

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
40V	3.2mΩ@10V	100A
	5.3mΩ@4.5V	

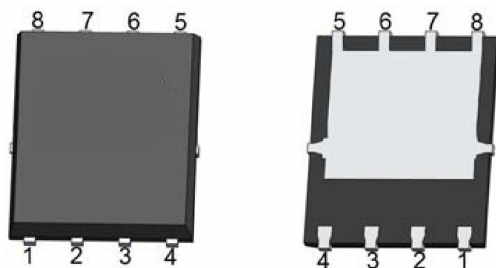
Feature

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

Application

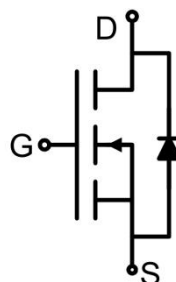
- Boost driver
- Brushless motor
- BLDC

Package

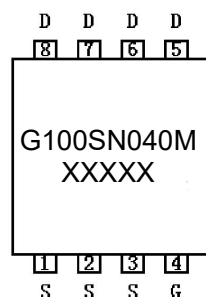


PDFN5*6-8L

Circuit diagram



Marking



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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V _{DS}	40	V
Gate-Source Voltage	V _{GS}	±20	V
Continuous Drain Current ¹⁾ (V _{GS} =10V)	I _D	100	A
Continuous Drain Current ¹⁾ (V _{GS} =10V, T _C =100°C)	I _D (100°C)	71	A
Pulsed Drain Current ²⁾	I _{DM}	240	A
Single Pulse Avalanche Energy ³⁾	E _{AS}	345	mJ
Power Dissipation ⁴⁾	P _D	22	W
Thermal Resistance Junction to Case	R _{θJC}	5.7	°C/W
Operating Junction Temperature	T _J	-55 ~ +150	°C
Storage Temperature	T _{STG}	-55 ~ +150	°C

