

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
35V	1.6mΩ@10V	140A
	2.7mΩ@4.5V	

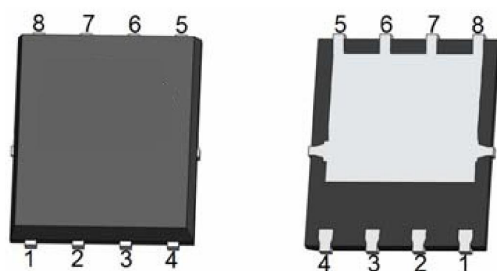
Feature

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

Application

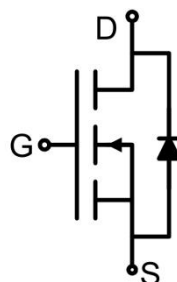
- Boost driver
- Brushless motor
- BLDC

Package

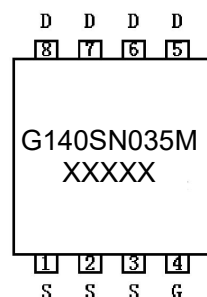


PDFN5*6-8L

Circuit diagram



Marking



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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V _{DS}	35	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)	106	A
Pulsed Drain Current ²⁾	I _{DM}	672	A
Single Pulse Avalanche Energy ³⁾	E _{AS}	180	mJ
Power Dissipation ⁴⁾	P _D	81	W
Thermal Resistance, Junction-to-Case ¹⁾	R _{θJC}	1.7	°C/W
Operating Junction Temperature	T _J	-55 ~ +150	°C
Storage Temperature	T _{STG}	-55 ~ +150	°C

Electrical characteristics (T_J=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	35			V
Zero gate voltage drain current	I _{DSS}	V _{DS} =30V, 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	1.7	2.5	V
Drain-source on-resistance	R _{DS(on)}	V _{GS} =10V, I _D =20A		1.4	1.6	mΩ
		V _{GS} =4.5V, I _D =15A		2.0	2.7	
Dynamic characteristics ⁵⁾						
Input Capacitance	C _{iss}	V _{DS} =15V, V _{GS} =0V, f=1MHz		2554		pF
Output Capacitance	C _{oss}			924		
Reverse Transfer Capacitance	C _{rss}			73		
Total Gate Charge	Q _g	V _{DS} =15V, V _{GS} =10V, I _D =20A		39.1		nC
Gate-Source Charge	Q _{gs}			6.7		
Gate-Drain Charge	Q _{gd}			5.9		
Turn-on delay time	t _{d(on)}	V _{DS} =15V, V _{GS} =10V, R _L =0.75Ω R _G =3Ω		10		nS
Turn-on rise time	t _r			7.3		
Turn-off delay time	t _{d(off)}			38.6		
Turn-off fall time	t _f			16.4		
Source-Drain Diode characteristics						
Diode Forward Current	I _S	T _C =25°C			140	A
Diode Forward voltage	V _{SD}	I _S =1A, V _{GS} =0V			1.2	V
Reverse Recovery Time	T _{rr}	I _F =20A, di/dt=100A/μs		54		nS
Reverse Recovery Charge	Q _{rr}			57		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_{DD} = 32V, V_{GS} = 10V, L = 0.1mH, I_{AS} = 54A
- 4) The power dissipation is limited by 150°C junction temperature.
- 5) Guaranteed by design, not subject to production testing.

