

Product Summary

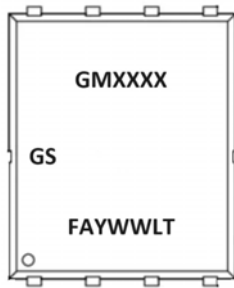
V_{DS} (V)	$R_{DS(on),max}$ (mΩ)	I_D (A)
-30	3.0 @ $V_{GS} = 10V$	100

Features

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

Application

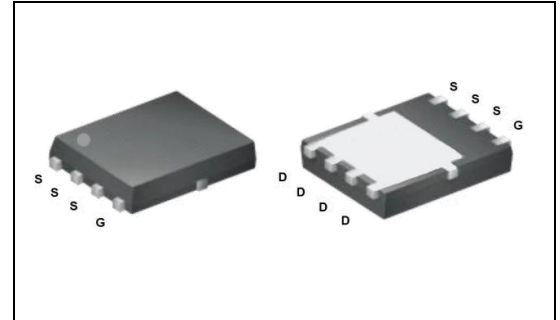
- PWM applications
- Load Switch
- Power management
- Motor Control Switch



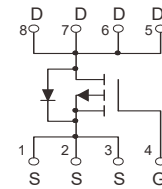
PDFN5060

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

PDFN5060



Equivalent circuit



Absolute Maximum Rating ($T_a=25^\circ\text{C}$)

Parameter	Symbol	Limit	Unit
Drain-source voltage	V_{DS}	-30	V
Gate-source voltage	V_{GS}	± 20	
Continuous drain current ⁽¹⁾	I_D	$T_C=25^\circ\text{C}$ -100	A
		$T_C=100^\circ\text{C}$ -68	
Pulsed drain current ⁽²⁾	$I_{D,pulse}$	-400	
Single Pulsed Avalanche Energy ⁽³⁾	E_{AS}	106	mJ
Power dissipation	P_D	104	W
Operating junction and storage temperature range	T_J, T_{stg}	-55 to 150	$^\circ\text{C}$

Thermal Characteristic

Parameter	Symbol	Max.	Unit
Thermal resistance, junction-to-case	$R_{\theta JC}$	1.2	$^\circ\text{C/W}$
Thermal resistance, junction-to-ambient ⁽⁴⁾	$R_{\theta JA}$	60	

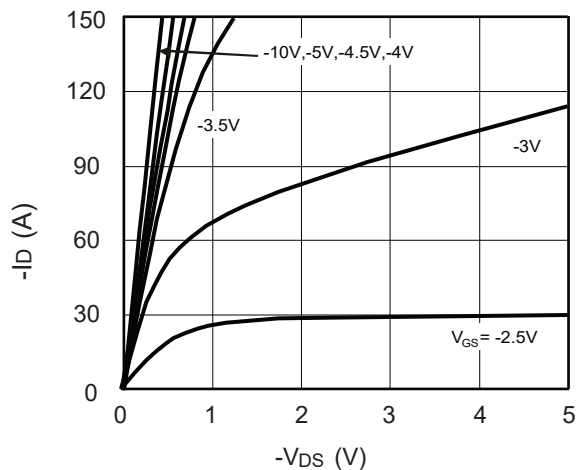
**Electrical characteristics (Ta=25°C ± 3°C)**