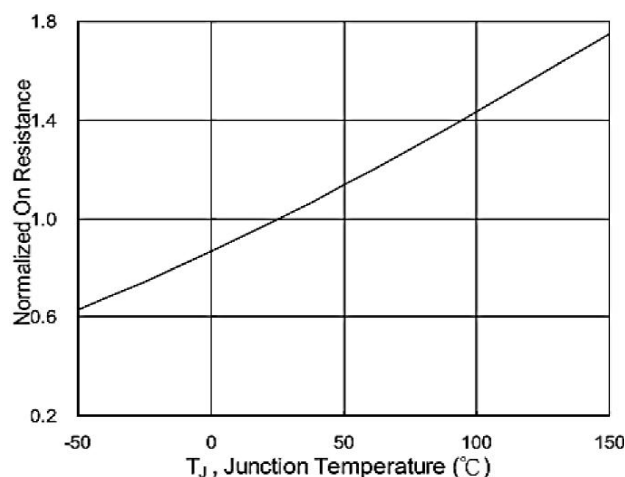
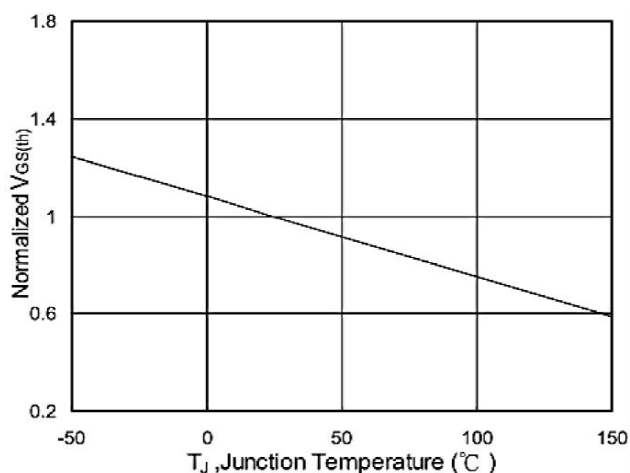
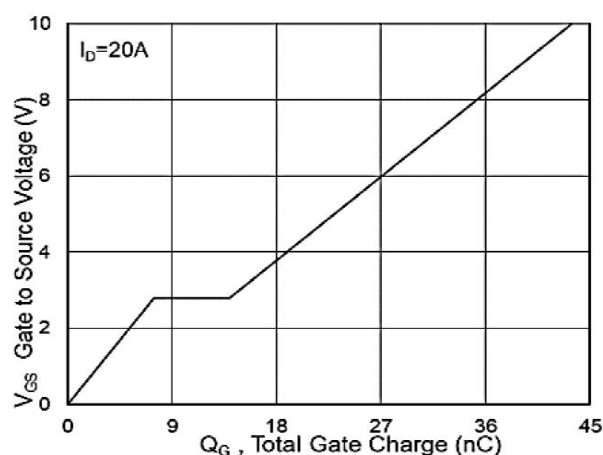
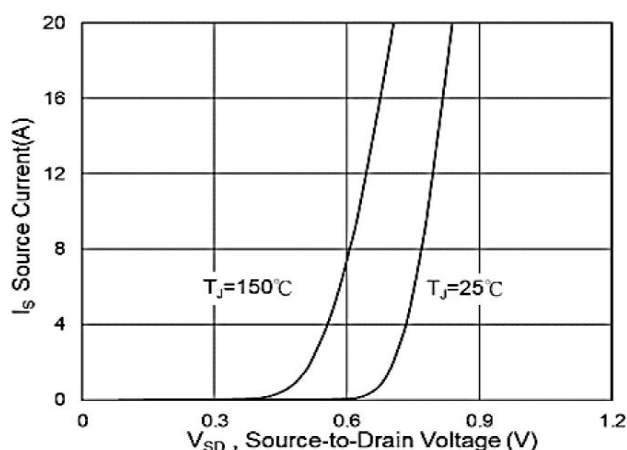
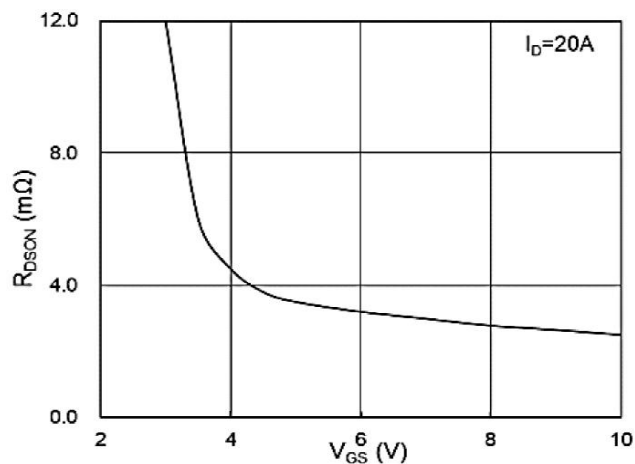
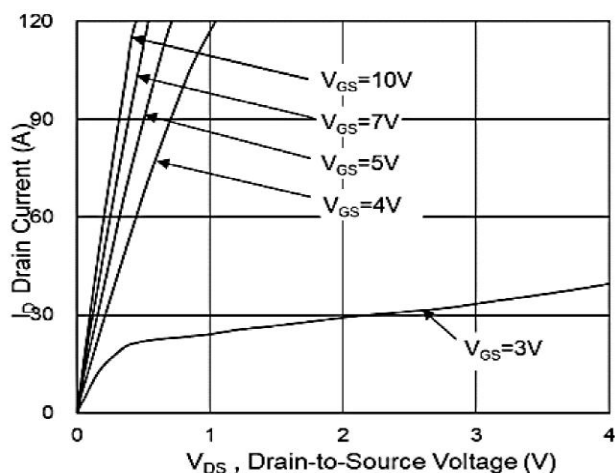
Electrical characteristics (T_J=25 °C, unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	40			V
Zero gate voltage drain current	I_{DSS}	$V_{DS}=40V, V_{GS}=0V$			1	μA
Gate-body leakage current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 20V$			± 100	nA
Gate threshold voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1.2	1.7	2.5	V
Drain-source on-resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=20A$		2.1	3.2	m Ω
		$V_{GS}=4.5V, I_D=15A$		2.7	5.3	
Dynamic characteristics ⁵⁾						
Input Capacitance	C_{iss}	$V_{DS}=20V, V_{GS}=0V, f=1MHz$		2600		pF
Output Capacitance	C_{oss}			899		
Reverse Transfer Capacitance	C_{rss}			71		
Total Gate Charge	Q_g	$V_{DS}=20V, V_{GS}=4.5V, I_D=20A$		22.7		nC
Gate-Source Charge	Q_{gs}			7.5		
Gate-Drain Charge	Q_{gd}			5.5		
Turn-on delay time	$t_{d(on)}$	$V_{DS}=20V, V_{GS}=10V, I_D=20A$ $R_G=3\Omega$		10		nS
Turn-on rise time	t_r			5		
Turn-off delay time	$t_{d(off)}$			33		
Turn-off fall time	t_f			6.5		
Source-Drain Diode characteristics						
Diode Forward Current	I_S	$V_D=V_G=0V$, Force Current			100	A
Diode Forward voltage	V_{SD}	$V_{GS}=0V, I_S=1A$			1	V

