

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
100V	1.6mΩ@10V	320A

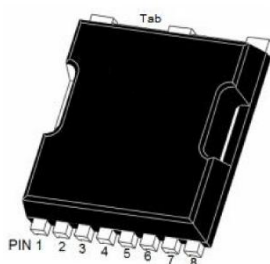
Feature

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

Application

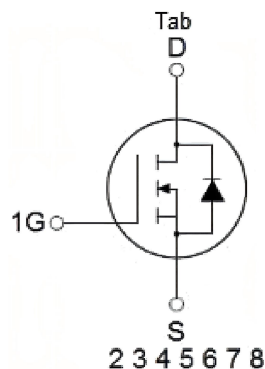
- DC/DC Converter
- LED Backlighting
- Power management switches

Package

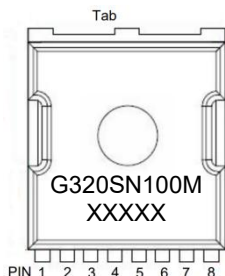


TOLL

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	320	A
Continuous Drain Current ¹⁾ (V _{GS} =10V, T _c =100°C)	I _D (100°C)	210	A
Pulsed Drain Current ²⁾	I _{DM}	1248	A
Single Pulse Avalanche Energy ³⁾	E _{AS}	2340	mJ
Power Dissipation ⁴⁾	P _D	390.6	W
Thermal Resistance Junction to Case	R _{θJC}	0.38	°C/W
Operating Junction Temperature	T _J	-55 ~ +175	°C
Storage Temperature Range	T _{STG}	-55 ~ +175	°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} =100V, V _{GS} =0V, T _J =25°C			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	4	V
Drain-source on-resistance ²⁾	R _{DS(on)}	V _{GS} =10V, I _D =20A		1.3	1.6	mΩ
Dynamic characteristics ⁵⁾						
Input Capacitance	C _{iss}	V _{DS} =50V,V _{GS} =0V, f =1MHz		14300		pF
Output Capacitance	C _{oss}			2120		
Reverse Transfer Capacitance	C _{rss}			50		
Total Gate Charge	Q _g	V _{DS} =50V, V _{GS} =10V, I _D =20A		250		nC
Gate-Source Charge	Q _{gs}			53		
Gate-Drain Charge	Q _{gd}			77		
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			88		
Turn-off delay time	t _{d(off)}			163		
Turn-off fall time	t _f			98		
Source-Drain Diode characteristics						
Diode Forward Current	I _S				320	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		106		nS
Reverse Recovery Charge	Q _{rr}			245		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}=90V, V_{GS}=10V, L=1.0mH, I_{AS}=50A.
- 4) The power dissipation is limited by 175°C junction temperature.
- 5) Guaranteed by design, not subject to production.

