-30V P-Channel Trench Power MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(ON)TYP}$	I_D
-30V	8.8mΩ @V_{GS}=-10V	-24A
	12.5mΩ @V_{GS}=-4.5V	

Description

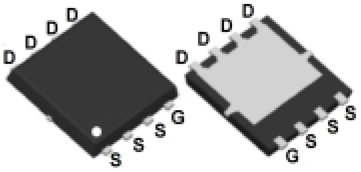
- Trench Power MOSFET Technology
- Low R_{DSON} and Low Gate Charge
- RoHS and Halogen-Free Complaint

Applications

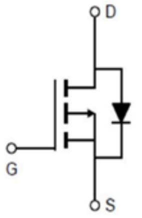
- DC-DC converter circuit
- Power Switch
- Load Switch
- Charging

Marking Information

Device	Marking	Package	Shipping
LPM03P080TE	LPS M03P080TE YWX	PDFN3030-8L	5K/REEL
Marking indication: Y:Production year W:Production week X: Series Number			



PDFN3030-8L



Internal Schematic

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Absolute Maximum Ratings (TA = 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[7]		I_D	-24	A
Pulsed Drain Current [3]		I_{DM}	-82	A
Total Power Dissipation [2]	Tc=25°C	P_D	24	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 (1,4)	$R_{\theta JA}$	49	℃/W
Thermal Resistance from Junction-to-Case	$R_{\theta JC}$	4.5	℃/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_{GS} =±20V, V_{DS} =0V	-	-	±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-30V,V_{GS}=0V			-1	μA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}= V_{GS},I_D=-250μA	-1	-1.5	-2	V
Drain-Source on-Resistance	$R_{DS(on)}$	V_{GS}=-10V,I_D=-17A	-	8.8	11.5	mΩ
		V_{GS}=-4.5V,I_D=-13A	-	12.5	17.5	mΩ
Forward Transconductance	g_{fs}	V_{DS}=-5V,I_D=-17A	-	61.8	-	S
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS}=-15V,V_{GS}=0V, f=1MHz	-	1820	-	pF
Output Capacitance	C_{oss}		-	235	-	pF
Reverse Transfer Capacitance	C_{rss}		-	202	-	pF
Gate Resistance	R_G	f=1MHz	-	4.6	-	Ω
Switching Characteristics						
Total Gate Charge	Q_g	V_{GS} = -10V, V_{DS} =-15V, I_D = -17A	-	37	-	nC
Gate-Source Charge	Q_{gs}		-	7.3	-	nC
Gate-Drain Charge	Q_{gd}		-	7.7	-	nC
Turn-on Delay Time	$T_{d(on)}$	V_{GS} =-10V, V_{DS} =-15V, R_L=0.9Ω, R_{GEN}=3Ω,	-	8.8	-	nS
Rise Time	Tr		-	70	-	nS
Turn-off Delay Time	$T_{d(off)}$		-	46	-	nS
Fall Time	Tf		-	76	-	nS
Drain-Source Body Diode Characteristics						
Diode Forward Voltage	V_{SD}	Is=-1A, V_{GS} =0V	-	-	-1	V
Continuous Source Current	I_S				-24	A
Body Diode Reverse Recovery Time	trr	IF=-17A,di/dt=100A/us	-	13.8	-	nS
Body Diode Reverse Recovery Charge	Qrr	IF=-17A,di/dt=100A/us	-	1.2	-	nC

Notes:

1. The value of RθJA is measured with the device mounted on 1in2 FR-4 board with 1oz. Copper, in a still air environment with TA =25°C. The value in any given application depends on the user's specific board design.
2. The power dissipation PD is based on TJ(MAX)=150°C, using junction-to-case thermal resistance and is more useful in setting the upper dissipation limit for cases where additional heatsinking is used.
3. Repetitive rating, pulse width limited by junction temperature TJ(MAX)=150°C. Ratings are based on low frequency and duty cycles to keep initial TJ=25°C.
4. The RθJA is the sum of the thermal impedance from junction to case RθJc and case to ambient.
5. The static characteristics in Figures 1 to 6 are obtained using <300μs pulses, duty cycle 0.5% max.
6. These curves are based on the junction-to-case thermal impedance which is measured with the device mounted on 1in2 FR-4 board with 1oz. Copper, in a still air environment with TA=25℃
7. The maximum current rating is package limited

