

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
60V	2.7mΩ@10V	150A
	3.5mΩ@4.5V	

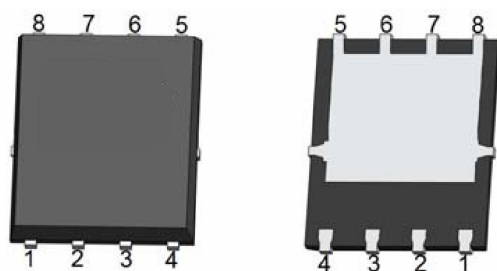
Feature

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

Application

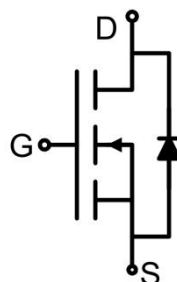
- Battery protection
- UPS

Package

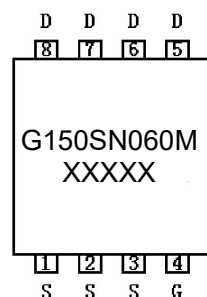


PDFN5*6-8L

Circuit diagram



Marking



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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ¹⁾	I_D	150	A
Continuous Drain Current ¹⁾ ($T_C=100^{\circ}\text{C}$)	$I_D(100^{\circ}\text{C})$	105	A
Pulsed Drain Current	I_{DM}	450	A
Single Pulse Avalanche Energy ²⁾	E_{AS}	585	mJ
Power Dissipation ³⁾	P_D	168	W
Thermal Resistance Junction-to-Case ¹⁾	$R_{\theta JC}$	0.75	$^{\circ}\text{C/W}$
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	1.75	2.5	V
Drain-source on-resistance	R _{DS(on)}	V _{GS} =10V, I _D =20A		2	2.7	mΩ
		V _{GS} =4.5V, I _D =10A		2.7	3.5	
Dynamic characteristics ⁴⁾						
Input Capacitance	C _{iss}	V _{DS} =30V, V _{GS} =0V, f =1MHz		5245		pF
Output Capacitance	C _{oss}			1090		
Reverse Transfer Capacitance	C _{rss}			25		
Total Gate Charge	Q _g	V _{DS} =30V, V _{GS} =10V, I _D =20A		72.5		nC
Gate-Source Charge	Q _{gs}			19.5		
Gate-Drain Charge	Q _{gd}			14		
Turn-on delay time	t _{d(on)}	V _{DS} =30V, V _{GS} =10V, I _D =20A R _G =3Ω		26.5		nS
Turn-on rise time	t _r			15		
Turn-off delay time	t _{d(off)}			73		
Turn-off fall time	t _f			18		
Source-Drain Diode characteristics						
Diode Forward Current	I _S	T _C =25°C			150	A
Diode Forward voltage	V _{SD}	I _S =20A, V _{GS} =0V			1.2	V
Reverse Recovery Time	T _{rr}	I _F =20A, di/dt =100A/μs		25		nS
Reverse Recovery Charge	Q _{rr}			90		nC

Notes:

- 1) The data tested by surface mounted on a 1 inch² FR-4 board with 20Z copper.
- 2) EAS condition: $T_J=25^{\circ}\text{C}$, $V_{DD}=48\text{V}$, $V_G=10\text{V}$, $R_G=25\Omega$, $L=0.1\text{mH}$, $I_{AS}=55\text{A}$.
- 3) The power dissipation is limited by 150°C junction temperature.
- 4) Guaranteed by design, not subject to production testing.

