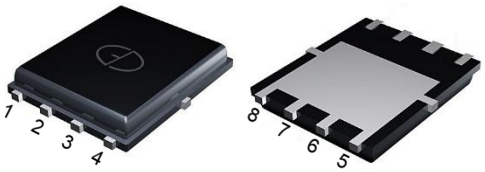
N-Channel 30V (D-S) Power MOSFET

Features

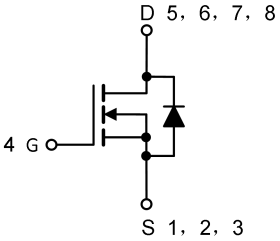
- 100% Avalanche Tested
- Extremely Low Losses with Low FOM Rdson*Qg
- Halogen Free, Pb-Free
- RoHS Compliant



PDFN5060

Applications

- DC-DC
- Motors, lamps
- Power switching



Absolute Maximum Ratings (T_J=25°C unless otherwise noted)

Parameter		Symbol	Value	Unit
Drain Source Voltage		V_{DS}	30	V
Gate Source Voltage		V_{GS}	±20	V
Drain Current, Continuous V_{GS}=10V *(Note 1)*	T_C=25°C	I_D	25	A
	T_C=100°C		17	
Drain Current, Pulsed *(Note 2)*		I_{DM}	50	A
Single Avalanche Energy @ L=0.5mH		E_{AS}	68	mJ
Power Dissipation *(Note 3)*	T_C=25°C	P_D	30	W
Operating Junction/ Storage Temperature Range		T_J/ T_{STG}	-55 to +150	°C

Note 1: Continuous current tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.
Note 2: Repetitive rating; pulse width limited by max. junction temperature.

Thermal Characteristics

Parameter	Symbol	Max	Unit
Thermal Resistance Junction to Case *(Note 3)*	R_{thJC}	4.2	°C/W

Note 3: The power dissipation PD is based on max. junction temperature, using junction-to-case thermal resistance.

Electrical Characteristics (T_J =25°C unless otherwise noted)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V, I_D=250μA	30	--	--	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=30V, V_{GS}=0V	--	--	1.0	uA
Gate Threshold Voltage	$V_{GS(TH)}$	V_{DS}=V_{GS}, I_{DS}=250uA	1.0	--	2.5	V
Gate Leakage Current	I_{GSS}	V_{GS}=±20V, V_{DS}=0V	--	--	±100	nA
Drain-Source On-state Resistance	$R_{DS(on)}$	V_{GS}=10V, I_D=15A	--	6.7	10	mΩ
		V_{GS}=4.5V, I_D=10A	--	12	16	
Total Gate Charge	Q_g	I_D = 15A, V_{DS}=15V, V_{GS} = 10V	--	12	--	nC
Gate-Source Charge	Q_{gs}		--	3	--	
Gate-Drain Charge	Q_{gd}		--	4	--	
Turn-on Delay Time	$t_{d(on)}$	V_{GS}=10V, V_{DD}=22V, I_D=10A, R_G=2.2Ω	--	8.3	--	ns
Turn-on Rise Time	t_r		--	19.3	--	
Turn-off Delay Time	$t_{d(off)}$		--	23.1	--	
Turn-off Fall Time	t_f		--	5.5	--	
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=25V, f=1MHz	--	960	--	pF
Output Capacitance	C_{oss}		--	144	--	
Reverse Transfer Capacitance	C_{rss}		--	120	--	

Reverse Diode Characteristics (T_J =25°C unless otherwise noted)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Continuous Source Current (Body Diode)	I_S	T_C=25°C	--	--	25	A
Pulsed Source Current (Body Diode)	I_{SM}		--	--	50	
Diode Forward Voltage	V_{SD}	I_S=15A, V_{GS}=0V	--	--	1.2	V
Reverse Recovery Time	T_{rr}	I_F =10A, di/dt = 100 A/μs	--	12	--	ns
Reverse Recovery Charge	Q_{rr}		--	4	--	nC

Typical Characteristics Curves (T_J = 25℃ unless otherwise noted)