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

Figure 1: Output Characteristic

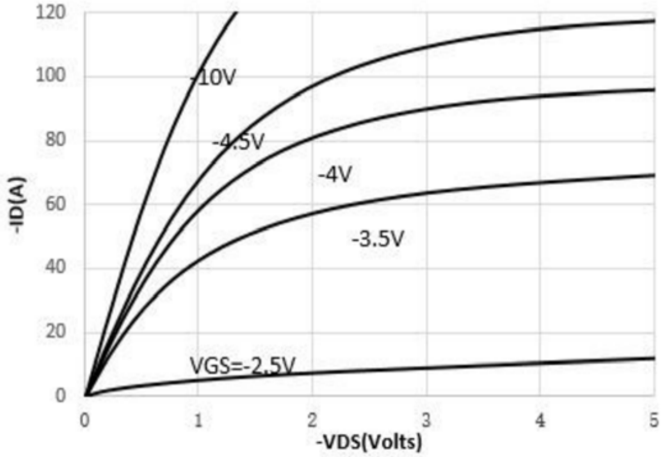


Figure 2: Transfer Characteristics

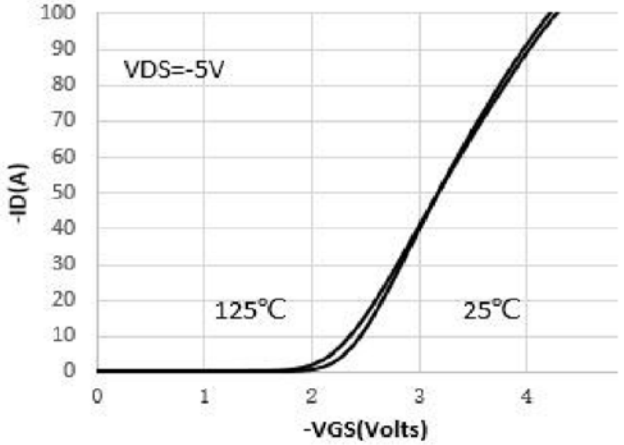


Figure 3: On-Resistance vs. Junction Temperature

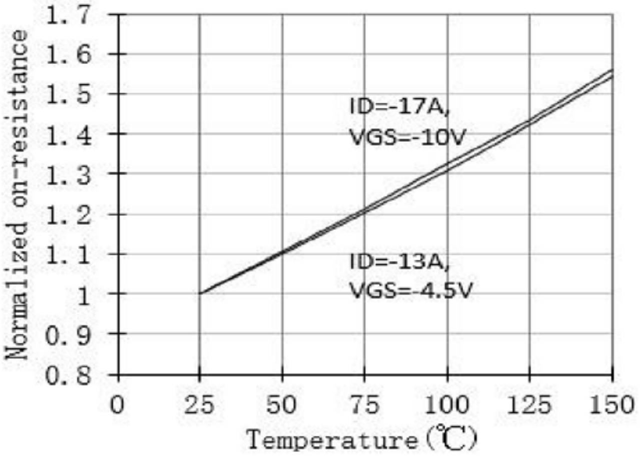


Figure 4: On-Resistance vs.Gate-Source Voltage

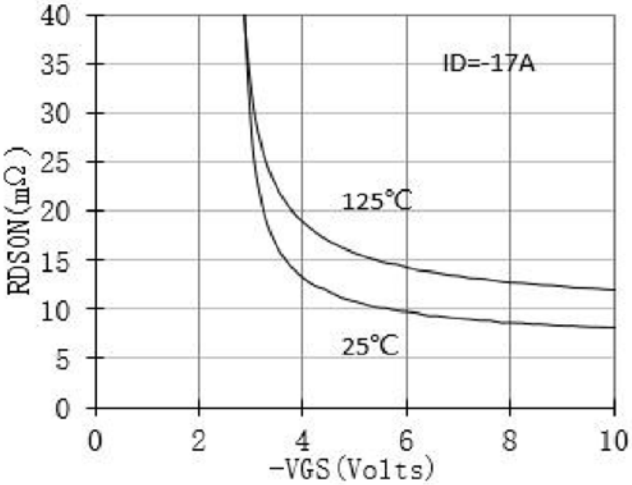


Figure 5: Body Diode VF VS Current

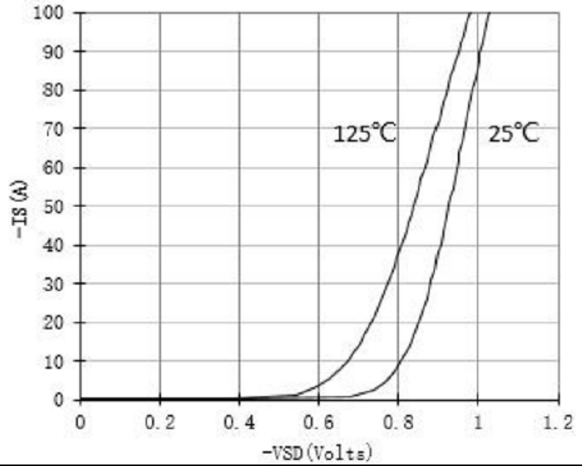
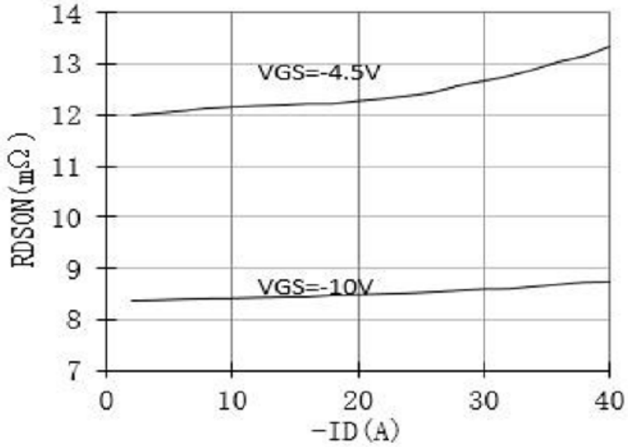


