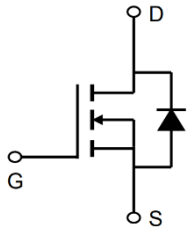
APM
A Power Microelectronics

# AP130N20MP

## 200V N-Channel Enhancement Mode MOSFET

### Description

The AP130N20P 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 =130A

RDS(ON) <23mΩ@ VGS=10V


### Application

Power amplifier

motor drive



### Package Marking and Ordering Information

| Product ID | Pack | Marking | Qty(PCS) |
|---|---|---|---|
| AP130N20P | TO-247-3 Plus | AP130N20P XXX YYYY | 600 |

### Absolute Maximum Ratings $T_C$ = 25°C, unless otherwise noted

| Parameter | | Symbol | Value | Unit |
|---|---|---|---|---|
| Drain-Source Voltage ($V_{GS}$ = 0V) | | $V_{DSS}$ | 200 | V |
| Continuous Drain Current | | $I_D$ | 130 | A |
| Pulsed Drain Current | (note1) | $I_{DM}$ | 360 | A |
| Gate-Source Voltage | | $V_{GSS}$ | ±30 | V |
| Single Pulse Avalanche Energy | (note2) | $E_{AS}$ | 2000 | mJ |
| Avalanche Current | (note1) | $I_{AR}$ | 30 | A |
| Repetitive Avalanche Energy | (note1) | $E_{AR}$ | 25 | mJ |
| Power Dissipation ($T_C$ = 25°C) | | $P_D$ | 450 | W |
| Operating Junction and Storage Temperature Range | | $T_J$, $T_{stg}$ | -55~+150 | °C |
| Thermal Resistance, Junction-to-Case | | $R_{thJC}$ | 0.28 | °C/W |
| Thermal Resistance, Junction-to-Ambient | | $R_{thJA}$ | 60 | |

## Electrical Characteristics at $T_j$=25 ℃ unless otherwise specified

| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| 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 | -- | -- | ±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, $I_D$ = 45A | -- | 18 | 23 | mΩ |
| $C_{iss}$ | Input Capacitance | $V_{GS}$ = 0V, $V_{DS}$ = 25V, f = 1.0MHz | -- | 6500 | -- | pF |
| $C_{oss}$ | Output Capacitance | | -- | 980 | -- | |
| $C_{rss}$ | Reverse Transfer Capacitance | | -- | 370 | -- | |
| $Q_g$ | Total Gate Charge | $V_{DD}$ = 160V, $I_D$ = 90A, $V_{GS}$ = 10V | -- | 200 | -- | nC |
| $Q_{gs}$ | Gate-Source Charge | | -- | 28 | -- | |
| $Q_{gd}$ | Gate-Drain Charge | | -- | 60 | -- | |
| td(on) | Turn-on Delay Time | $V_{DD}$ = 100V, $I_D$ = 90A, $R_G$ = 25 Ω | -- | 45 | -- | ns |
| $t_r$ | Turn-on Rise Time | | -- | 70 | -- | |
| td(off) | Turn-off Delay Time | | -- | 110 | -- | |
| $t_f$ | Turn-off Fall Time | | -- | 90 | -- | |
| IS | Continuous Body Diode Current | $T_C$ = 25 ºC | -- | -- | 90 | A |
| ISM | Pulsed Diode Forward Current | | -- | -- | 360 | |
| $V_{SD}$ | Body Diode Voltage | $T_J$ = 25ºC, $I_{SD}$ = 90A, $V_{GS}$ = 0V | -- | -- | 1.4 | V |
| trr | Reverse Recovery Time | $V_{GS}$ = 0V,$I_S$ = 90A, $di_F/dt$ =100A /μs | -- | 280 | -- | ns |
| $Q_{rr}$ | Reverse Recovery Charge | | -- | 2.4 | -- | μC |



**Notes**

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

2、$I_{AS}$ = 30A, $V_{DD}$ = 50V, $R_G$ = 25 Ω, Starting $T_J$ = 25 ºC

3、Pulse Test: Pulse