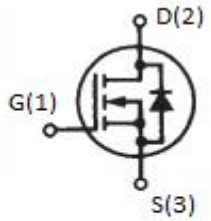
ISF1041

eq FDP12N50NZ

N-Channel MOSFET



pin 1.Gate
2.Drain
3.Source
TO-220 package

FEATURES

·Drain Current -I_D= 11.5A@ T_C=25℃

·Drain Source Voltage -V_{DSS}= 500V(Min)

·Static Drain-Source On-Resistance

-$R_{DS(on)}$ = 0.52Ω(Max)@V_{GS}= 10V

APPLICATIONS

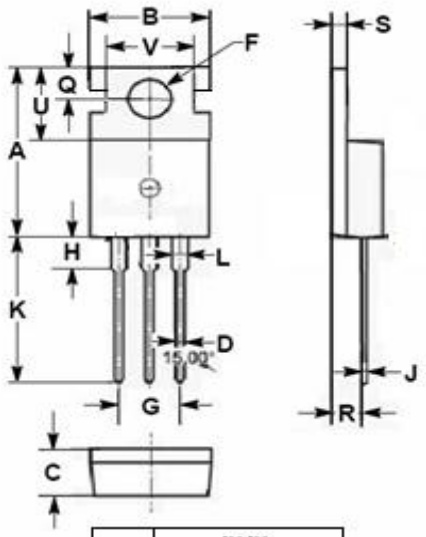
- Motor Drive
- DC-DC converter
- Power Switch And Solenoid Drive

Absolute Maximum Ratings(TC=25℃)

SYMBOL	PARAMETER	VALUE	UNIT
V_{DSS}	Drain-Source Voltage	500	V
V_{GS}	Gate-Source Voltage-Continuous	±25	V
I_D	Drain Current-Continuous	11.5	A
I_{DM}	Drain Current-Single Pluse	46	A
P_D	Total Dissipation @T_C=25℃	170	W
T_J	Max. Operating Junction Temperature	-55~150	℃
T_{stg}	Storage Temperature	-55~150	℃

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	MAX	UNIT
$R_{th\ j\text{-}c}$	Thermal Resistance, Junction to Case	0.73	℃/W



DIM	mm MIN	MAX
A	15.50	15.90
B	9.80	10.20
C	4.20	4.50
D	0.70	0.90
F	3.40	3.70
G	4.98	5.18
H	2.68	2.90
J	0.44	0.60
K	12.80	13.40
L	1.20	1.45
Q	2.70	2.90
R	2.30	2.70
S	1.29	1.35
U	6.45	6.65
V	8.66	8.86

N-Channel MOSFET

ELECTRICAL CHARACTERISTICS (T_C=25℃)

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNIT
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS}= 0; I_D= 0.25mA	500	--	--	V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}= V_{GS}; I_D= 0.25mA	3.0	--	5.0	V
$R_{DS(on)}$	Drain-Source On-Resistance	V_{GS}=10V; I_D= 5.75A	-	--	0.52	Ω
I_{GSS}	Gate-Body Leakage Current	V_{GS}= ±25V;V_{DS}= 0	-	--	±10	uA
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=500V; V_{GS}= 0	-	--	1	uA
C_{iss}	Input Capacitance	V_{GS} = 0V, V_{DS} = 25V, f = 1.0MHz	-	1841	-	pF
C_{oss}	Output Capacitance		-	159	-	
C_{rss}	Reverse Transfer Capacitance		-	10	-	
Q_g	Total Gate Charge	V_{DD} = 400V, I_D = 11.5A, V_{GS} = 10V	-	43	-	nC
Q_{gs}	Gate-Source Charge		-	6.8	-	
Q_{gd}	Gate-Drain Charge		-	18.3	-	
$t_{d(on)}$	Turn-on Delay Time	V_{DD} = 250V, I_D = 11.5A, R_G = 25Ω, V_{GS} = 10V	-	23	-	ns
t_r	Turn-on Rise Time		-	55	-	
$t_{d(off)}$	Turn-off Delay Time		-	60	-	
t_f	Turn-off Fall Time		-	47	-	
Drain - Source Body Diode Characteristics						
I_{SD}	Continuous Source Current	T_c = 25 ºC	-	-	11.5	A
I_{SM}	Pulsed Source Current		-	-	46	
V_{SD}	Diode Forward Voltage	I_{SD}= 11.5A; V_{GS}= 0V	-	-	1.4	V
t_{rr}	Reverse Recovery Time	V_{GS} = 0V,I_F = I_S, di_F/dt = 100A /μs	-	421	-	ns
Q_{rr}	Reverse Recovery Charge		-	4.3	-	uC

