



XNM70N10DF

100V N-Channel SGT MOSFET

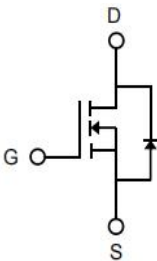
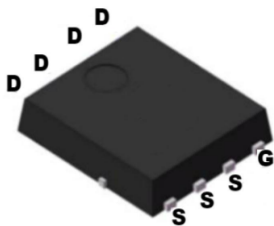
1.Features

- V_{DS} 100V
- I_D (at $V_{GS}=10V$) 70A
- $R_{DS(ON)}$ (at $V_{GS}=10V$) 8.1m Ω (Typ)

2.Mechanical Data

- Case:Molded Plastic,PDFN5*6;
- Epoxy:UL 94V-0 rate flame retardant
- Terminals:Plated Leads Solderable per MIL-STD-750,Method-2026.
- Marking: marked on body.
- Mounting Position : Any.

PDFN5*6



1. Gate
2. Drain
3. Source

3.Absolute Maximum Ratings

Electrical Characteristics ($T_A=25^{\circ}C$ unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current-Continuous ($T_C = 25^{\circ}C$)	I_D	70	A
Drain Current-Continuous($T_C = 100^{\circ}C$)		44	
Power Dissipation	P_D	122	W
Single Pulsed Avalanche energy ⁽¹⁾	E_{AS}	230	mJ
Junction Temperature	T_J	-55~+150	$^{\circ}C$
Storage Temperature	T_{STG}	-55~+150	$^{\circ}C$
Junction-to-Case Thermal Resistance	$R_{\theta JC}$	1.02	$^{\circ}C/W$
Junction-to-Ambient Thermal Resistance	$R_{\theta JA}$	62	$^{\circ}C/W$



4. Electrical Characteristics

Parameter	Symbol	Conditions	Values			Unit
			Min.	Typ.	Max.	

Off Characteristics

Drain-source breakdown voltage	B_{VDSS}	$V_{GS} = 0V, I_D = 250\mu A$	100	-		V
Gate-source leakage current	I_{DSS}	$V_{DS}=60V, V_{GS}=0V$	-	-	1	μA
Gate threshold voltage	I_{GSS}	$V_{DS} = 0V, V_{GS} = 20V$	-	-	100	nA

On Characteristics

Drain-to-Source Leakage Current	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	1.2	1.8	2.5	V
Drain-to-Source On-Resistance	$R_{DS(ON)}$	$V_{GS} = 10V, I_D = 20A$	-	8.1	9.5	m Ω
		$V_{GS} = 4.5V, I_D = 15A$	-	10	12.5	m Ω

Dynamic Parameters

Forward Transconductance	gfs	$V_{DS} = 5V, I_D = 20A$	-	30	-	S
Input Capacitance	C_{iss}	$V_{DS} = 25V, V_{GS}=0V$ $f=1.0MHz$	-	1600	-	pF
Output Capacitance	C_{oss}		-	496	-	
Reverse Transfer Capacitance	C_{rss}		-	95	-	

Switching Parameters

Turn-on Delay Time	$t_{d(on)}$	$V_{DD}=80V, V_{GS}=10V, I_D=10A$ $R_G=2.7\Omega$	-	31	-	nS
Turn-on Rise Time	t_r		-	81	-	
Turn-off Delay Time	$t_{d(off)}$		-	24	-	
Turn-off Fall Time	t_f		-	7	-	
Total Gate Charge	Q_g	$V_{DS}=80V, I_D=10, V_{GS}=4.5V$	-	20	-	nC
Gate-Source Charge	Q_{gs}		-	4.6	-	
Gate-Drain Charge	Q_{gd}		-	9.5	-	

Drain-Source Diode Characteristics

Drain-Source Diode Forward Voltage	V_{SD}	$V_{GS} = 0V, I_S = 1A$	-	0.8	1.1	V
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Notes:

