



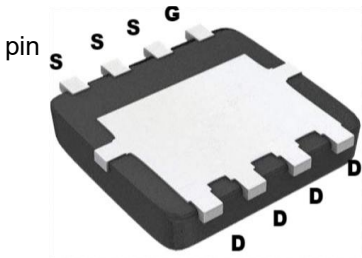
XNM139N03D3

30V N-Channel SGT MOSFET

1.Features

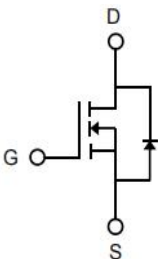
- V_{DS} 30V
- I_D (at $V_{GS}=10V$) 139A
- $R_{DS(ON)}$ (at $V_{GS}=10V$) 1.1m Ω (Typ)

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

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current-Continuous	I_D	139	A
		88	
Pulsed Drain Current	I_{DM}	540	A
Single Pulse Avalanche Energy	EAS	336	mJ
Power Dissipation	P_D	42	W
Junction Temperature	T_J	-55~+150	$^{\circ}C$
Storage Temperature	T_{STG}	-55~+150	$^{\circ}C$
Thermal Resistance from Junction to Case	$R_{\theta JC}$	3	$^{\circ}C/W$
Junction-to-Ambient Thermal Resistance	$R_{\theta JA}$	50	$^{\circ}C/W$



4. Electrical Characteristics

Parameter	Symbol	Conditions	Values			Unit
			Min.	Typ.	Max.	

Off Characteristics

Drain-source breakdown voltage	B_{VDSS}	$I_D = 250\mu A$, $V_{GS}=0V$	30	-		V
Gate-source leakage current	I_{DSS}	$V_{DS}=30V$, $V_{GS}=0V$	-	-	1	μA
Gate threshold voltage	I_{GSS}	$V_{GS} = \pm 20V$	-	-	± 100	nA

On Characteristics

Drain-to-Source Leakage Current	$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_D = 250\mu A$	1.2	1.7	2.5	V
Drain-to-Source On-Resistance	$R_{DS(ON)}$	$V_{GS} = 10V$, $I_D = 20A$	-	1.1	1.4	m Ω
		$V_{GS} = 4.5V$, $I_D = 20A$	-	1.9	2.6	m Ω

Dynamic Parameters

Input Capacitance	C_{iss}	$V_{DS} = 15V$, $V_{GS}=0V$ $f=1.0MHz$	-	2990	-	pF
Output Capacitance	C_{oss}		-	2026	-	
Reverse Transfer Capacitance	C_{rss}		-	217	-	

Switching Parameters

Gate resistance	R_g	$V_{GS}=0V$, $V_{DS}=0V$, $F=1MHz$	-	1.8	-	Ω
Turn-on Delay Time	$t_{d(on)}$	$V_{DS}=10V$, $V_{GS}=15V$ $I_D=20A$, $R_{GEN}=3\Omega$	-	6.6	-	nS
Turn-on Rise Time	t_r		-	30	-	
Turn-off Delay Time	$t_{d(off)}$		-	34	-	
Turn-off Fall Time	t_f		-	22	-	
Total Gate Charge	Q_g	$V_{DS}=15V$, $I_D=20A$ $V_{GS}=10V$	-	47.6	-	nC
Gate-Source Charge	Q_{gs}		-	9.63	-	
Gate-Drain Charge	Q_{gd}		-	13.5	-	

Drain-Source Diode Characteristics

Forward Voltage	V_{SD}	$V_{GS} = 0V$, $I_{SD} = 1A$	-	0.7	1.2	V
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Notes:

1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. The data tested by pulsed , pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
3. Essentially independent of operating temperature.
4. $V_{DD}=20V$, $I_{AR}=32A$, $L=0.5mH$, $R_G=25\Omega$, Starting $T_J=25^\circ C$



