

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
60V	1.5mΩ@10V	225A
	2mΩ@4.5V	

Feature

- Advanced split gate trench technology
- Excellent $R_{DS(on)}$
- Low gate charge

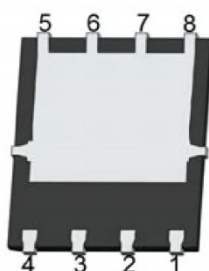
Application

- Load switch
- PWM Application
- Power Management

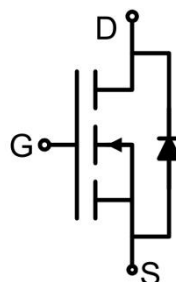
Package



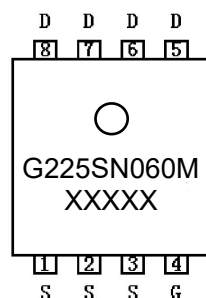
PDFN5*6-8L



Circuit diagram



Marking



Absolute maximum ratings ($T_J = 25^\circ\text{C}$, unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ($T_C = 25^\circ\text{C}$)	I_D	225	A
Continuous Drain Current ($T_C = 100^\circ\text{C}$)	$I_D(100^\circ\text{C})$	135	A
Pulsed Drain Current ¹⁾	I_{DM}	900	A
Single Pulse Avalanche Energy ²⁾	E_{AS}	637	mJ
Power Dissipation ($T_C = 25^\circ\text{C}$)	P_D	139	W
Thermal Resistance Junction to Case	$R_{\theta JC}$	0.9	$^\circ\text{C}/\text{W}$
Operating Junction Temperature	T_J	$-55 \sim +150$	$^\circ\text{C}$
Storage Temperature	T_{STG}	$-55 \sim +150$	$^\circ\text{C}$

Electrical characteristics ($T_J = 25^\circ\text{C}$, unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	V _{(BR)DSS}	V _{GS} =0V, I _D =250μA	60			V
Zero gate voltage drain current	I _{DSS}	V _{DS} =60V, V _{GS} =0V			1	μA
Gate-body leakage current	I _{GSS}	V _{DS} =0V, V _{GS} =±20V			±100	nA
Gate threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	1.2	1.6	2.4	V
Drain-source on-resistance ³⁾	R _{DS(on)}	V _{GS} =10V, I _D =20A		1.15	1.5	mΩ
		V _{GS} =4.5V, I _D =15A		1.5	2	
Dynamic characteristics ⁴⁾						
Input Capacitance	C _{iss}	V _{DS} =30V, V _{GS} =0V, f =100KHz		6789		pF
Output Capacitance	C _{oss}			1923		
Reverse Transfer Capacitance	C _{rss}			57		
Total Gate Charge	Q _g	V _{DS} =30V, V _{GS} =10V, I _D =20A		90		nC
Gate-Source Charge	Q _{gs}			25		
Gate-Drain Charge	Q _{gd}			15		
Turn-on delay time	t _{d(on)}	V _{DS} =30V, V _{GS} =10V, I _D =20A R _G =3Ω		20		nS
Turn-on rise time	t _r			55		
Turn-off delay time	t _{d(off)}			40		
Turn-off fall time	t _f			12		
Source-Drain Diode characteristics						
Diode Forward Current	I _S				225	A
Diode Forward voltage	V _{SD}	V _{GS} =0V, I _S =20A			1.2	V
Reverse recover time	T _{rr}	I _F =20A, di/dt =-100A/us		60		nS
Reverse recovery charge	Q _{rr}			75		nC

Notes:

- 1) Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.
- 2) E_{AS} condition: Starting $T_J = 25^\circ\text{C}$, $V_{DD} = 30V$, $V_G = 10V$, $R_G = 25\Omega$, $L = 0.5\text{mH}$, $I_{AS} = 50.5A$.
- 3) Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 0.5\%$.
- 4) Guaranteed by design, not subject to production.