Fig.1 - Typical Output Characteristics

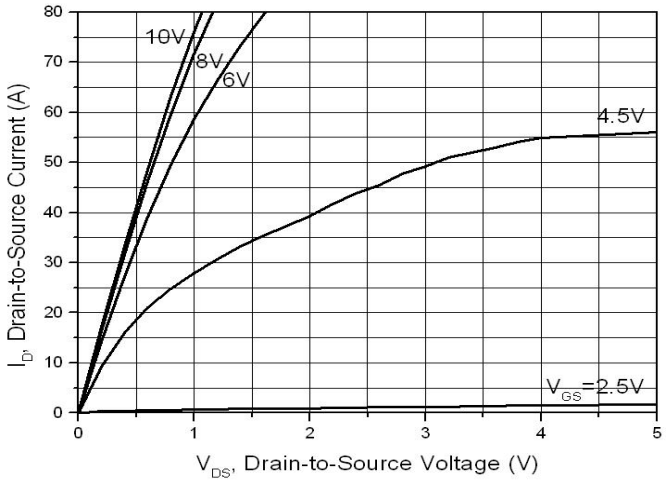


Fig.2 - BVDSS vs. Junction Temperature

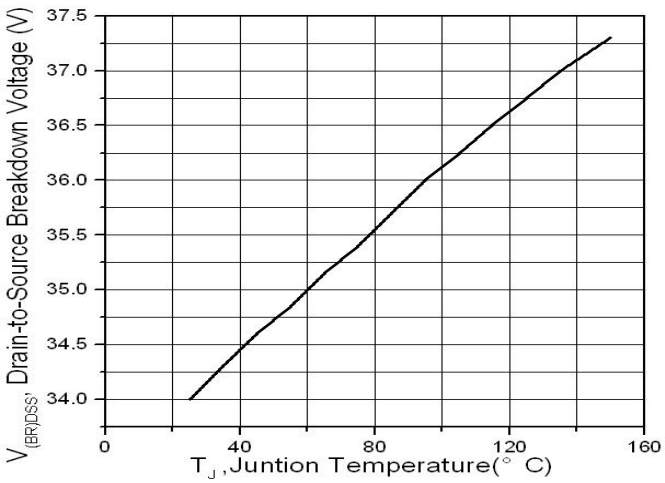


Fig.3 - Normalized On-Resistance vs. Junction Temperature

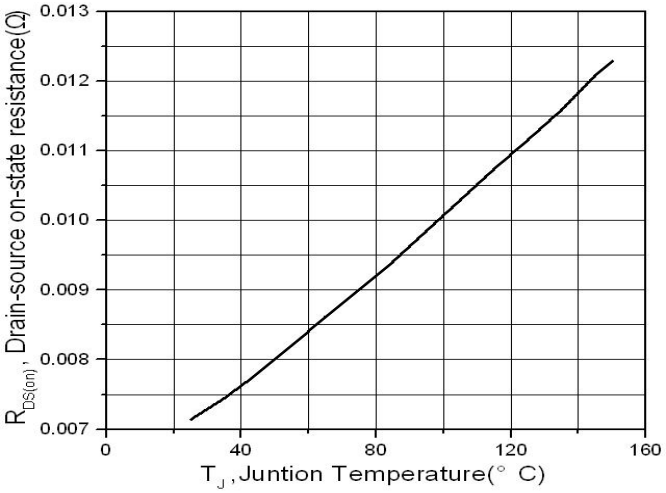


Fig.4 - Normalized V_{GS}(th) vs. Junction Temperature

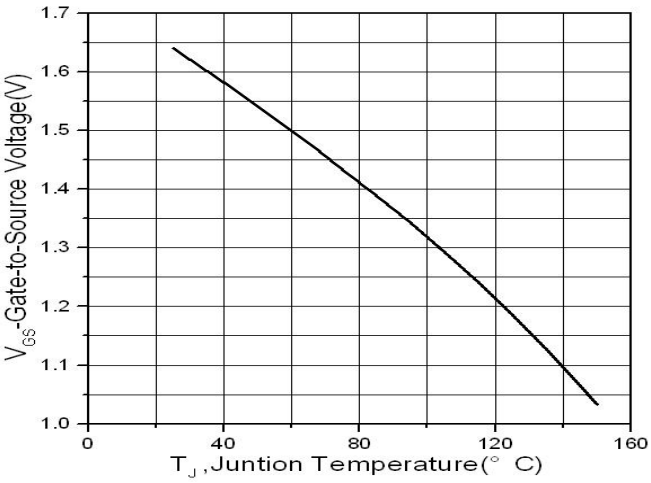