1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. $V_{DD}=50V, V_{GS}=10V, L=0.5mH, I_{AS}=48A$., Starting $T_J=25^\circ C$
3. The data tested by pulsed , pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
4. Essentially independent of operating temperature



5. Rating And Characteristic Curves

Fig. 1 Continuous Drain Current vs. T_C

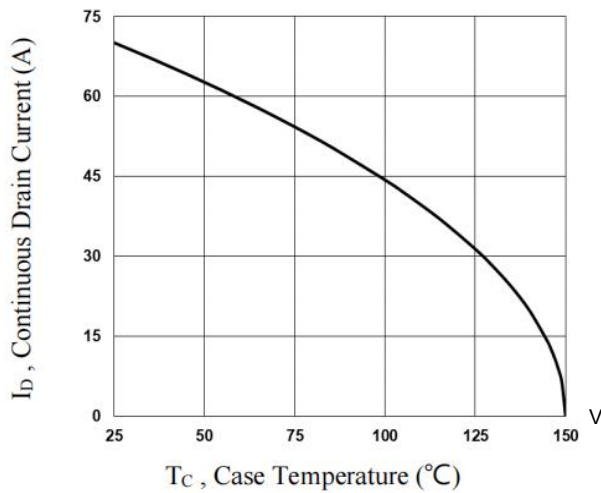


Fig 2 Normalized $R_{DS(on)}$ vs. T_J

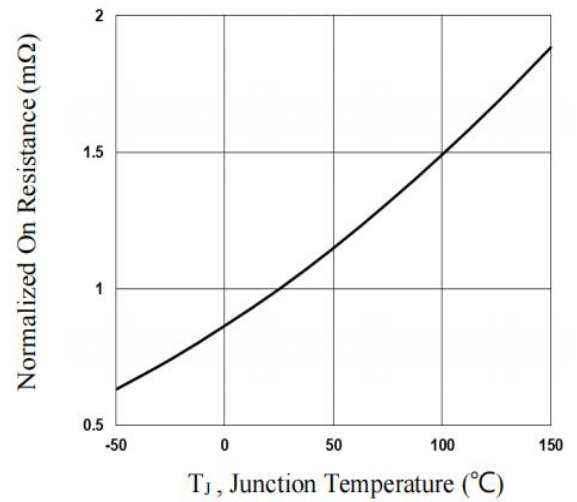


