GOSTONE

RoHS COMPLIANT

Dual-N-Channel 60V, 14mΩ max., Power MOSFET

GMS150D06F4

Product Summary

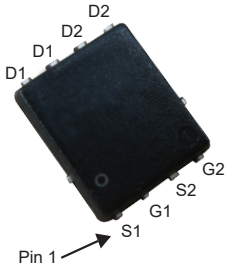
V_{DS} (V)	$R_{DS(on),max}$ (mΩ)	I_D (A)
60	14 @ V_{GS} = 10V	30 (1)

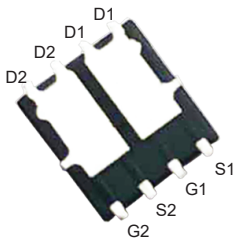
Application

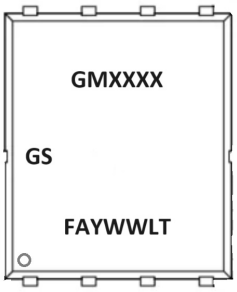
- Load Switching
- Motor driver
- High frequency switching

Features

- Low RDS(on)
- Trench power MOSFET
- Low Gate Charge



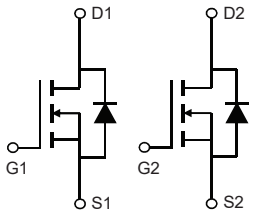




PDFN5060-D

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	T_C=25°C (1)	I_D	30	A
	T_C=100°C (1)		21	
Pulsed drain current(2)		$I_{D,pulse}$	120	
Avalanche energy, single pulse(3)		E_{AS}	80	mJ
Power dissipation	T_C=25°C	P_D	52	W
Operating junction and storage temperature range		T_J, T_{stg}	-55 to 150	°C

Thermal Characteristic (Ta=25°C)

Parameter		Symbol	Max.	Unit
Thermal resistance, junction-to-case	Steady state	$R_{\theta JC}$	2.4	°C/W
Thermal resistance, junction-to-ambient (4)	Steady state	$R_{\theta JA}$	48	

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

Parameter	Symbol	Test conditions	Min.	Typ.	Max.	Unit
Static parameter						
Drain to source breakdown voltage	$V_{(BR)DSS}$	V_{GS} = 0 V, I_D = 1 mA	60			V
Gate-source threshold voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250 μA	1.2	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} = 60 V, V_{GS} = 0 V			1	μA
Drain-source on-resistance	$R_{DS(on)}$	V_{GS} = 10 V, I_D = 20 A		11.6	14	mΩ
		V_{GS} = 4.5 V, I_D = 15 A		14.5	17.4	mΩ
Forward transconductance(5)	g_{fs}	V_{DS} = 5 V, I_D = 10 A		32		S
Gate resistance	R_g	f = 1 MHz		0.8		Ω
Dynamic(5)						
Total gate charge	Q_g	V_{DS} = 30 V, I_D = 20 A, V_{GS} = 10 V		10.6		nC
Gate-source charge	Q_{gs}			1.8		
Gate-drain charge	Q_{gd}			2.3		
Turn-on delay time	$t_{d(on)}$	V_{DS} = 30 V, I_D = 20 A, V_{GS} = 10 V, R_{GEN} = 3 Ω		3.3		ns
Rise time	t_r			8.3		
Turn-off delay time	$t_{d(off)}$			12		
Fall time	t_f			4.4		
Input capacitance	C_{iss}	V_{DS} = 30 V, V_{GS} = 0 V, f = 1 MHz		930		pF
Output capacitance	C_{oss}			232		
Reverse transfer capacitance	C_{rss}			9.5		
Reverse Diode Characteristics(5)						
Diode forward voltage	V_{SD}	V_{GS} = 0 V, I_F = 20 A		0.7	1.2	V
Reverse recovery time	t_{rr}	V_{DS} = 30 V, I_F = 20 A, di/dt = 100 A/μs		24		ns
Reverse recovery charge	Q_{rr}			11.7		nC

Notes

(1) Limited by maximum junction temperature..

