

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
60V	12mΩ@10V	40A
	16mΩ@4.5V	

Feature

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

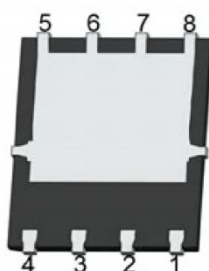
Application

- Load switch
- PWM Applianction
- Power Management

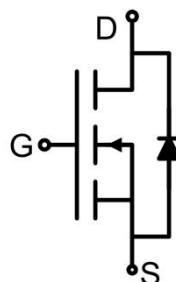
Package



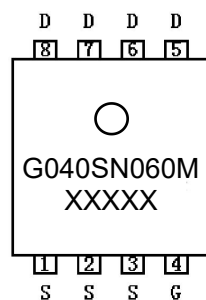
PDFN5*6-8L



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	40	A
Continuous Drain Current ($T_C = 100^{\circ}\text{C}$)	$I_D(100^{\circ}\text{C})$	25	A
Pulsed Drain Current ¹⁾	I_{DM}	160	A
Single Pulse Avalanche Energy ²⁾	E_{AS}	49	mJ
Power Dissipation ($T_C = 25^{\circ}\text{C}$)	P_D	33	W
Thermal Resistance Junction to Case	$R_{\theta JC}$	3.8	$^{\circ}\text{C}/\text{W}$
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	1.45	2.5	V
Drain-source on-resistance ³⁾	R _{DS(on)}	V _{GS} =10V, I _D =20A		9	12	mΩ
		V _{GS} =4.5V, I _D =10A		12	16	
Dynamic characteristics ⁴⁾						
Input Capacitance	C _{iss}	V _{DS} =25V, V _{GS} =0V, f =1MHz		915		pF
Output Capacitance	C _{oss}			370		
Reverse Transfer Capacitance	C _{rss}			30		
Total Gate Charge	Q _g	V _{DS} =30V, V _{GS} =10V, I _D =10A		33		nC
Gate-Source Charge	Q _{gs}			5.3		
Gate-Drain Charge	Q _{gd}			6.4		
Turn-on delay time	t _{d(on)}	V _{DS} =30V, V _{GS} =10V, I _D =10A R _G =4.7Ω		9		nS
Turn-on rise time	t _r			19.4		
Turn-off delay time	t _{d(off)}			31.5		
Turn-off fall time	t _f			8.9		
Source-Drain Diode characteristics						
Diode Forward Current	I _S				40	A
Diode Forward voltage	V _{SD}	V _{GS} =0V, I _S =10A			1.2	V

Notes:

- 1) Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.
- 2) E_{AS} condition: Starting $T_J=25^{\circ}\text{C}$, $V_{DD}=30\text{V}$, $V_G=10\text{V}$, $R_G=25\Omega$, $L=0.5\text{mH}$, $I_{AS}=14\text{A}$.
- 3) Pulse Test: Pluse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 0.5\%$.
- 4) Guaranteed by design, not subject to production.