Figure 6: On-Resistance vs. Drain Current and Gate Voltage



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

Figure 7: Gate-Charge Characteristics

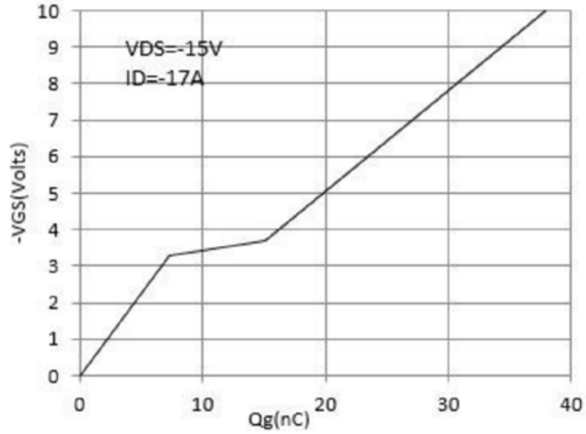


Figure 8: Capacitance Characteristics

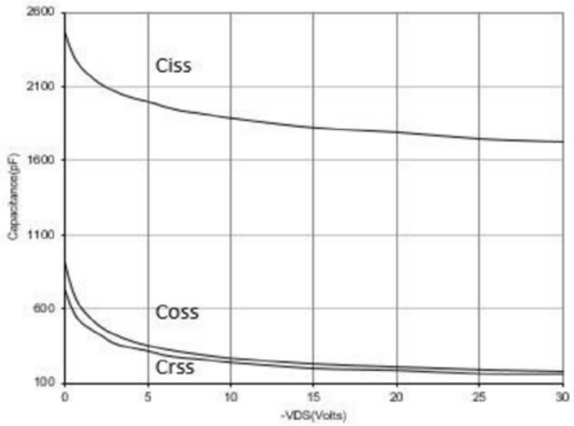


Figure 9: Maximum Forward Biased Safe

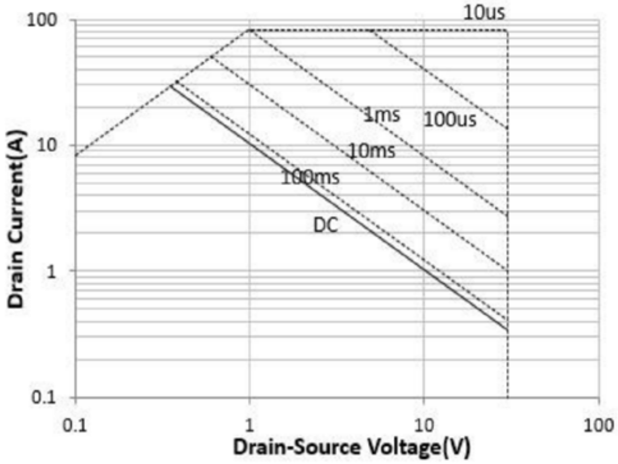


Figure 10: Single Pulse Power Rating Operating Area

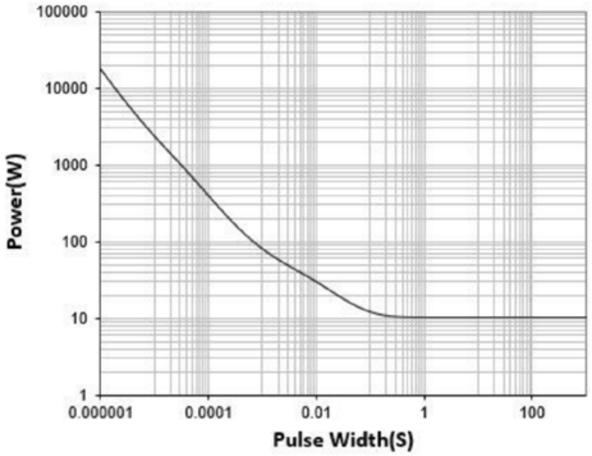
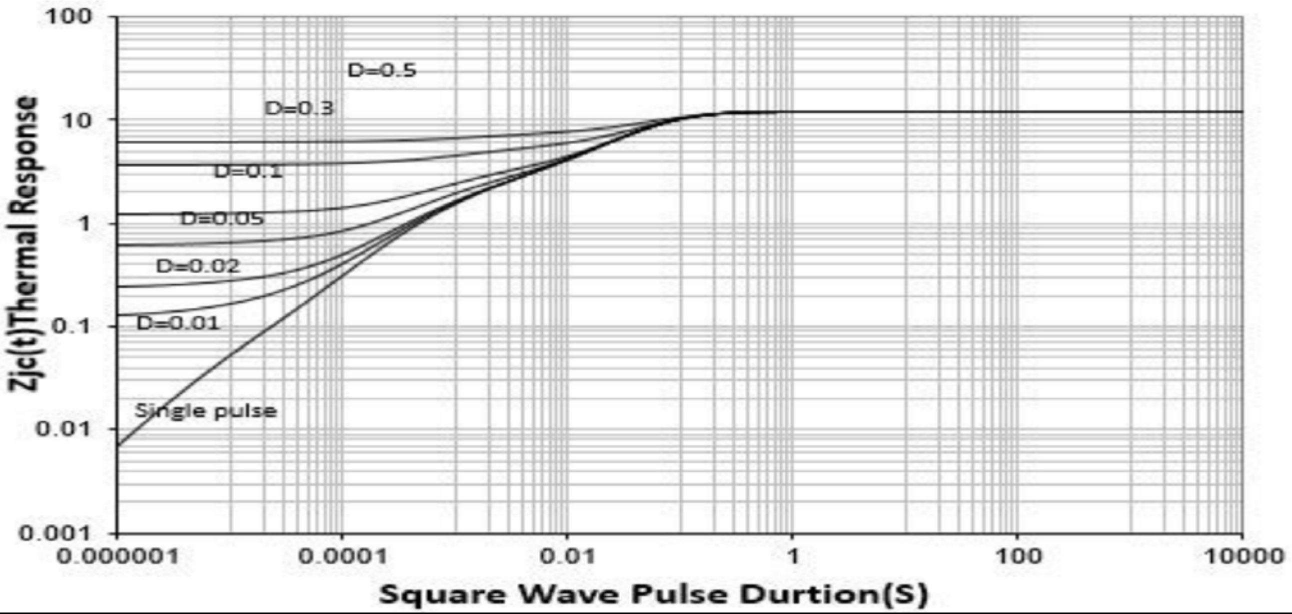
