GOSTONE

RoHS COMPLIANT

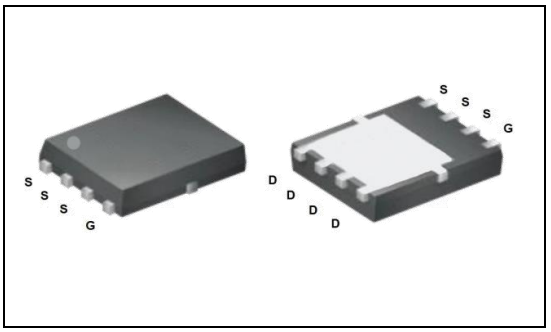
N-Channel 60V, 13mΩ max, MOSFET

GMT130N06F1

Product Summary

V_{DS} (V)	$R_{DS(on),max}$ (mΩ)	I_D (A)
60	13@ V_{GS} = 10V	50

PDFN5060



Features

- Low $R_{DS(on)}$ trench technology
- Low thermal impedance
- Fast switching speed
- 100% avalanche tested

Application

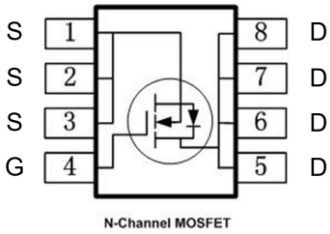
- PWM applications
- Load Switch
- Power manage ment



PDFN5060

NOTE:
LOGO - GS
GMXXXXX- Part number code
F - Fab location code
A - Assembly location code
Y - Year code
WW - Week code
L&T - Assembly lot code

Equivalent circuit



Absolute Maximum Rating (Ta=25°C)

Parameter		Symbol	Limit	Unit
Drain-source voltage		V_{DS}	60	V
Gate-source voltage		V_{GS}	±20	
Continuous drain current (V_{GS}=10V)(1)	T_C=25℃	I_D	50	A
	T_C=70℃		31	
Pulsed drain current(2)		$I_{D,pulse}$	120	
Single Pulse Avalanche Energy(3)		EAS	80	mJ
Power dissipation	T_C=20℃	P_D	41	W
Operating junction and storage temperature range		T_J, T_{stg}	-55 to 150	℃

Thermal Characteristic (Ta=25°C)

Parameter	Symbol	Typ.	Max.	Unit
Thermal Resistance, Junction-to-Ambient(4)	$R_{\theta JA}$		55	℃/W

Electrical characteristics (Ta=25°C ± 3°C)

Parameter	Symbol	Test conditions	Min.	Typ.	Max.	Unit
Static parameter(5)						
Drain to source breakdown voltage	$V_{(BR)DSS}$	V_{GS} = 0 V, I_D = 250 μA	60			V
Gate-source threshold voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250 μA	1.2	1.7	2.5	V
Gate-body leakage	I_{GSS}	V_{DS} = 0 V, V_{GS} = ±20 V			±0.1	μA
Zero gate voltage drain current	I_{DSS}	V_{DS} = 60 V, V_{GS} = 0 V			1	μA
Drain-source on-resistance	$R_{DS(on)}$	V_{GS} = 10V, I_D = 20 A		10	13	mΩ
		V_{GS} = 4.5V, I_D = 15 A		12	15	
Forward transconductance(5)	g_{fs}	V_{DS} = 5.0V, ID = 20 A		35		S
Gate resistance	R_g	V_{GS} = 0V, VDS = 0V, f = 1MHz		1.2		Ω
Dynamic(6)						
Total gate charge	Q_g	V_{DS} = 30V, I_D = 18A , V_{GS} = 10V		57		nC
Gate-source charge	Q_{gs}			8.6		
Gate-drain charge	Q_{gd}			14		
Turn-on delay time	$t_{d(on)}$	V_{GS} = 10V, V_{DD} = 30V , I_D = 20 A, R_{GEN} = 3.3Ω		16.2		ns
Rise time	t_r			41.2		
Turn-off delay time	$t_{d(off)}$			56.4		
Fall time	t_f			16.2		
Input capacitance	C_{iss}	V_{DS} = 30V, V_{GS} = 0 V, f = 1 MHz		1264		pF
Output capacitance	C_{oss}			135		
Reverse transfer capacitance	C_{rss}			83		
Reverse Diode Characteristics(6)						
Diode forward voltage	V_{SD}	I_S = 115mA, V_{GS} = 0V		0.85	1.2	V
Diode Forward Current	I_s	T_C = 25°C			50	A