Fig.3 Normalized V_{th} vs. T_J

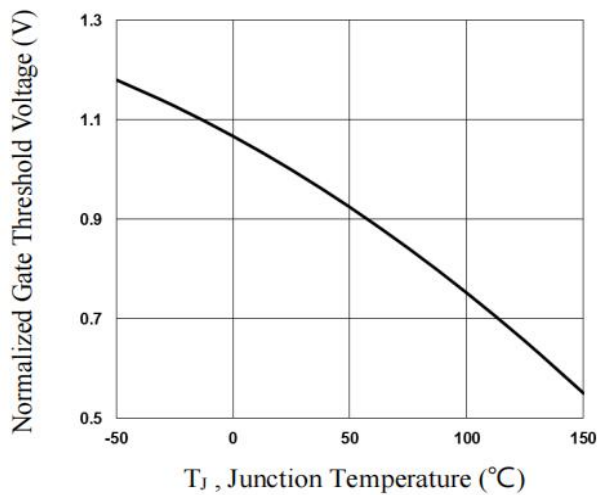


Fig.4 Gate Charge Characteristics

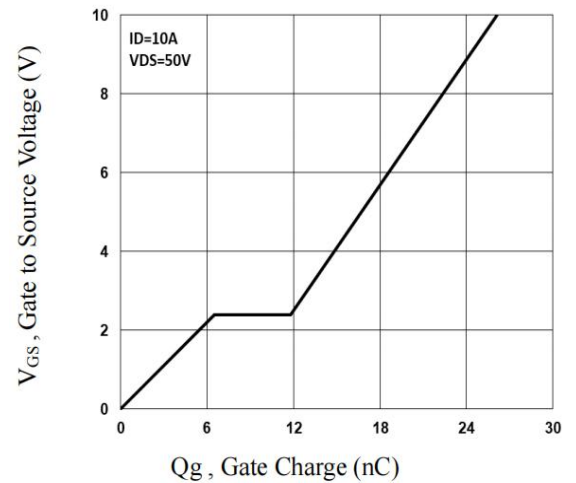


Fig.5 Normalized Transient Impedance

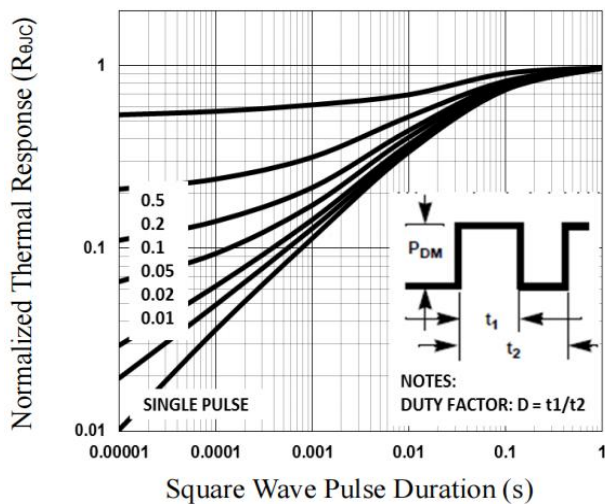


Fig.6 Maximum Safe Operation Area

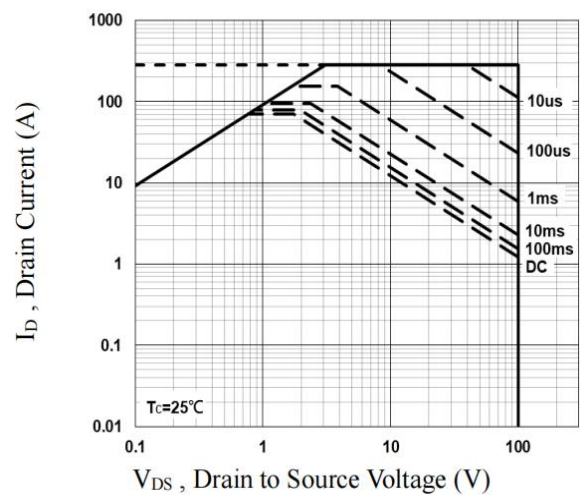




Fig. 7 Switching Time Waveform

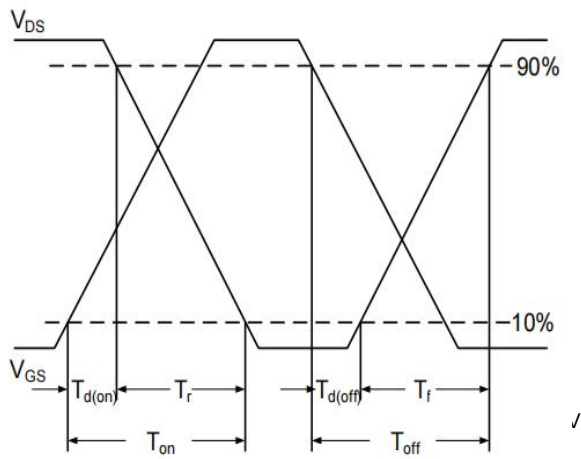
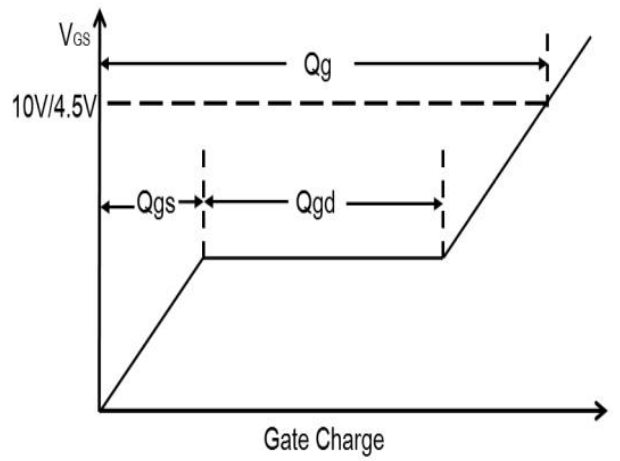
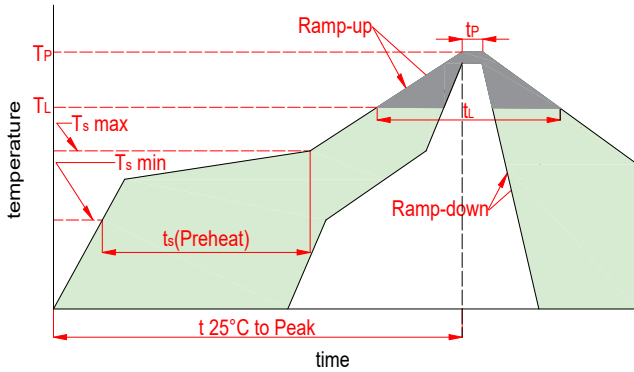