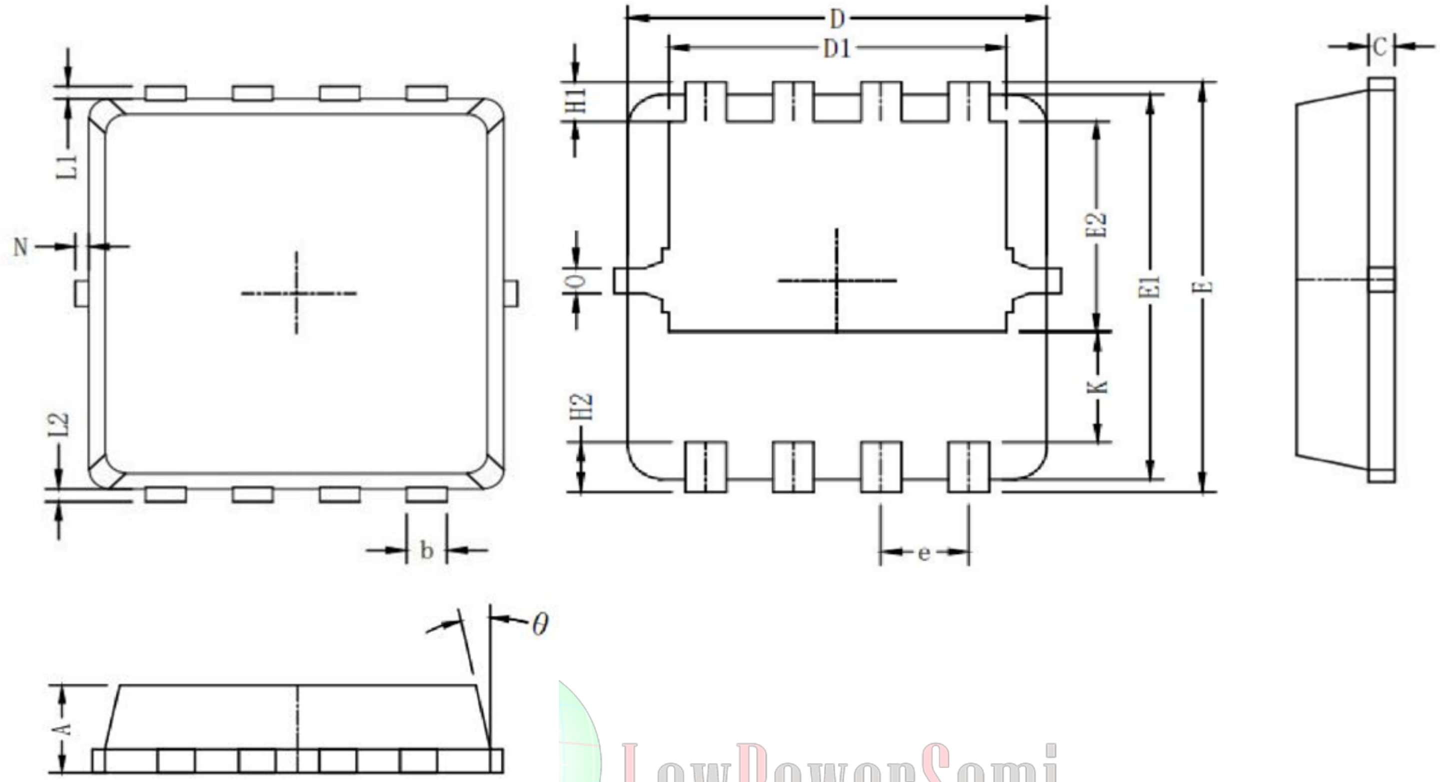


Figure 11: Normalized Maximum Transient Thermal Impedance



Packaging Information：

Mechanical Dimensions for PDFN3030-8L



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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°