

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
100V	1.2mΩ@10V	400A

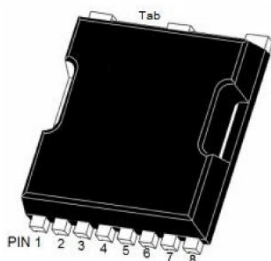
Feature

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

Application

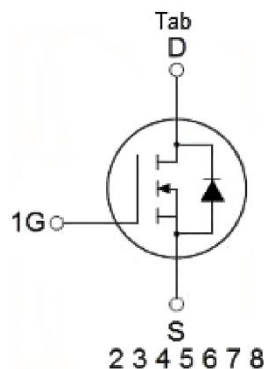
- DC/DC Converter
- LED Backlighting
- Power management switches

Package

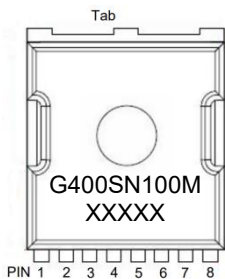


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Circuit diagram



Marking



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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V _{DS}	100	V
Gate-Source Voltage	V _{GS}	±20	V
Continuous Drain Current ¹⁾ (V _{GS} =10V)	I _D	400	A
Continuous Drain Current ¹⁾ (V _{GS} =10V, T _C =100°C)	I _D (100°C)	295	A
Pulsed Drain Current ²⁾	I _{DM}	1800	A
Single Pulse Avalanche Energy ³⁾	E _{AS}	1987	mJ
Power Dissipation ⁴⁾	P _D	500	W
Thermal Resistance Junction to Case	R _{θJC}	0.25	°C/W
Operating Junction Temperature	T _J	-55 ~ +150	°C
Storage Temperature Range	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	100			V
Zero gate voltage drain current	I _{DSS}	V _{DS} =80V, 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	2.5	2.9	4	V
Drain-source on-resistance	R _{DS(on)}	V _{GS} =10V, I _D =20A		1	1.2	mΩ
Dynamic characteristics ⁵⁾						
Input Capacitance	C _{iss}	V _{DS} =50V,V _{GS} =0V, f =1MHz		13360		pF
Output Capacitance	C _{oss}			7813		
Reverse Transfer Capacitance	C _{rss}			380		
Total Gate Charge	Q _g	V _{DS} =50V, V _{GS} =10V, I _D =20A		217		nC
Gate-Source Charge	Q _{gs}			65		
Gate-Drain Charge	Q _{gd}			57		
Turn-on delay time	t _{d(on)}	V _{DS} =50V, V _{GS} =10V, I _D =20A R _G =3Ω		41		nS
Turn-on rise time	t _r			69		
Turn-off delay time	t _{d(off)}			157		
Turn-off fall time	t _f			92		
Source-Drain Diode characteristics						
Diode Forward Current	I _S				400	A
Diode Forward voltage	V _{SD}	V _{GS} =0V, I _S =20A			1.2	V
Reverse Recovery Time	T _{rr}	I _F =20A ,di/dt =100A/μs		130		nS
Reverse Recovery Charge	Q _{rr}			374		nC

Notes:

- 1) The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ 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}=90V, V_{GS}=10V, L=1mH, I_{AS}=50A.
- 4) The power dissipation is limited by 150°C junction temperature.
- 5) Guaranteed by design, not subject to production.