Typical Characteristics

Figure 1: Output Characteristics

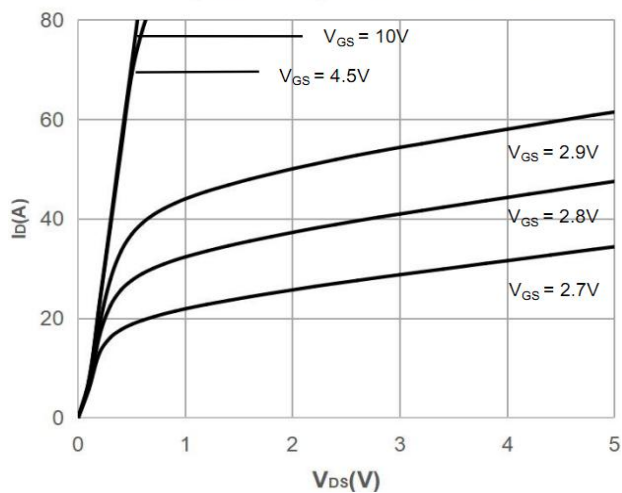


Figure 2: Typical Transfer Characteristics

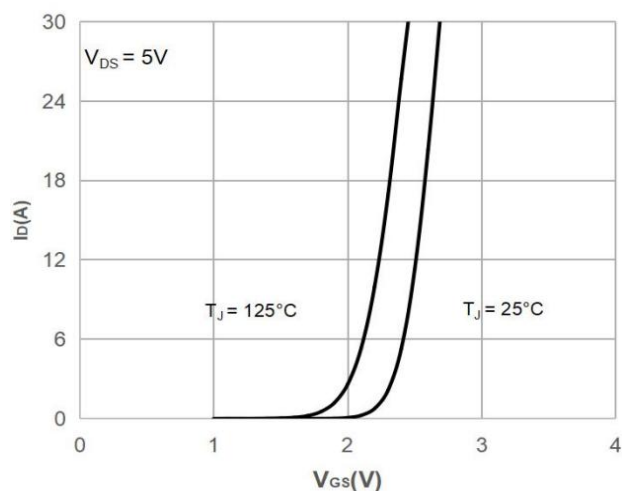


Figure 3: On-resistance vs. Drain Current

