

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
100V	8.8mΩ@10V	85A
	14mΩ@4.5V	

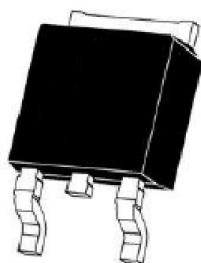
Feature

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

Application

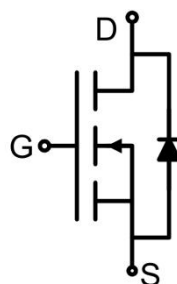
- DC/DC Converter
- LED Backlighting
- Power Management Switches

Package

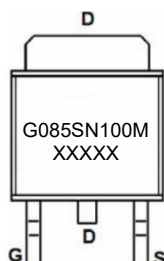


TO-252AB

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	85	A
Continuous Drain Current ¹⁾ (V _{GS} =10V, T _c =100°C)	I _D (100°C)	49	A
Pulsed Drain Current ²⁾	I _{DM}	260	A
Single Pulse Avalanche Energy ³⁾	E _{AS}	24	mJ
Power Dissipation ⁴⁾	P _D	86	W
Thermal Resistance Junction to Case	R _{θJC}	1.5	°C/W
Operating Junction Temperature	T _J	-55 ~ +150	°C
Storage Temperature	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} =100V, 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	1.8	2.5	V
Drain-source on-resistance	R _{DS(on)}	V _{GS} =10V, I _D =10A		7.2	8.8	mΩ
		V _{GS} =4.5V, I _D =6A		10	14	
Dynamic characteristics ⁵⁾						
Input Capacitance	C _{iss}	V _{DS} =50V, V _{GS} =0V, f =1MHz		1870		pF
Output Capacitance	C _{oss}			730		
Reverse Transfer Capacitance	C _{rss}			22		
Total Gate Charge	Q _g	V _{DS} =50V, V _{GS} =10V, I _D =10A		27		nC
Gate-Source Charge	Q _{gs}			7.6		
Gate-Drain Charge	Q _{gd}			8.1		
Turn-on delay time	t _{d(on)}	V _{DS} =50V, V _{GS} =10V R _L =2.5Ω, R _G =6Ω		11		nS
Turn-on rise time	t _r			21		
Turn-off delay time	t _{d(off)}			23		
Turn-off fall time	t _f			8.8		
Source-Drain Diode characteristics						
Diode Forward Current	I _S				85	A
Diode Forward voltage	V _{SD}	V _{GS} =0V, I _S =1A			1.2	V
Reverse Recovery Time	T _{rr}	I _F =20A, di/dt =100A/μs		44		nS
Reverse Recovery Charge	Q _{rr}			56		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 ≤300μs, Duty Cycle ≤2%.
- 3) E_{AS} condition: Starting V_{DS}=50V, V_G=10V, R_G=25Ω, L=0.1mH, I_{AS}=24A.
- 4) The power dissipation is limited by 150°C junction temperature.
- 5) Guaranteed by design, not subject to production testing.