Typical Characteristics

Figure 1: Output Characteristics

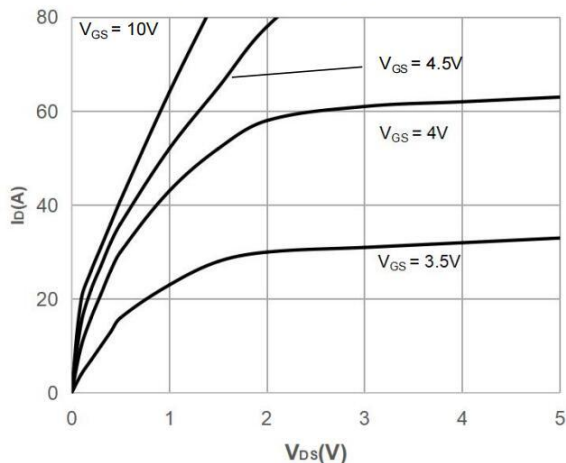


Figure 2: Typical Transfer Characteristics

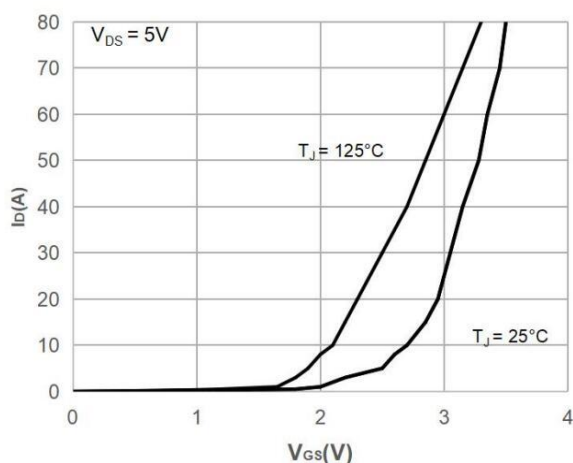


Figure 3: On-resistance vs. Drain Current

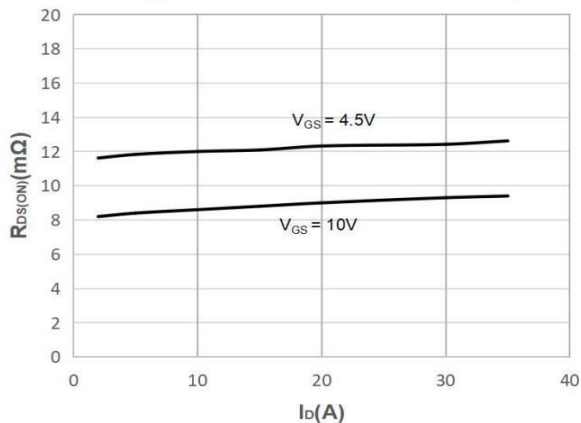


Figure 4: Body Diode Characteristics

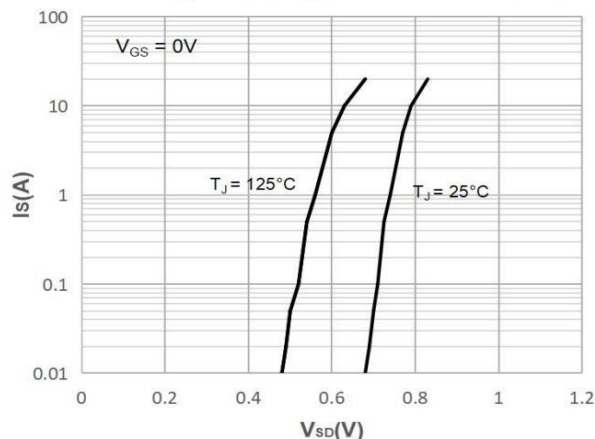


Figure 5: Gate Charge Characteristics

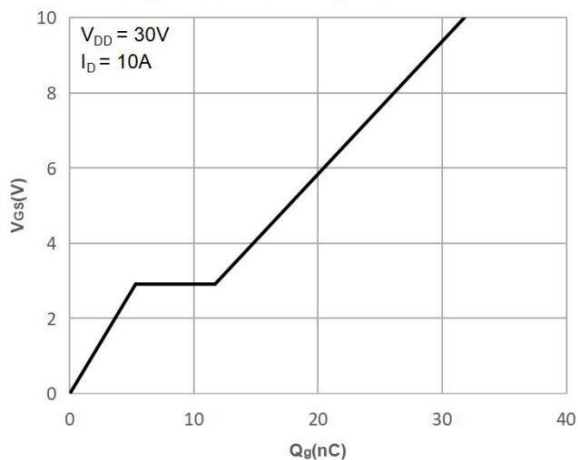
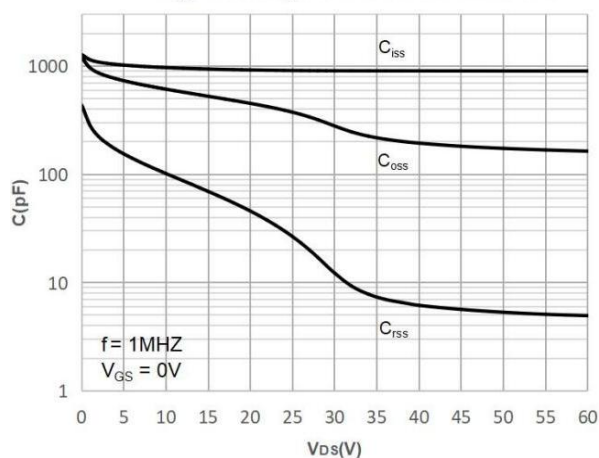


