FXN25N50F Series

Rev.A

General Description

The FXN25N50F uses advanced Silicon's MOSFET Technology, which provides high performance in on-state resistance, fast switching performance, and excellent quality.

These devices can also be utilized in industrial applications such as Low Power Drives SMPS, DC/DC converter, and general purpose applications.

Features

V_{DS} = 500V

ID =25A @V_{GS} = 10V

Very low on-resistance

$R_{DS(ON)}$ < 0.26Ω @V_{GS} = 10V

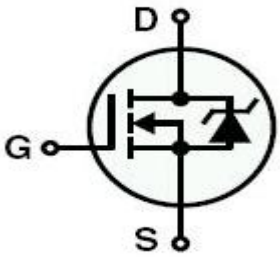
100% UIL Tested

100% Rg Tested

150 ^{O}C operating temperature

TO-220F Top View

N-channel



Schematic Diagram

Absolute Maximum Ratings (TJ =25C)

Characteristics		Symbol	Rating	Unit
Drain-Source Voltage		VDSS	500	V
Gate-Source Voltage		VGSS	±30	V
Continuous Drain Current (1)	Tc=25$_o$c(silicon limited)	ID	25	A
	Tc=25$_o$C(package limited)		20	
	Tc=100$_o$C(silicon limited)		13.7	
Pulsed Drain Current (2)		IDM	100	
Power Dissipation	Tc=25$_o$C	PD	98	W
	Tc=100$_o$C		95	
Single Pulse Avalanche Energy (3)		EAS	2620	mJ
Junction and Storage Temperature Range		TJ, Tstg	-55~175	$_o$C

Thermal Characteristics

Characteristics	Symbol	Rating	Unit
Thermal Resistance, Junction-to-Ambient (1)	RθJA	100	^{O}C/W
Thermal Resistance, Junction-to-Case	RθJC	1.16	

Electrical Characteristics (T_J =25C)

Characteristics	Symbol	Test Condition	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BVDSS	ID = 250μA, VGS = 0V	500	540	-	V
Gate Threshold Voltage	VGS(th)	VDS = VGS, ID = 250μA	2	3	4	
Drain Cut-Off Current	IDSS	VDS = 500V, VGS = 0V	-	-	1	μA
Gate Leakage Current	IGSS	VGS = ±30V, VDS = 0V	-	-	±0.1	
Drain-Source ON Resistance	RDS(ON	VGS = 10V, ID = 14A	-	0.20	0.26	Ω
Forward Transconductance	gfs	VDS = 25V, ID = 14A	-	30	-	S
Dynamic Characteristics						
Total Gate Charge	Qg	VDS = 400V, ID = 25A, VGS = 10V	-	80		nC
Gate-Source Charge	Qgs		-	22	-	
Gate-Drain Charge	Qgd		-	19.2	-	
Input Capacitance	Ciss	VDS = 300V, VGS = 0V, f = 1.0MHz	-	4.2	-	nF
Reverse Transfer Capacitance	Crss		-	0.18	-	
Output Capacitance	Coss		-	1.42	-	
Turn-On Delay Time	td(on)	VGS = 10V, VDS = 300V, ID = 25A , RG = 25Ω	-	25	-	ns
Rise Time	tr		-	38	-	
Turn-Off Delay Time	td(off)		-	96	-	
Fall Time	tf		-	35	-	
Gate Resistance	Rg	f=1 MHz	-	-	-	Ω
Drain-Source Body Diode Characteristics						
Source-Drain Diode Forward Voltag	VSD	IS = 25A, VGS = 0V	-	1.0	1.5	V
Body Diode Reverse Recovery Time	trr	IF = 25A, dI/dt = 100A/μs	-	538		ns
Body Diode Reverse Recovery Charg	Qrr		-	4.2		μc

Note

1. Surface mounted FR-4 board by JEDEC (jesd51-7)
2. Pulse width limited by T_{Jmax}
3. E_{AS} is tested at starting Tj = 25℃, L = 10.5mH, I_{AS} = 25A, V_{GS} = 10V VDD=50V

