

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
80V	1.05mΩ@10V	445A

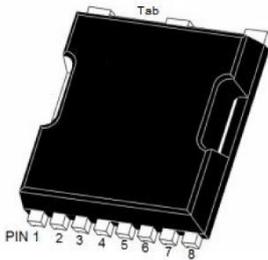
Feature

- Excellent package for heat dissipation
- High density cell design for low $R_{DS(ON)}$

Application

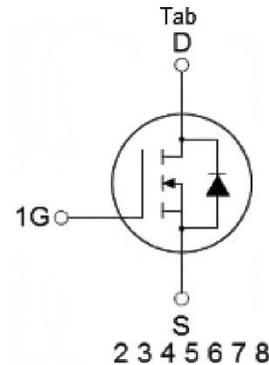
- Power switching application
- Uninterruptible power supply
- DC-DC convertor

Package

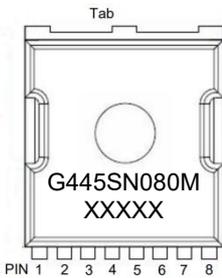


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Circuit diagram



Marking



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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V _{DS}	80	V
Gate-Source Voltage	V _{GS}	±20	V
Continuous Drain Current ^{1,3)} (V _{GS} =10V, Chip limitation)	I _D	445	A
Continuous Drain Current ^{1,3)} (V _{GS} =10V, T _C =100°C)	I _D (100°C)	314	A
Pulsed Drain Current (t _p ≤10us)	I _{DM}	1780	A
Single Pulse Avalanche Energy ²⁾	E _{AS}	2401	mJ
Power Dissipation ^{1,3)}	P _D	416	W
Thermal Resistance Junction to Case	R _{θJC}	0.36	°C/W
Operating Junction Temperature	T _J	-55 ~ +175	°C
Storage Temperature Range	T _{STG}	-55 ~ +175	°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 =1mA	80			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	2.2	3	3.8	V
Drain-source on-resistance	R _{DS(on)}	V _{GS} =10V, I _D =50A		0.79	1.05	mΩ
Dynamic characteristics⁴⁾						
Input Capacitance	C _{iss}	V _{DS} =40V, V _{GS} =0V f =1MHz		13030		pF
Output Capacitance	C _{oss}			3930		
Reverse Transfer Capacitance	C _{rss}			130		
Total Gate Charge	Q _g	V _{DS} =40V, V _{GS} =10V, I _D =50A		236.7		nC
Gate-Source Charge	Q _{gs}			53.6		
Gate-Drain Charge	Q _{gd}			79.4		
Turn-on delay time	t _{d(on)}	V _{DS} =40V, V _{GS} =10V, I _D =50A R _G =3Ω		29.1		nS
Turn-on rise time	t _r			152.9		
Turn-off delay time	t _{d(off)}			163.3		
Turn-off fall time	t _f			161.3		
Source-Drain Diode characteristics						
Diode Forward Current	I _S	T _C =25°C			445	A
Diode Forward voltage	V _{SD}	V _{GS} =0V, I _S =50A			1.2	V
Reverse Recovery Time	T _{rr}	V _{GS} =0V, V _R =40V, I _F =50A		87.7		nS
Reverse Recovery Charge	Q _{rr}	di/dt =-100A/μs		153.7		nC

Notes:

- 1) The entire application environment impacts the thermal resistance values shown, they are not constants and are only valid for the particular conditions noted.
- 2) The test condition is T_J =25°C, V_G=10V, L=2mH, R_G =25Ω, I_S=49A.
- 3) Thermal resistance from junction to soldering point (on the exposed drain pad).
- 4) Guaranteed by design, not subject to production.

