GOSTONE

RoHS COMPLIANT

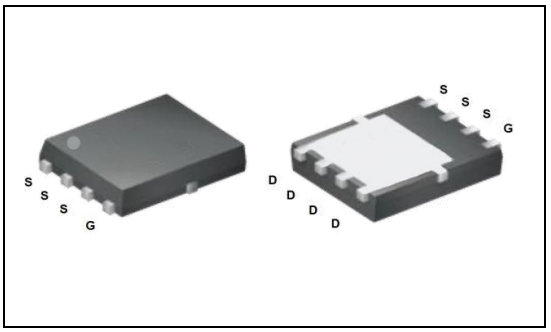
P-Channel -40V, 15mΩ max, Power MOSFET

GMT150P04F

Product Summary

V_{DS} (V)	$R_{DS(on),max}$ (mΩ)	I_D (A)
-40	15@ V_{GS} = -10V	-50

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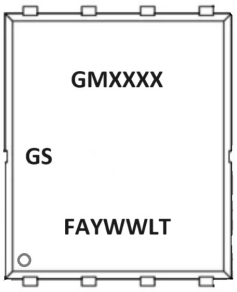


Features

- Advanced Split Gate Trench technology
- Low thermal impedance
- Fast switching speed
- 100% avalanche tested

Application

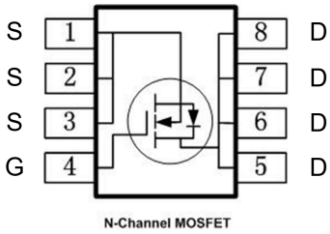
- Load Switch
- PWM Application
- Power Management



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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}	-40	V
Gate-source voltage		V_{GS}	±20	
Continuous drain current (V_{GS}=-10V)(1)	T_C=25℃	I_D	-50	A
	T_C=100℃		-35	
Pulsed drain current(2)		$I_{D,pulse}$	-105	
Single Pulse Avalanche Energy(3)		EAS	146	mJ
Power dissipation	T_C=25℃	P_D	52.1	W
Operating junction and storage temperature range		T_J, T_{stg}	-55 to 150	℃

Thermal Characteristic

Parameter		Symbol	Max.	Unit
Thermal resistance, junction-to-case	Steady state	$R_{\theta JC}$	2.4	℃/W
Thermal resistance, junction-to-ambient (4)	Steady state	$R_{\theta JA}$	62	

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

Parameter	Symbol	Test conditions	Min.	Typ.	Max.	Unit
Static parameter (4)						
Drain to source breakdown voltage	$V_{(BR)DSS}$	V_{GS} = 0 V, I_D = -250 μA	-40			V
Gate-source threshold voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = -250 μA	-1.0	-1.6	-2.5	V
Gate-body leakage	I_{GSS}	V_{DS} = 0 V, V_{GS} = ±20 V			±100	nA
Zero gate voltage drain current	I_{DSS}	V_{DS} = -32 V, V_{GS} = 0 V			1	μA
Drain-source on-resistance	$R_{DS(on)}$	V_{GS} = -10V, I_D = -30 A		13	15	mΩ
		V_{GS} = -4.5V, I_D = -20 A		18	21	mΩ
Forward transconductance	g_{fs}	V_{DS} = -5.0V, I_D = -18 A		24		S
Gate resistance	R_g	V_{GS} = 0V, V_{DS} = 0V, f = 1MHz		7		Ω
Dynamic(5)						
Total gate charge	Q_g	V_{DS} = -20V, I_D = -12A V_{GS} = -10V		27		nC
Gate-source charge	Q_{gs}			7.6		
Gate-drain charge	Q_{gd}			7.5		
Turn-on delay time	$t_{d(on)}$	V_{GS} = -10V, V_{DD} = -15V I_D = -1 A, R_G = 3.3 Ω		40		ns
Rise time	t_r			35		
Turn-off delay time	$t_{d(off)}$			100		
Fall time	t_f			9.5		
Input capacitance	C_{iss}	V_{DS} = -15 V, V_{GS} = 0 V, f = 1 MHz		2320		pF
Output capacitance	C_{oss}			1192		
Reverse transfer capacitance	C_{rss}			1253		
Reverse Diode Characteristics (5)						
Diode forward voltage	V_{SD}	V_{GS} = 0 V, I_F = -1 A		0.8	1.1	V
Reverse recovery time	t_{rr}	I_F = -20 A, di/dt = 100 A/μs		24		ns
Reverse recovery charge	Q_{rr}			15		nC