Typical Characteristics

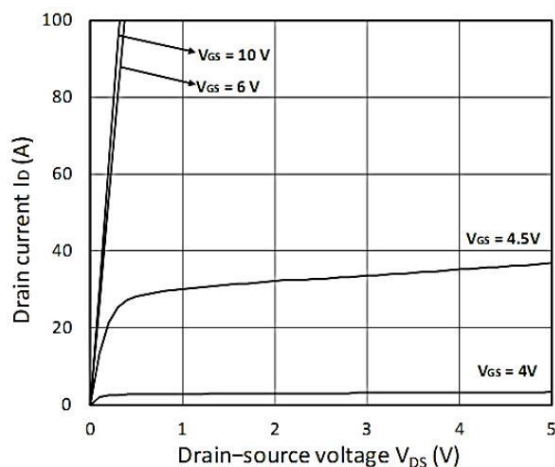


Figure 1. Output Characteristics

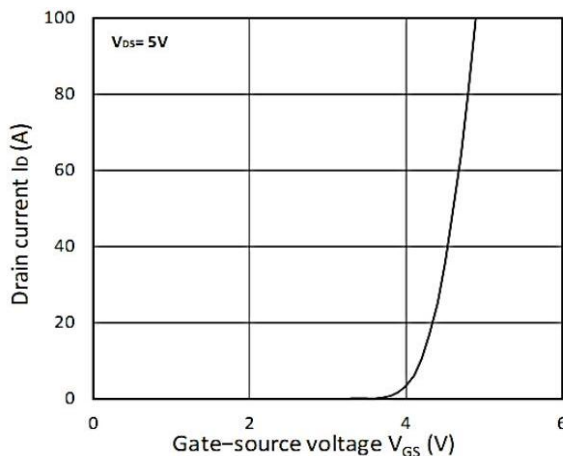


Figure 2. Transfer Characteristics

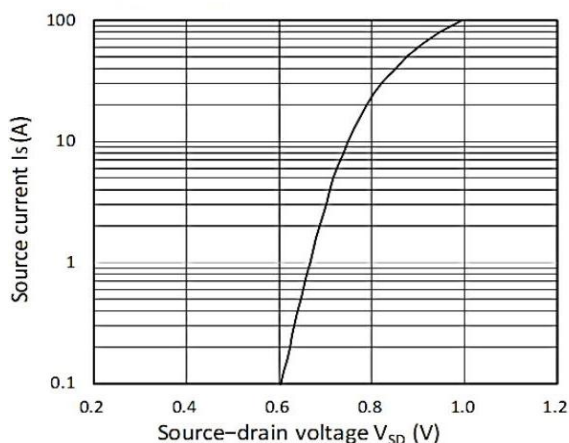


Figure 3. Forward Characteristics of Reverse

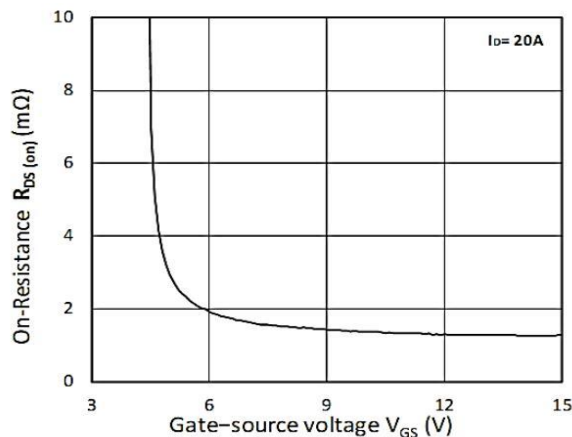


Figure 4. R_DS(ON) vs. V_GS

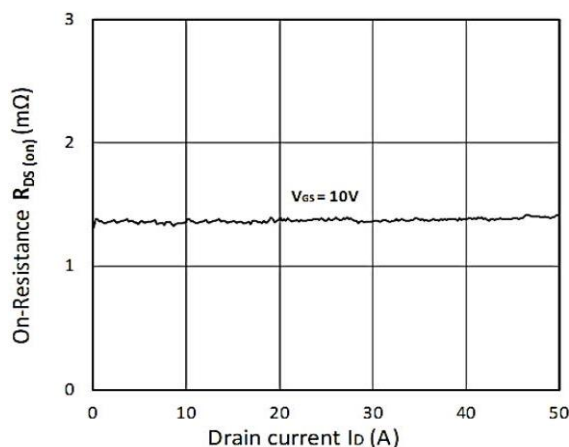


Figure 5. R_DS(ON) vs. I_D

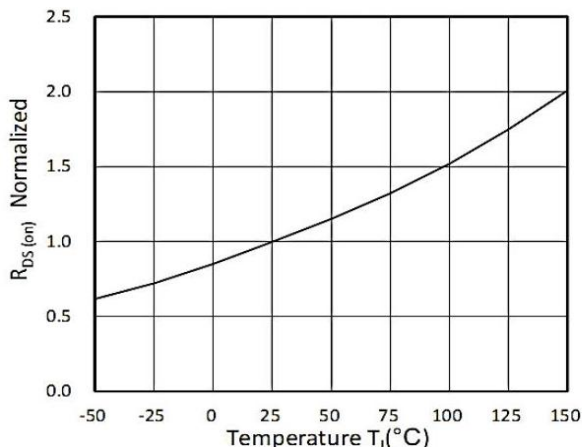


Figure 6. Normalized R_DS(on) vs. Temperature

Typical Characteristics

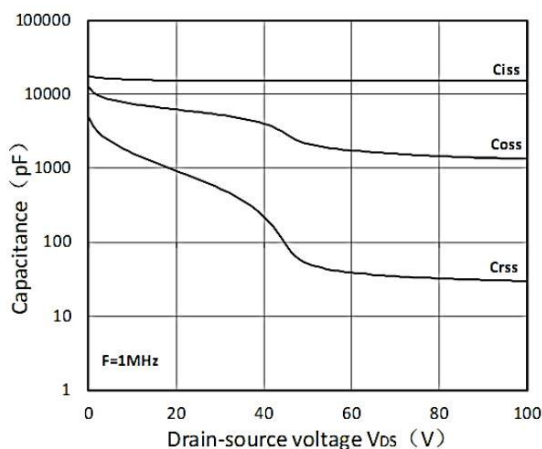


Figure 7. Capacitance Characteristics

