 25 °C	70	A
	Continuous Drain Current TC = 100 °C	42	A
IDMa1	Pulsed Drain Current TC = 25 °C	280	A
VGS	Gate-to-Source Voltage	±30	V
EAS a2	Single Pulse Avalanche Energy	2200	mJ
PD	Power Dissipation TC = 25 °C	367	W
	Derating Factor above 25°C	2.9	W/℃
TJ，Tstg	Operating Junction and Storage Temperature Range	-55 to +150	℃
TL	Maximum Temperature for Soldering	300	℃
RθJC	Junction-to-Case	0.34	℃/W
RθJA	Junction-to-Ambient	40	℃/W

HN70N20MP

200V N-Channel Enhancement Mode MOSFET

Electrical Characteristics at T_j=25 ℃ unless otherwise specified

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit s
V(BR)DSS	Drain-Source Breakdown Voltage	V_{GS} = 0V, I_D = 250μA	200	--	--	V
IDSS	Zero Gate Voltage Drain Current	V_{DS} = 200V, V_{GS} = 0V, T_J = 25ºC	--	--	1	μA
IGSS	Gate-Source Leakage	V_{GS} = ±20V， V_{DS} = 0V	--	--	±100	nA
VGS(th)	Gate-Source Threshold Voltage	V_{DS} = V_{GS}, I_D = 250μA	2	--	4	V
RDS(on)	Drain-Source On-Resistance (Note4)	V_{GS} = 10V, I_D = 25A	--	30	38	mΩ
C_{iss}	Input Capacitance	V_{GS} = 0V, V_{DS} =25V, f = 1.0MHz	--	3538	--	pF
C_{oss}	Output Capacitance		--	657	--	
C_{rss}	Reverse Transfer Capacitance		--	280	--	
Q_g	Total Gate Charge	V_{DD} = 160V, I_D = 50A, V_{GS} 0 to 10V	--	244	--	nC
Q_{gs}	Gate-Source Charge		--	16	--	
Q_{gd}	Gate-Drain Charge		--	144	--	
td(on)	Turn-on Delay Time	V_{DD} = 100V, I_D = 50A, VGS =10V.RG = 25Ω	--	53	--	ns
t_r	Turn-on Rise Time		--	65	--	
td(off)	Turn-off Delay Time		--	689	--	
t_f	Turn-off Fall Time		--	230	--	
ISD	Continuous Source Current	Integral PN-diode in MOSFET	--	--	50	A
ISM	Pulsed Source Current		--	--	200	
V_{SD}	Body Forward Voltage	I_S = 20A, V_{GS} = 0V	--	--	1.5	V
trr	Reverse Recovery Time	V_{GS} = 0V,I_F = 10A, di_F/dt =100A /μs	--	208	--	ns
Q_{rr}	Reverse Recovery Charge		--	2.04	--	μC

1、Repetitive Rating: Pulse width limited by maximum junction temperature

2、L = 1mH, V_{DD} = 30V, R_G = 25 Ω, Starting T_J = 25 ºC 3. Pulse Test: Pulse width ≤ 300μs, Duty Cycle ≤ 1%

HN70N20MP

200V N-Channel Enhancement Mode MOSFET

Electrical Characteristics Diagrams

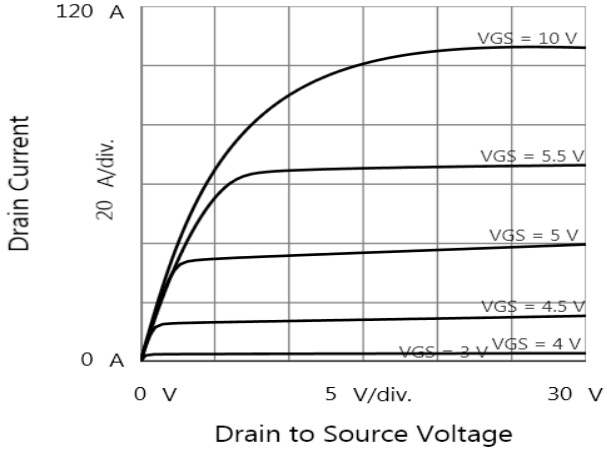


Figure 1. Output Characteristics (T_J = 25ºC)

