HSP18P20

P-Ch 100V Fast Switching MOSFETs

Description

The HSP18P20 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 systemminiaturization and higher efficiency.

- 100% EAS Guaranteed
- Green Device Available
- Uninterruptible Power Supply(UPS)
- Power Factor Correction(PFC)

Product Summary

V_{DS}	-200	V
$R_{DS(ON),max}$	330	mΩ
I_D	-18	A

TO220 Pin Configuration
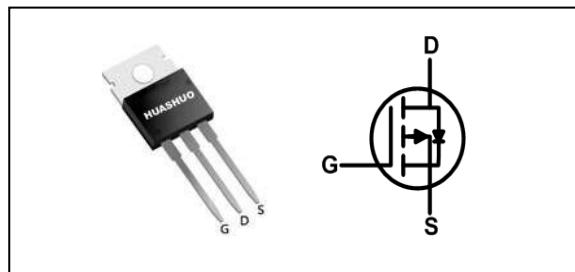
Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	-200	V
V_{GS}	Gate-Source Voltage	±20	V
I_D@T_C=25℃	Continuous Drain Current, V_{GS} @ -10V[1]	-18	A
I_D@T_C=100℃	Continuous Drain Current, V_{GS} @ -10V[1]	-12	A
I_{DM}	Pulsed Drain Current[2]	-65	A
EAS	Single Pulse Avalanche Energy[3]	1200	mJ
I_{AS}	Avalanche Current	-15	A
P_D@T_C=25℃	Total Power Dissipation[4]	310	W
T_{STG}	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	-55 to 150	℃

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{θJA}$	Thermal Resistance Junction-Ambient [1]	---	62	℃/W
$R_{θJC}$	Thermal Resistance Junction-Case[1]	---	1.0	℃/W

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Electrical Characteristics (T$_J$=25 ℃, unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV$_{DSS}$	Drain-Source Breakdown Voltage	V$_{GS}$=0V , I$_D$=-250uA	-200	---	---	V
R$_{DS(ON)}$	Static Drain-Source On-Resistance[2]	V$_{GS}$=-10V , I$_D$=-5.5A	---	265	330	mΩ
V$_{GS(th)}$	Gate Threshold Voltage	V$_{GS}$=V$_{DS}$, I$_D$ =-250uA	-2.0	-3.5	-5.0	V
I$_{DSS}$	Drain-Source Leakage Current	V$_{DS}$=-200V , V$_{GS}$=0V , T$_J$=25℃	---	---	-100	uA
I$_{GSS}$	Gate-Source Leakage Current	V$_{GS}$=±20V , V$_{DS}$=0V	---	---	±100	nA
gfs	Forward Transconductance	V$_{DS}$=-50V , I$_D$=-10A	4.2	---	---	S
Q$_g$	Total Gate Charge	V$_{DS}$=-160V , V$_{GS}$=-10V , I$_D$=-18A	---	80	---	nC
Q$_{gs}$	Gate-Source Charge		---	11	---	
Q$_{gd}$	Gate-Drain Charge		---	49	---	
T$_{d(on)}$	Turn-On Delay Time	V$_{DD}$=-100V , V$_{GS}$=-10V , R$_G$=9.1Ω, I$_D$=-18A	---	29	---	ns
T$_r$	Rise Time		---	84	---	
T$_{d(off)}$	Turn-Off Delay Time		---	73	---	
T$_f$	Fall Time		---	77	---	
C$_{iss}$	Input Capacitance	V$_{DS}$=-25V , V$_{GS}$=0V , f=1MHz	---	2416	---	pF
C$_{oss}$	Output Capacitance		---	7400	---	
C$_{rss}$	Reverse Transfer Capacitance		---	185	---	

Diode Characteristics

| Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
V$_{SD}$	Diode Forward Voltage[2]	V$_{GS}$=0V , I$_S$=-18A , T$_J$=25℃	---	---	-5	V
t$_{rr}$	Reverse Recovery Time	I$_F$=-18A , di/dt=-100A/μs , T$_J$=25℃	---	500	---	nS
Q$_{rr}$	Reverse Recovery Charge		---	6.1	---	nC

Note :

1.The data tested by surface mounted on a 1 inch[2] FR-4 board with 2OZ copper.