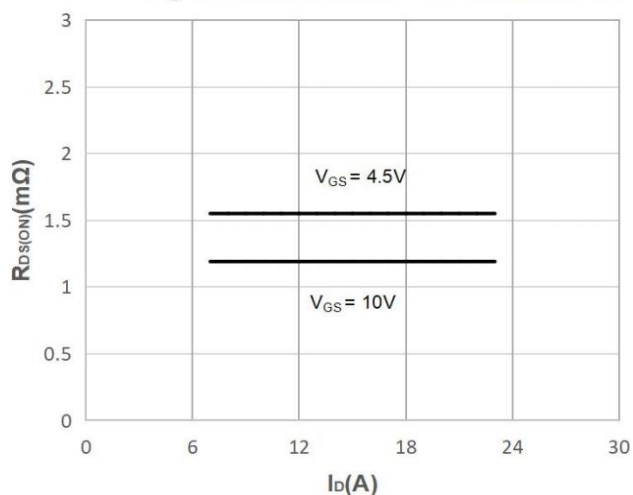


Figure 4: Body Diode Characteristics

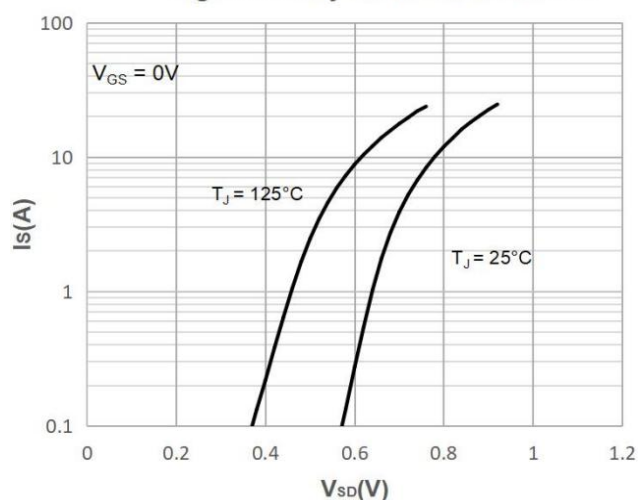


Figure 5: Gate Charge Characteristics

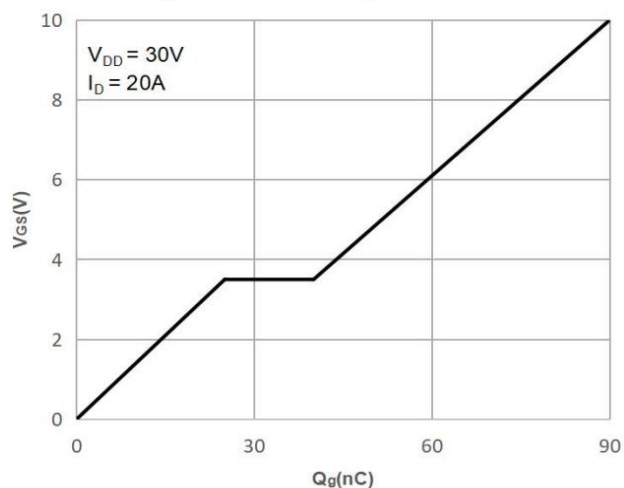
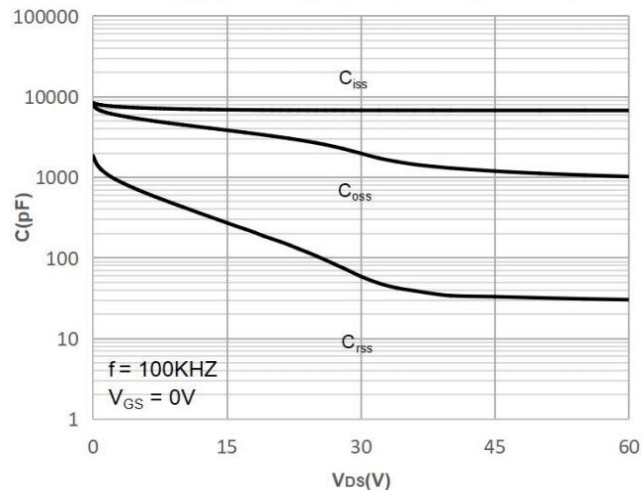