Fig.5 - Transfer Characteristics

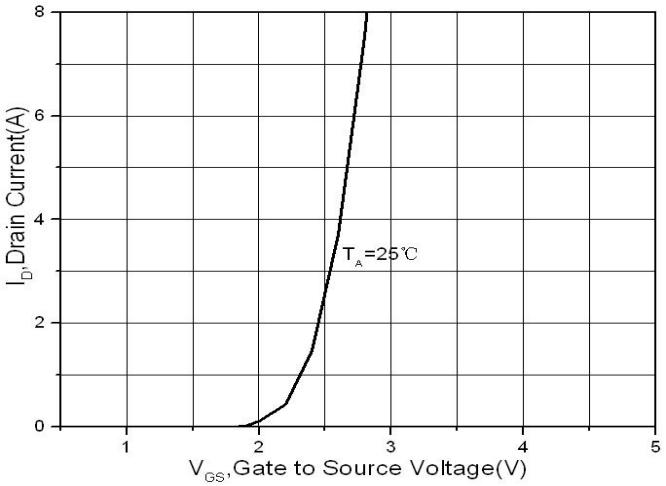
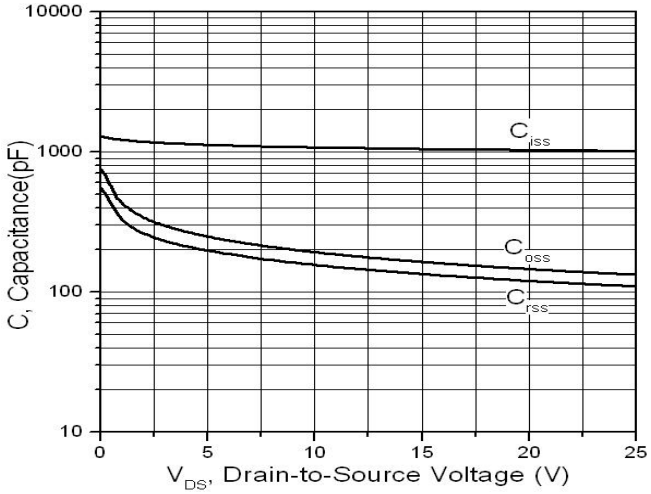


Fig.6 - Capacitance Characteristics



Typical Characteristics Curves (T_J = 25℃ unless otherwise noted)

Fig.7 - Safe Operation Area

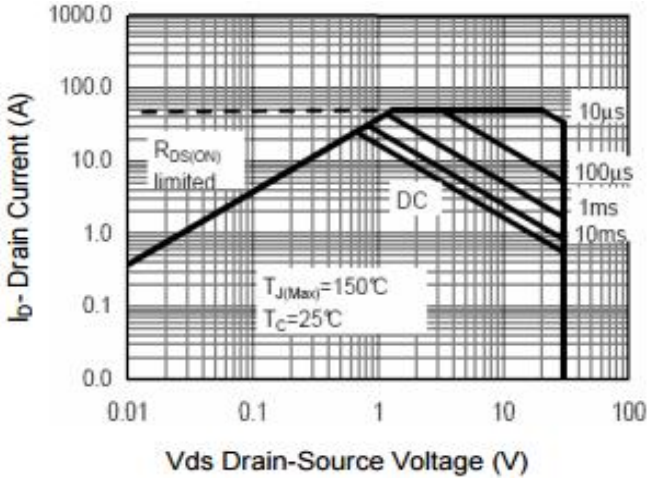
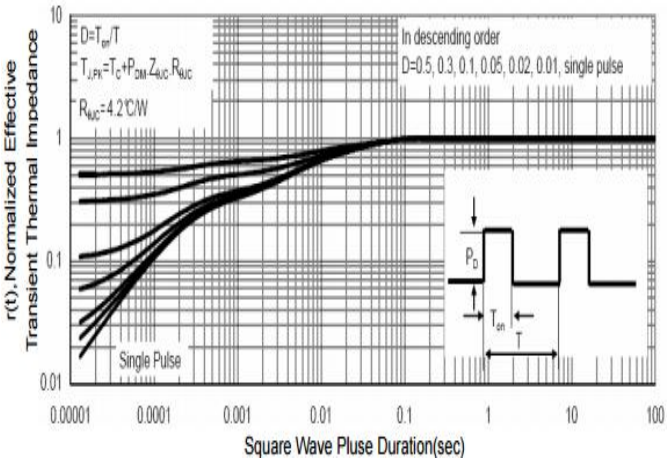
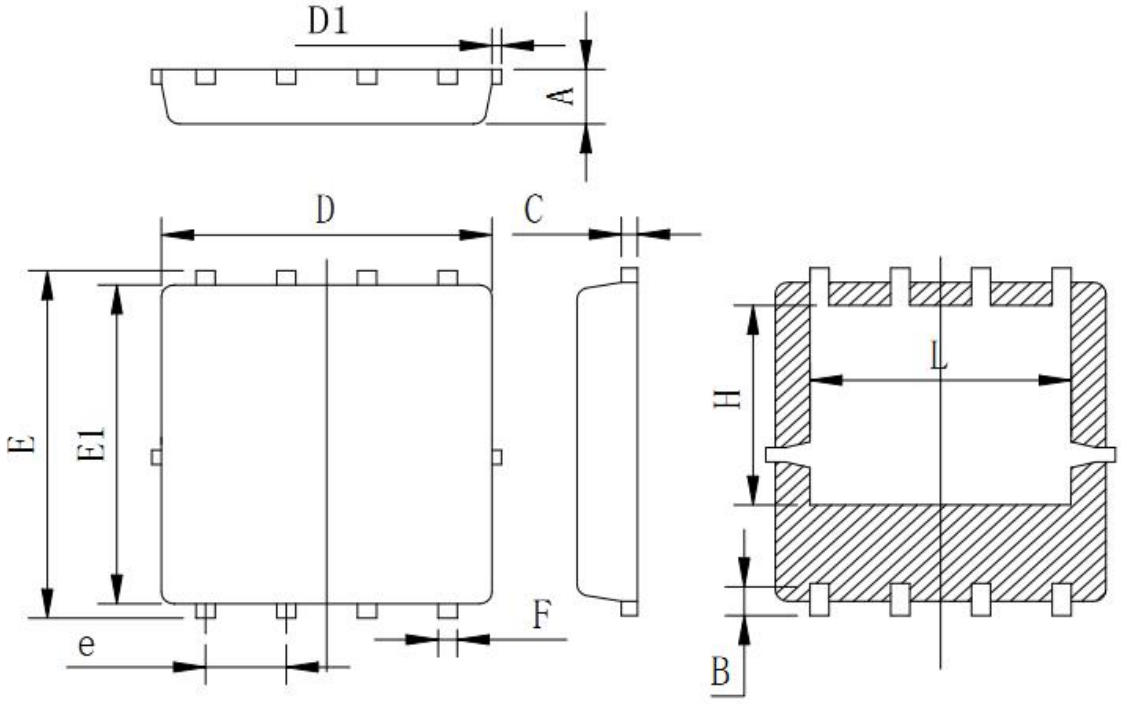