Fig 8 Gate Charge Waveform



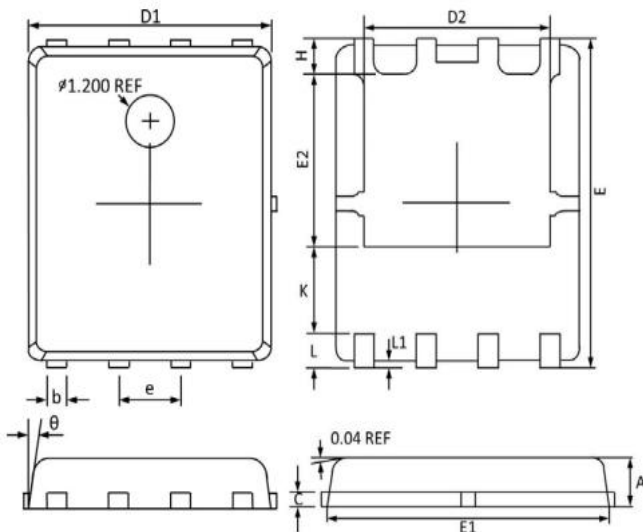


7. Soldering Parameters



Reflow Condition		Lead-free
Pre Heat	Temp. min($T_s(\min)$)	150℃
	Temp. max($T_s(\min)$)	200℃
	Time(min to max)(t_s)	60~180s
Aver. ramp up rate(Liquidus Temp.)(T_L)to peak		3℃/s max
$T_s(\max)$ to T_L -Ramp-up Rate		3℃/s max
Reflow	Temp. (T_L)(Liquidus)	217℃
	Temp. (t_L)(Liquidus)	60~150s
Peak Temp. (T_P)		260 ^{+0/-5} ℃
Time within actual peak Temp. (t_p)		30s max
Ramp-down Rate		6℃/s max
Time 25℃ to peak Tempe. (T_P)		8 minutes max
Do not exceed		260℃

8.Package Drawing



Dimensions	Inches		Millimeters	
	Min	Max	Min	Max
A	0.031	0.043	0.8	1.1
b	0.013	0.021	0.33	0.54
C	0.008	0.012	0.2	0.3
D1	0.189	0.201	4.8	5.1
D2	0.142	0.161	3.61	4.1
E	0.232	0.244	5.9	6.2
E1	0.224	0.232	5.7	5.9
E2	0.132	0.149	3.35	3.78
e	1.27BSC		1.27BSC	
H	0.016	0.028	0.41	0.7
K	0.043	0.059	1.1	1.5
L	0.020	0.028	0.51	0.71
L1	0.002	0.008	0.06	0.2

9. Package Information

Part Number	Package	Quantity(pcs)
XNM70N10DF	PDFN5*6	5000



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