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	-30			V
Gate-source threshold voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = -250 μA	-1.0	-1.5	-2.0	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} = -24 V, V _{GS} = 0 V			-1	μA
Drain-source on-resistance	R _{DS(on)}	V _{GS} = -10V, I _D = -20 A		2.2	3.0	mΩ
		V _{GS} = -4.5V, I _D = -20 A		3.2	4.2	mΩ
Forward transconductance	g _{fs}	V _{DS} = -5.0V, I _D = -30 A		43		S
Gate resistance	R _g	V _{GS} = 0V, V _{DS} = 0V, f = 1MHz		4.5		Ω
Dynamic ⁽⁵⁾						
Total gate charge	Q _g	V _{DS} = -15V, I _D = -20A V _{GS} = -10V		163		nC
Gate-source charge	Q _{gs}			22		
Gate-drain charge	Q _{gd}			33		
Turn-on delay time	t _{d(on)}	V _{GS} = -10V, V _{DS} = -15V I _D = -15 A, R _G = 2.7 Ω		13		ns
Rise time	t _r			18		
Turn-off delay time	t _{d(off)}			135		
Fall time	t _f			52		
Input capacitance	C _{iss}	V _{DS} = -25 V, V _{GS} = 0 V, f = 1MHz		7860		pF
Output capacitance	C _{oss}			980		
Reverse transfer capacitance	C _{rss}			650		
Diode Characteristics ⁽⁵⁾						
Diode forward voltage	V _{SD}	V _{GS} = 0 V, I _F = -28 A		-0.8	-1.2	V
Continuous Source Current	I _S	V _G =V _D =0V , Force Current		14		A
Pulsed Source Current	I _{SM}			6.2		A

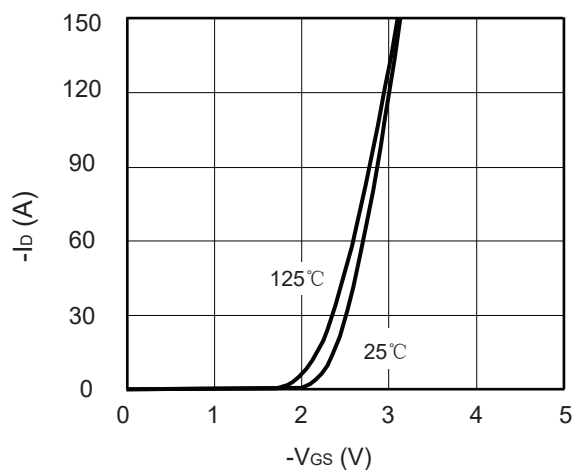
Notes

1. $T_C = 25^\circ\text{C}$ Limited only by maximum temperature allowed.
2. This current is calculated on single pulse with 10μs Pulse & Duty Cycle = 1%.
3. E_{AS} condition: $V_{DD} = -20\text{ V}, V_{GS} = -10\text{ V}, L = 0.1\text{ mH}, R_g = 25\text{ }\Omega$ Starting $T_J = 25^\circ\text{C}$.
4. Short duration pulse test used to minimize self-heating effect.
5. Defined by design, not subject to production.