Typical Characteristics

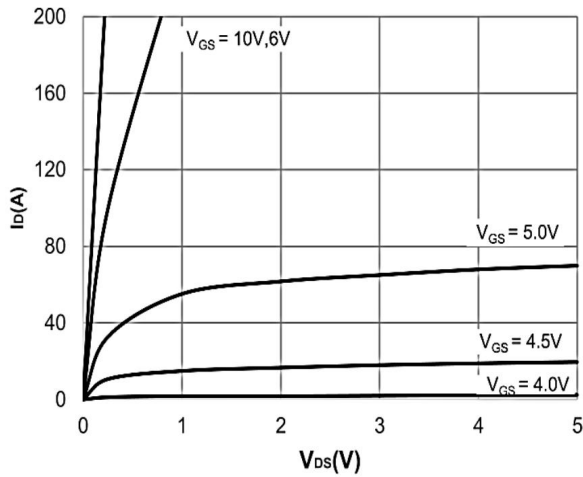


Figure 1: Output Characteristics

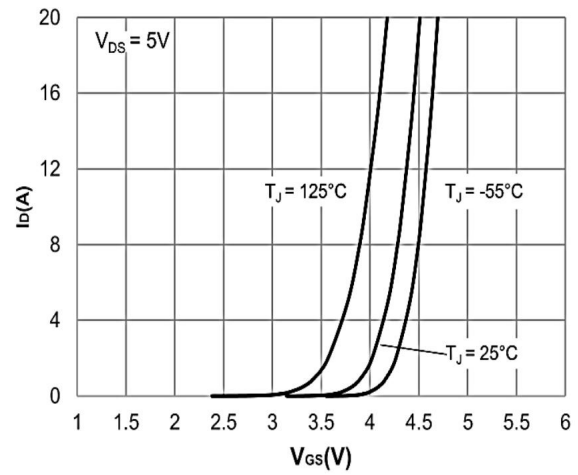


Figure 2: Typical Transfer Characteristics

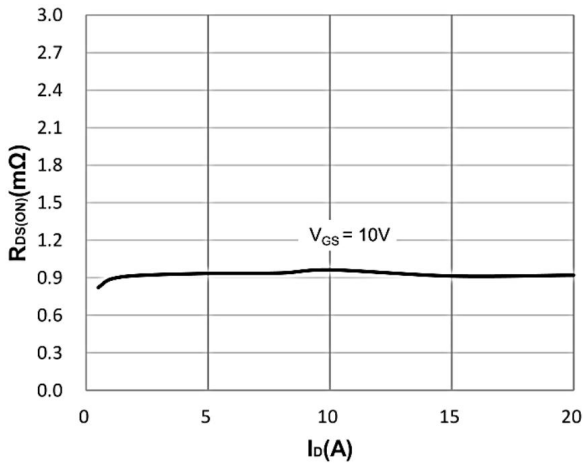


Figure 3: On-resistance vs. Drain Current

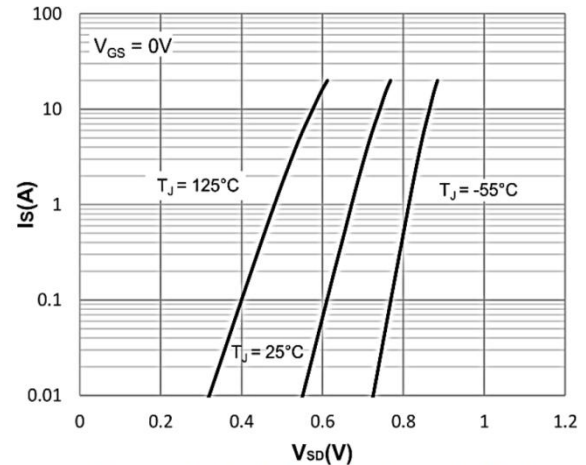


Figure 4: Body Diode Characteristics

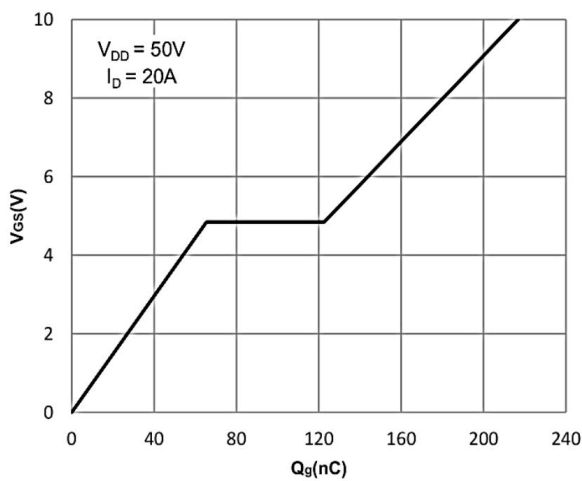


Figure 5: Gate Charge Characteristics

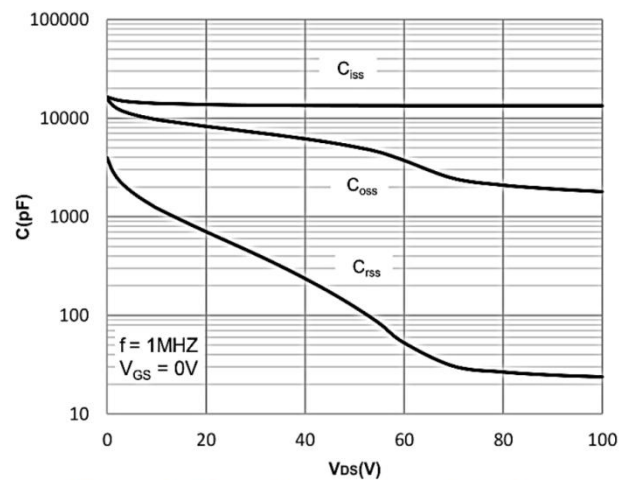


Figure 6: Capacitance Characteristics

Typical Characteristics

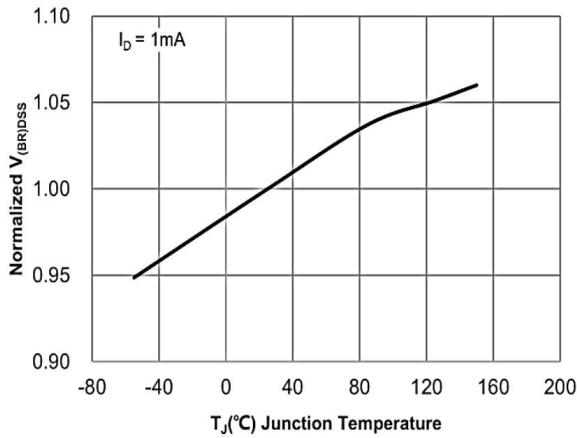


