

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
150V	9mΩ@10V	140A

Feature

- Advanced SGT technology
- Excellent $R_{DS(on)}$
- Low Gate Charge

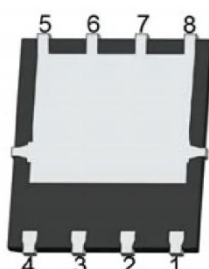
Application

- DC/DC Converter
- Power Management Switches

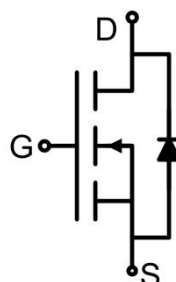
Package



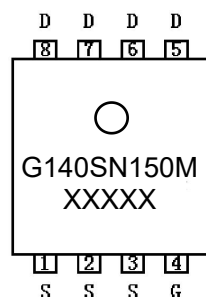
PDFN5*6-8L



Circuit diagram



Marking



Absolute maximum ratings (T_c=25°C, unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V _{DS}	150	V
Gate-Source Voltage	V _{GS}	±20	V
Continuous Drain Current ¹⁾ (V _{GS} =10V)	I _D	140	A
Continuous Drain Current ¹⁾ (V _{GS} =10V, T _C =100°C)	I _D (100°C)	60	A
Pulsed Drain Current ²⁾	I _{DM}	520	A
Single Pulse Avalanche Energy ³⁾	E _{AS}	506	mJ
Power Dissipation ⁴⁾	P _D	179	W
Thermal Resistance Junction to Case	R _{θJC}	0.7	°C/W
Operating Junction Temperature	T _J	-55 ~ +150	°C
Storage Temperature	T _{STG}	-55 ~ +150	°C

Electrical characteristics (T_c=25°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	150			V
Zero gate voltage drain current	I _{DSS}	V _{DS} =150V, V _{GS} =0V, T _J =25℃			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	2	3.2	4.5	V
Drain-source on-resistance ²⁾	R _{DS(on)}	V _{GS} =10V, I _D =20A		7.4	9	mΩ
Dynamic characteristics ⁵⁾						
Input Capacitance	C _{iss}	V _{DS} =75V, V _{GS} =0V, f =1MHz		2181		pF
Output Capacitance	C _{oss}			363		
Reverse Transfer Capacitance	C _{rss}			7.9		
Total Gate Charge	Q _g	V _{DS} =75V, V _{GS} =10V, I _D =20A		30		nC
Gate-Source Charge	Q _{gs}			7.5		
Gate-Drain Charge	Q _{gd}			6.5		
Turn-on delay time	t _{d(on)}	V _{DS} =75V, V _{GS} =10V, I _D =20A R _G =3Ω		12.5		nS
Turn-on rise time	t _r			24		
Turn-off delay time	t _{d(off)}			30		
Turn-off fall time	t _f			26		
Source-Drain Diode characteristics						
Diode Forward Current	I _S				140	A
Diode Forward voltage	V _{SD}	V _{GS} =0V, I _S =20A			1.2	V
Reverse recover time	T _{rr}	I _S =20A, di/dt =100A/us		99		nS
Reverse recovery charge	Q _{rr}			318		nC

Notes:

- 1) The data tested by surface mounted on a 1 inch² FR-4 board with 20Z copper.
- 2) The data tested by pulsed, pulse width ≤ 300us, duty cycle ≤ 2%.
- 3) The EAS data shows Max. rating. The test condition is V_{DS}=50V, V_{GS}=10V, L=0.5mH, I_{AS}=65A.
- 4) The power dissipation is limited by 150°C junction temperature.
- 5) Guaranteed by design, not subject to production.