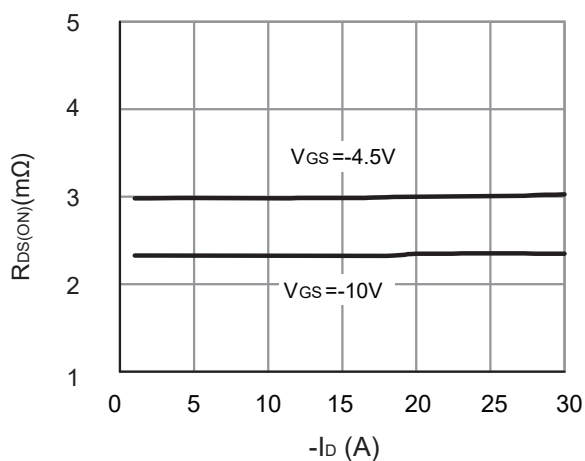
Electrical characteristics diagrams



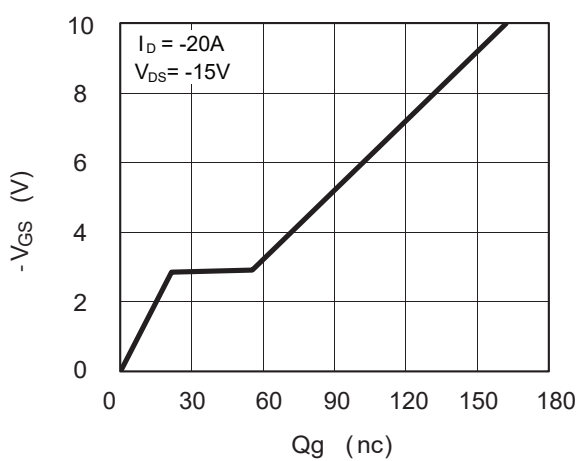
On-Region Characteristics



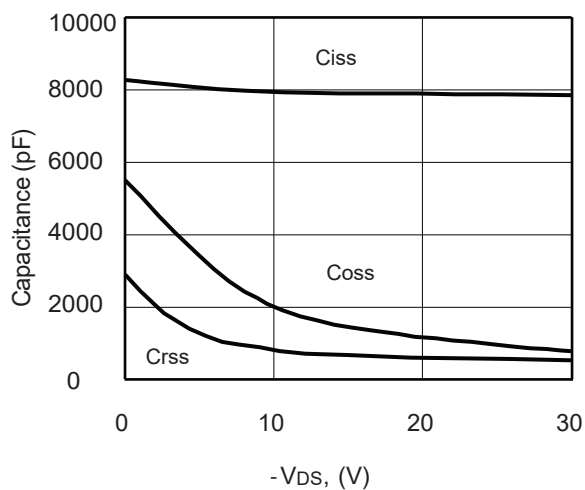
transfer characteristics



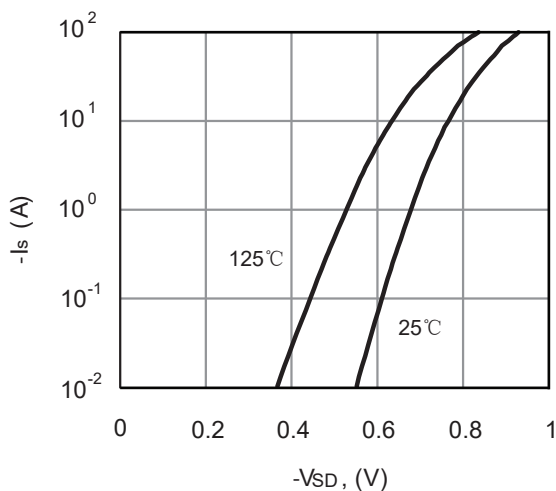
On-Resistance vs. Drain Current



Gate Charge Characteristics

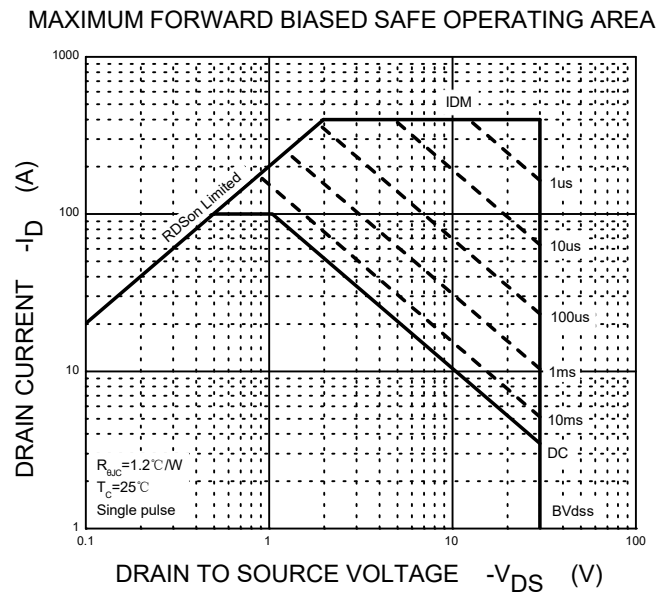
