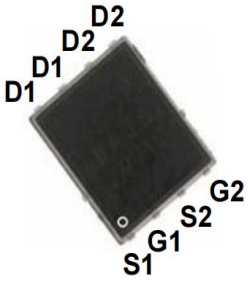
XNM20ND03D3

30V Dual N-Channel MOSFET

1.Features

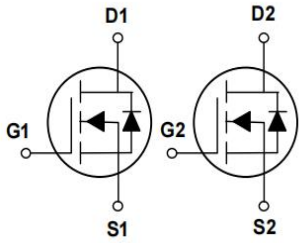
- V_{DS} 30V
- I_D(at V_{GS}=10V) 20A
- $R_{DS(on)}$(at V_{GS}=10V) 16mΩ(Typ)
- $R_{DS(on)}$(at V_{GS}=4.5V) 21mΩ(Typ)

PDFN3*3



2.Mechanical Data

- Case:Molded Plastic,PDFN3*3;
- Epoxy:UL 94V-0 rate flame retardant
- Terminals:Plated Leads Solderable per MIL-STD-750,Method-2026.
- Marking: marked on body.
- Mounting Position : Any.



1. Gate
2. Drain
3. Source

3.Absolute Maximum Ratings

Electrical Characteristics (T_A=25℃ unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	±20	V
Drain Current-Continuous (T_C = 25°C)	I_D	20	A
Pulsed Drain Current	I_{DM}	80	A
Maximum Power Dissipation	P_D	13	W
Junction Temperature	T_J	-55~+150	°C
Storage Temperature	T_{STG}	-55~+150	°C
Thermal Resistance junction-case	$R_{\theta JC}$	10	°C/W
Thermal Resistance junction-to-Ambient	$R_{\theta JA}$	72	°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 = 250μA	30	-		V
Gate-source leakage current	I_{DSS}	V_{DS}=30V,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 = 250μA	1	1.6	2.5	V
Drain-to-Source On-Resistance	$R_{DS(ON)}$	V_{GS} = 10V, I_D = 10A	-	16	20	mΩ
		V_{GS} = 4.5V, I_D = 6A	-	21	32	mΩ
Dynamic Parameters						
Input Capacitance	C_{iss}	V_{DS} =15V ,V_{GS}=0V f=1.0MHz	-	290	-	pF
Output Capacitance	C_{oss}		-	160	-	
Reverse Transfer Capacitance	C_{rss}		-	25	-	
Switching Parameters						
Turn-on Delay Time	$t_{d(on)}$	V_{DD}=15V, V_{GS}=10V,I_D=10A R_G=3Ω	-	4	-	nS
Turn-on Rise Time	t_r		-	32	-	
Turn-off Delay Time	$t_{d(off)}$		-	9.4	-	
Turn-off Fail Time	t_f		-	2.6	-	
Total Gate Charge	Q_g	V_{DS}=15V,I_D=10,V_{GS}=10V	-	7.2	-	nC
Gate-Source Charge	Q_{gs}		-	1.2	-	
Gate-Drain Charge	Q_{gd}		-	1.8	-	
Drain-Source Diode Characteristics						
Gate resistance	R_G	V_{GS}=0V, V_{DS}=0V,F=1MHz	-	1.7	-	Ω
Drain-Source Diode Forward Voltage	V_{SD}	V_{GS} = 0V, I_S= 1A	-	-	1.2	V

Notes：
1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%.
3. Essentially independent of operating temperature.