5. Rating And Characteristic Curves

Fig. 1 Output Characteristics

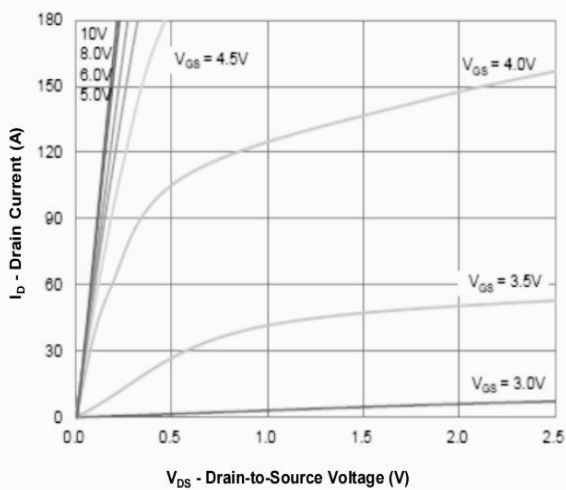


Fig 2 Transfer Characteristics

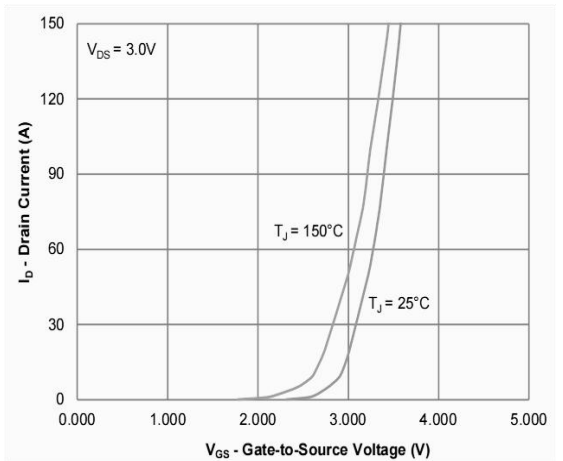


Fig.3 On-Resistance vs. Gate-Source Voltage

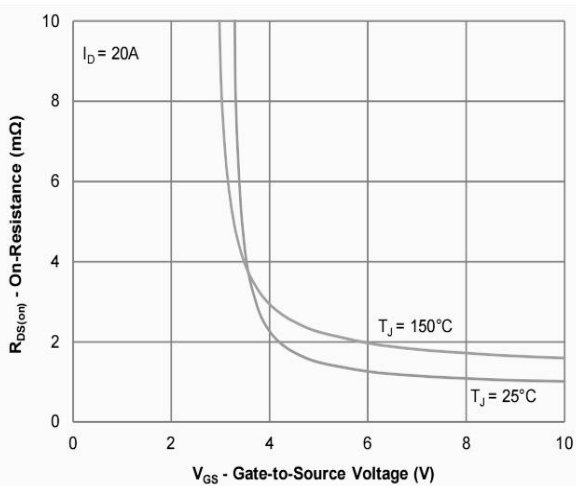