Typical Characteristics （Tj=25C Noted）

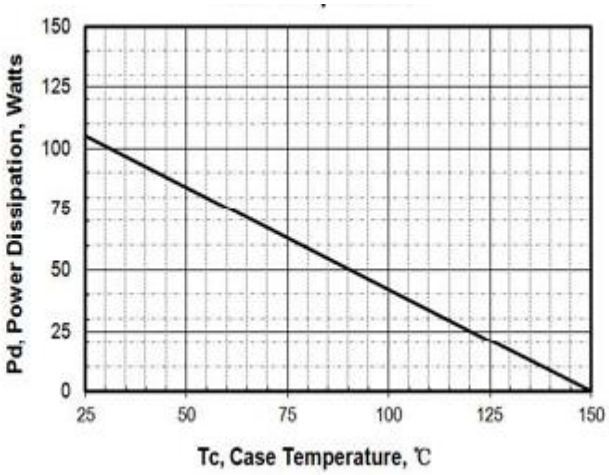


Figure 1. MAX.Power Dissipation VS Casse Temperature

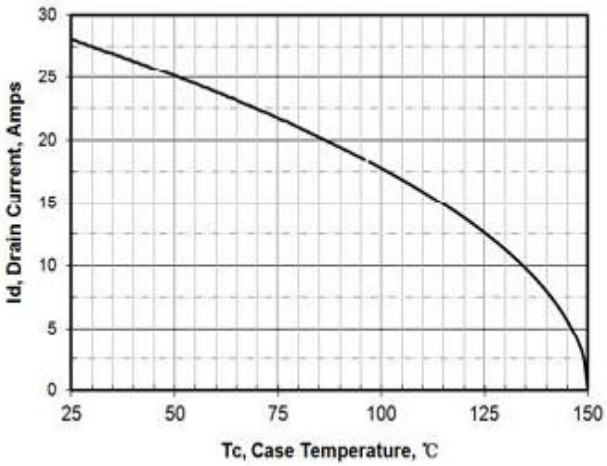


Figure 2. Maximum Continuous Drain Current vs Tc

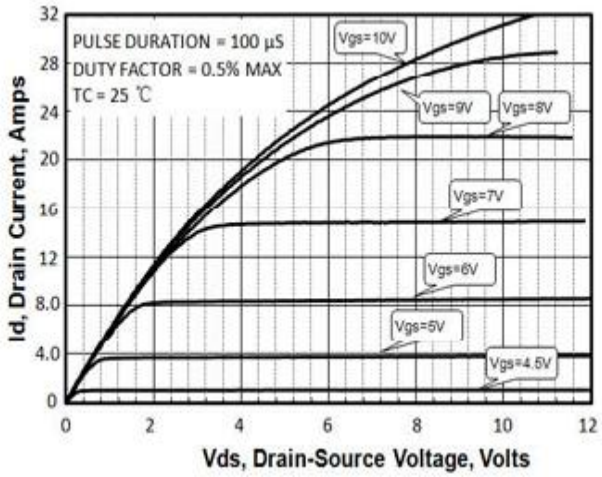


Figure 3. Output Characteristics

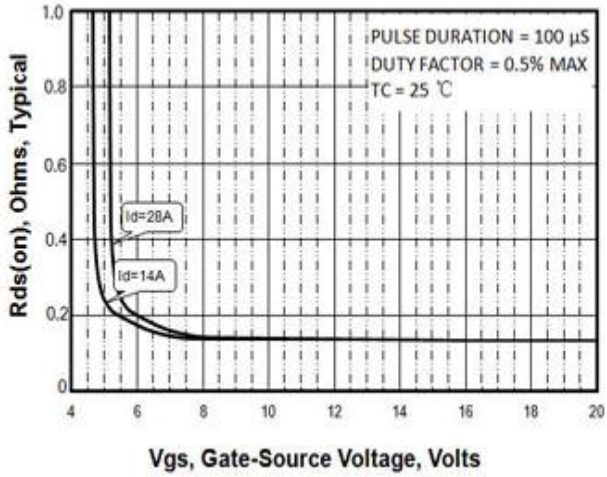


Figure 4. Rdson VS Gate Voltage

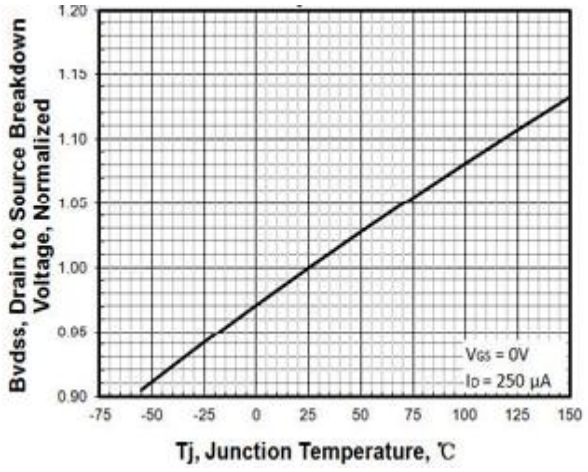