5.Rating And Characteristic Curves

Fig. 1 Typical Output Characteristics

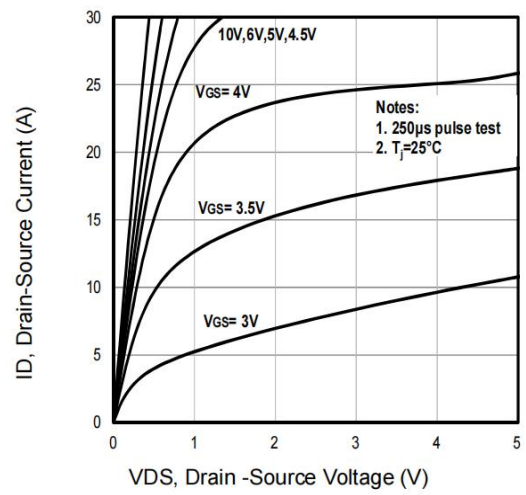


Fig 2 Typical $V_{GS(TH)}$ Gate -Source Voltage Vs. Tj

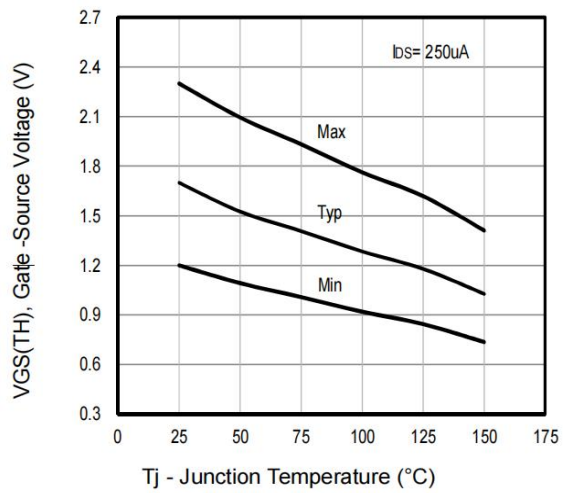


Fig.3 Typical Transfer Characteristics

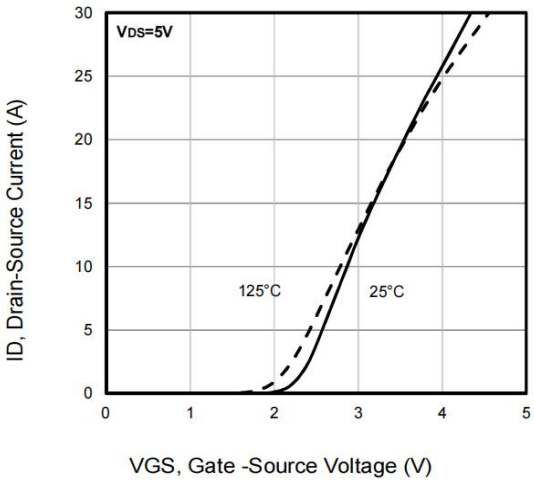


Fig.4 Typical Normalized On-Resistance Vs. Tj

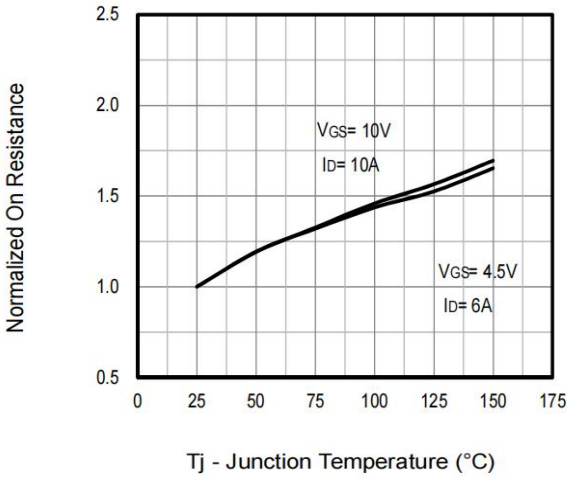