Notes

1. The data tested by surface mounted on a 1 inch2 FR-4 board with 2OZ copper.
2. The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%.
3. The EAS data shows Max. rating . The test condition is V_{DD}=-25V，V_{GS}=-10V，L=0.1mH.
4. Short duration pulse test used to minimize self-heating effect.
5. Defined by design, not subject to production.

Electrical characteristics diagrams

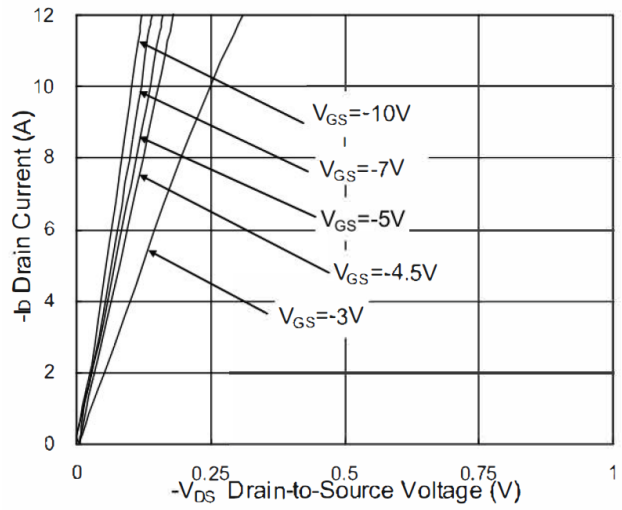