Notes

1. This current is chip limited, whiich is calculated based on Rthjc.
2. This current is calculated on single pulse with 10μs Pulse & Duty Cycle = 1%.
3. EAS Condition:TJ=25°C,VDD=40V,VGS=10V,RG=25Ω, L=3mH
4. Device mounted on FR-4 substrate PC board with 2oz copper in 1inch square cooling area.
5. Short duration pulse test used to minimize self-heating effect.
6. Defined by design, not subject to production.

Electrical characteristics diagrams

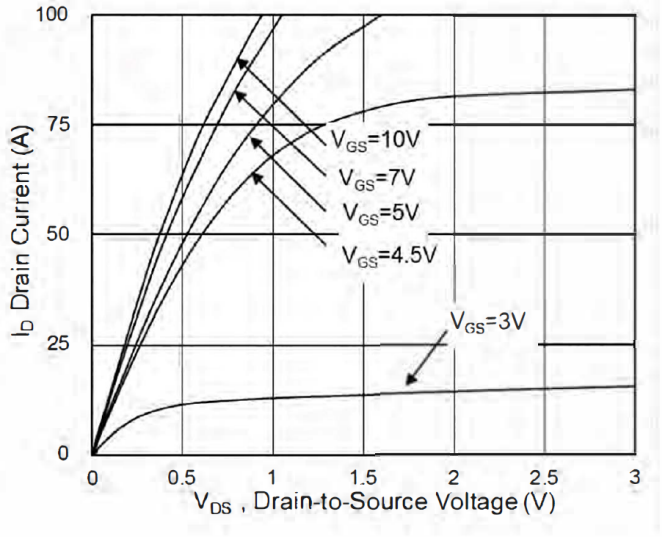


Fig.1 Typical Output Characteristics

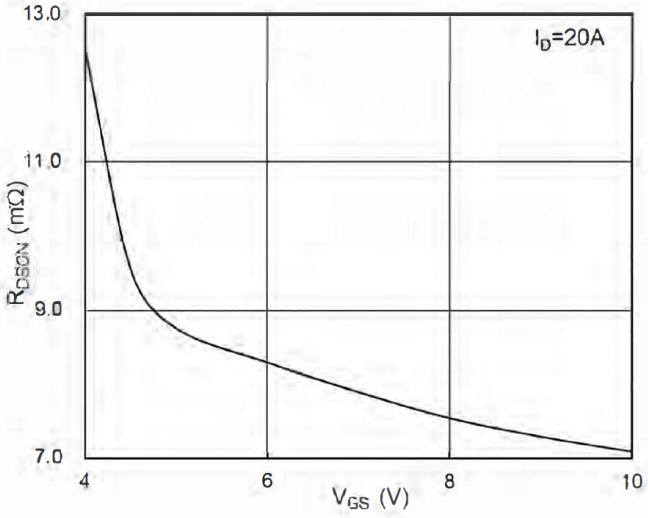


Fig.2 On-Resistance v.s Gate-Source

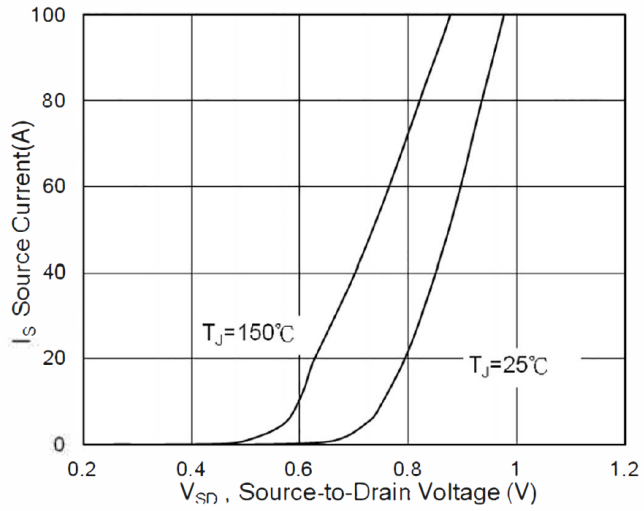


Fig.3 Forward Characteristics of Reverse

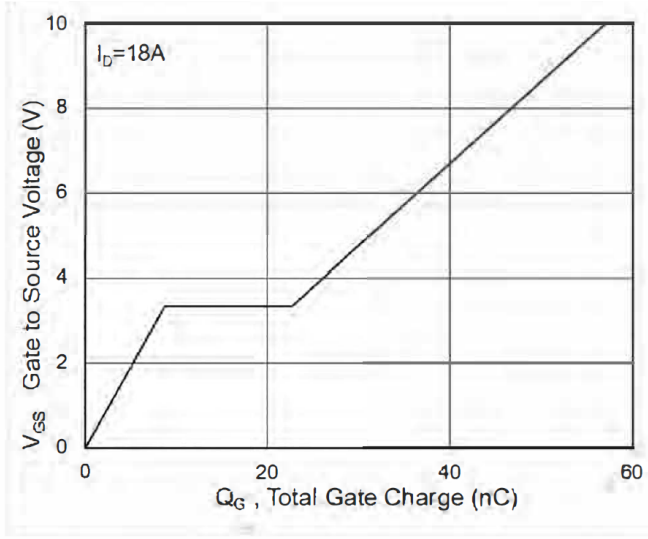


Fig.4 Gate-Charge Characteristics

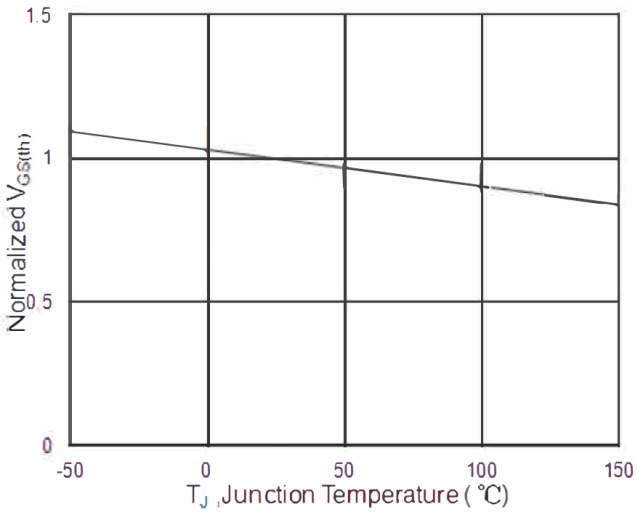


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

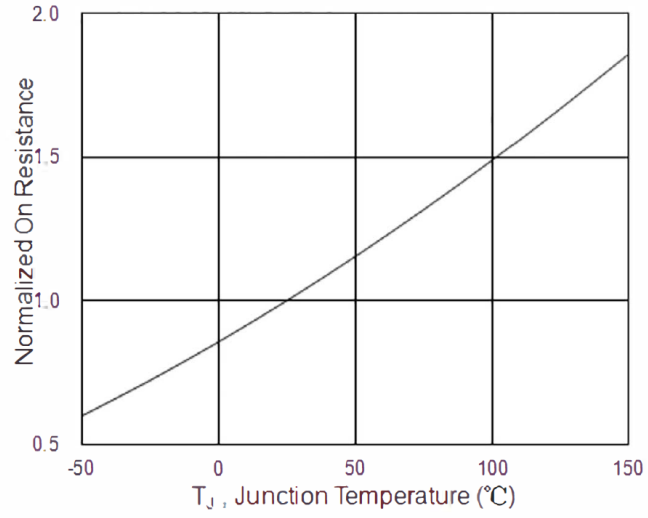