Fig.5 Typical On Resistance Vs Gate -Source Voltage

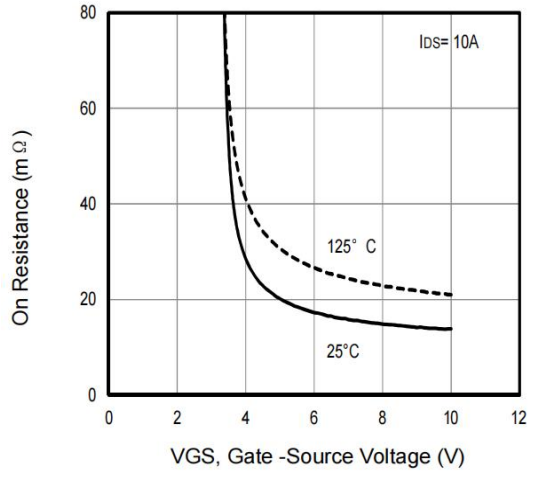


Fig.6 Typical On Resistance Vs Drain Current

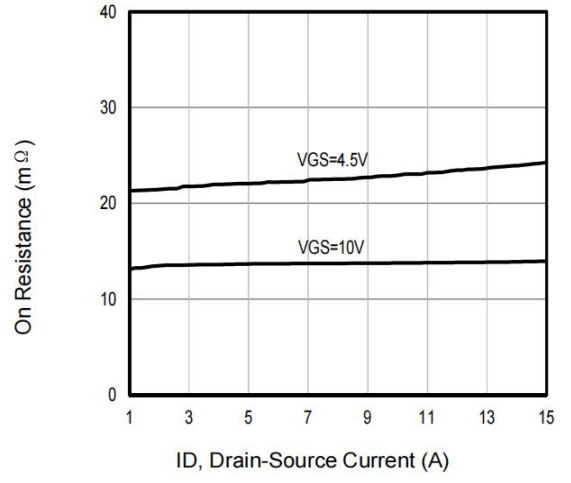


Fig. 7 Typical Source-Drain Diode Forward Voltage

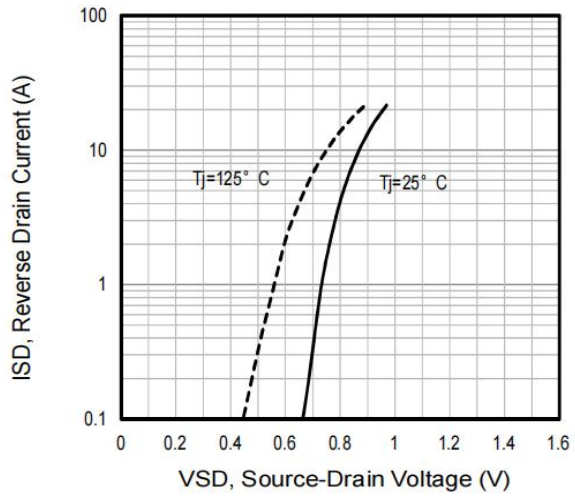


Fig 8 Maximum Safe Operating Area

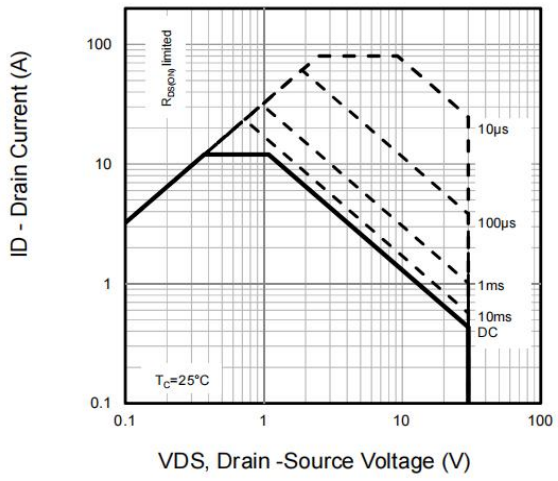


Fig.9 Typical Capacitance Vs. Drain-Source Voltage