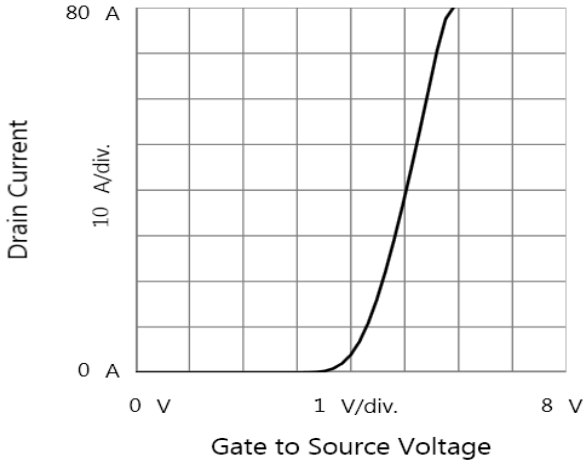
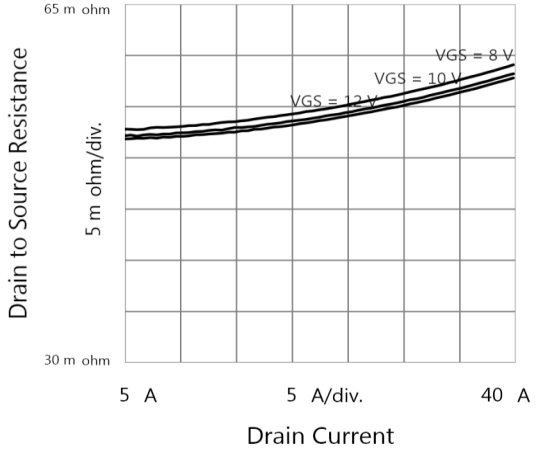
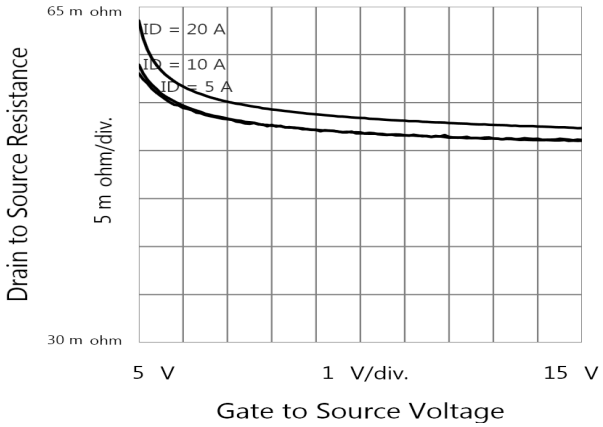


Figure 2. Transfer Characteristics



T^C, Case Temperature (A)

Figure 3. Drain to Source Resistance vs. Drain Current



T^C, Case Temperature (ºC)