Fig.4 On-Resistance vs. Gate-Source Voltage

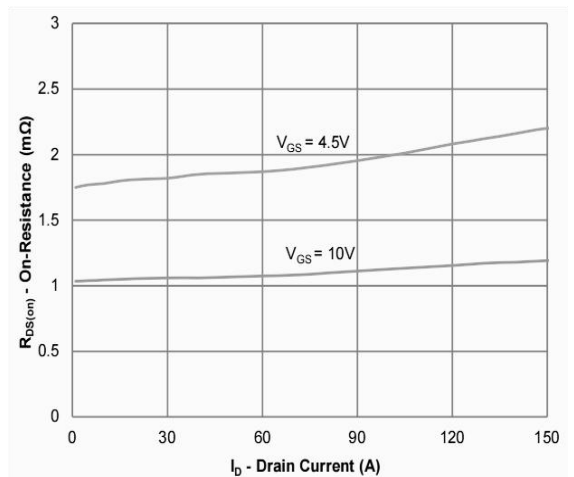


Fig.5 On-Resistance vs. Junction Temperature

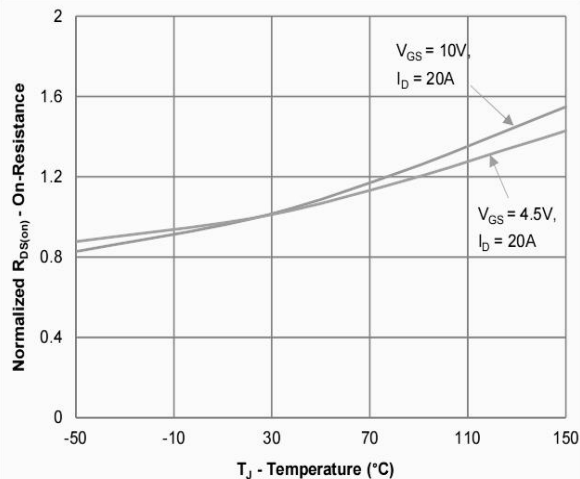


Fig.6 Source-Drain Diode Forward Voltage

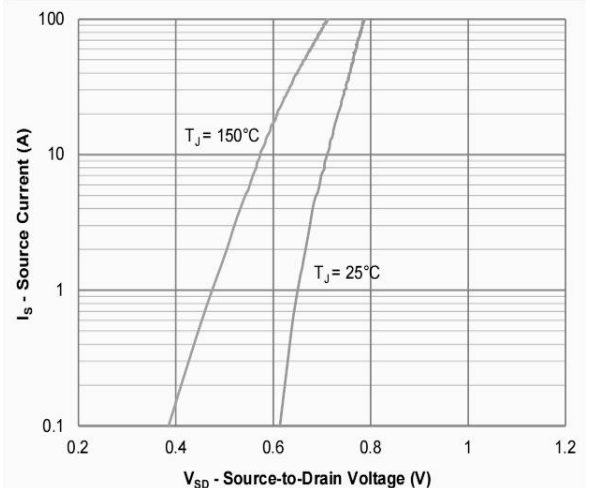




Fig. 7 Capacitance Characteristics