Fig.8 - Transient Thermal Impedance



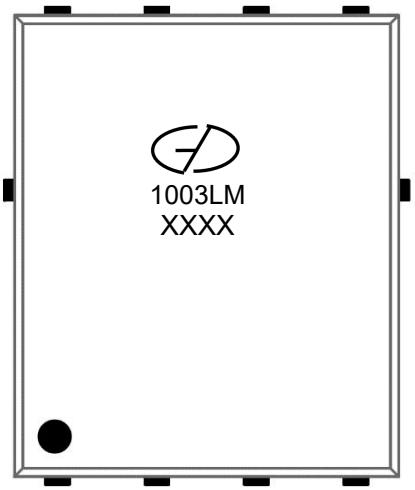
Package Outline Dimensions (Unit: millimeters)

PDFN5060



Symbol	Min	Typ	Max
A	0.90	0.95	1.00
B	0.48	0.58	0.68
C	0.20	0.254	0.30
D	5.00	5.20	5.40
D1			0.15
E	5.90	6.05	6.20
E1	5.40	5.55	5.70
e	1.22	1.27	1.32
F	0.25	0.30	0.35
H	3.27	3.47	3.67
L	3.80	4.00	4.20

Marking Outline



Part Name: GMN1003LM

1. Logo Mark:
2. P/N Mark: 1003LM
3. Date Code: XXXX
4. Pin 1#: ●

Disclaimers

These materials are intended as a reference to assist our customers in the selection of the Suzhou Good-Ark product best suited to the customer's application; they do not convey any license under any intellectual property rights, or any other rights, belonging to Suzhou Good-Ark Electronics Co., Ltd.or a third party.

Suzhou Good-Ark Electronics Co., Ltd. assumes no responsibility for any damage, or infringement of any third-party's rights, originating in the use of any product data, diagrams, charts, programs, algorithms, or circuit application examples contained in these materials.

All information contained in these materials, including product data, diagrams, charts, programs and algorithms represents information on products at the time of publication of these materials, and are subject to change by Suzhou Good-Ark Electronics Co., Ltd. without notice due to product improvements or other reasons. It is therefore recommended that customers contact Suzhou Good-Ark Electronics Co., Ltd. or an authorized Suzhou Good-Ark Electronics Co., Ltd. for the latest product information before purchasing a product listed herein. The information described here may contain technical inaccuracies or typographical errors. Suzhou Good-Ark Electronics Co., Ltd. assumes no responsibility for any damage, liability, or other loss rising from these inaccuracies or errors. Please also pay attention to information published by Suzhou Good-Ark Electronics Co., Ltd. by various means, including our website home page.
(http://www.goodark.com)

When using any or all of the information contained in these materials, including product data, diagrams, charts, programs, and algorithms, please be sure to evaluate all information as a total system before making a final decision on the applicability of the information and products. Suzhou Good-Ark Electronics Co., Ltd. assumes no responsibility for any damage, liability or other loss resulting from the information contained herein.

The prior written approval of Suzhou Good-Ark Electronics Co., Ltd. is necessary to reprint or reproduce in whole or in part these materials.

Please contact Suzhou Good-Ark Electronics Co., Ltd. or an authorized distributor for further details on these materials or the products contained herein.