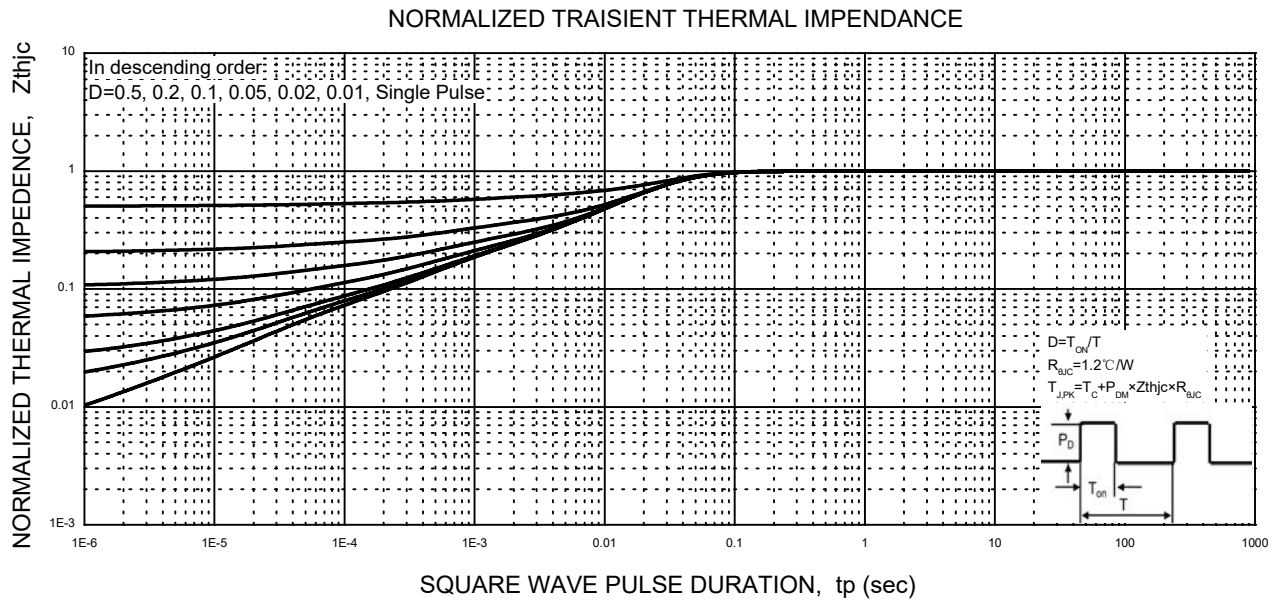


Capacitance Characteristics



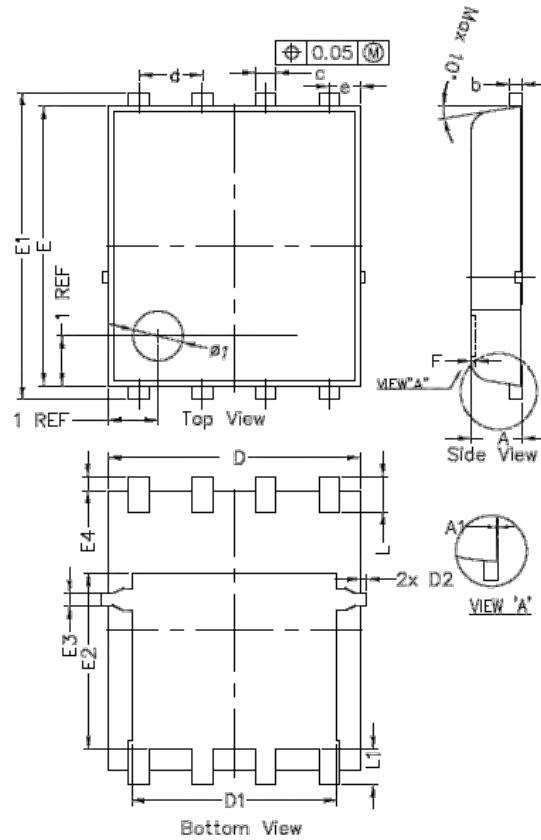
Body Diode Forward Voltage Variation with Source Current and Temperature

Electrical characteristics diagrams





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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