Figure 4. Drain to Source Resistance vs. Gate to Source Voltage

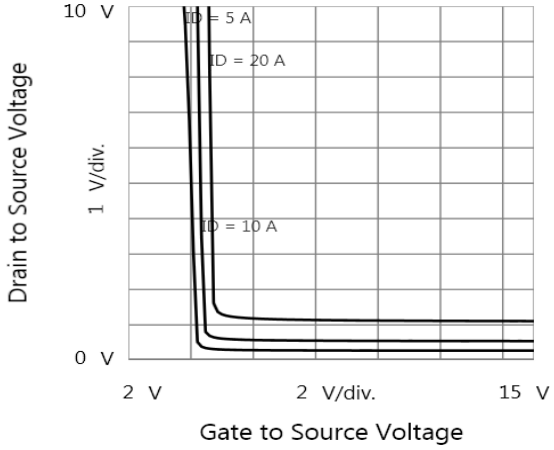


Figure 5. Drain to Source Voltage vs. Gate to Source Voltage

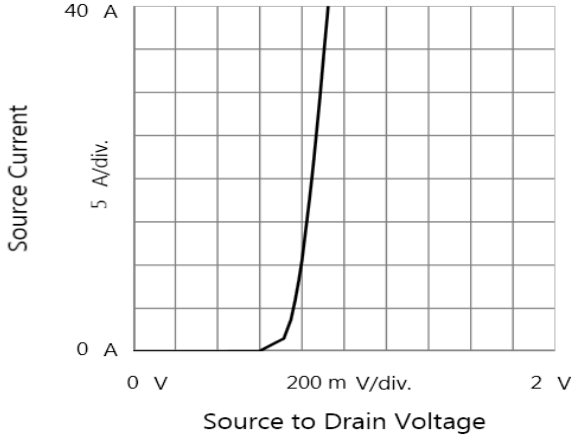


Figure 6. Body Diode Forward Characteristics

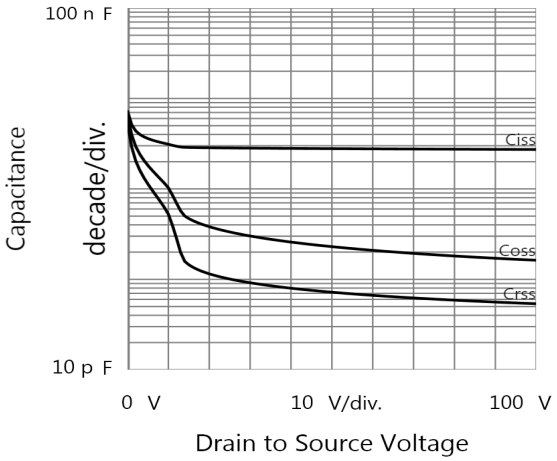


Figure 7. Capacitance

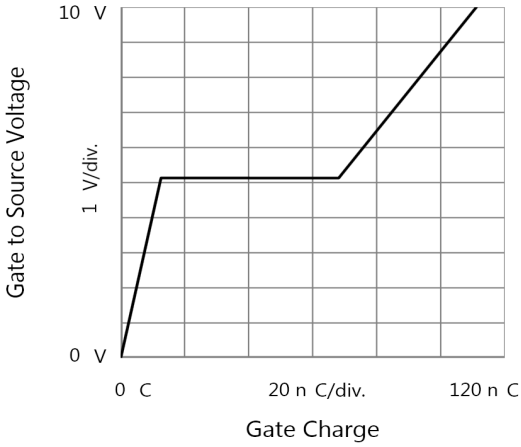
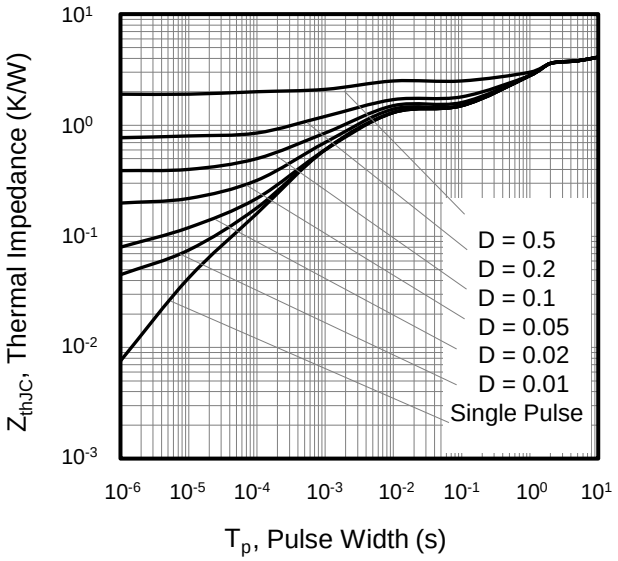
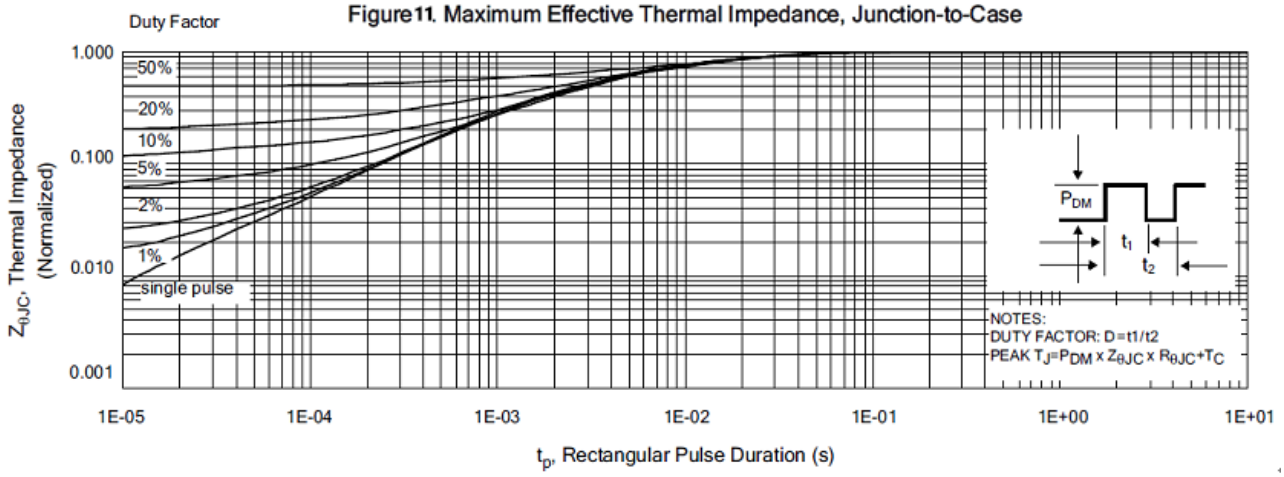