2.The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%

3.The EAS data shows Max. rating . The test condition is V$_{DD}$=-50V,V$_{GS}$=-10V, R$_G$=25Ω,I$_{AS}$=-18A

4.The power dissipation is limited by 150℃ junction temperature

5.The data is theoretically the same as I$_D$ and I$_{DM}$, in real applications , should be limited by total power dissipation.

Package Information

TO-220FB-3L
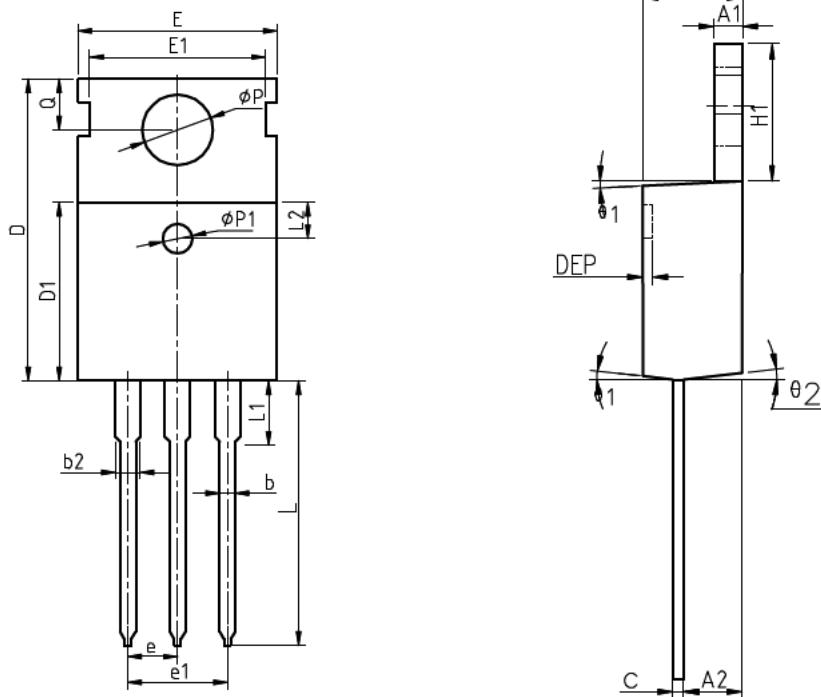
COMMON DIMENSIONS
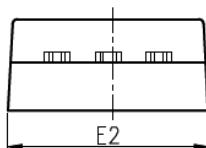
SYMBOL	MIN	NOM	MAX	MIN	NOM	MAX
A	4.40	4.57	4.70	0.173	0.180	0.185
A1	1.27	1.30	1.33	0.050	0.051	0.052
A2	2.35	2.40	2.50	0.093	0.094	0.098
b	0.77	0.80	0.90	0.030	0.031	0.035
b2	1.17	1.27	1.36	0.046	0.050	0.054
c	0.48	0.50	0.56	0.019	0.020	0.022
D	15.40	15.60	15.80	0.606	0.614	0.622
D1	9.00	9.10	9.20	0.354	0.358	0.362
DEP	0.05	0.10	0.20	0.002	0.004	0.008
E	9.80	10.00	10.20	0.386	0.394	0.402
E1	–	8.70	–	–	0.343	–
E2	9.80	10.00	10.20	0.386	0.394	0.402
e		2.54	BSC		0.100	BSC
e1		5.08	BSC		0.200	BSC
H1	6.40	6.50	6.60	0.252	0.256	0.260
L	12.75	13.50	13.65	0.502	0.531	0.537
L1	–	3.10	3.30	–	0.122	0.130
L2		2.50	REF		0.098	REF
P	3.50	3.60	3.63	0.138	0.142	0.143
P1	3.50	3.60	3.63	0.138	0.142	0.143
Q	2.73	2.80	2.87	0.107	0.110	0.113
θ1	5°	7°	9°	5°	7°	9°
θ2	1°	3°	5°	1°	3°	5°
θ3	1°	3°	5°	1°	3°	5°