Typical Characteristics

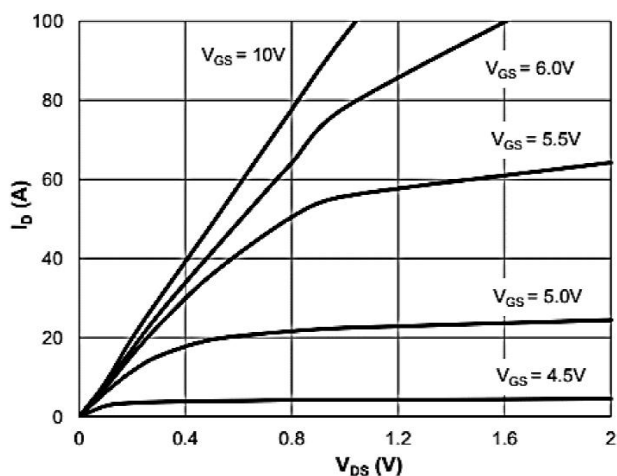


Figure 1: Saturation Characteristics

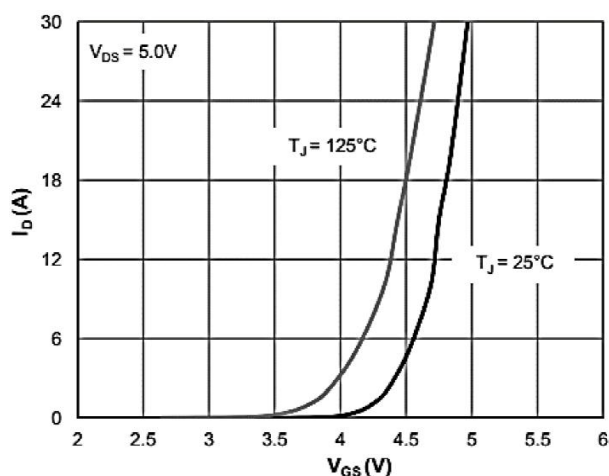


Figure 2: Transfer Characteristics

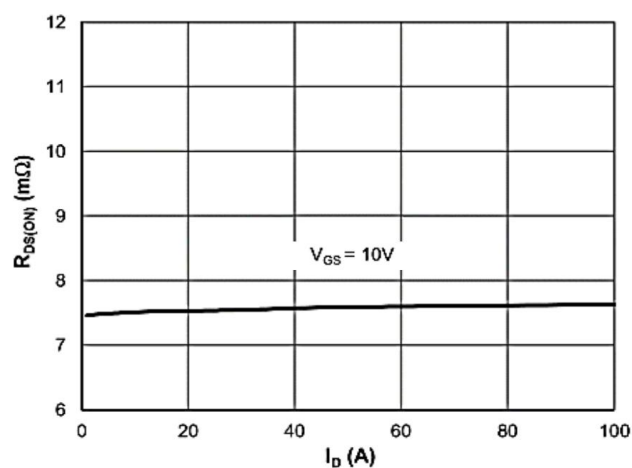


Figure 3: $R_{DS(ON)}$ vs. Drain Current

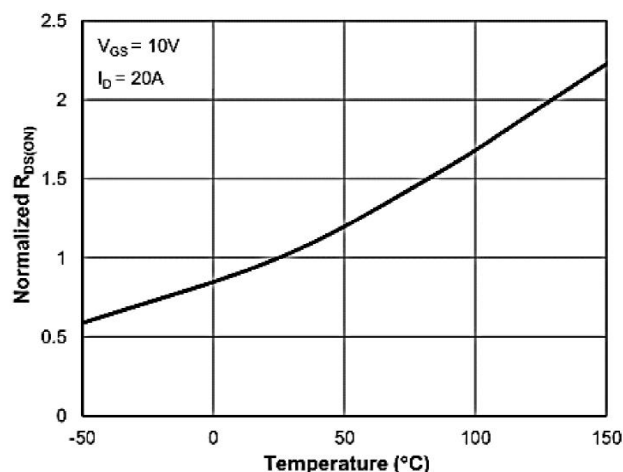


Figure 4: $R_{DS(ON)}$ vs. Junction Temperature