Fig.1 Typical Output Characteristics

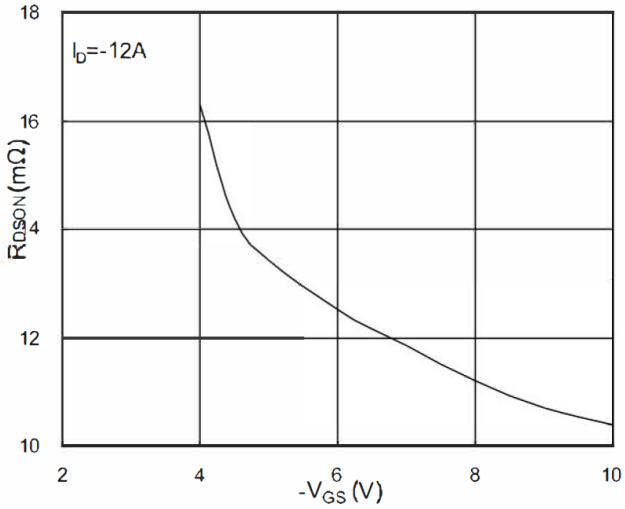


Fig.2 On-Resistance v.s Gate-Source

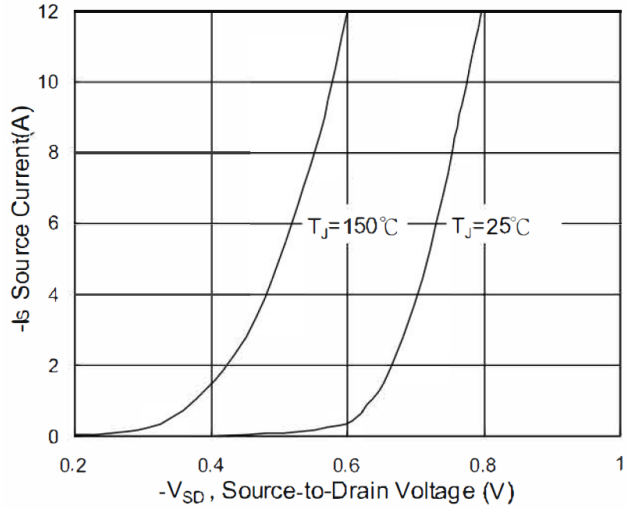


Fig.3 Forward Characteristics Of Reverse

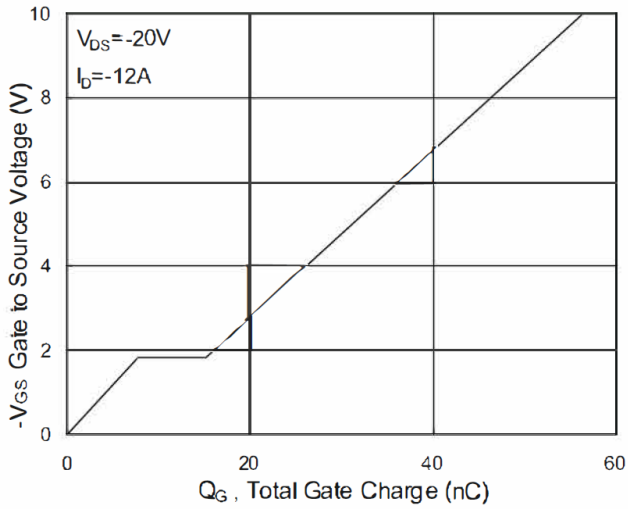


Fig.4 Gate-Charge Characteristics

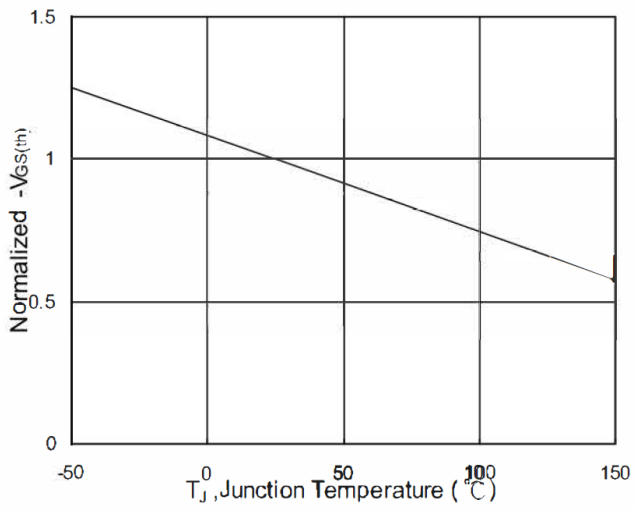


Fig.5 Normalized $V_{GS(th)}$ v.s T_J

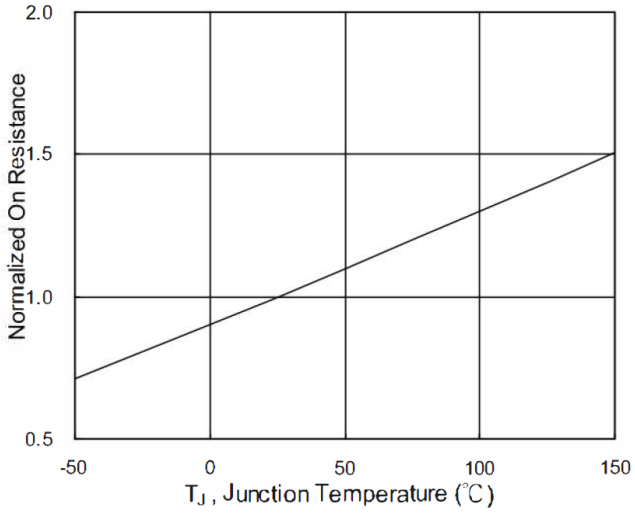


Fig.6 Normalized R_{DSON} v.s T_J