Typical Characteristics

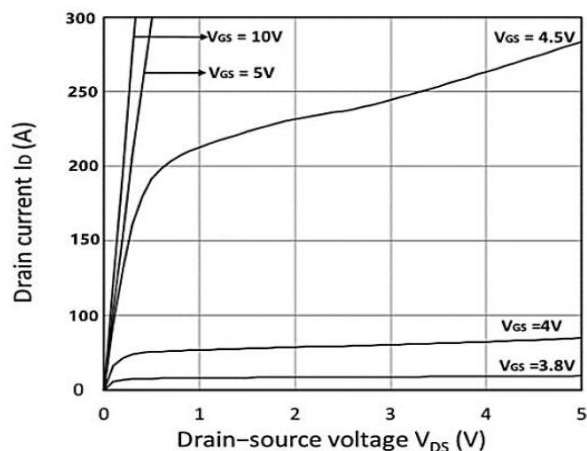


Figure 1. Output Characteristics

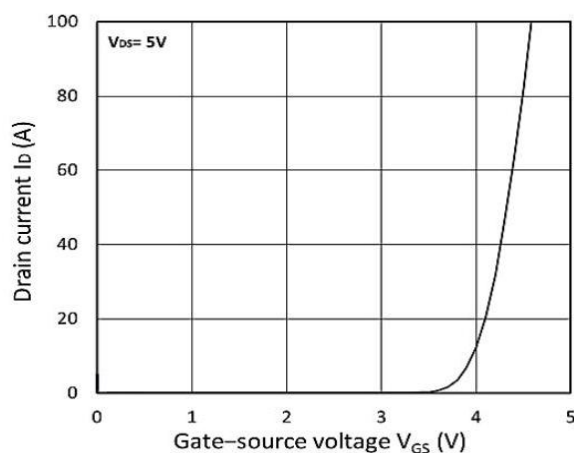


Figure 2. Transfer Characteristics

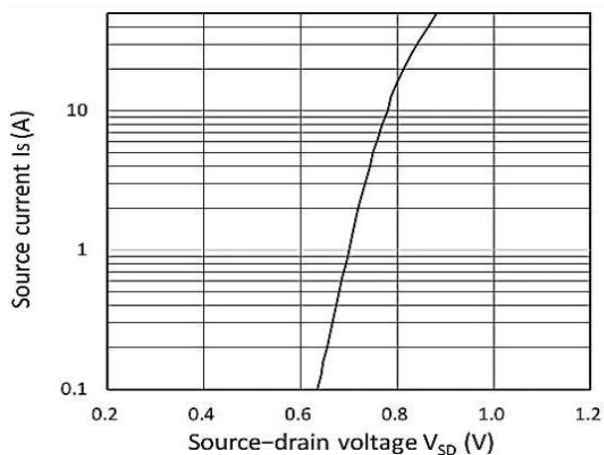


Figure 3. Forward Characteristics of Reverse

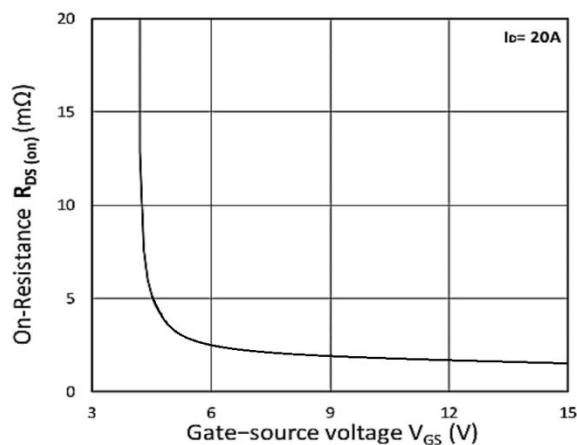


Figure 4. $R_{DS(on)}$ vs. V_{GS}

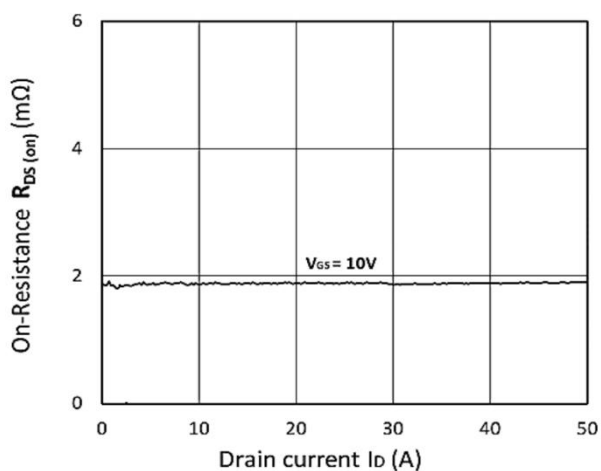


Figure 5. $R_{DS(on)}$ vs. I_D

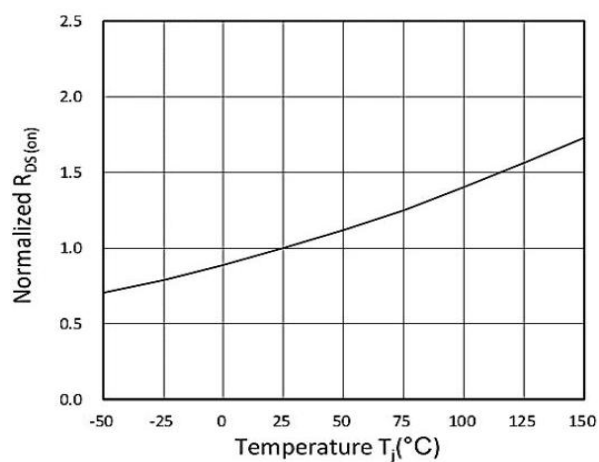