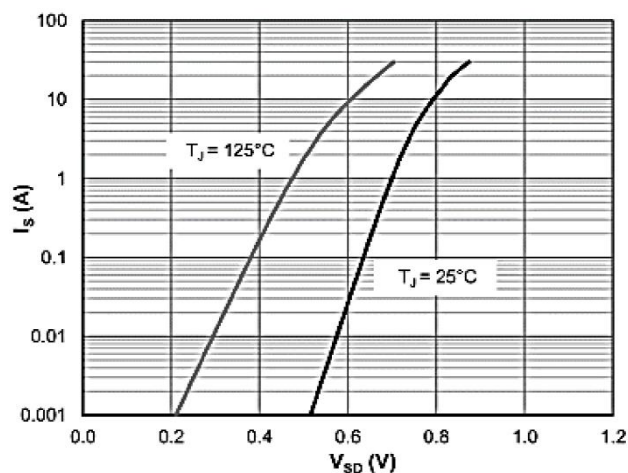


Figure 5: Body-Diode Characteristics

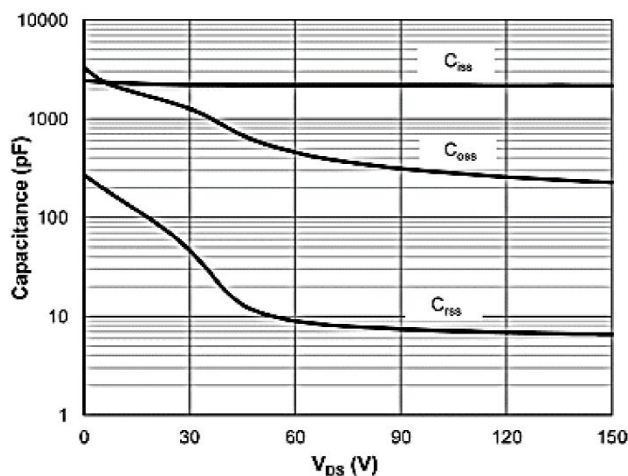


Figure 6: Capacitance Characteristics

Typical Characteristics

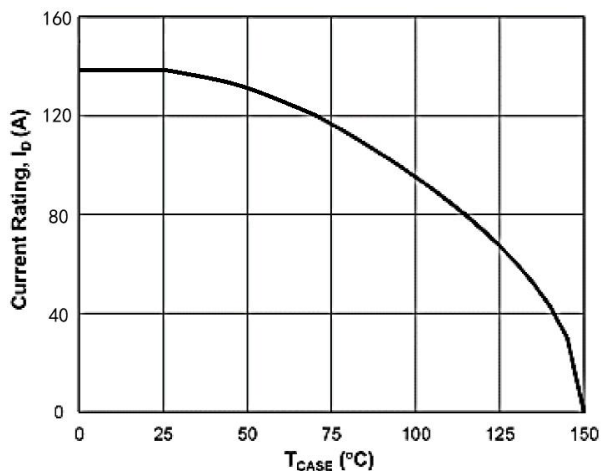


Figure 7: Current De-rating

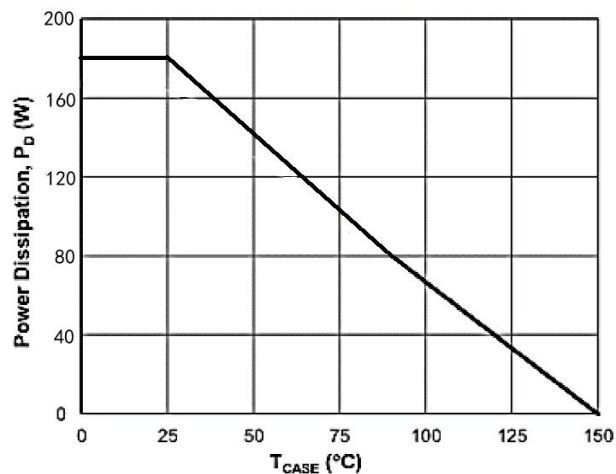


Figure 8: Power De-rating