Typical Characteristics

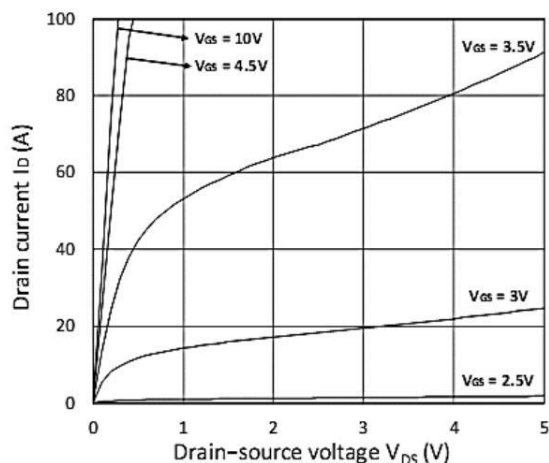


Figure 1. Output Characteristics

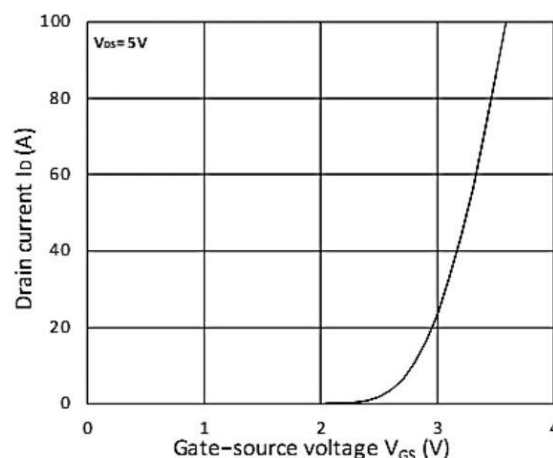


Figure 2. Transfer Characteristics

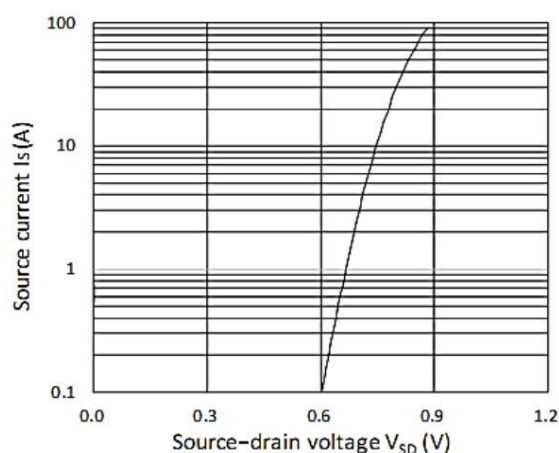


Figure 3. Forward Characteristics of Reverse

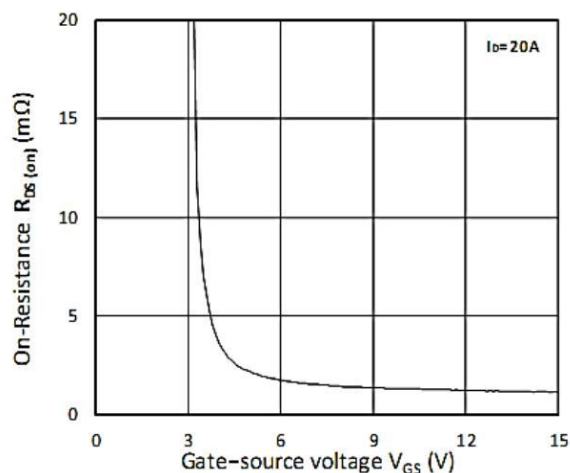


Figure 4. R_DS(ON) vs. V_GS

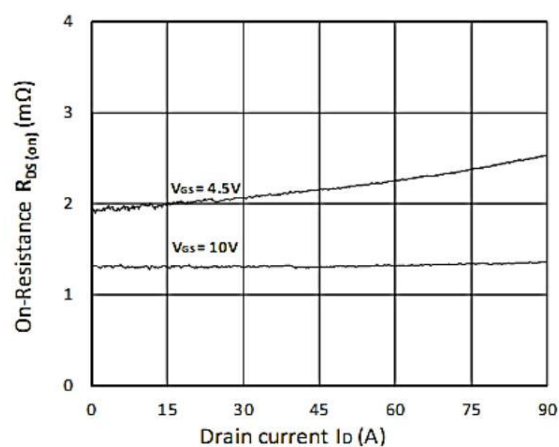


Figure 5. R_DS(ON) vs. I_D

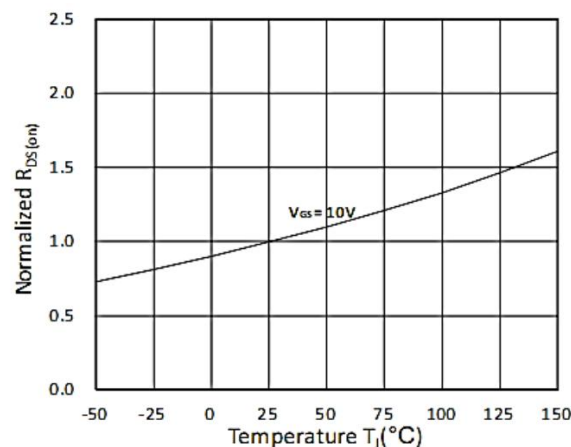


Figure 6. Normalized R_DS(on) vs. Temperature