Figure 5. Breakdown Voltage VS Temperature

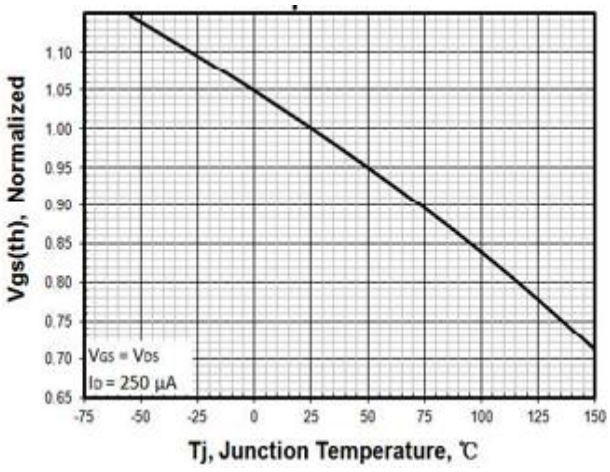


Figure 6. Threshold Voltage VS Temperaturre

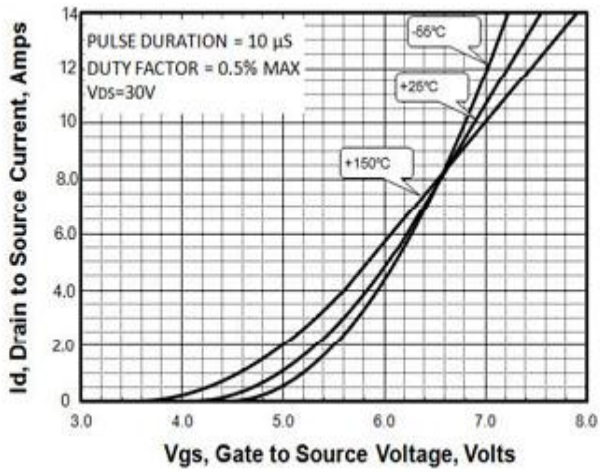


Figure 7. Transfer Characteristics

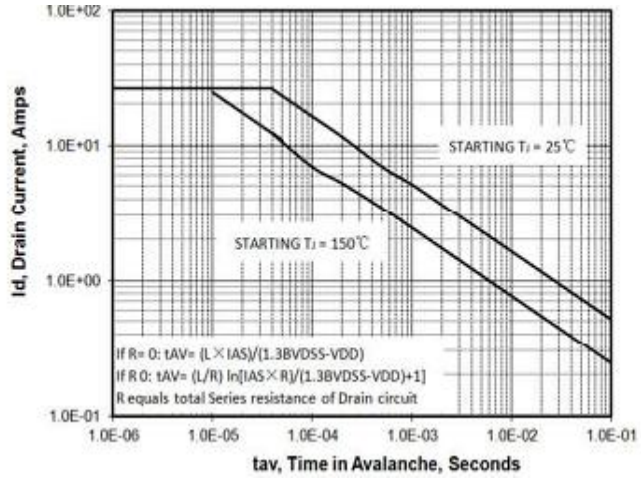


Figure 8. Unclamped Inductive Switching Capability

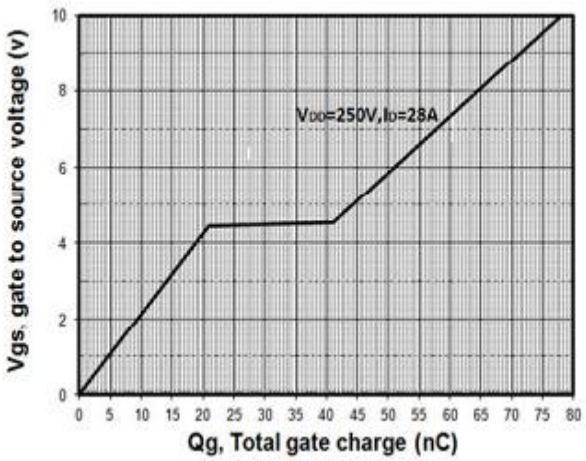


Figure 9. Typical Gate Charge