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



Typical Characteristics

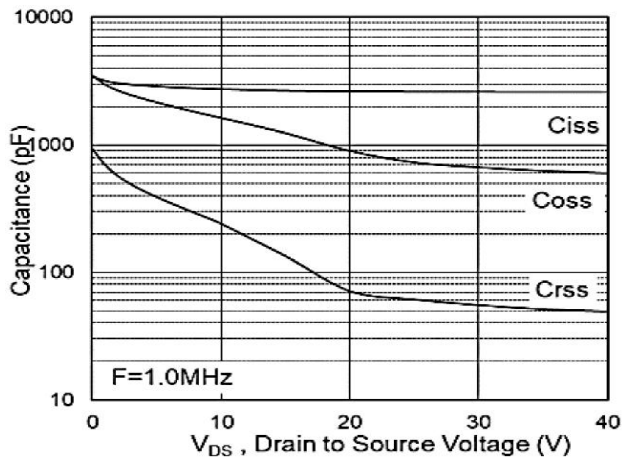


Fig.7 Capacitance

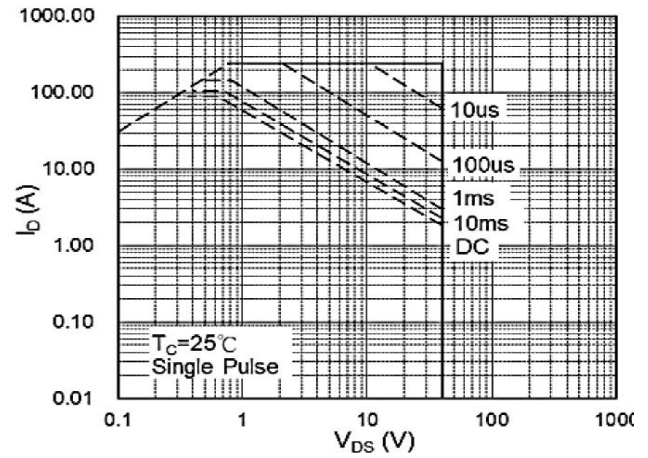


Fig.8 Safe Operating Area

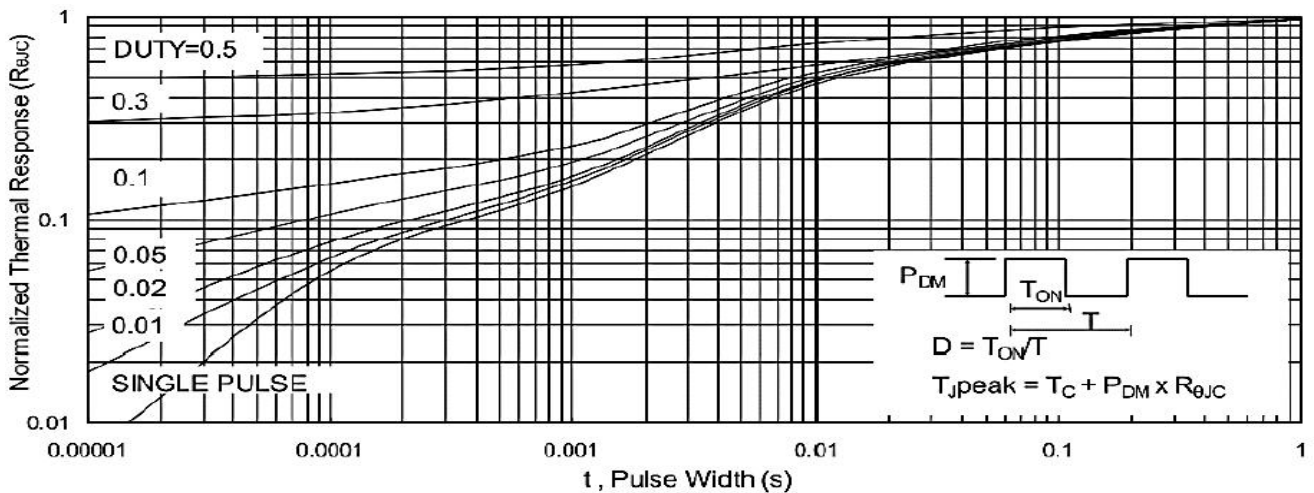


Fig.9 Normalized Maximum Transient Thermal Impedance

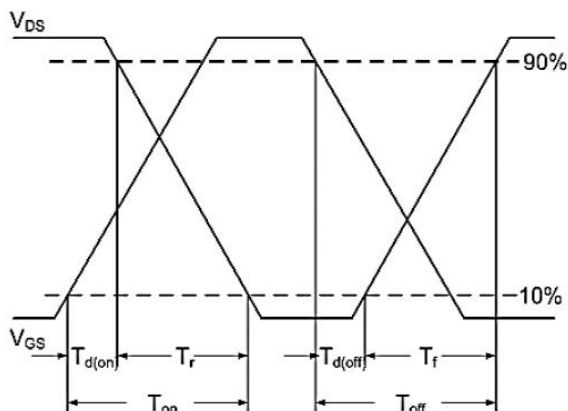


Fig.10 Switching Time Waveform

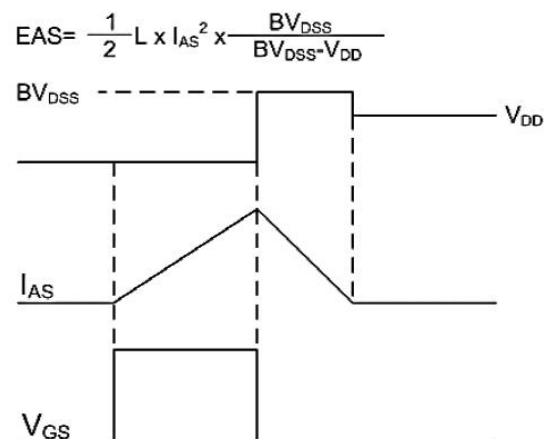
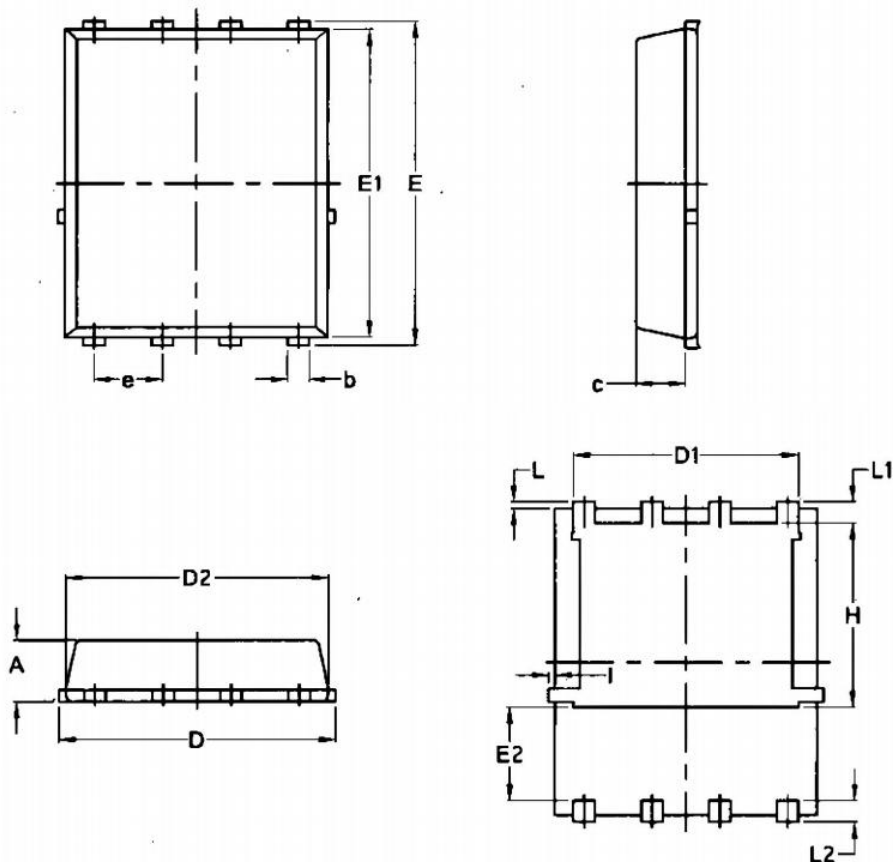


Fig.11 Unclamped Inductive Switching Wave

PDFN5*6-8L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.030	1.170	0.040	0.046
b	0.340	0.480	0.013	0.019
c	0.824	0.097	0.032	0.004
D	4.800	5.400	0.189	0.213
D1	4.110	4.310	0.162	0.170
D2	4.800	5.000	0.189	0.197
E	5.950	6.150	0.234	0.242
E1	5.650	5.850	0.222	0.230
E2	1.600	-	0.063	-
e	1.270 BSC		0.050 BSC	
L	0.050	0.250	0.002	0.010
L1	0.380	0.500	0.015	0.020
L2	0.380	0.500	0.015	0.020
H	3.300	3.500	0.130	0.138
I	0.000	0.180	0.000	0.007