Figure 6: Capacitance Characteristics



Typical Characteristics

Figure 7: Normalized Breakdown voltage vs. Junction Temperature

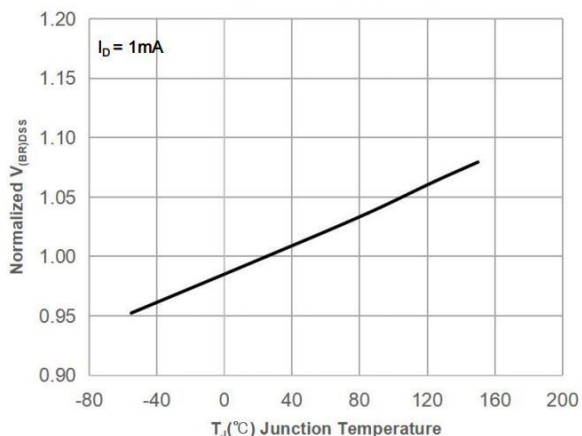


Figure 8: Normalized on Resistance vs. Junction Temperature

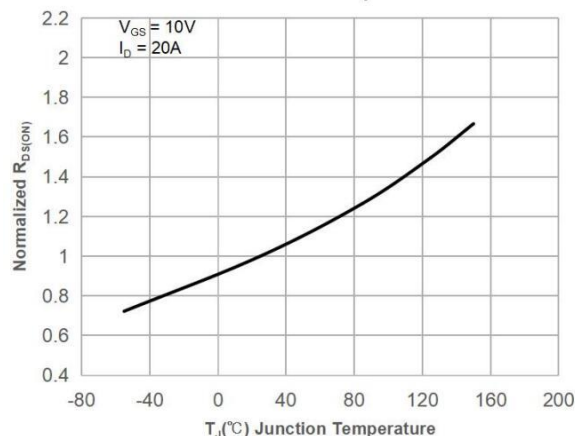


Figure 9: Maximum Safe Operating Area

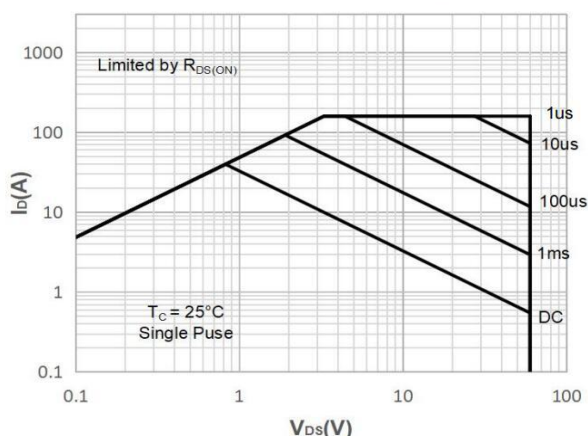


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

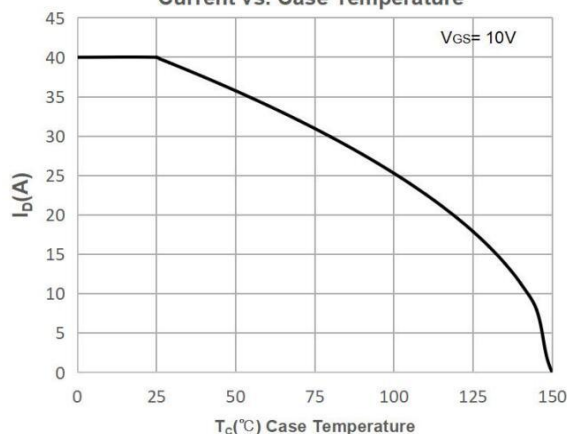


Figure 11: Normalized Maximum Transient Thermal Impedance

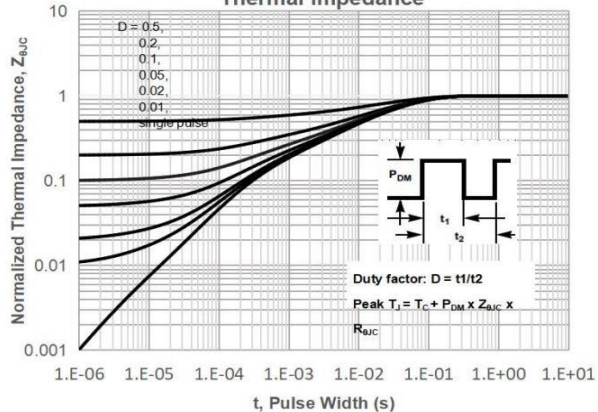