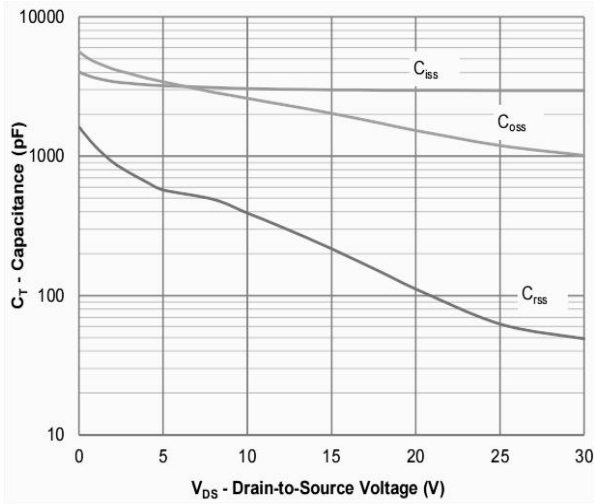


Fig 8 Gate Charge Characteristics

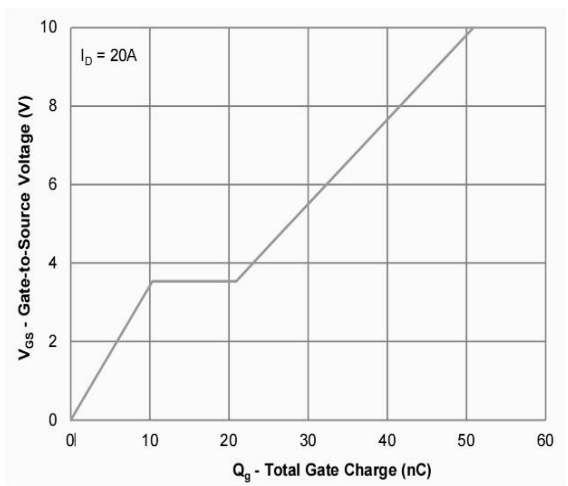


Fig 9 Current Derating

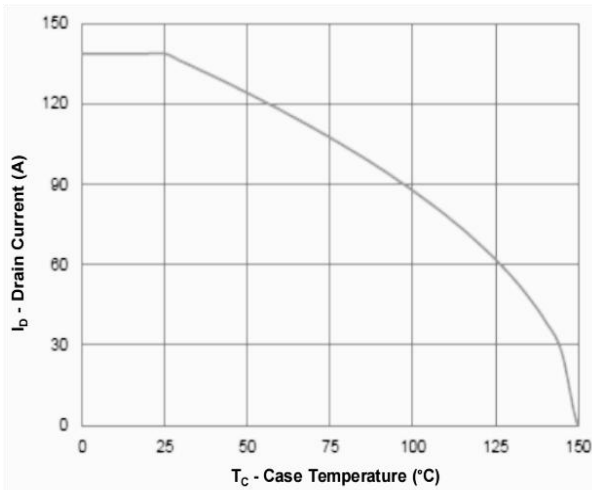


Fig 10 Safe Operating Area

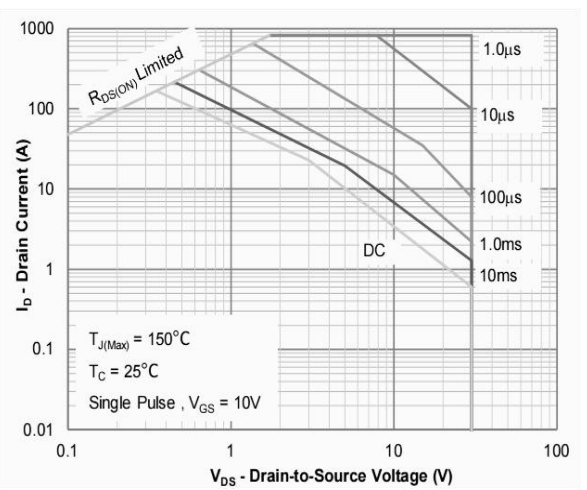
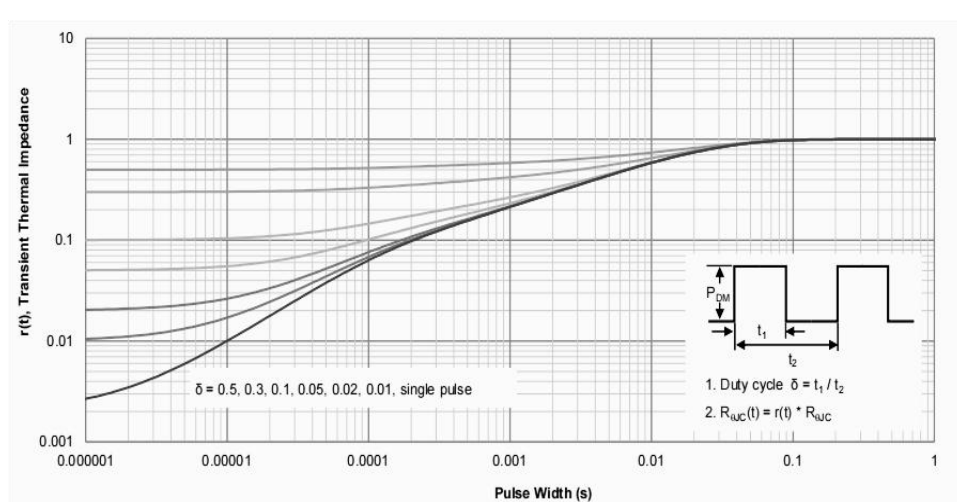