Figure 6: Capacitance Characteristics



Typical Characteristics

Figure 7: Normalized Breakdown voltage vs. Junction Temperature

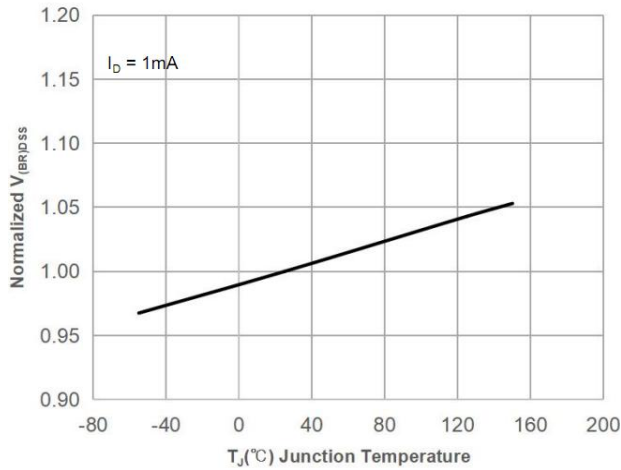


Figure 8: Normalized on Resistance vs. Junction Temperature

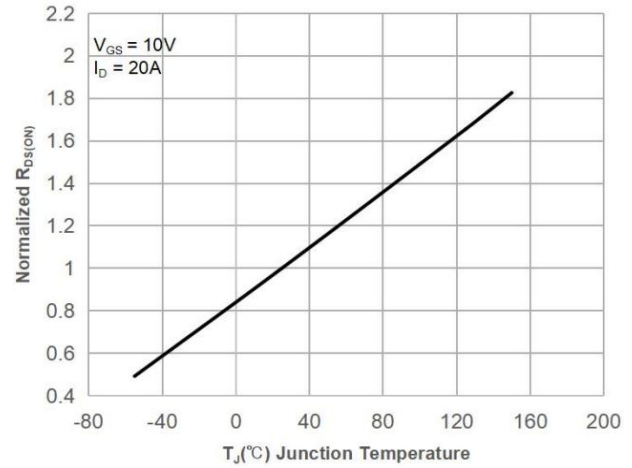


Figure 9: Maximum Safe Operating Area

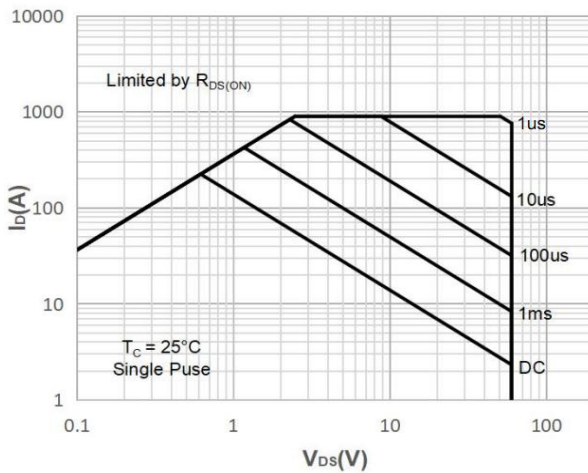


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

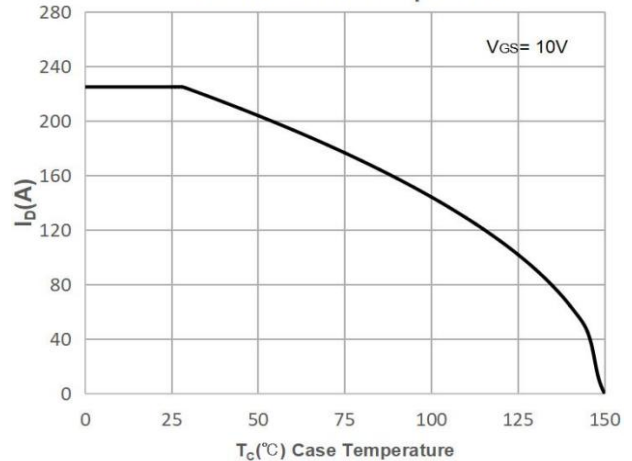


Figure 11: Normalized Maximum Transient Thermal Impedance

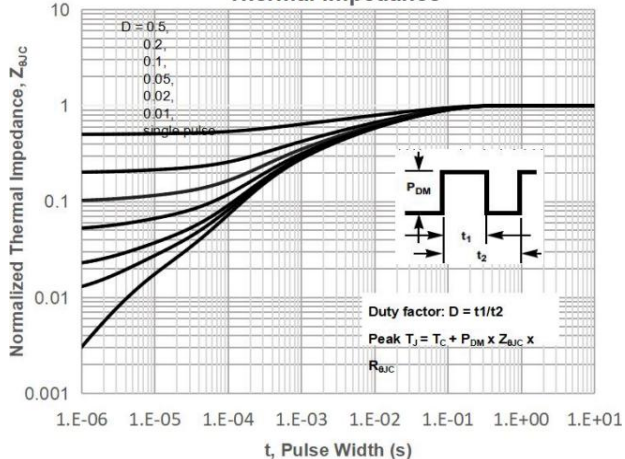
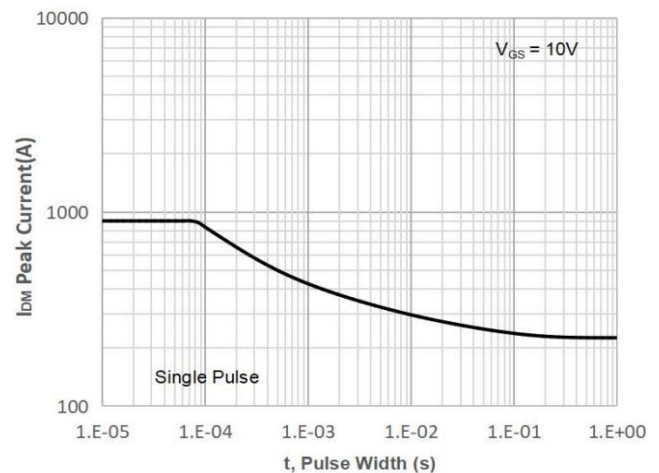