Typical Characteristics

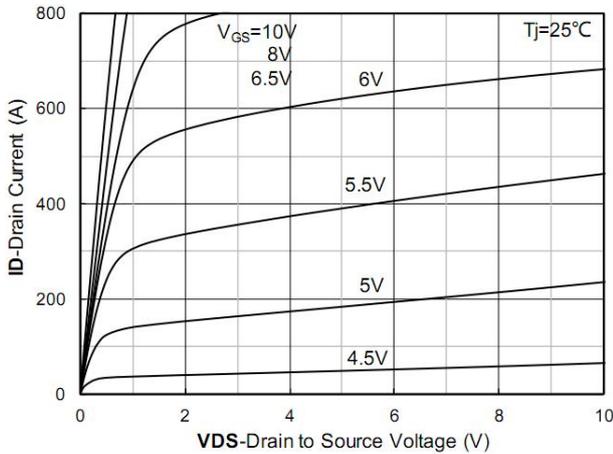


Figure 1. Output Characteristics; typical values

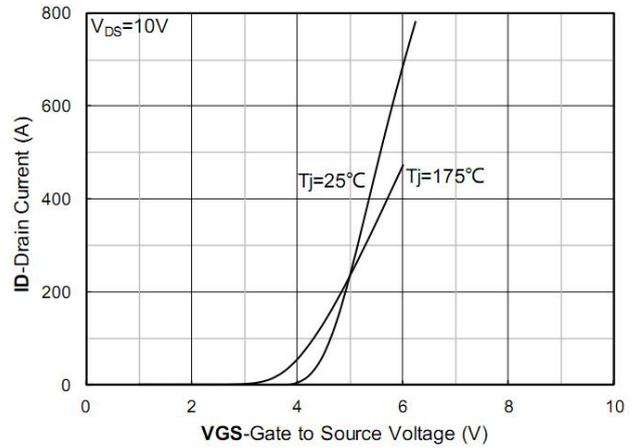


Figure 2. Transfer Characteristics; typical values

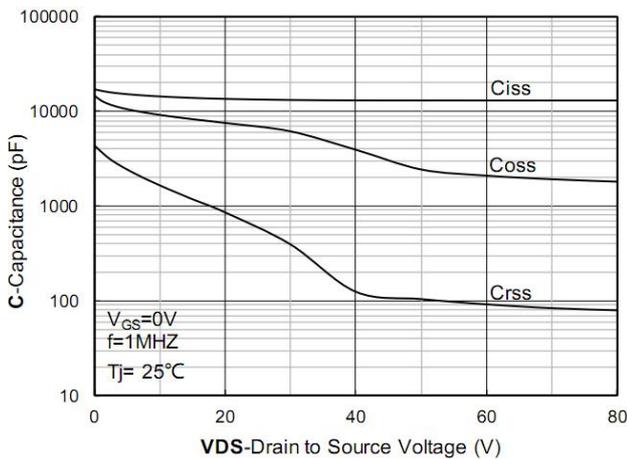


Figure 3. Capacitance Characteristics; typical values

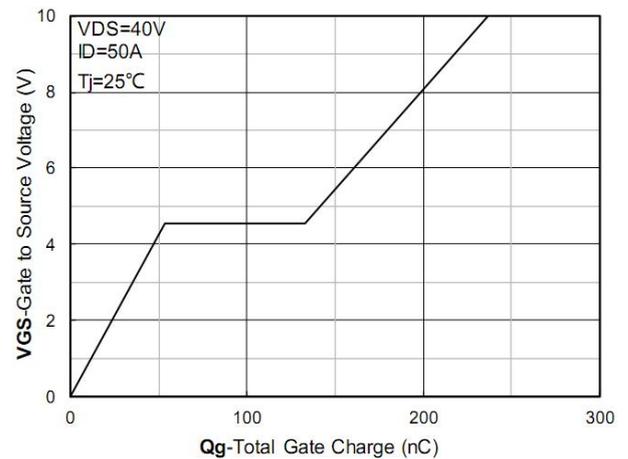


Figure 4. Gate Charge; typical values

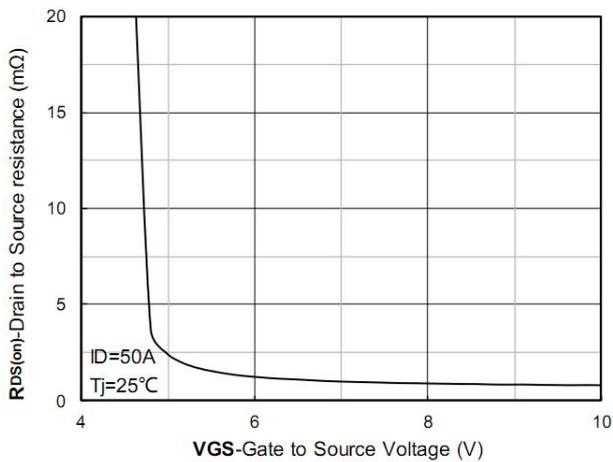


Figure 5. On-Resistance vs. Gate to Source Voltage;