N-Channel MOSFET

TYPICAL CHARACTERISTICS T_J = 25ºC, unless otherwise noted

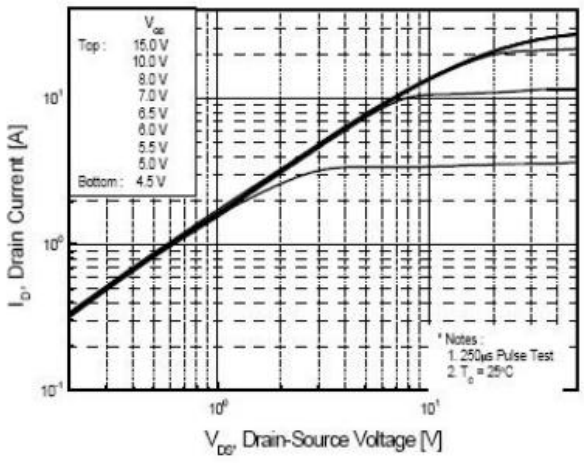


Fig1 Typical Output Characteristics, Tc=25℃

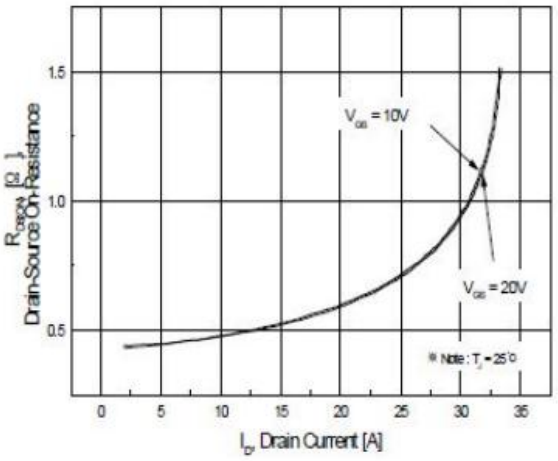


Fig2 On-Resistance Vs.Drain Current and Gate Voltage

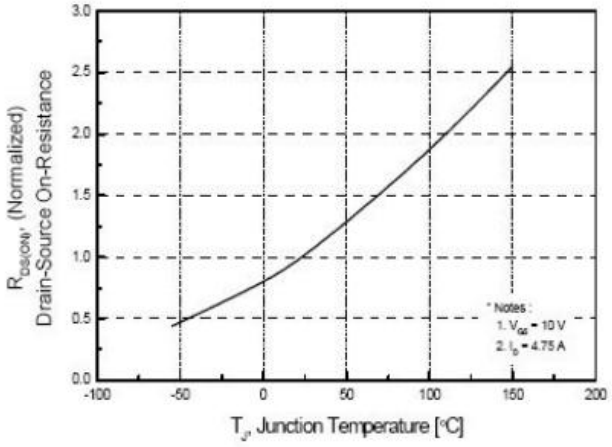


Fig3 Normalized On-Resistance Vs.Temperature

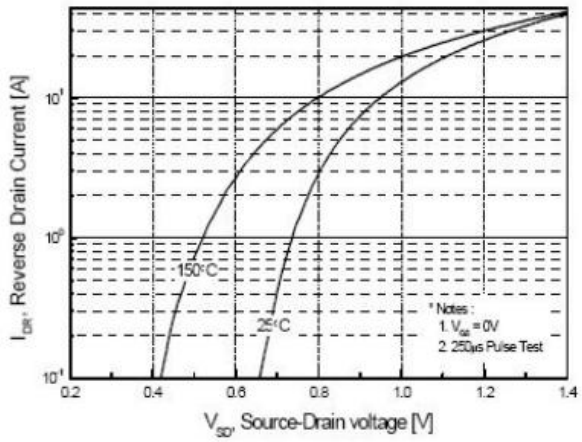


Fig4 Typical Source-Drain Diode Forward Voltage

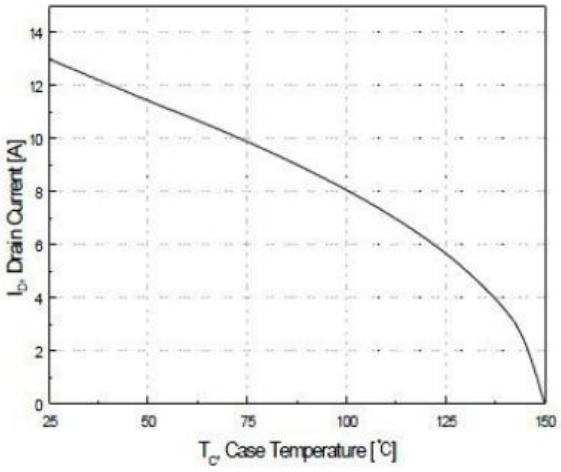


Fig5 Maximum Drain Current Vs.Case Temperature

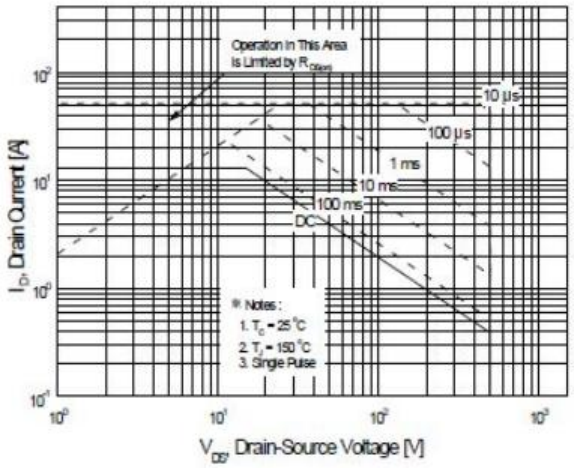


Fig6-1 Maximum Safe Operating Area

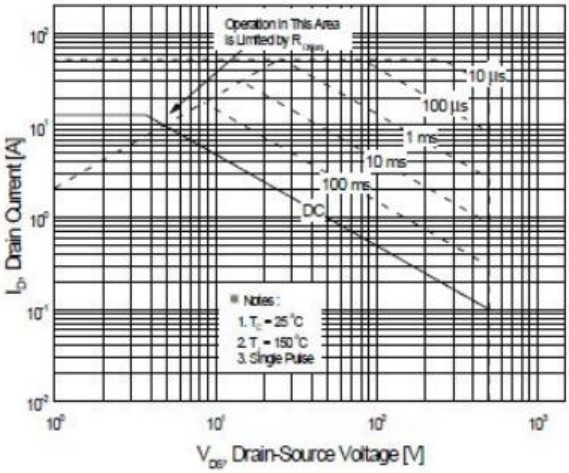


Fig6-2 Maximum Safe Operating Area

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