Figure 8. Gate Charge



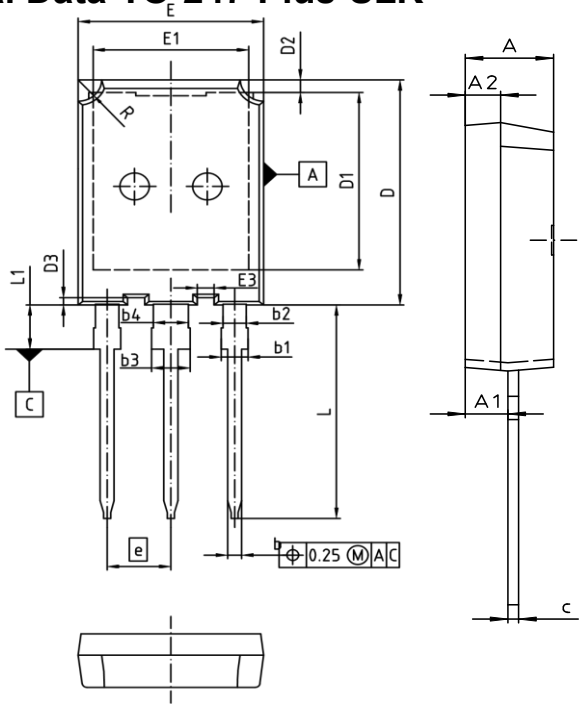


华半半导体
Huaban Semiconductor

HN70N20MP

200V N-Channel Enhancement Mode MOSFET

Package Mechanical Data-TO-247-Plus-SLK



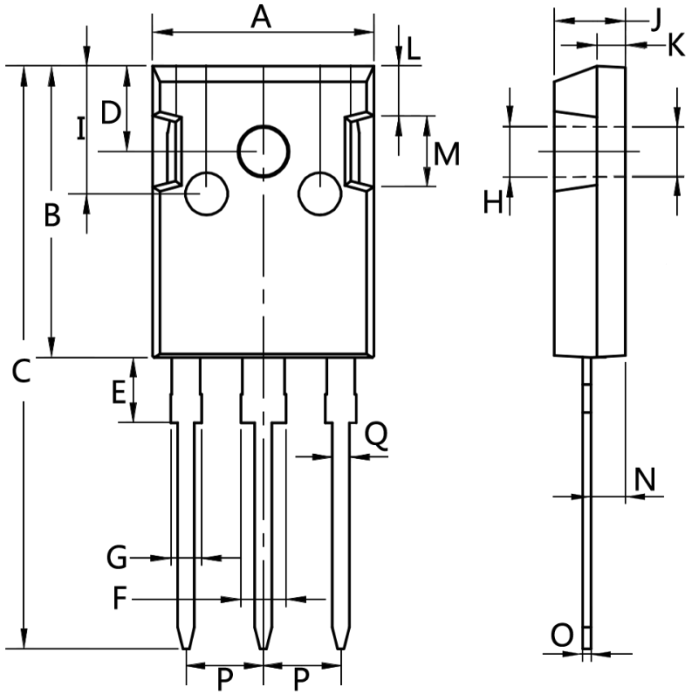
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	4.90	5.10	0.193	0.201
A1	2.31	2.51	0.091	0.099
A2	1.90	2.10	0.075	0.083
b	1.16	1.26	0.046	0.050
b1	1.96	2.25	0.077	0.089
b2	1.96	2.06	0.077	0.081
c	0.59	0.66	0.023	0.026
D	20.90	21.10	0.823	0.831
D1	16.25	16.85	0.640	0.663
D2	1.05	1.35	0.041	0.053
D3	0.58	0.78	0.023	0.031
E	15.70	15.90	0.618	0.626
E1	13.10	13.50	0.516	0.531
E3	1.35	1.55	0.053	0.061
e	5.44 (BSC)		0.214 (BSC)	
N	3		3	
L	19.80	20.10	0.780	0.791
L1	-	4.30	-	0.169
R	1.90	2.10	0.075	0.083

华半半导体
Huaban Semiconductor

HN70N20MP

200V N-Channel Enhancement Mode MOSFET

Package Mechanical Data-TO-247-LX



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