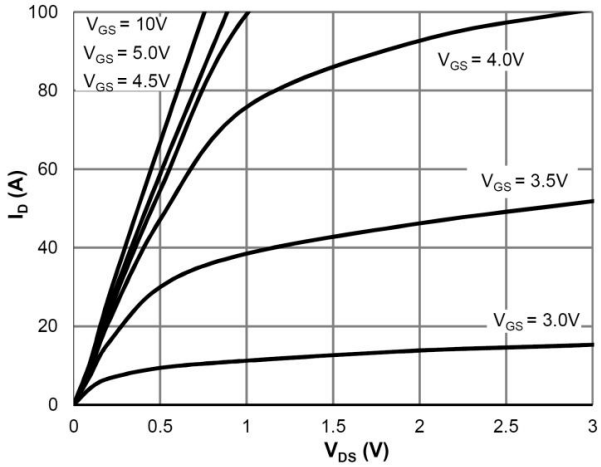
(2) Pulse width limited by maximum junction temperature.

(3) V_{DS} = 60 V, V_{GS} = 10 V, L = 0.5 mH.

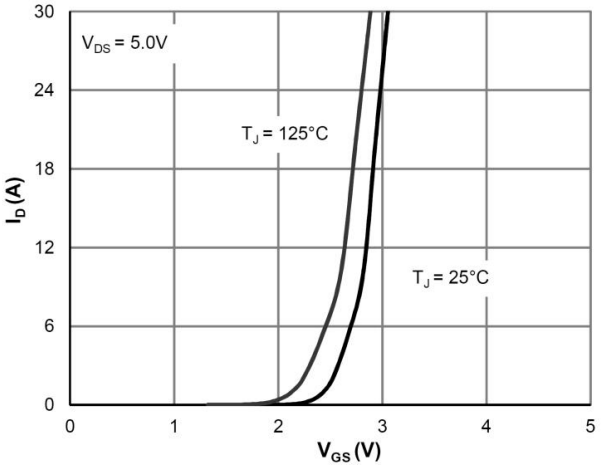
(4) $R_{\theta JA}$ is determined with the device mounted on a 1 in^2 pad 2 oz copper pad on a 1.5x1.5 in. board of FR-4 material.

(5) Guaranteed by design, not subject to production testing.