Figure 7: Normalized Breakdown voltage vs. Junction Temperature

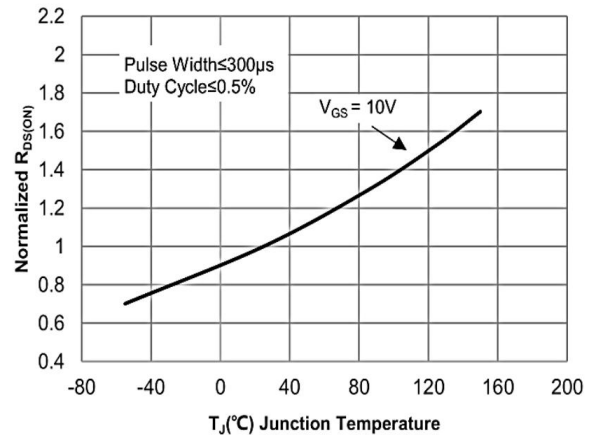


Figure 8: Normalized on Resistance vs. Junction Temperature

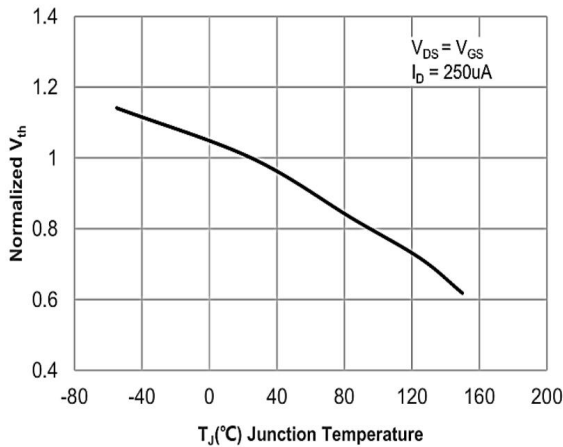


Figure 9: Maximum Safe Operating Area

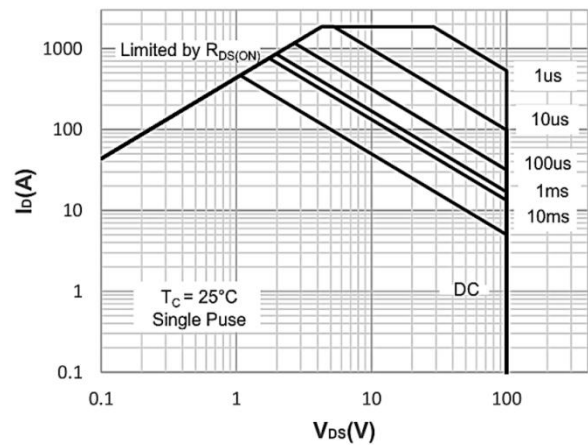


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

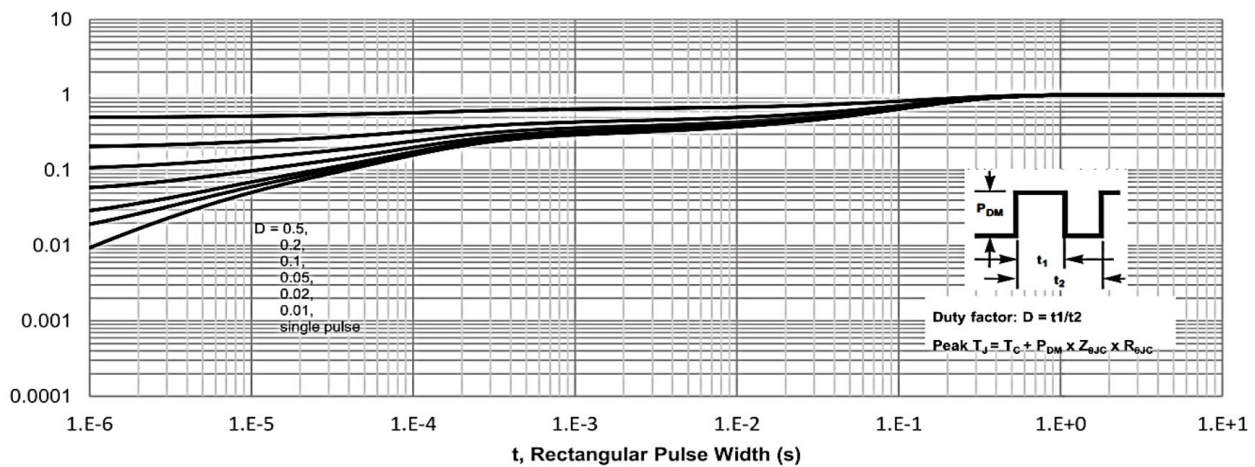
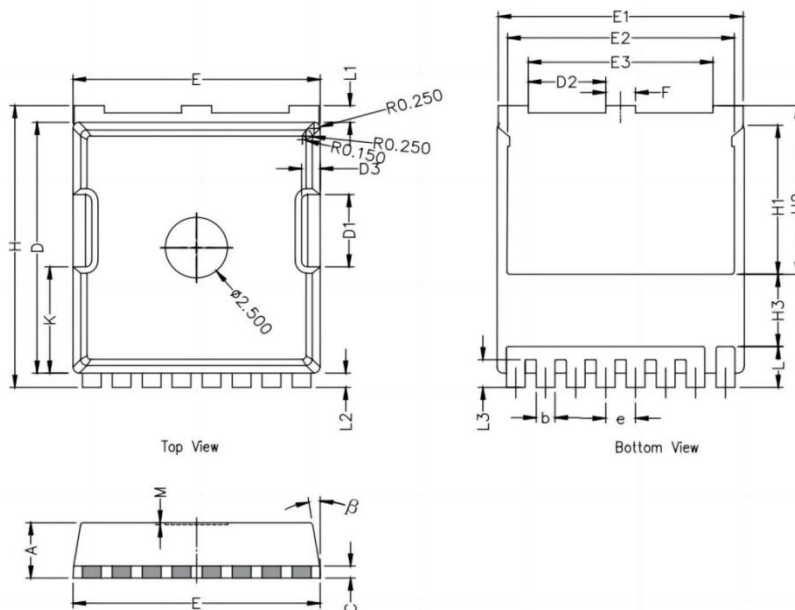


Figure 11: Normalized Maximum Transient Thermal Impedance

TOLL Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
b	0.650	0.850	0.026	0.033
C	0.508 REF.		0.020 REF.	
D	10.250	10.550	0.404	0.415
D1	2.850	3.150	0.112	0.124
D2	2.950	3.250	0.116	0.128
D3	0.750 REF.		0.030 REF.	
E	9.750	10.050	0.384	0.396
E1	9.650	9.950	0.380	0.392
E2	8.950	9.250	0.352	0.364
E3	7.250	7.550	0.285	0.297
e	1.200 BSC.		0.047 BSC.	
F	1.050	1.350	0.041	0.053
H	11.550	11.850	0.455	0.467
H1	6.030	6.330	0.237	0.249
H2	6.850	7.150	0.270	0.281
H3	3.000 BSC.		0.118 BSC.	
L	1.550	1.850	0.061	0.073
L1	0.550	0.850	0.022	0.033
L2	0.450	0.750	0.018	0.030
L3	1.000	1.300	0.039	0.051
M	0.080 REF.		0.003 REF.	
β	8°	12°	8°	12°
K	4.250	4.550	0.167	0.179