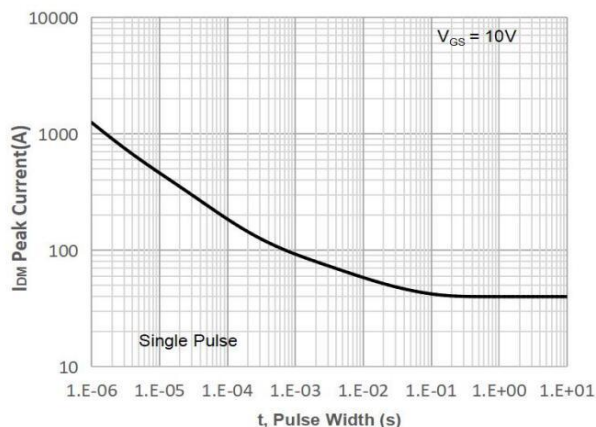
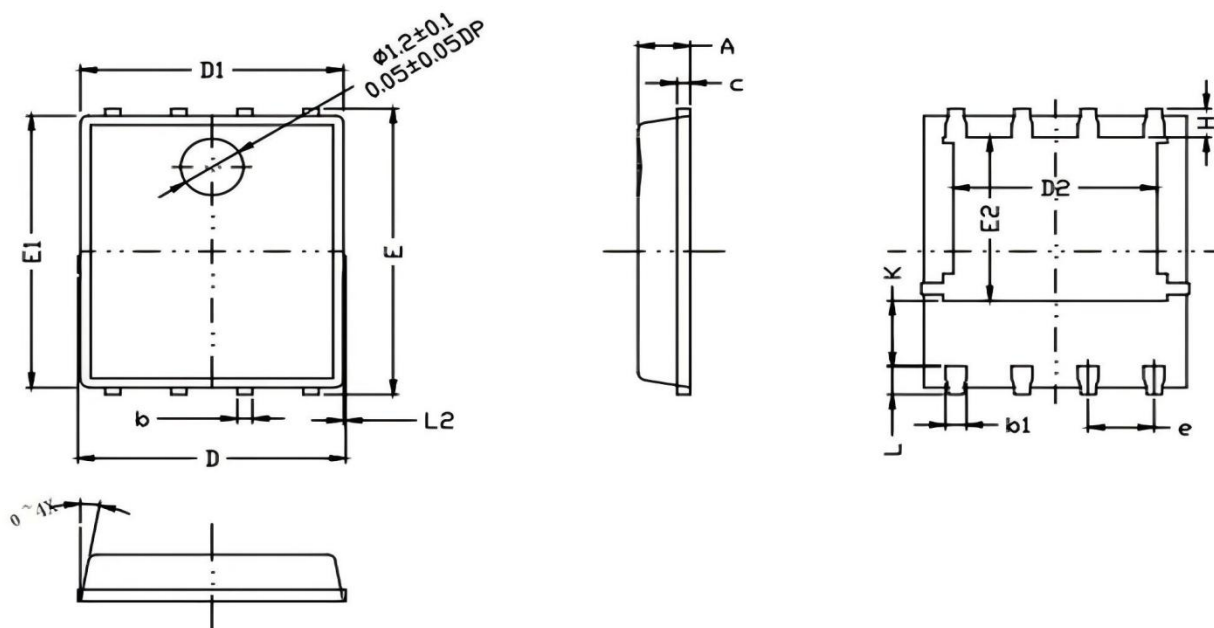


Figure 12: Peak Current Capacity



PDFN5*6-8L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.100	0.035	0.043
b	0.250	0.350	0.010	0.014
b1	0.300	0.450	0.012	0.018
C	0.220	0.280	0.009	0.011
D	-	5.300	-	0.209
D1	4.900	5.200	0.193	0.205
D2	3.900 REF.		0.154 REF.	
D3	1.700 REF.		0.067 REF.	
E	6.000	6.300	0.236	0.248
E1	5.700	6.000	0.224	0.236
E2	3.500 REF.		0.138 REF.	
e	1.100	1.400	0.043	0.000
H	0.510	0.710	0.020	0.028
K	1.100	-	0.043	-
L	0.510	0.710	0.020	0.028
L2	-	0.100	-	0.004
θ	8°	12°	8°	12°