30V N-Channel SGT Power MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(ON)TYP}$	I_D
30V	4.5mΩ @V_{GS}=10V	60A
	6.3mΩ @V_{GS}=4.5V	

Marking Information

Device	Marking	Package	Shipping
LPM03N038GE	LPS M03N038GE YWX	PDFN3030-8L	5K/REEL

Marking indication:

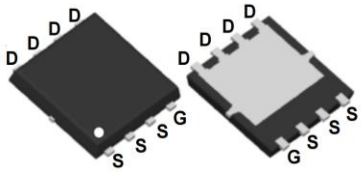
Y:Production year W:Production week X: Series Number

Description

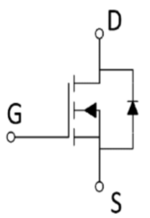
- SGT Power MOSFET Technology
- Low R_{DSON} and Low Gate Charge
- High Current Capability
- High Speed Switching
- 100% UIS Tested
- RoHS and Halogen-Free Complaint

Applications

- PWM Application
- Load Switch
- Power Management



PDFN3030-8L



Absolute Maximum Ratings (T$_A$ = 25°C, unless otherwise noted)

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	30	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current	Tc=25°C	I_D	60	A
	Tc=100°C		36	A
Pulsed Drain Current[1]		I_{DM}	240	A
Single Pulse Avalanche Energy[2]		E_{AS}	39	mJ
Total Power Dissipation[4]	Tc=25°C	P_D	35	W
Operating Junction and Storage Temperature Range		T_J,T_{STG}	-55 to 150	°C

Thermal Characteristics

Parameter	Symbol	Value	Unit
Thermal Resistance from Junction-to-Ambient[3]	$R_{\theta JA}$	46	℃/W
Thermal Resistance from Junction-to-Case	$R_{\theta JC}$	3.5	℃/W

Electrical Characteristics (TJ = 25°C, unless otherwise noted)

Parameter		Symbol	Test Conditions	Min	Typ	Max	Unit
Static Characteristics							
Drain-Source Breakdown Voltage		$V_{(BR)DSS}$	V_{GS}=0V,I_D=250uA	30	-	-	V
Gate-Body Leakage Current		I_{GSS}	V_{DS}=0V,V_{GS}=±20V	-	-	±100	nA
Zero Gate Voltage Drain Current	T_J=25℃	I_{DSS}	V_{DS}=40V,V_{GS}=0V	-	-	1	μA
	T_J=100℃			-	-	100	μA
Gate Threshold Voltage		$V_{GS(th)}$	V_{DS}=V_{GS},I_D=250μA	1.1	1.5	1.9	V
Drain-Source on-Resistance[4]		$R_{DS(on)}$	V_{GS}=10V,I_D=20A	-	4.5	5.5	mΩ
			V_{GS}=4.5V,I_D=20A	-	6.3	7.9	mΩ
Dynamic Characteristics[5]							
Input Capacitance		C_{iss}	V_{DS}=15V,V_{GS}=0V, f=1MHz	-	753	-	pF
Output Capacitance		C_{oss}		-	331	-	pF
Reverse Transfer Capacitance		C_{rss}		-	30	-	pF
Gate Resistance		R_G	f=1MHz	-	1	-	Ω
Switching Characteristics[5]							
Total Gate Charge		Q_g	V_{GS} = 10V, V_{DS}=15V, I_D= 20A	-	13.5	-	nC
Gate-Source Charge		Q_{gs}		-	2.2	-	nC
Gate-Drain Charge		Q_{gd}		-	3.2	-	nC
Turn-on Delay Time		$t_{d(on)}$	V_{GS}=10V,V_{DD}=15V, R_G=3Ω,I_D=20A	-	4.5	-	nS
Rise Time		Tr		-	23	-	nS
Turn-off Delay Time		$T_{d(off)}$		-	14	-	nS
Fall Time		tf		-	6	-	nS
Drain-Source Body Diode Characteristics							
Diode Forward Voltage[4]		V_{SD}	I_S=1A,V_{GS}=0V	-	0.7	-	V
Continuous Source Current[1,5]	Tc=25℃	I_S	-	-	-	60	A

Notes:

1. Repetitive rating, pulse width limited by junction temperature TJ(MAX)=150°C.
2. The test condition is VDD=24V,VGS=10V,L=0.1mH
3. The data tested by surface mounted on a 1 inch2 FR-4 board with 2OZ copper, The value in any given application depends on the user's specific board design.
4. The data tested by pulsed, pulse width ≤ 300us, duty cycle ≤ 2%.
5. This value is guaranteed by design hence it is not included in the production test.