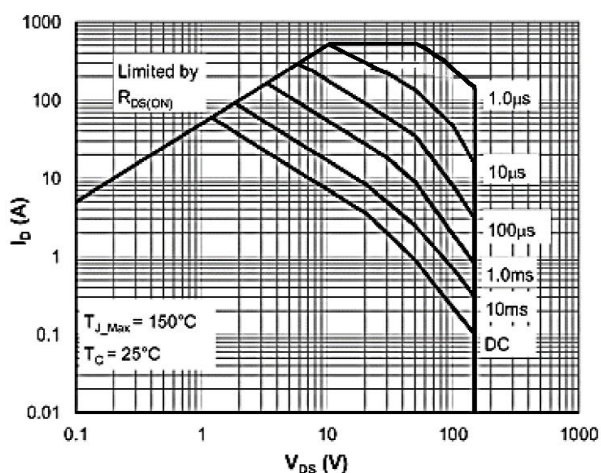


Figure 9: Maximum Safe Operating Area

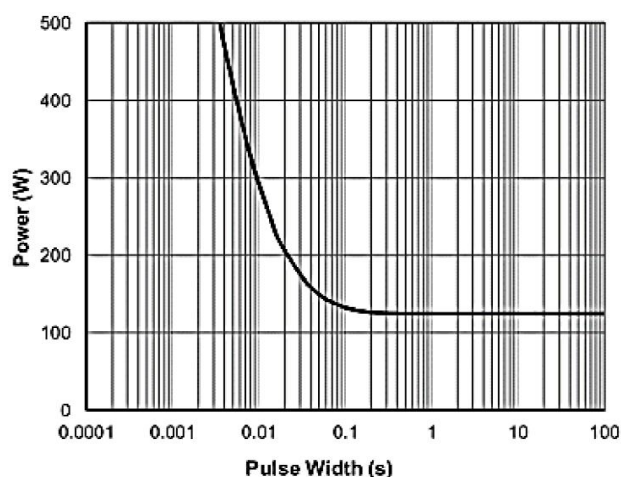


Figure 10: Single Pulse Power Rating, Junction-to-Case

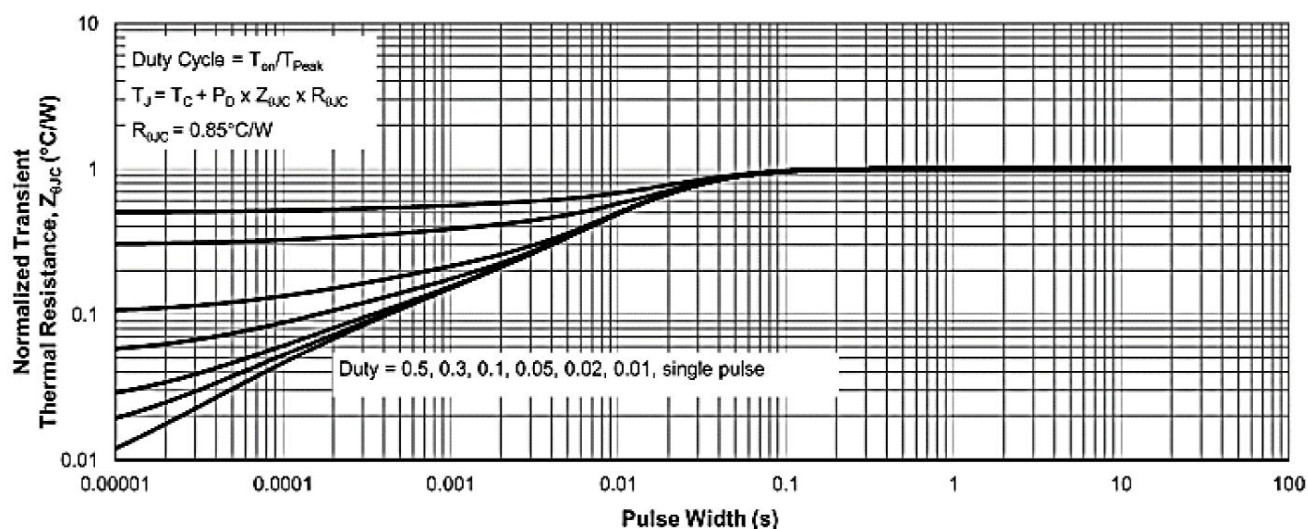
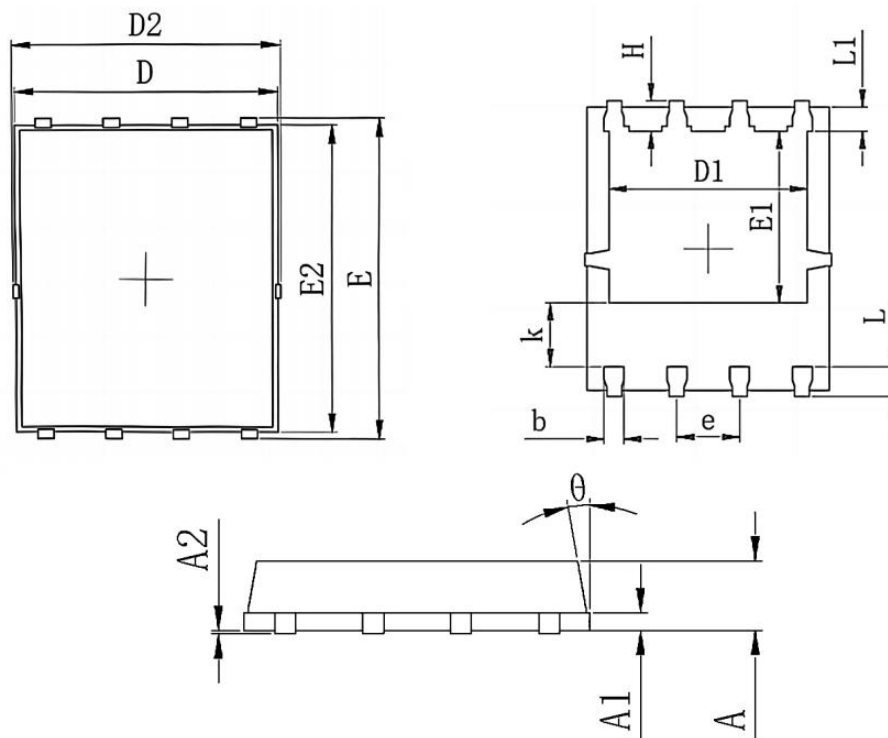


Figure 11: Normalized Maximum Transient Thermal Impedance

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°