Figure 6. Normalized $R_{DS(on)}$ vs. Temperature

Typical Characteristics

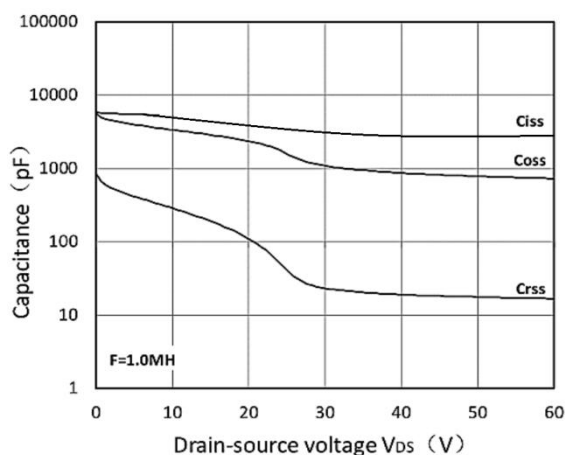


Figure 7. Capacitance Characteristics

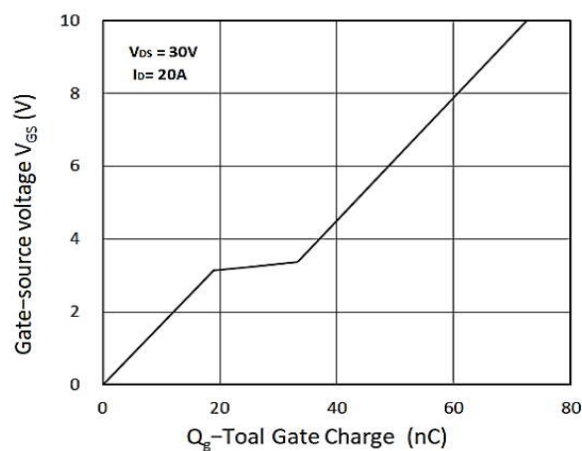


Figure 8. Gate Charge Characteristics

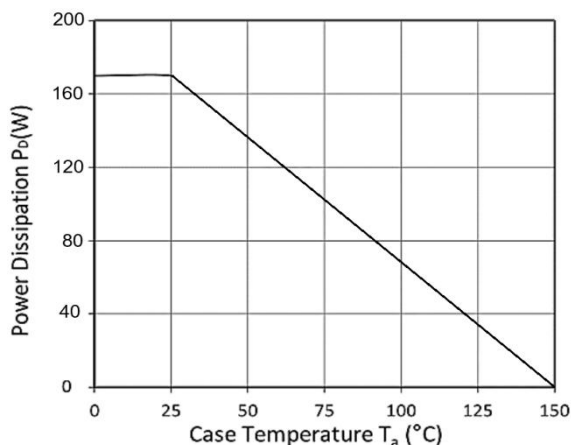


Figure 9. Power Dissipation

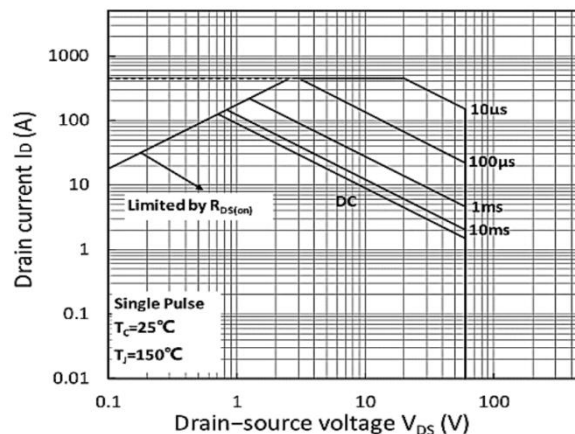


Figure10. Safe Operating Area

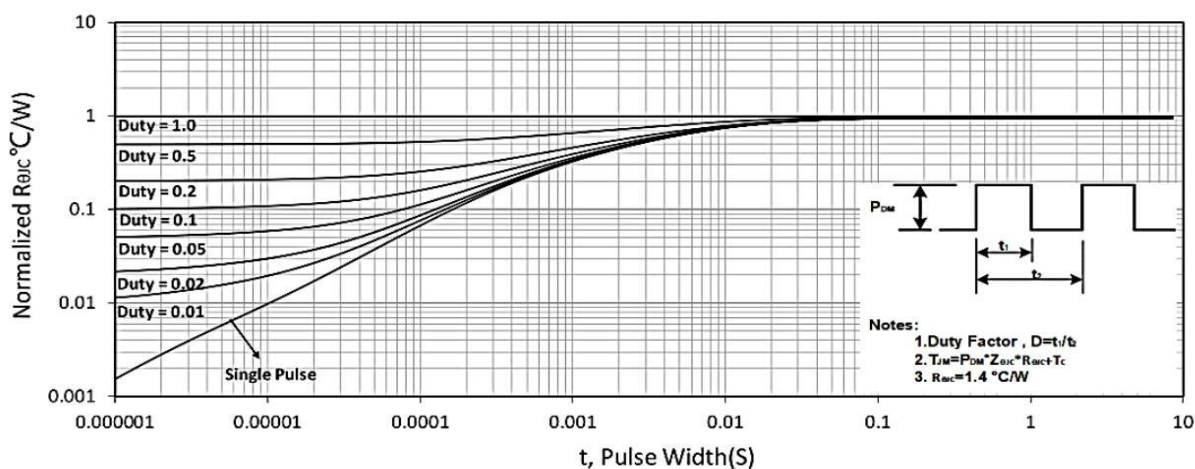
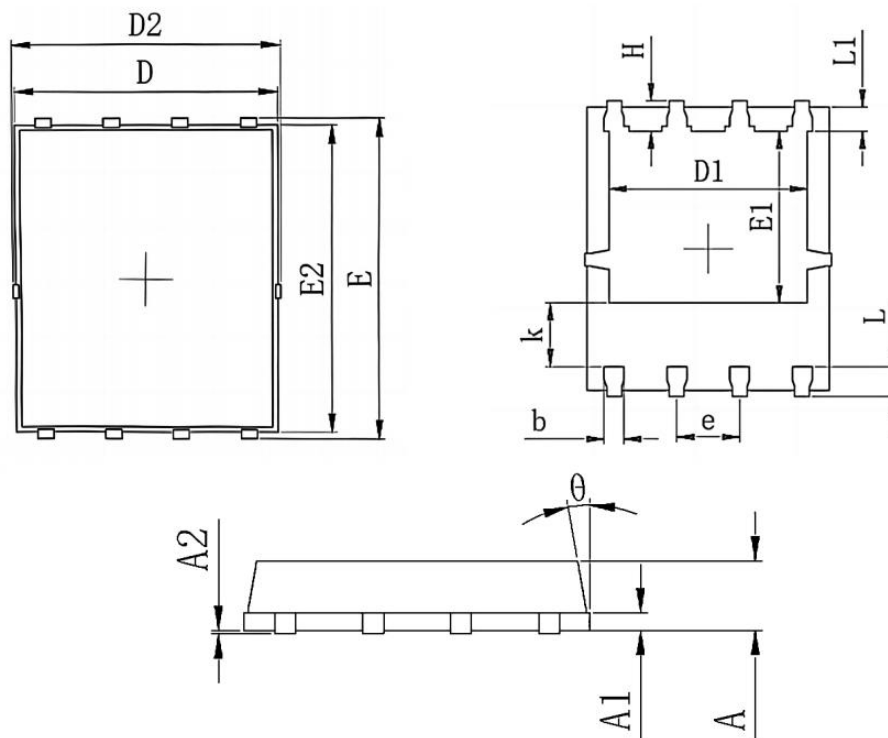


Figure 11. Normalized Maximum Transient Thermal Impedance

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
A1	0.254 REF.		0.010 REF.	
A2	0.000	0.050	0.000	0.002
D	4.824	4.976	0.190	0.196
D1	3.910	4.110	0.154	0.162
D2	4.944	5.076	0.195	0.200
E	5.924	6.076	0.233	0.239
E1	3.375	3.575	0.133	0.141
E2	5.674	5.826	0.223	0.229
b	0.350	0.450	0.014	0.018
e	1.270 BSC.		0.050 BSC.	
L	0.534	0.686	0.021	0.027
L1	0.424	0.576	0.017	0.023
K	1.190	1.390	0.047	0.055
H	0.549	0.701	0.022	0.028
ϕ	8°	12°	8°	12°