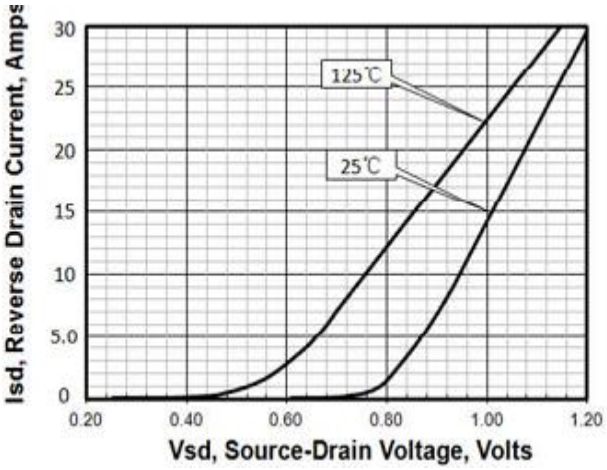


Figure 10. Body Diode Transfer characteristics

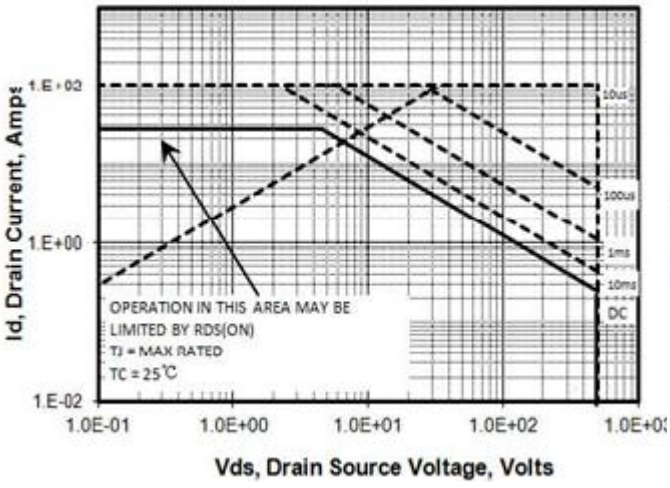


Figure 11. Maximum safe Operating Area

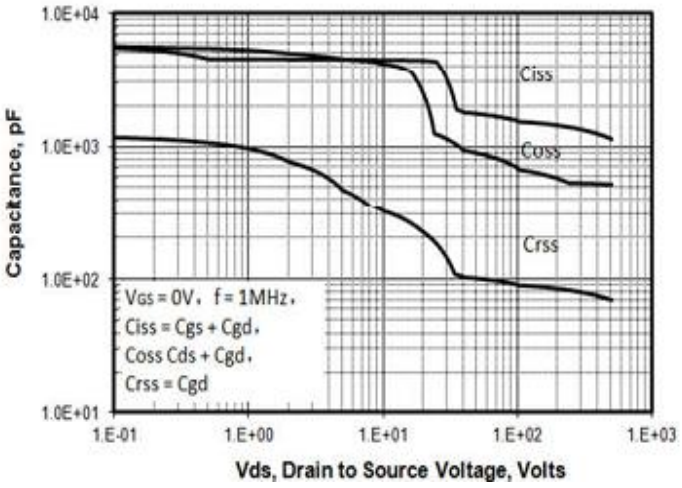
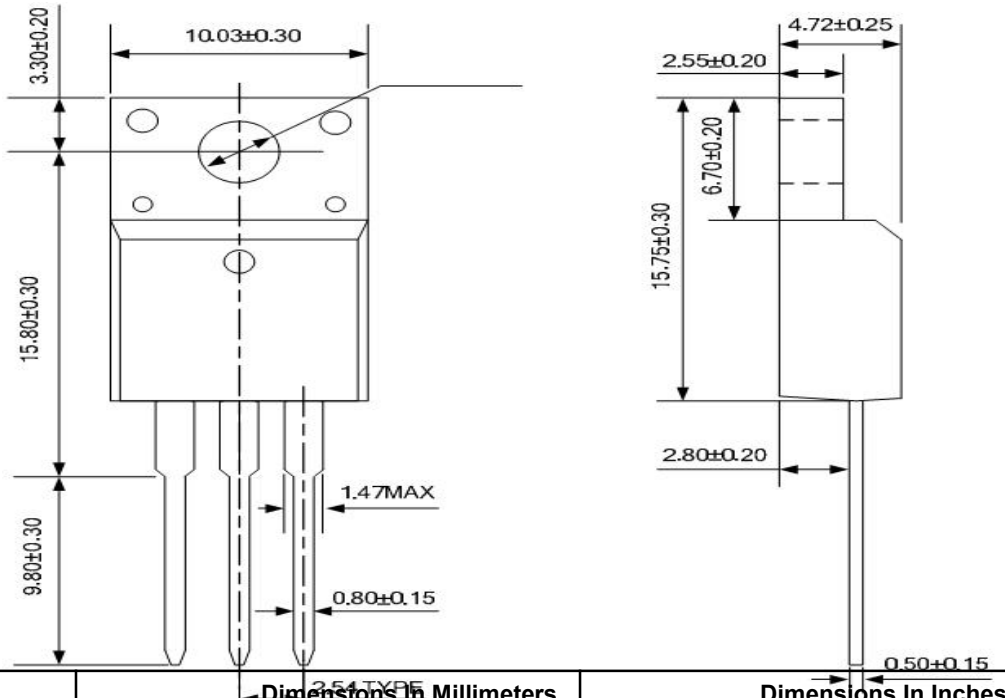


Figure 12. Capacitance VS Vds

TO-220F Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max
A	4.300	4.700	0.169	0.185
A1	2.200	2.600	0.087	0.102
b	0.700	0.950	0.025	0.037
b1	1.170	1.410	0.046	0.056
c	0.450	0.500	0.018	0.026
c1	1.200	1.400	0.047	0.055
D	9.600	10.400	0.378	0.409
E	8.8500	9.750	0.348	0.384
E1	12.500	12.950	0.498	0.510
e	2.540 TYP.		0.100TYP.	
e1	4.980	5.180	0.196	0.204
F	2.500	2.950	0.104	0.116
H	7.900	8.100	0.311	0.319
h	0.000	0.300	0.000	0.012
L	12.750	14.300	0.502	0.563
L1	2.850	3.950	0.112	0.156
V	7.500 REF.		0.295 REF.	
Φ	3.400	4.000	0.134	0.157