Fig.6 Normalized R_{DSON} vs. T_J

Electrical characteristics diagrams

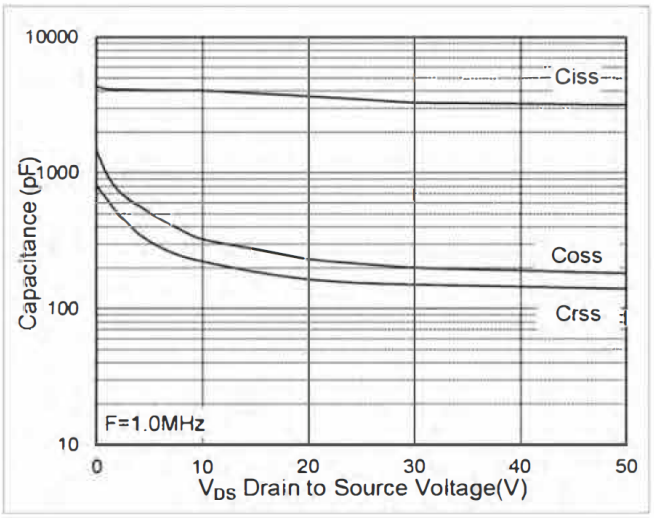


Fig.7 Capacitance

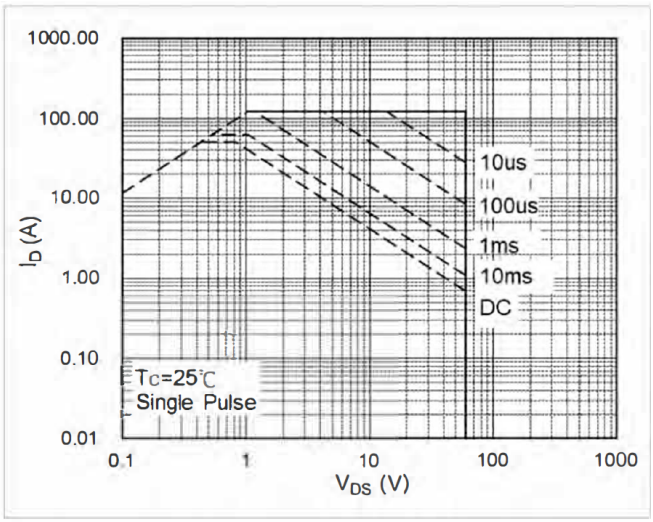


Fig.8 Safe Operating Area

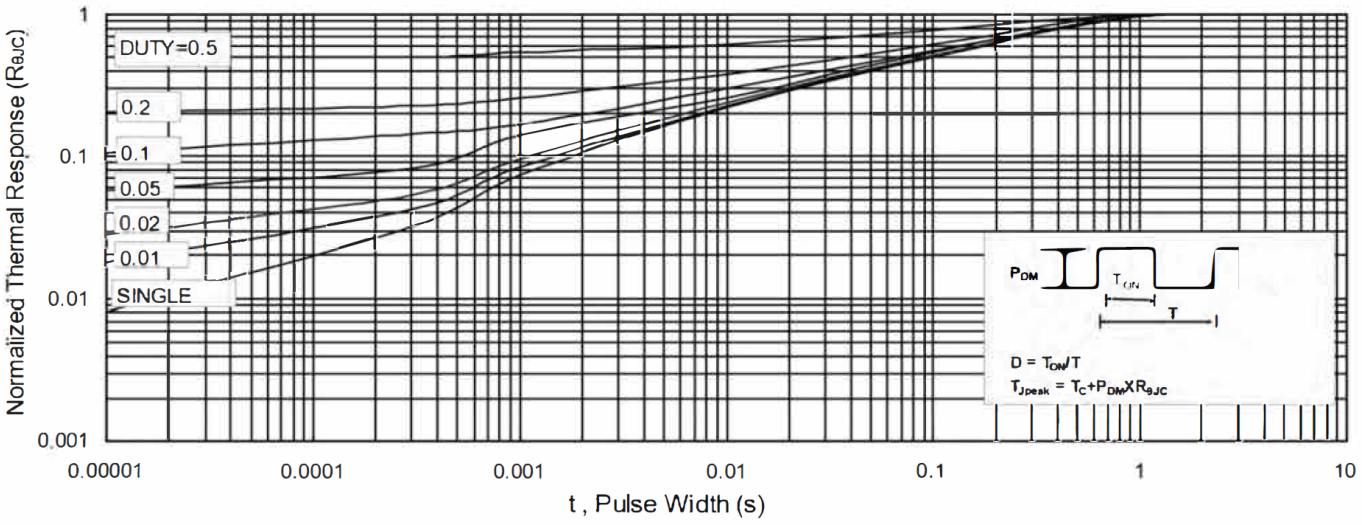


Fig.9 Normalized Maximum Transient Thermal Impedance

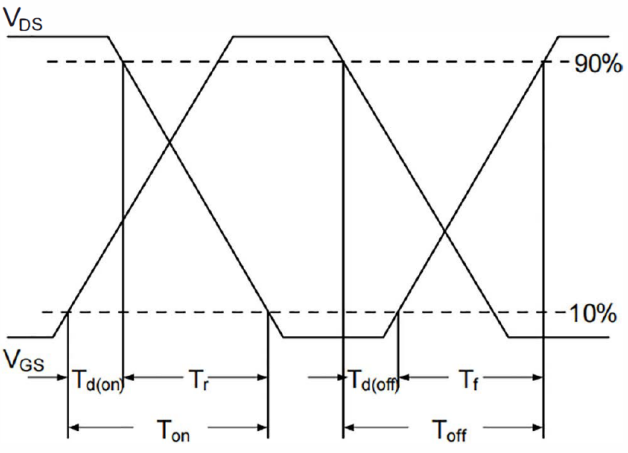


Fig.10 Switching Time Waveform

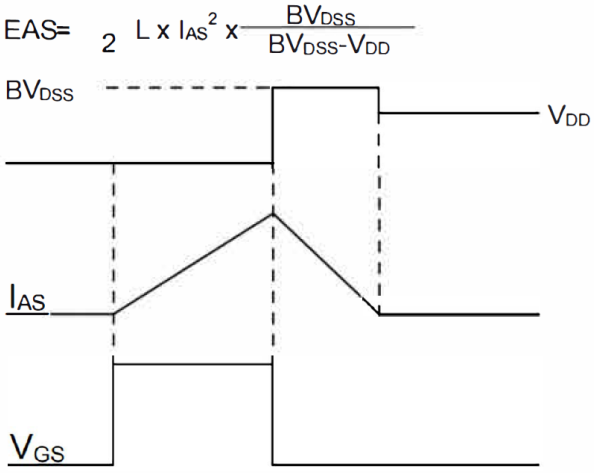
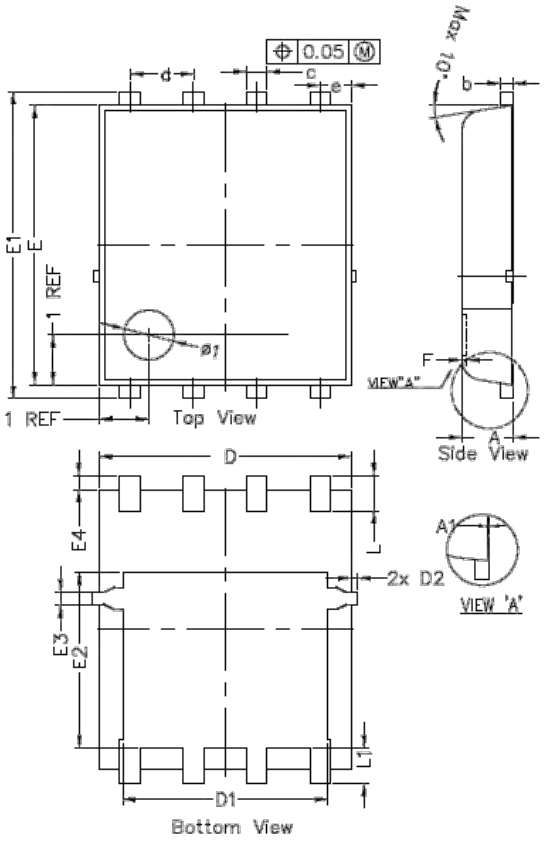


Fig.11 Unclamped Inductive Switching Waveform

Outline Drawing PDFN5060



Dim	Millimeters		
	Min	Nom	Max
A	0.900	1.000	1.100
A1	0.000	---	0.050
b	0.246	0.254	0.312
c	0.310	0.410	0.510
d		1.27BSC	
D	4.950	5.050	5.150
D1	4.000	4.100	4.200
D2	---	---	0.125
e		0.62BSC	
E	5.500	5.600	5.700
E1	6.050	6.150	6.250
E2	3.425	3.525	3.625
E3	0.150	0.250	0.350
E4	0.175	0.275	0.375
F	---	---	0.100
L	0.500	0.600	0.700
L1	0.600	0.700	0.800

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