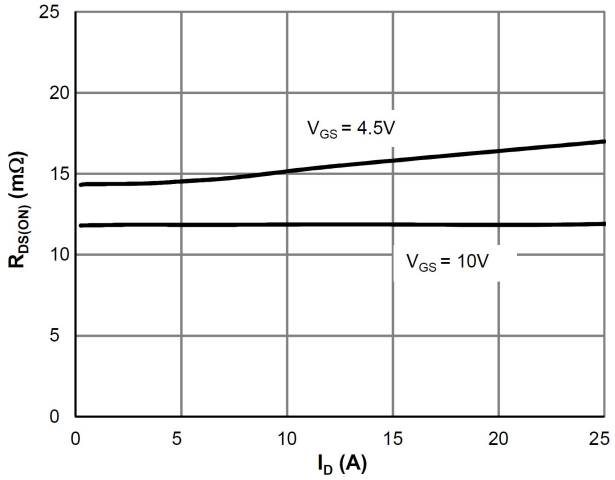
Electrical characteristics diagrams



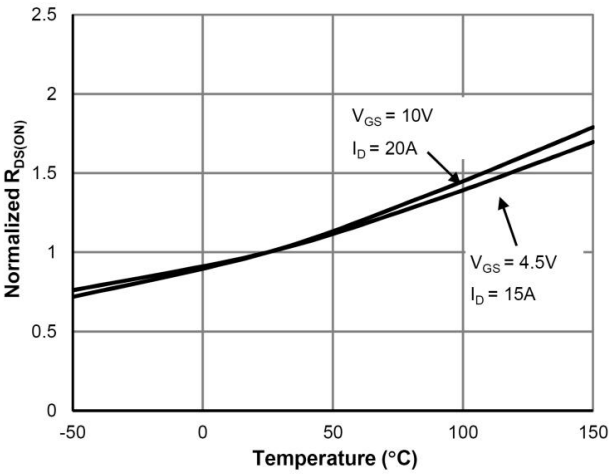
Saturation Characteristics



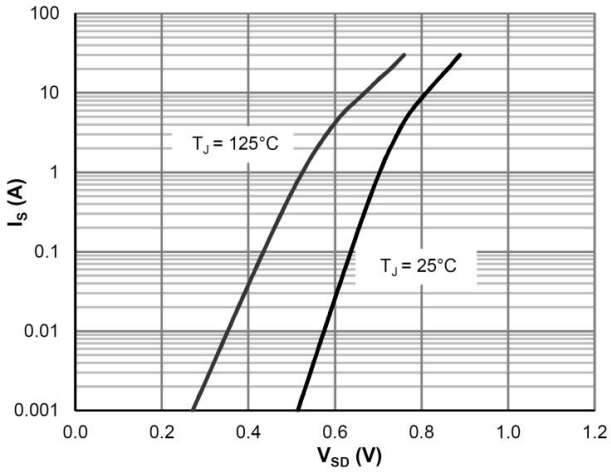
Transfer Characteristics



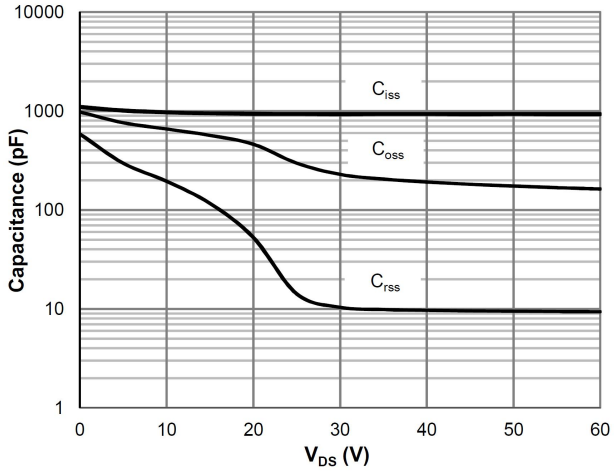
$R_{DS(ON)}$ vs. Drain Current



$R_{DS(ON)}$ vs. Junction Temperature

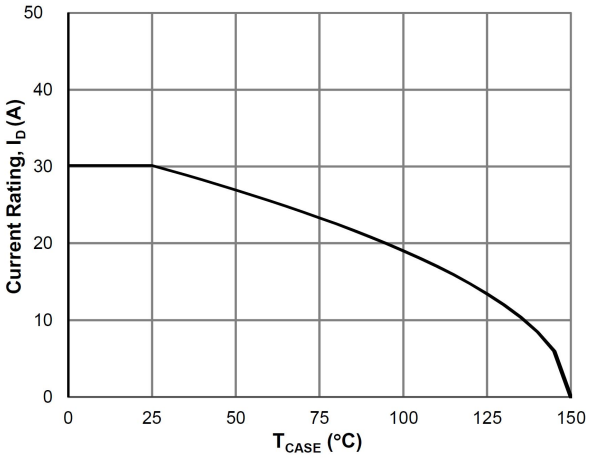


Body-Diode Characteristics

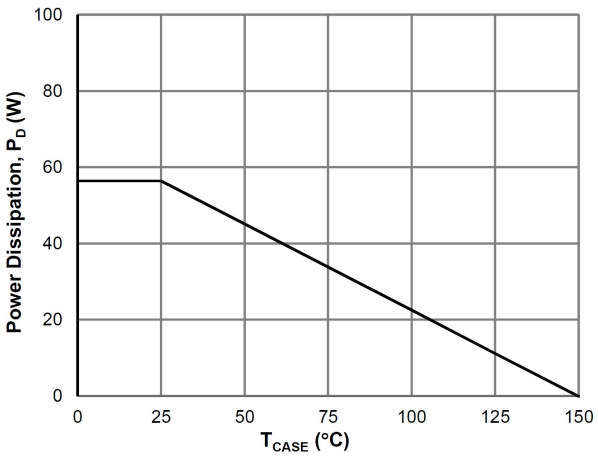


Capacitance Characteristics

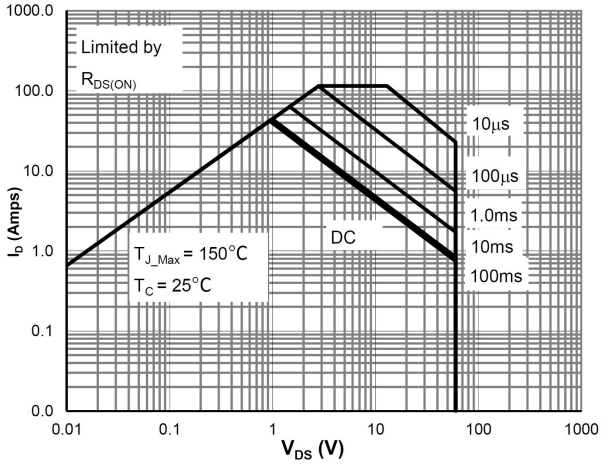
Electrical characteristics diagrams



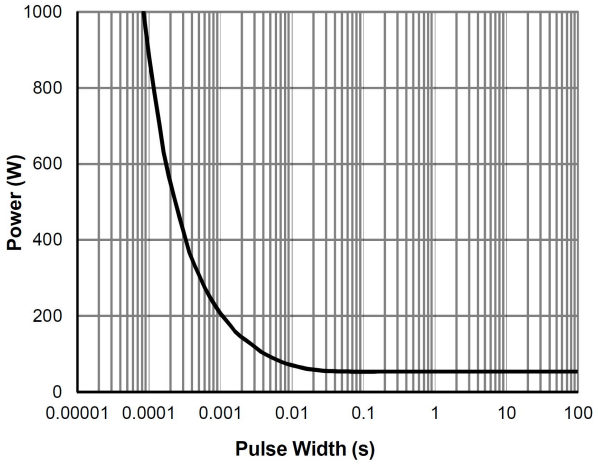
Current De-rating



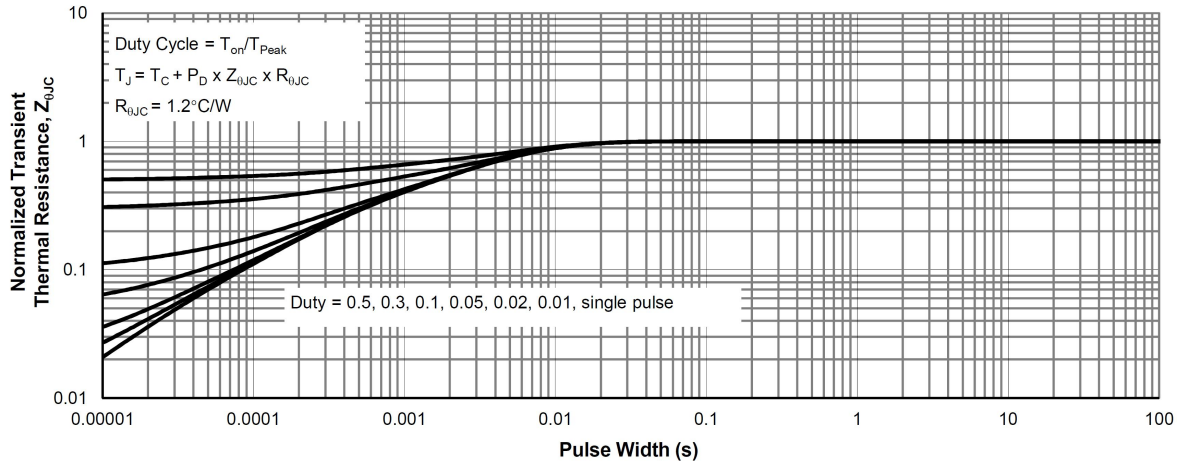
Power De-rating



Maximum Safe Operating Area



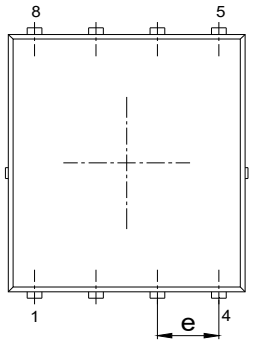
Single Pulse Power Rating, Junction-to-Case



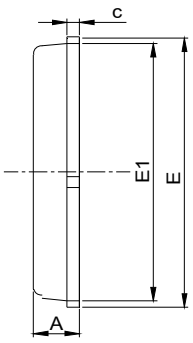
Normalized Maximum Transient Thermal Impedance

Package outline dimensions： PDFN5060-D

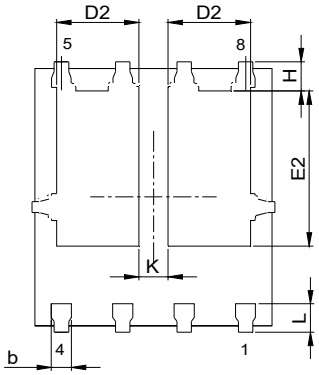
Package Outline



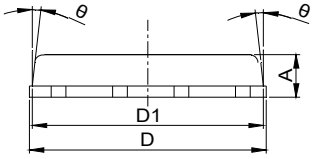
Top View



Side View



Bottom View



Front View

NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M,1994.
2. ALL DIMNESIONS IN MILLIMETER (ANNGLE IN DEGREE).