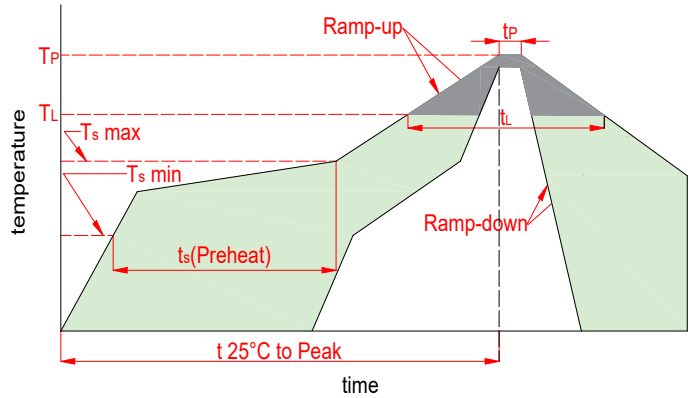
Fig 11 Normalized Maximum Transient Thermal Impedance



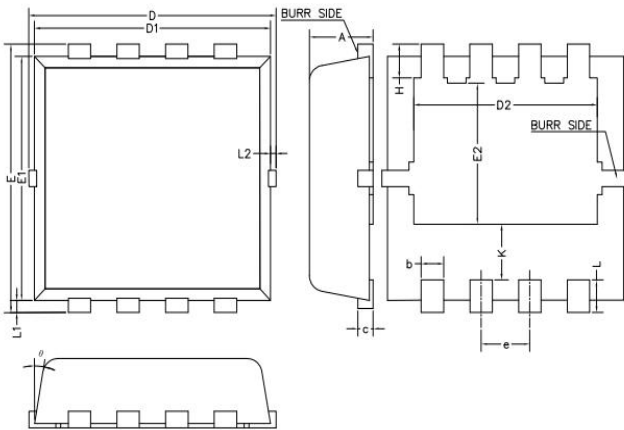


6. Rating And Characteristic Curves

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

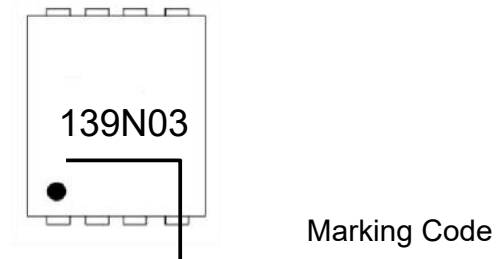
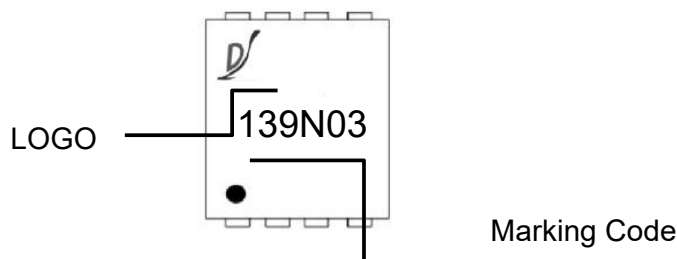


7. Package Drawing



Dimensions	Inches		Millimeters	
	Min	Max	Min	Max
A	0.028	0.035	0.7	0.9
b	0.010	0.014	0.25	0.35
c	0.004	0.010	0.1	0.25
D	0.118	0.134	3	3.4
D1	0.118	0.126	3	3.2
D2	0.093	0.104	2.35	2.65
e	0.022	0.030	0.55	0.75
E	0.122	0.138	3.1	3.5
E1	0.114	0.122	2.9	3.1
E2	0.061	0.077	1.55	1.95
K	0.023	0.031	0.59	0.79
L	0.012	0.022	0.3	0.55

9. Part Marking System



10. Package Information

Part Number	Package	Quantity(pcs)
XNM139N03D3	PDFN3*3	5000



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