Typical Characteristics (Ta=25℃, unless otherwise noted)

Figure 1: Output Characteristics

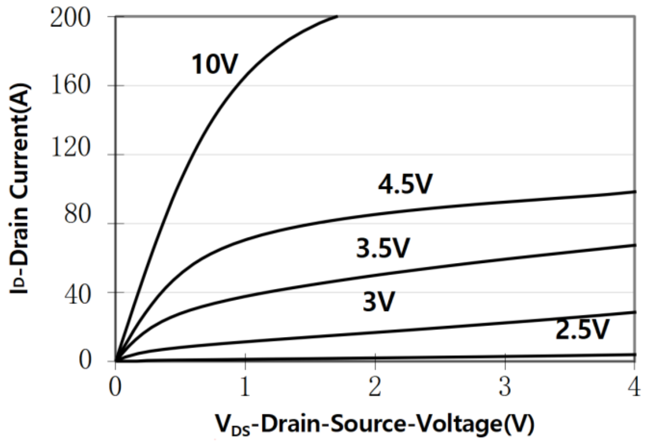


Figure 2: Transfer Characteristics

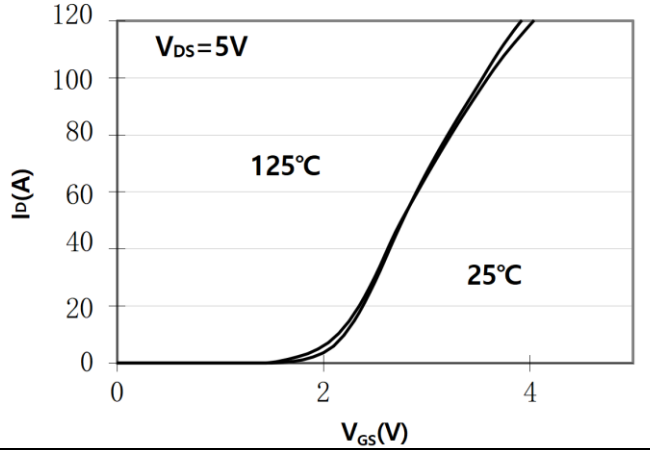


Figure 3: Body-Diode Characteristics

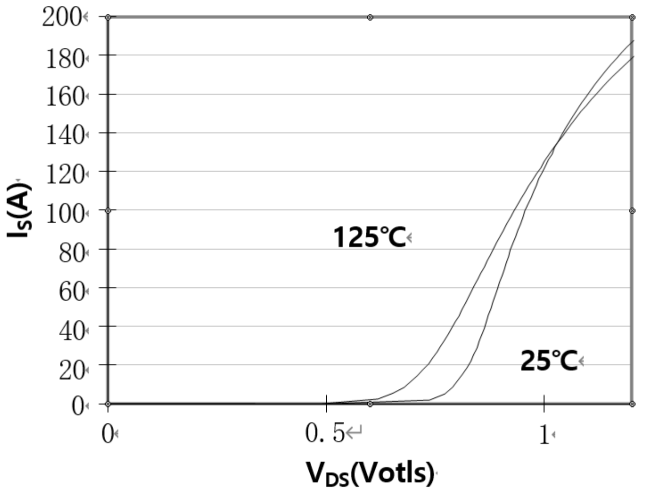


Figure 4: On-Resistance vs. Gate-Source Voltage