3. DIMENSIONS D1 AND E1 DO NOT INCLUDE MOLD FLASH PROTRUSIONS OR GATE BURRS.

DIM.	MILLIMETER		
	MIN.	NOM.	MAX.
A	0.90	1.00	1.10
b	0.20	--	0.51
c	0.21	0.25	0.34
D	4.90	5.00	5.15
D1	4.80	4.90	5.00
D2	1.50	--	1.80
E	5.90	6.00	6.10
E1	5.65	5.75	5.85
E2	3.38	3.48	3.78
e	1.27BSC		
H	0.41	--	0.75
L	0.45	0.60	0.75
K	0.60 REF		
θ	0°	--	12°

Important Notice

The information given in this document shall be for illustrative purposes only and shall in no event be regarded as a guarantee of conditions or characteristics. Gostone reserves the right to change any information herein. With respect to any examples, hints or any typical values stated herein and/or any information regarding the application of the product, Gostone or its affiliates hereby make no representation or warranty of any kind, expressed or implied, as to any information provided hereunder, including without limitation as to the accuracy, completeness or non-infringement of intellectual property rights of any third party, and they assume no liability for the consequences of use of such information. In addition, any information given in this document is subject to customer's compliance with its obligations stated herein and any applicable legal requirements, norms and standards concerning customer's products and any use of the product of Gostone in customer's applications. The information contained herein is exclusively intended for technically trained staff. No license is granted by implication under any patent right, copyright, mask work right, or other intellectual property right. It is customer's sole responsibility to evaluate the suitability of the product for the intended application and the completeness of the product information given herein with respect to such application. In no event shall Gostone or its affiliates be liable to any party for any direct, indirect, special, punitive, incidental or consequential damages of any nature whatsoever, including but not limited to loss of profits and loss of goodwill, whether or not such damages are based on tort or negligence, warranty, breach of contract or any other legal theory. In addition, any recipient of this document and the relevant products samples may not alter, decompile, disassemble, reverse engineer, or otherwise modify any information/samples received hereunder. Any intellectual property rights arising from the reverse engineering of Gostone's products shall belong to Gostone.