Electrical characteristics diagrams

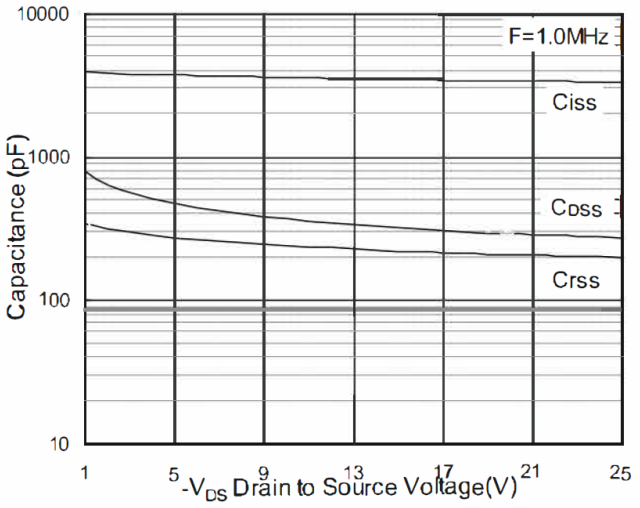


Fig.7 Capacitance

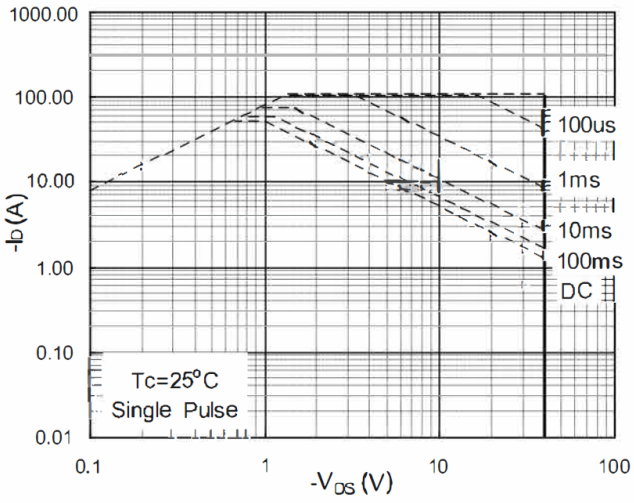


Fig.8 Safe Operating Area

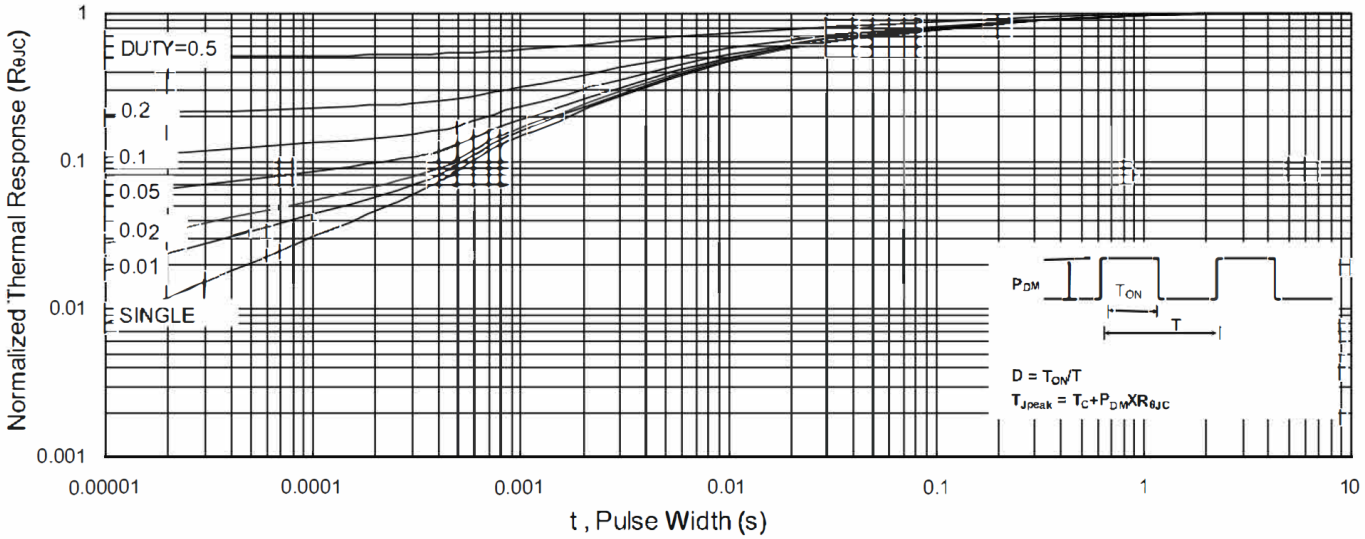


Fig.9 Normalized Maximum Transient Thermal Impedance

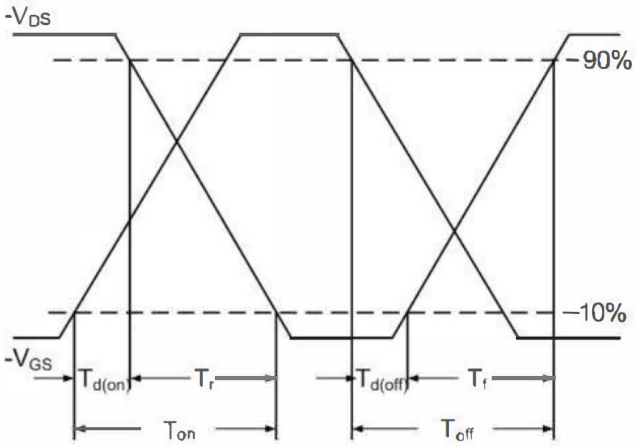


Fig.10 Switching Time Waveform

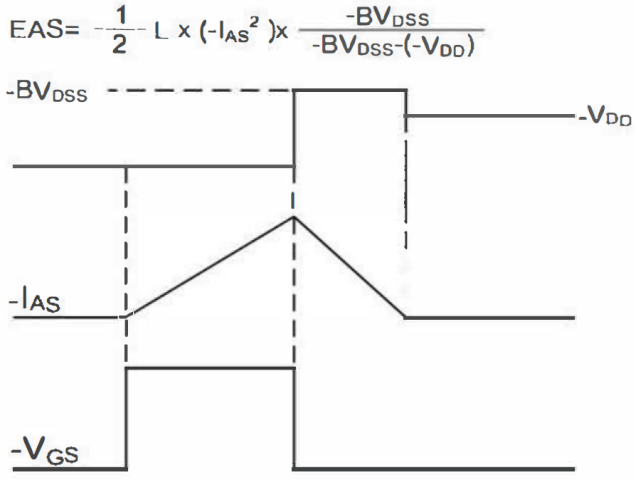
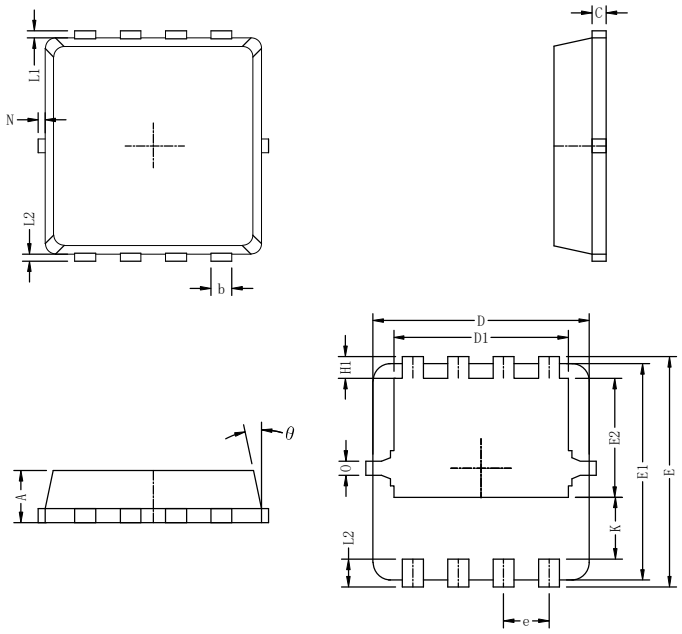


Fig.11 Unclamped Inductive Waveform

Outline Drawing PDFN3333



Symbols	Millimeters		
	MIN.	NOM.	MAX.
A	0.65	0.75	0.85
b	0.25	0.30	0.35
C	0.15	0.20	0.25
D	3.00	3.10	3.20
D1	2.40	2.50	2.60
E	3.20	3.30	3.40
E1	3.00	3.10	3.20
E2	1.60	1.70	1.80
e	0.65 BSC.		
H1	0.21	0.31	0.41
H2	0.30	0.40	0.50
K	0.78	0.88	0.98
L1/L2	0.10 REF.		
θ	11°	12°	13°
N	0	-	0.15
O	0.2 REF.		

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