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SemiHow
SEMICONDUCTOR TOTAL SOLUTION®

HFP75N75

75V N-Channel MOSFET

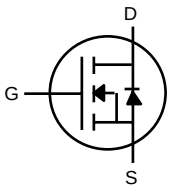
BV_{DSS} = 75 V

$R_{DS(on)\ typ}$ = 9 mΩ

I_D = 80 A

TO-220

1.Gate 2. Drain 3. Source



FEATURES

- ❑ Originative New Design
- ❑ Superior Avalanche Rugged Technology
- ❑ Robust Gate Oxide Technology
- ❑ Very Low Intrinsic Capacitances
- ❑ Excellent Switching Characteristics
- ❑ Unrivalled Gate Charge : 100 nC (Typ.)
- ❑ Extended Safe Operating Area
- ❑ Lower $R_{DS(ON)}$: 0.009 Ω (Typ.) @V_{GS}=10V

Absolute Maximum Ratings

T_C=25℃ unless otherwise specified

Symbol	Parameter		Value	Units
V_{DSS}	Drain-Source Voltage		75	V
I_D	Drain Current – Continuous (T_C = 25℃)		80	A
	Drain Current – Continuous (T_C = 100℃)		70	A
I_{DM}	Drain Current – Pulsed	(Note 1)	320	A
V_{GS}	Gate-Source Voltage		±25	V
E_{AS}	Single Pulsed Avalanche Energy	(Note 2)	700	mJ
I_{AR}	Avalanche Current	(Note 1)	80	A
E_{AR}	Repetitive Avalanche Energy	(Note 1)	12	mJ
dv/dt	Peak Diode Recovery dv/dt	(Note 3)	7.0	V/ns
P_D	Power Dissipation (T_C = 25℃)		300	W
	– Derate above 25℃		2.0	W/℃
T_J, T_{STG}	Operating and Storage Temperature Range		-55 to +175	℃
T_L	Maximum lead temperature for soldering purposes, 1/8" from case for 5 seconds		300	℃

Thermal Resistance Characteristics

Symbol	Parameter	Typ.	Max.	Units
$R_{\theta JC}$	Junction-to-Case	--	0.5	℃/W
$R_{\theta CS}$	Case-to-Sink	0.5	--	
$R_{\theta JA}$	Junction-to-Ambient	--	62.5	

Electrical Characteristics T_C=25 °C unless otherwise specified

Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
On Characteristics						
V_{GS}	Gate Threshold Voltage	V_{DS} = V_{GS}, I_D = 250 μA	2.0	--	4.0	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS} = 10 V, I_D = 25 A	--	0.009	0.011	Ω
Off Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS} = 0 V, I_D = 250 μA	75	--	--	V
ΔBV_{DSS} /ΔT_J	Breakdown Voltage Temperature Coefficient	I_D = 250 μA, Referenced to25℃	--	0.06	--	V/℃
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = 75 V, V_{GS} = 0 V	--	--	1	μA
		V_{DS} = 60 V, T_C = 150℃	--	--	10	μA
I_{GSSF}	Gate-Body Leakage Current, Forward	V_{GS} = 25 V, V_{DS} = 0 V	--	--	100	nA
I_{GSSR}	Gate-Body Leakage Current, Reverse	V_{GS} = -25 V, V_{DS} = 0 V	--	--	-100	nA
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS} = 25 V, V_{GS} = 0 V, f = 1.0 MHz	--	3500	2100	pF
C_{oss}	Output Capacitance		--	750	780	pF
C_{rss}	Reverse Transfer Capacitance		--	190	120	pF
Switching Characteristics						
$t_{d(on)}$	Turn-On Time	V_{DS} = 37.5 V, I_D = 56 A, R_G = 25 Ω (Note 4,5)	--	25	50	ns
t_r	Turn-On Rise Time		--	35	240	ns
$t_{d(off)}$	Turn-Off Delay Time		--	80	160	ns
t_f	Turn-Off Fall Time		--	80	170	ns
Q_g	Total Gate Charge	V_{DS} = 60 V, I_D = 80 A, V_{GS} = 10 V (Note 4,5)	--	100	130	nC
Q_{gs}	Gate-Source Charge		--	20	--	nC
Q_{gd}	Gate-Drain Charge		--	45	--	nC
Source-Drain Diode Maximum Ratings and Characteristics						
I_S	Continuous Source-Drain Diode Forward Current		--	--	80	A
I_{SM}	Pulsed Source-Drain Diode Forward Current		--	--	320	
V_{SD}	Source-Drain Diode Forward Voltage	I_S = 80 A, V_{GS} = 0 V	--	--	1.5	V
trr	Reverse Recovery Time	I_S = 80 A, V_{GS} = 0 V di_F/dt = 100 A/μs (Note 4)	--	120	--	ns
Qrr	Reverse Recovery Charge		--	550	--	μC

Notes ;

1. Repetitive Rating : Pulse width limited by maximum junction temperature
2. I_{AS}=80A, V_{DD}=37.5V, R_G=25Ω, Starting T_J=25°C
3. I_{SD}≤80A, di/dt≤300A/μs, V_{DD}≤BV_{DSS}, Starting T_J=25 °C
4. Pulse Test : Pulse Width ≤ 300μs, Duty Cycle ≤ 2%
5. Essentially Independent of Operating Temperature