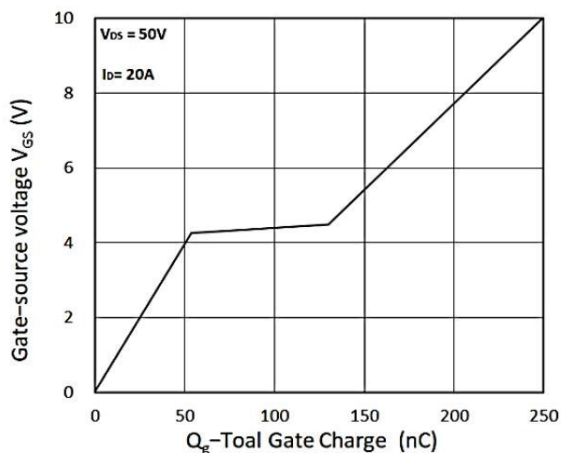


Figure 8. Gate Charge Characteristics

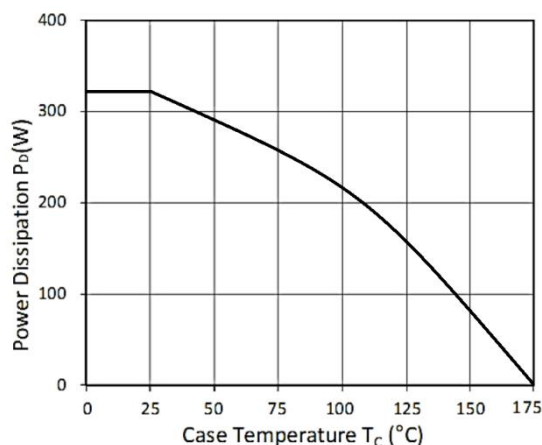


Figure 9. Power Dissipation

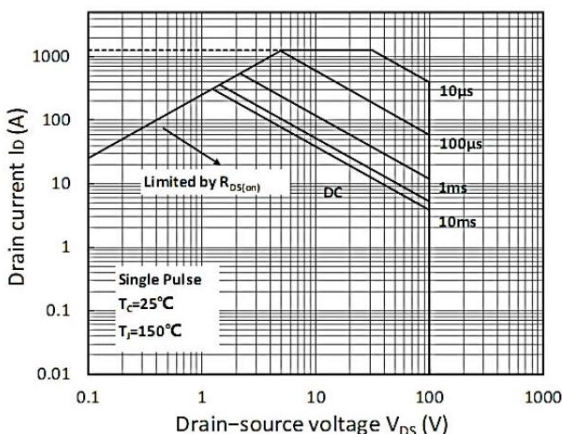


Figure 10. Safe Operating Area

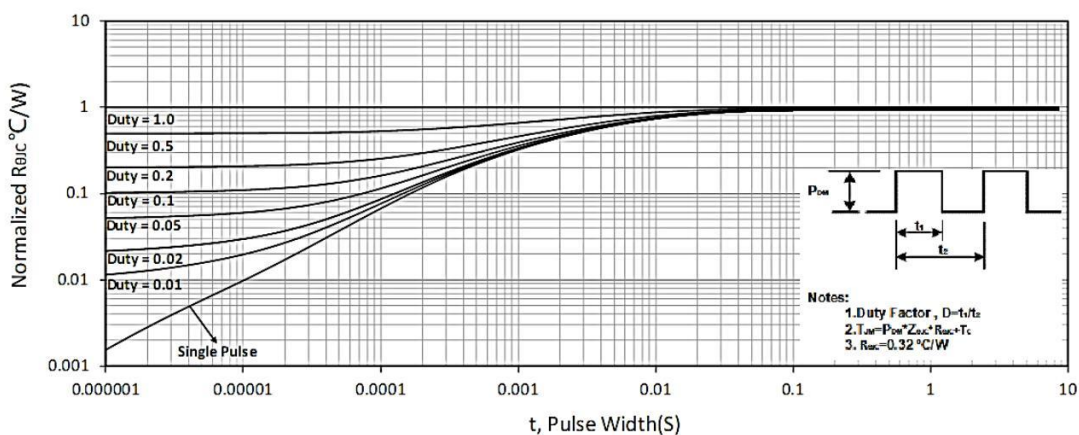
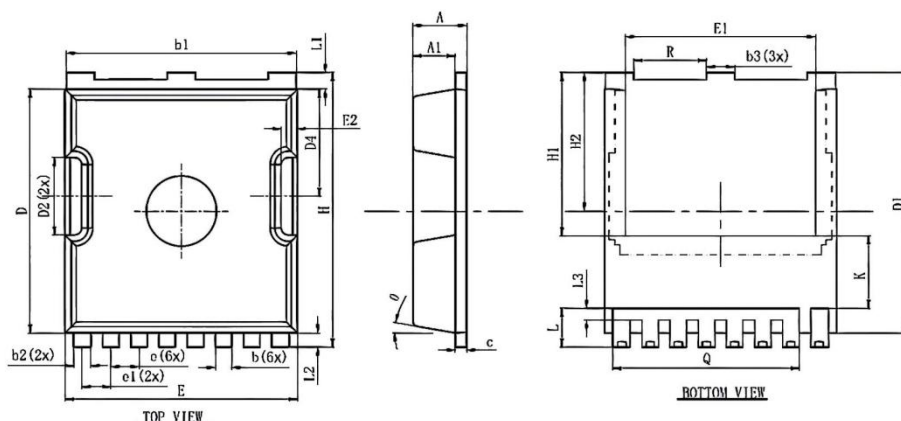


Figure 11. Normalized Maximum Transient Thermal Impedance

TOLL Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
A1	1.700	1.900	0.067	0.075
b	0.600	0.800	0.024	0.031
b1	9.700	9.900	0.382	0.390
b2	0.650	0.850	0.026	0.033
b3	1.100	1.300	0.043	0.051
C	0.400	0.600	0.016	0.024
D	10.300	10.500	0.406	0.413
D1	11.000	11.200	0.433	0.441
D2	3.200	3.400	0.126	0.134
D4	4.470	4.670	0.176	0.184
E	9.800	10.000	0.386	0.394
E1	8.000	8.200	0.315	0.323
E2	0.500	0.700	0.020	0.028
e	1.200 BSC.		0.047 BSC.	
e1	1.225 BSC.		0.048 BSC.	
H	11.600	11.800	0.457	0.465
H1	6.950 BSC.		0.274 BSC.	
H2	5.900 BSC.		0.232 BSC.	
i	0.100 REF.		0.004 REF.	
j	3.350 REF.		0.132 REF.	
K	3.100 REF.		0.122 REF.	
L	1.550	1.750	0.061	0.069
L1	0.600	0.800	0.024	0.031
L2	0.500	0.700	0.020	0.028
L3	0.400	0.600	0.016	0.024
Q	7.950 REF.		0.313 REF.	
R	3.000	3.200	0.118	0.126
θ	10°		10°	