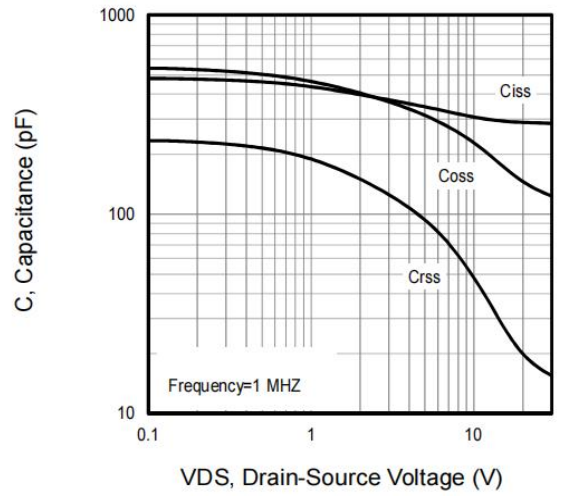


Fig.10 Typical Gate Charge Vs. Gate-Source Voltage

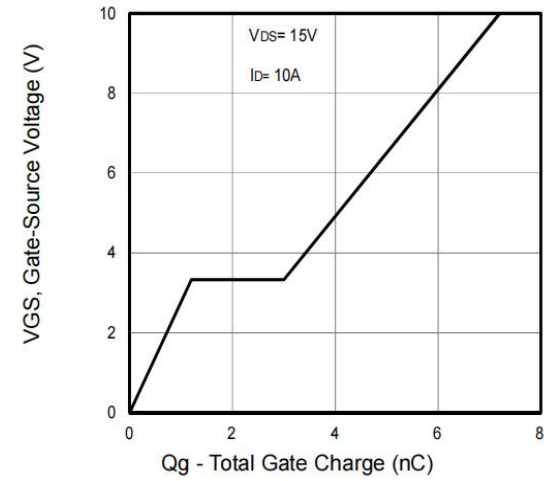


Fig.11 Power Dissipation Vs. Case Temperature

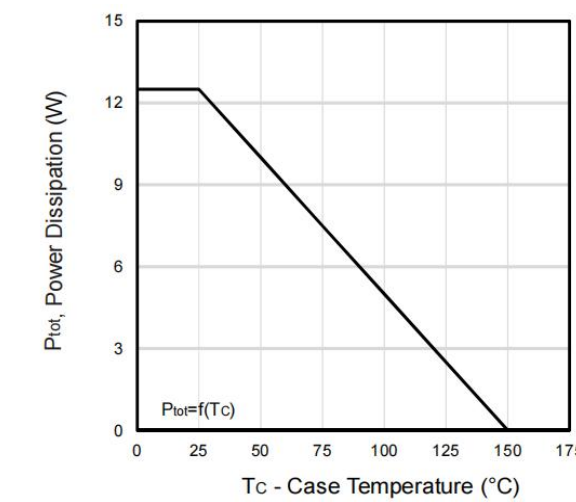


Fig.12 Maximum Drain Current Vs. Case Temperature

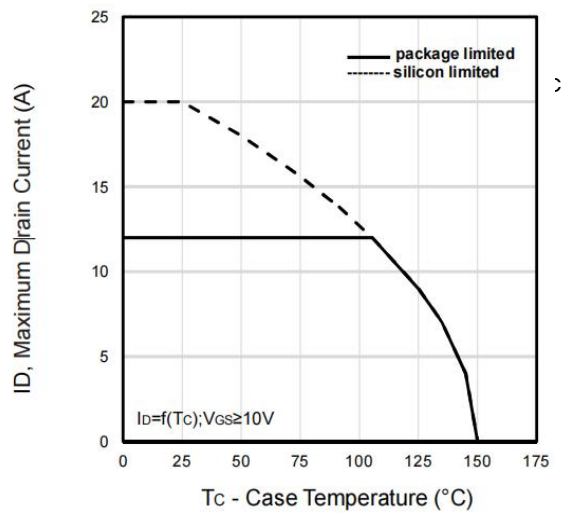
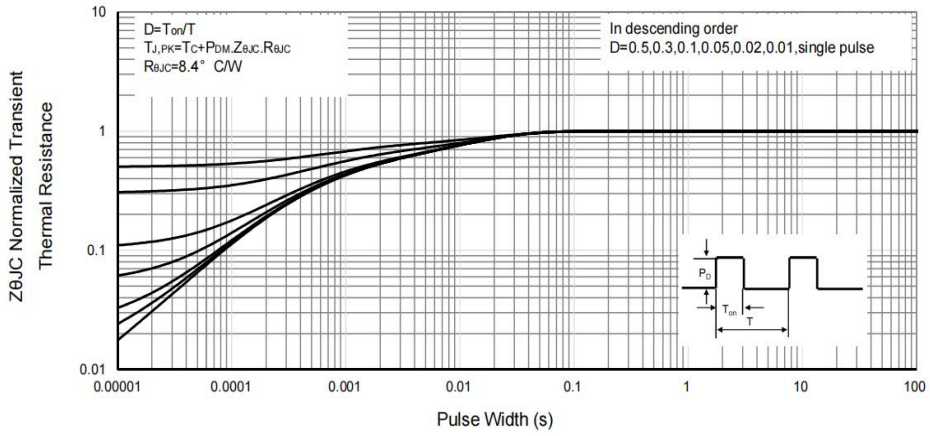