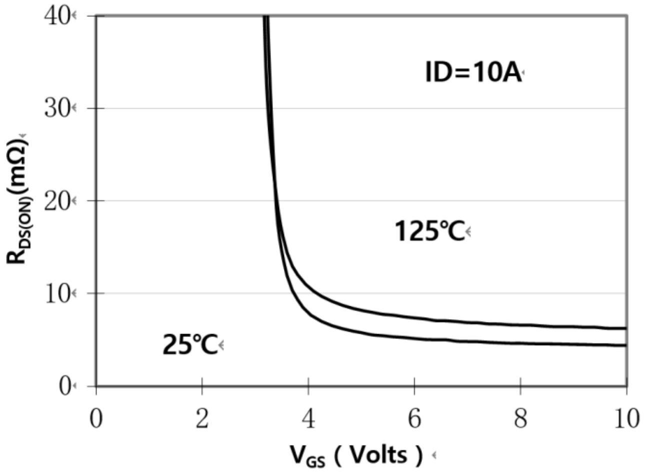


Figure 5: On-Resistance vs. Drain Current and Gate Voltage

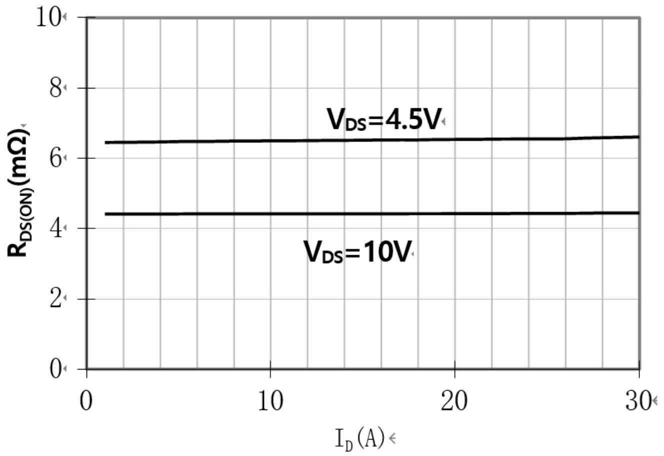
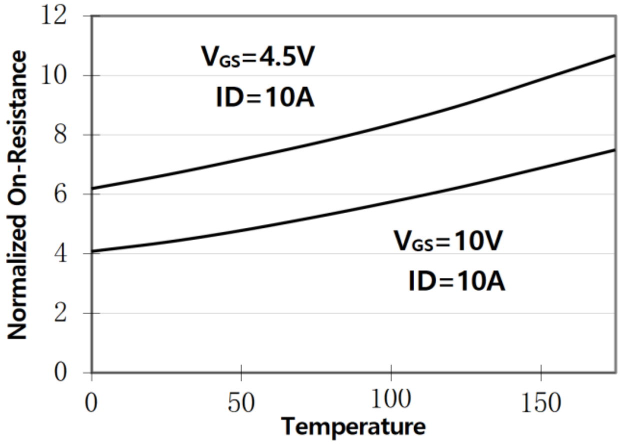


Figure 6: On-Resistance vs. Junction Temperature



Typical Characteristics (Ta=25℃, unless otherwise noted)