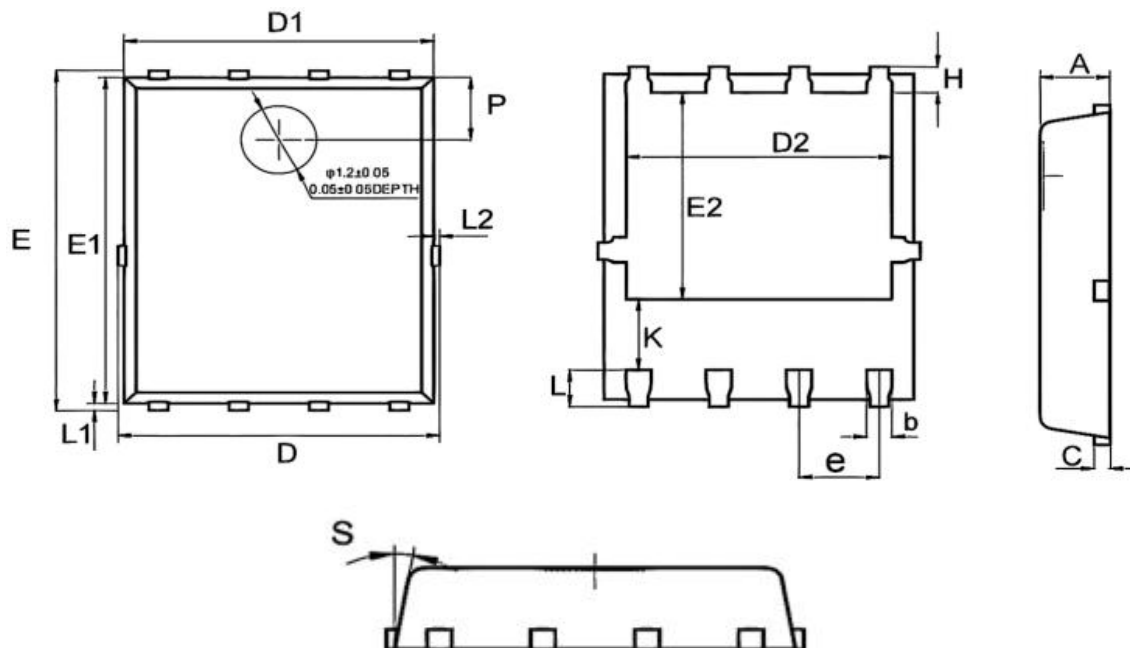


Figure 12: Peak Current Capacity



PDFN5*6-8L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.000	1.200	0.039	0.047
b	0.350	0.450	0.014	0.018
c	0.190	0.300	0.007	0.012
D	4.800	5.200	0.189	0.205
D1	4.800	5.000	0.189	0.197
D2	4.100	4.300	0.161	0.169
E	5.900	6.100	0.232	0.240
E1	5.700	5.800	0.224	0.228
E2	3.550	3.750	0.140	0.148
e	1.170	1.370	0.046	0.054
H	0.350	0.550	0.014	0.022
K	1.250	1.450	0.049	0.057
L	0.350	0.550	0.014	0.022
L1	0.000	0.200	0.000	0.008
L2	0.000	0.200	0.000	0.008
P	1.000	1.200	0.039	0.047
S	8°	12°	8°	12°