Fig.13 Normalized Maximum Transient Thermal Impedance



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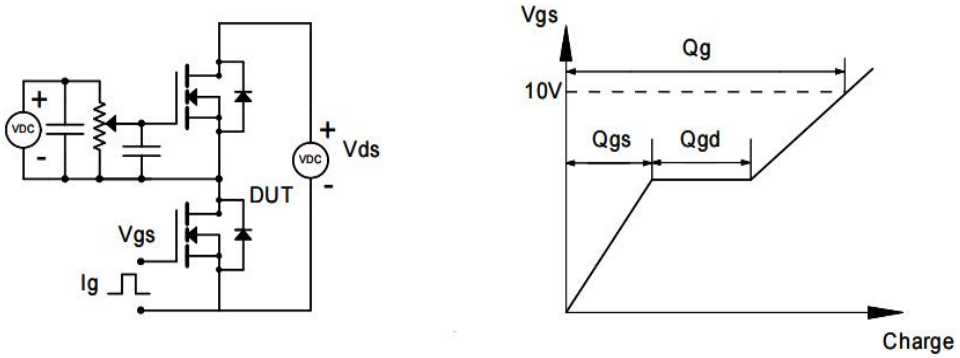
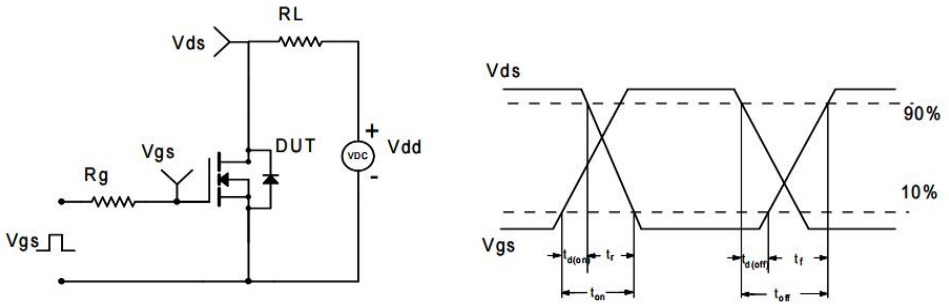
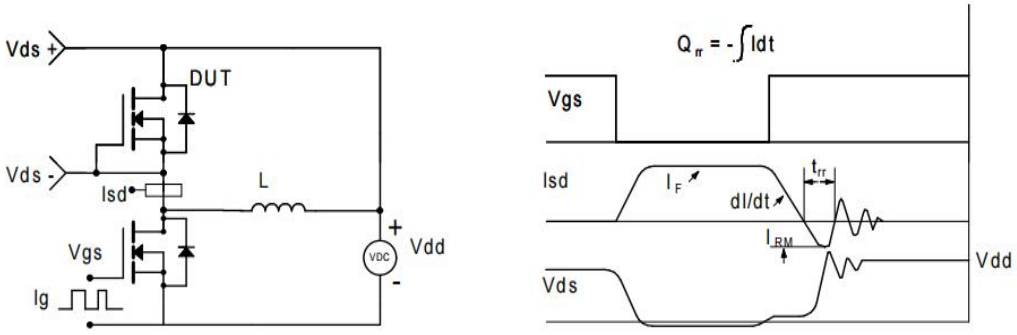


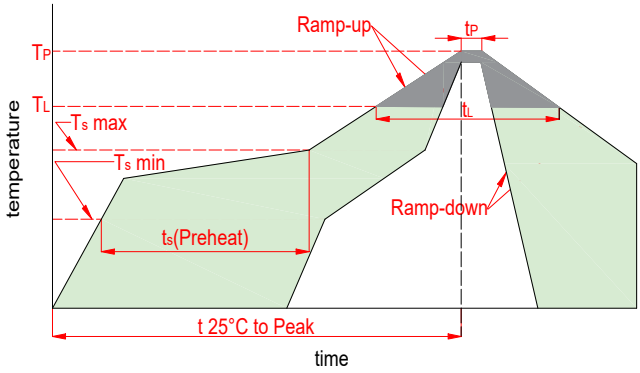
R esistive Switching Test Circuit & W aveform s



Diode Recovery Test Circuit & W aveform s

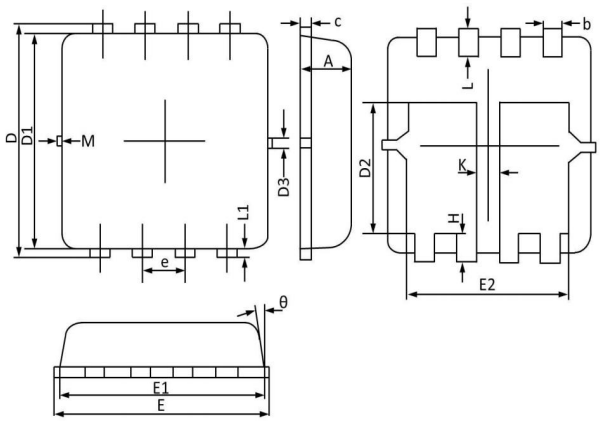


6. Soldering Parameters



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℃

7.Package Drawing



Dimensions	Inches		Millimeters	
	Min	Max	Min	Max
A	0.026	0.035	0.67	0.88
b	0.010	0.014	0.25	0.35
C	0.004	0.010	0.10	0.25
D	0.124	0.140	3.15	3.55
D1	0.118	0.130	3.00	3.30
D2	0.059	0.079	1.50	2.00
D3	0.005	0.008	0.13	0.20
E	0.122	0.138	3.10	3.50
E1	0.118	0.126	3.00	3.20
E2	0.093	0.102	2.35	2.60
e	0.026 BSC		0.65BSC	
H	0.012	0.020	0.30	0.50
L	0.012	0.020	0.30	0.50
L1	0.005 REF		0.130 REF	
K	0.012 REF		0.300 REF	
M	0.006 REF		0.150 REF	

8. Package Information

Part Number	Package	Quantity(pcs)
XNM20ND03D3	PDFN3*3	5000

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