Figure 7: Capacitance Characteristics

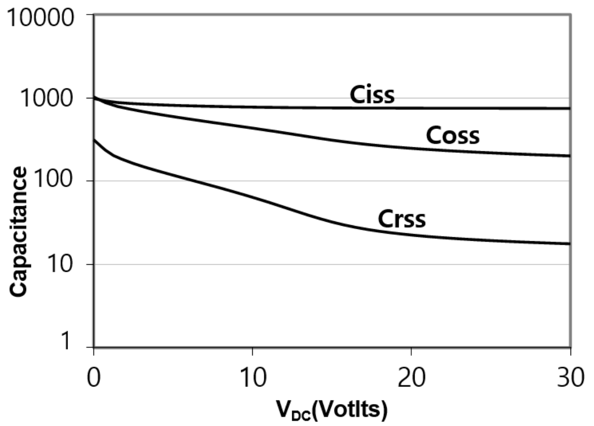


Figure 8: Gate Charge Characteristics

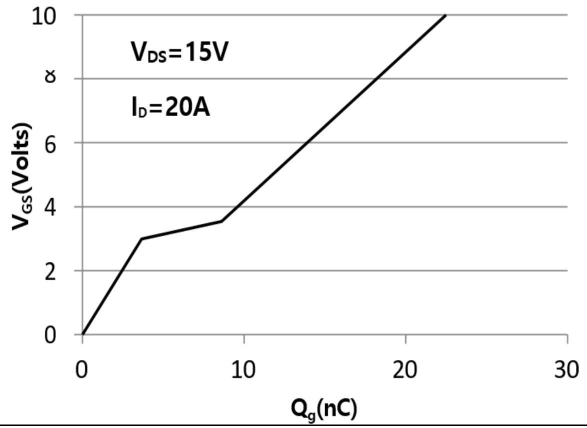


Figure 9: Safe Operating Area

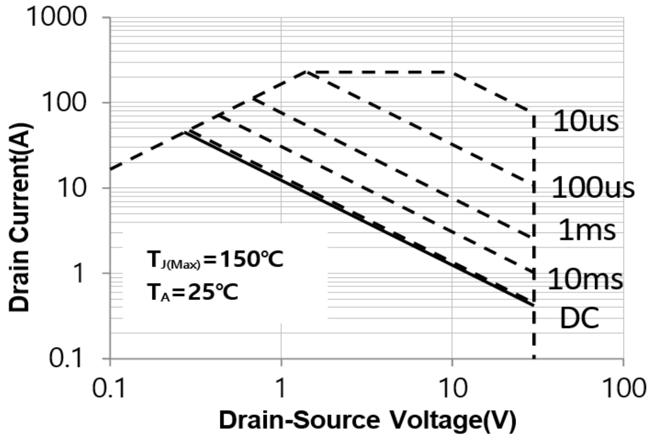


Figure 10. Single Pulse Power Rating

Junction-to-Ambient

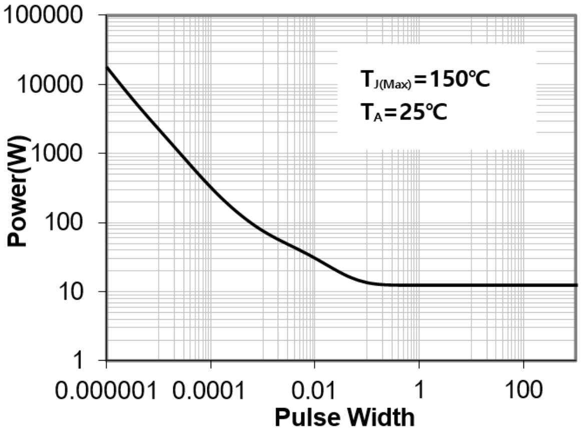
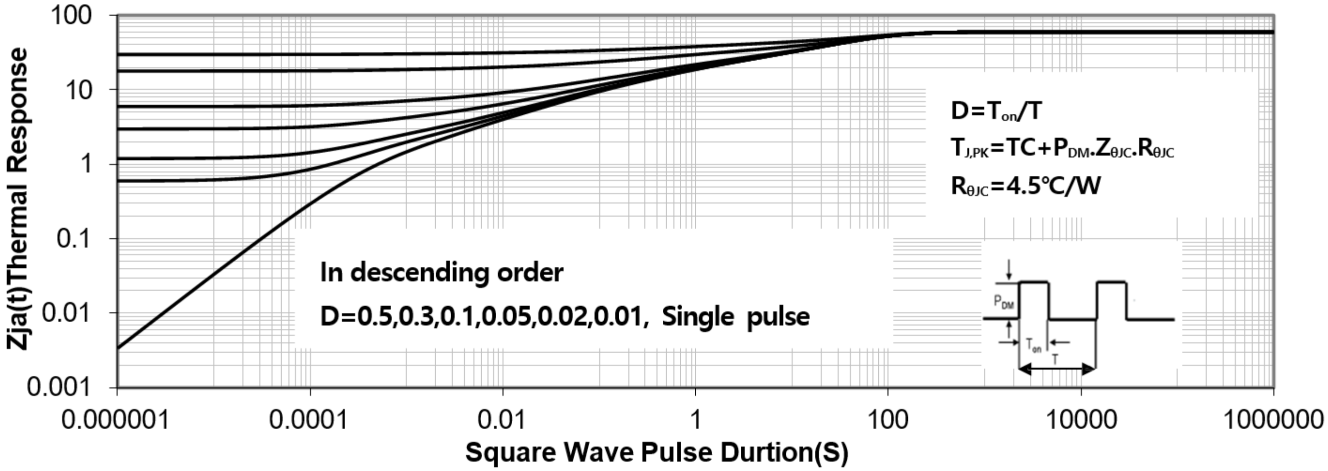
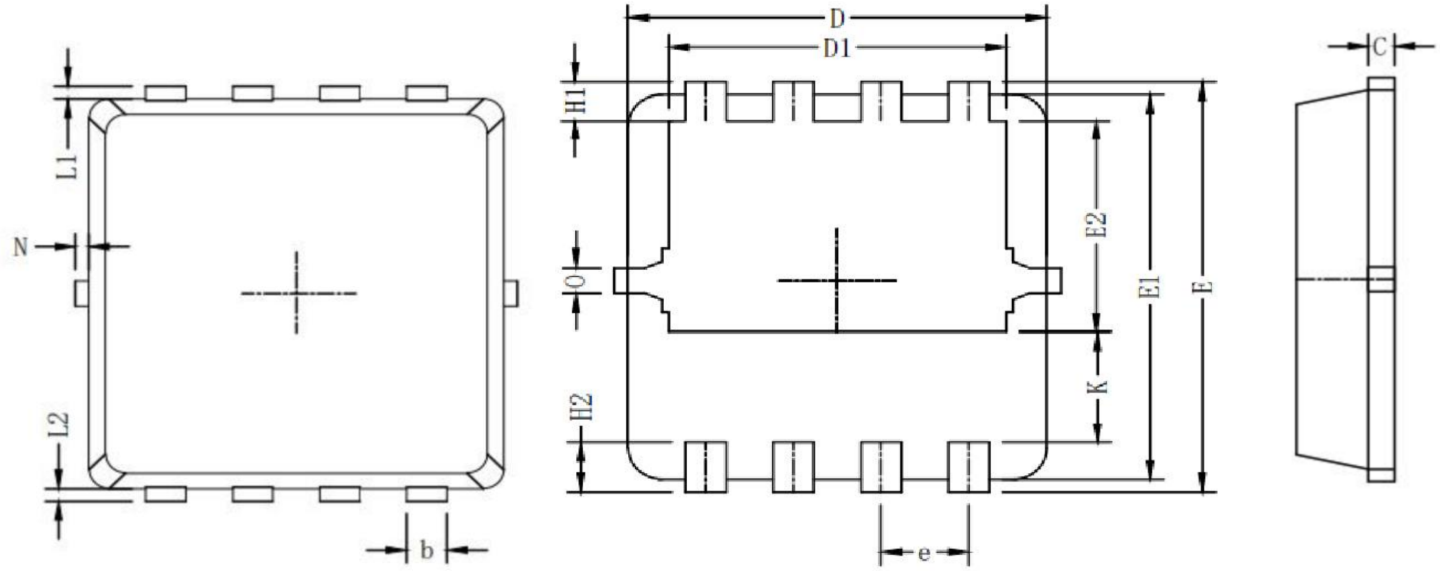


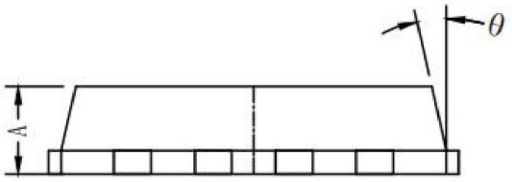
Figure 11: Normalized Maximum Transient Thermal Impedance



Packaging Information：

Mechanical Dimensions for PDFN3030-8L





SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	0.7	0.8	0.9
b	0.25	0.325	0.4
C	0.15	0.20	0.25
D	2.95	3.15	3.35
D1	2.3	2.5	2.7
E	3.1	3.3	3.5
E1	2.9	3.0	3.3
E2	1.60	1.82	2.0
e	0.65BSC		
H2	0.300	0.40	0.50
L1/L2	0.10	0.15	0.25
θ	11°	12°	13°