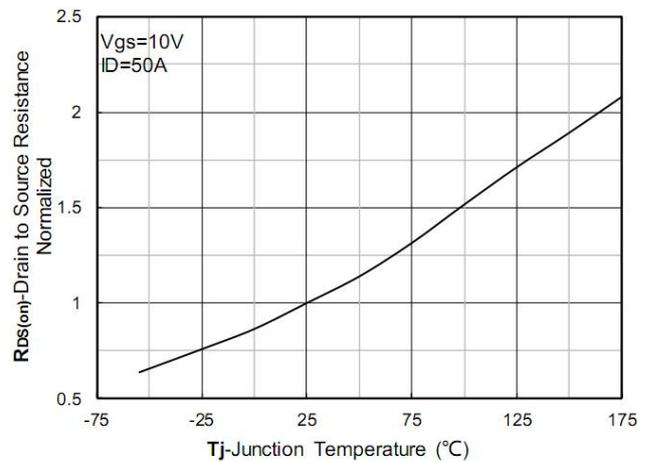


Figure 6. Normalized On-Resistance

Typical Characteristics

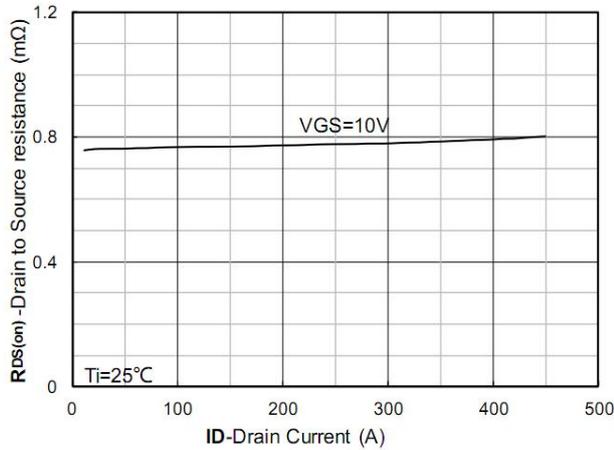


Figure 7. $R_{DS(on)}$ vs. Drain Current; typical values

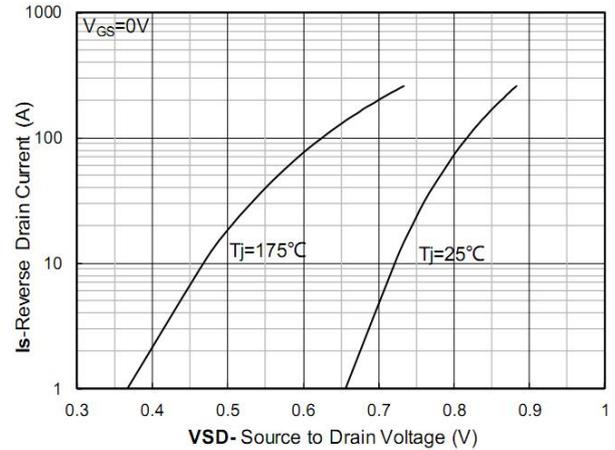


Figure 8. Forward characteristics of reverse diode;