Typical Characteristics

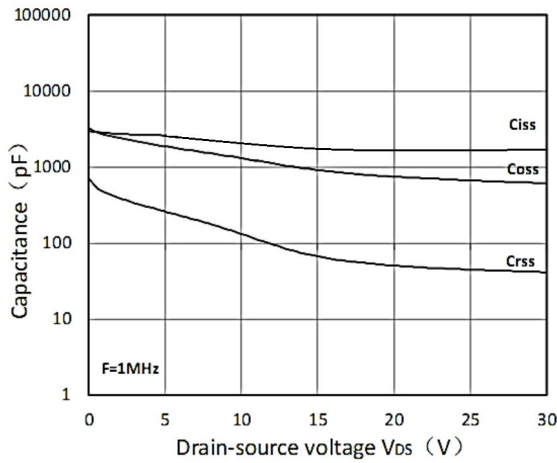


Figure7. Capacitance Characteristics

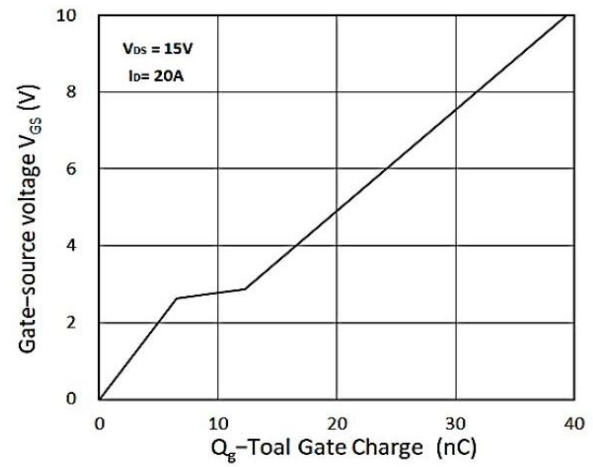


Figure8. Gate Charge Characteristics

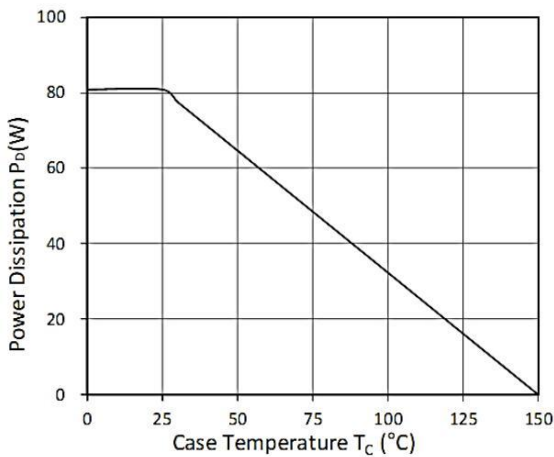


Figure9. Power Dissipation

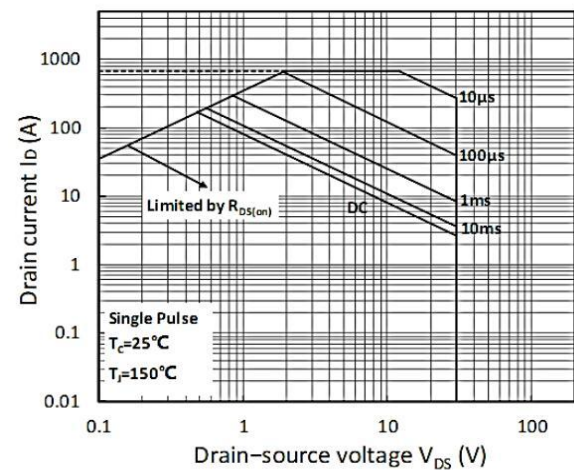


Figure10. Safe Operating Area

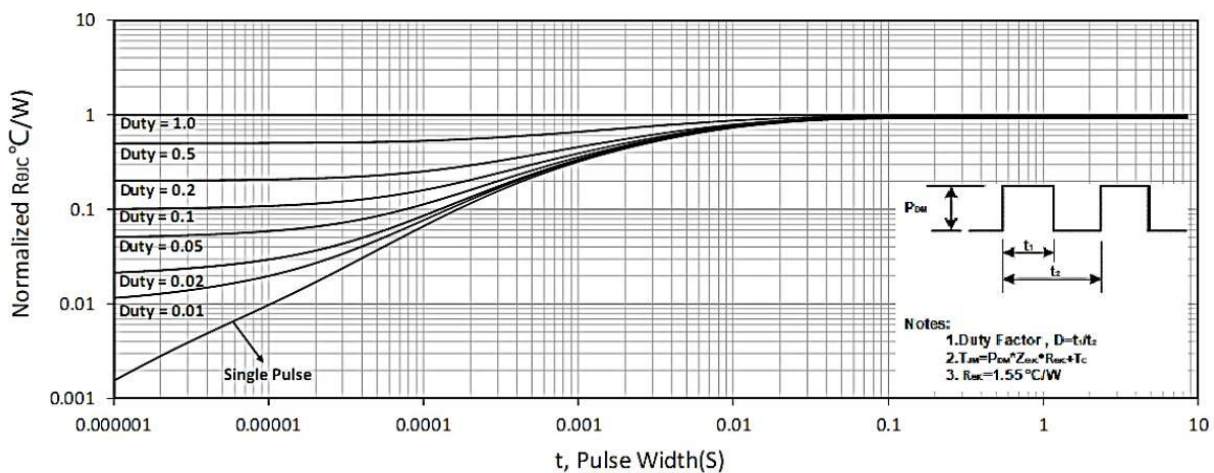
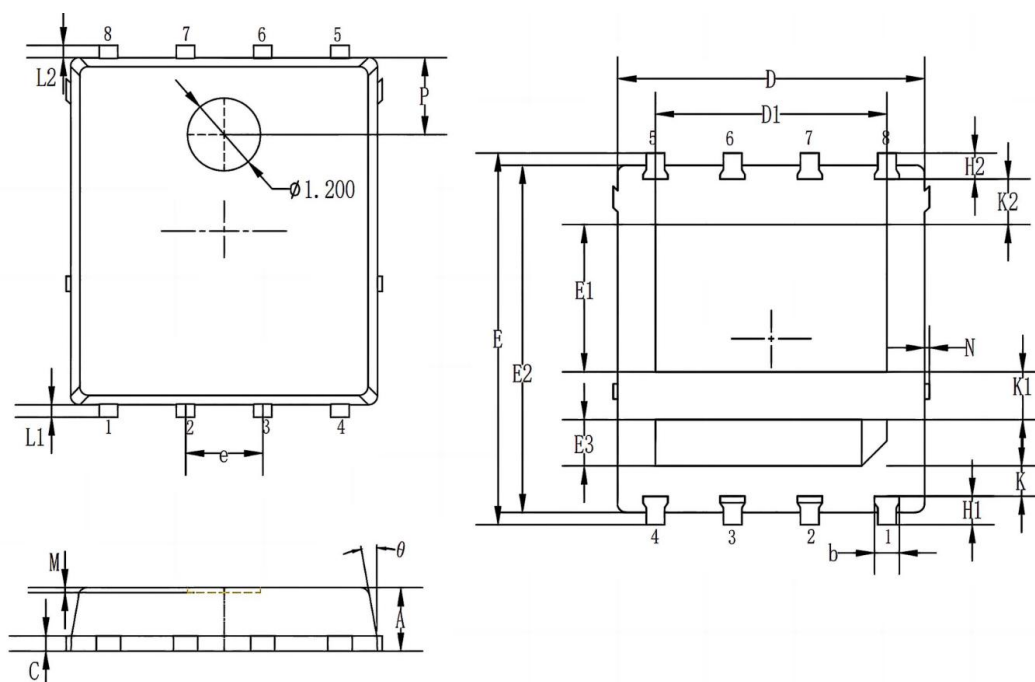


Figure11. Normalized Maximum Transient Thermal Impedance

PDFN5*6-8L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.200	0.035	0.047
b	0.300	0.500	0.012	0.020
C	0.200	0.350	0.008	0.014
D	4.900	5.200	0.193	0.205
D1/D2	1.510	1.810	0.059	0.071
E	5.900	6.300	0.232	0.248
E1	3.300	3.700	0.130	0.146
E2	5.600	5.900	0.220	0.232
e	1.270 BSC.		0.050 BSC.	
H	0.480	0.700	0.019	0.028
K	1.140	1.400	0.045	0.055
L	0.540	0.840	0.021	0.033
L1/L2	0.100	0.300	0.004	0.012
θ	8°	12°	8°	12°
M	0.080 REF.		0.003 REF.	
N	0.000	0.150	0.000	0.006
P	1.280 REF.		0.050 REF.	
d	0.500	0.700	0.020	0.028