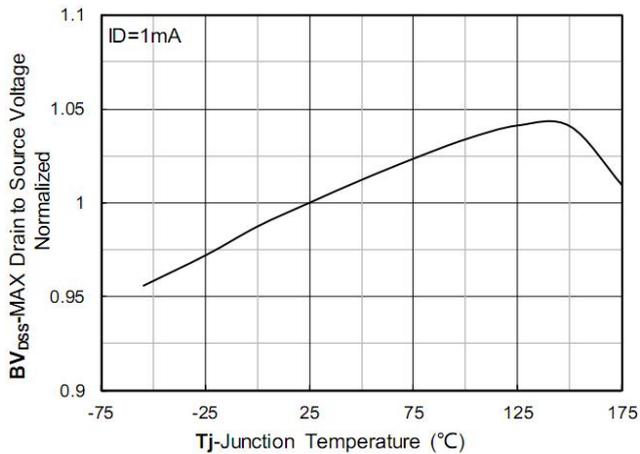


Figure 9. Normalized breakdown voltage

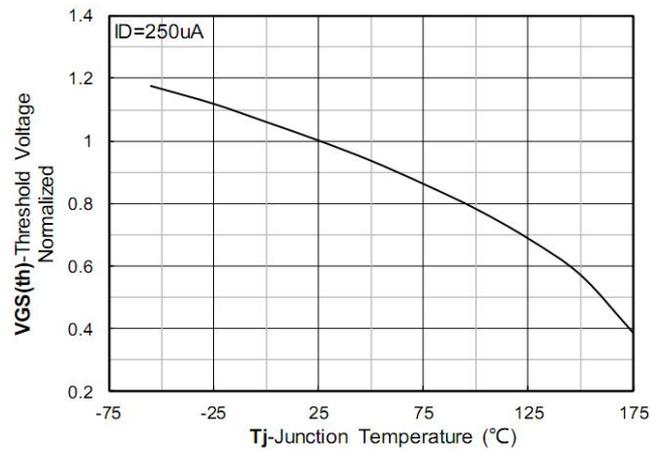


Figure 10. Normalized Threshold voltage

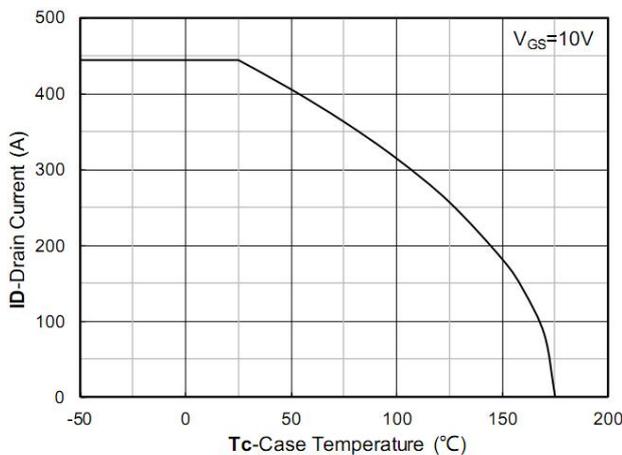


Figure 11. Current dissipation

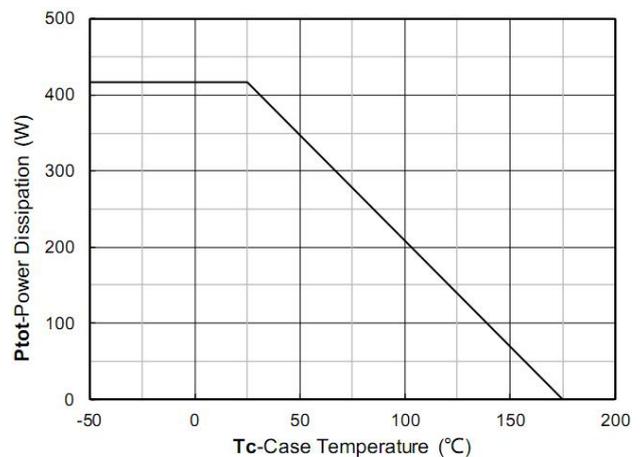


Figure 12. Power dissipation

Typical Characteristics

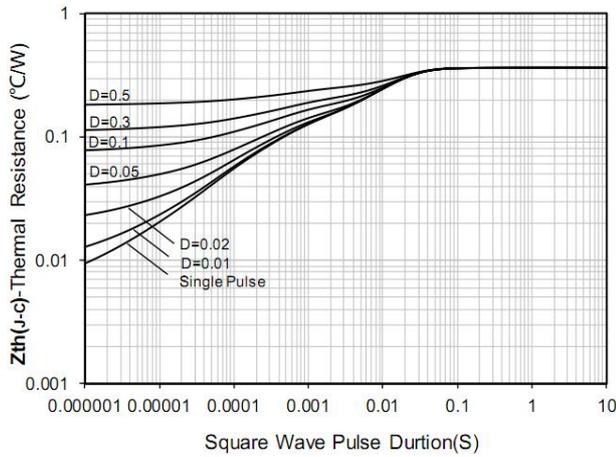


Figure 13. Maximum Transient Thermal Impedance

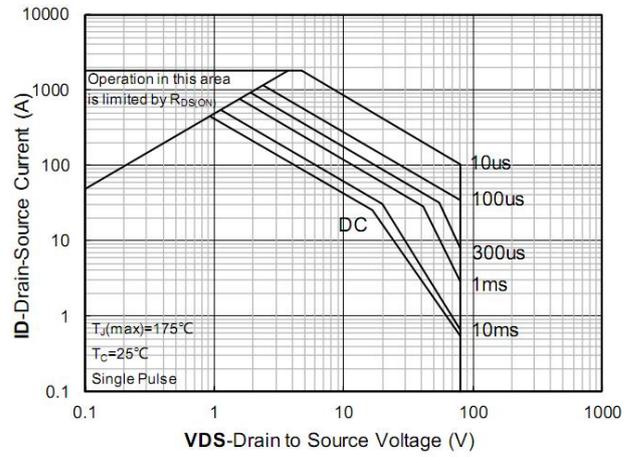
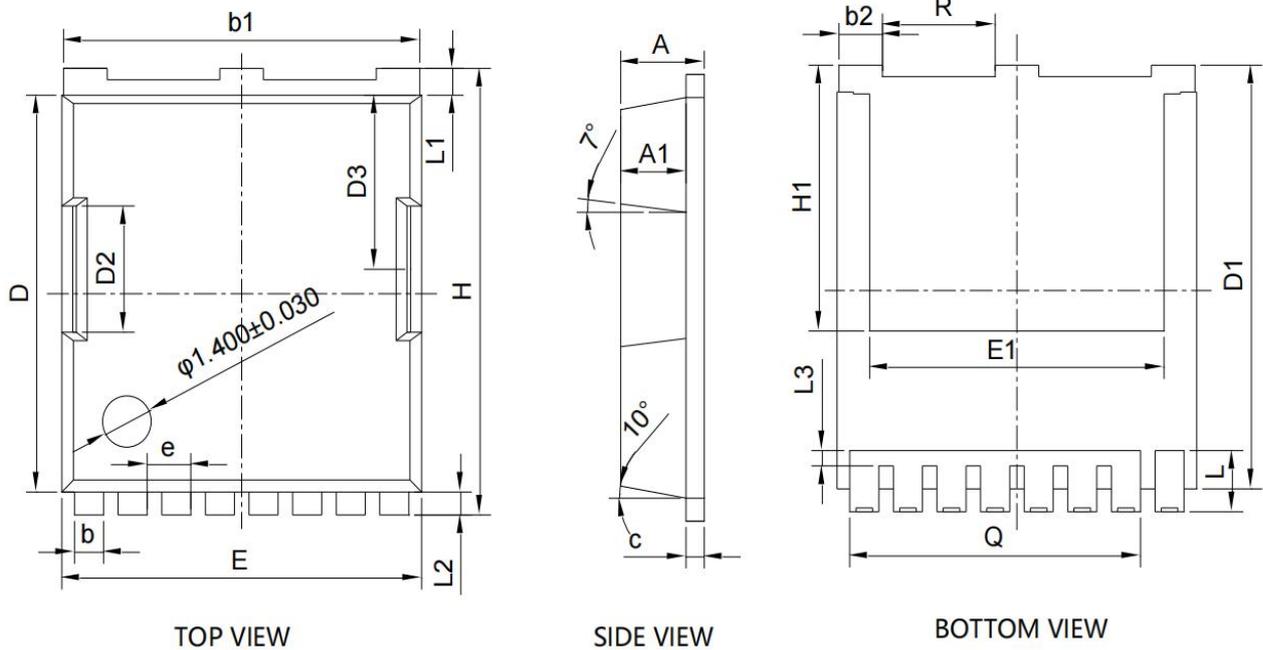


Figure 14. Safe Operation Area

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	0.700	0.900	0.028	0.035
b1	9.700	9.900	0.382	0.390
b2	1.100	1.300	0.043	0.051
c	0.400	0.600	0.016	0.024
D	10.280	10.480	0.405	0.413
D1	10.980	11.180	0.432	0.440
D2	3.200	3.400	0.126	0.134
D3	4.450	4.650	0.175	0.183
E	9.800	10.000	0.386	0.394
E1	8.000	8.200	0.315	0.323
e	1.200 BSC.		0.047 BSC.	
H	11.580	11.780	0.456	0.464
H1	6.950 BSC.		0.274 BSC.	
L	1.500	1.700	0.059	0.067
L1	0.600	0.800	0.024	0.031
L2	0.500	0.700	0.020	0.028
L3	0.300	0.500	0.012	0.020
Q	8.000 REF.		0.315 REF.	
R	3.000	3.200	0.118	0.126