Typical Characteristics

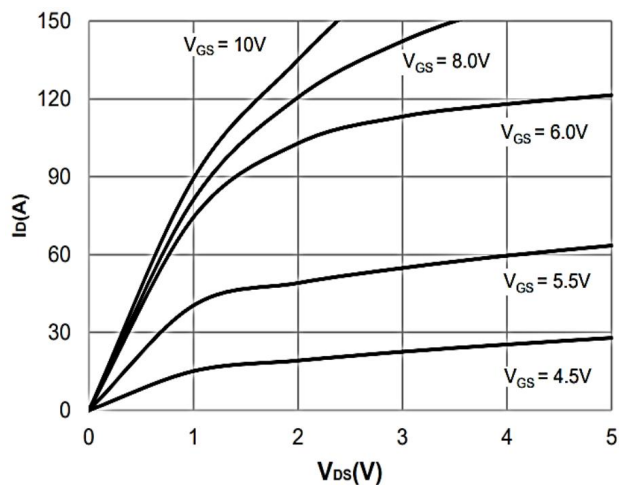


Figure 1: Output Characteristics

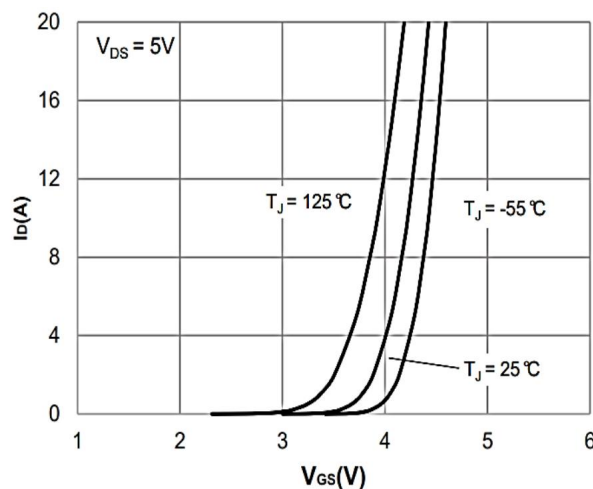


Figure 2: Typical Transfer Characteristics

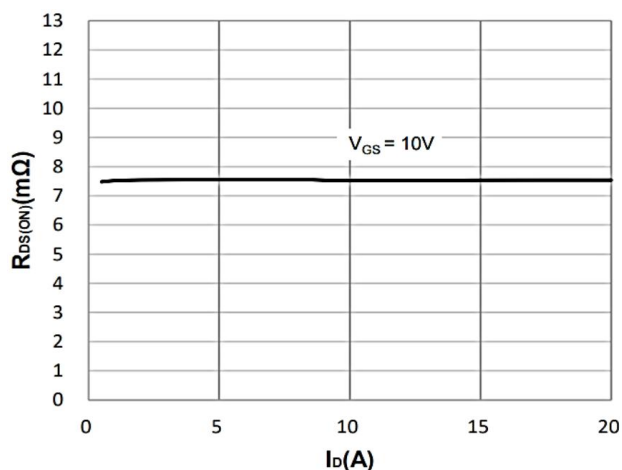


Figure 3: On-resistance vs. Drain Current

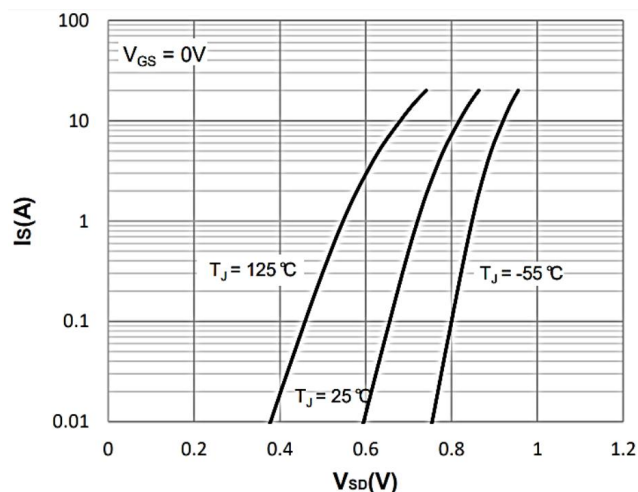


Figure 4: Body Diode Characteristics

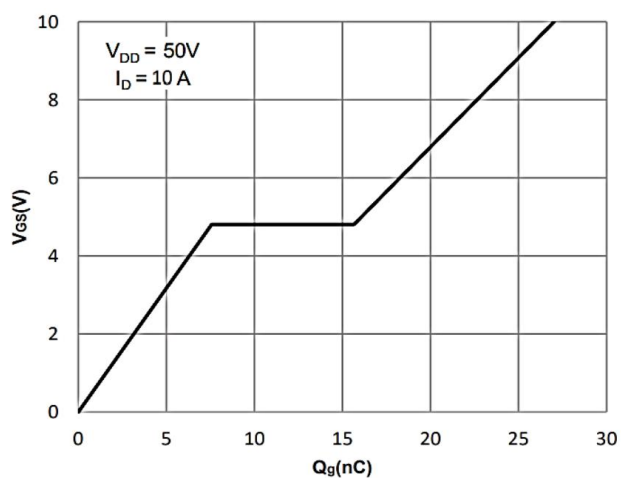


Figure 5: Gate Charge Characteristics

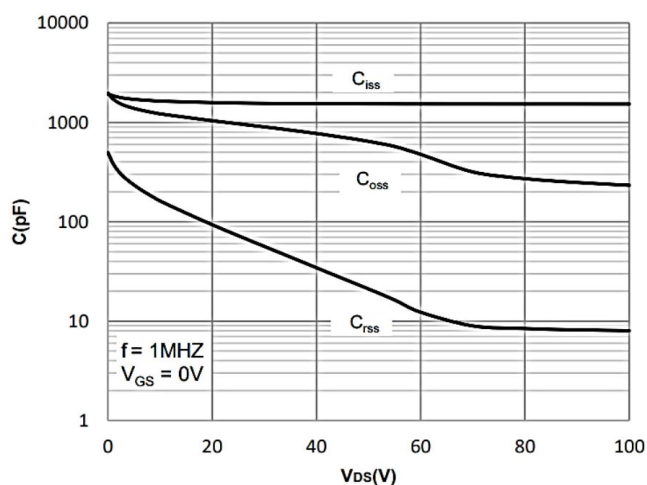


Figure 6: Capacitance Characteristics

Typical Characteristics

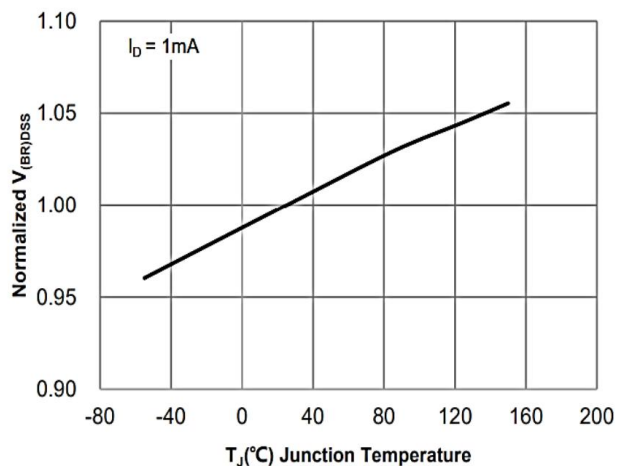


Figure 7: Normalized Breakdown voltage vs. Junction Temperature

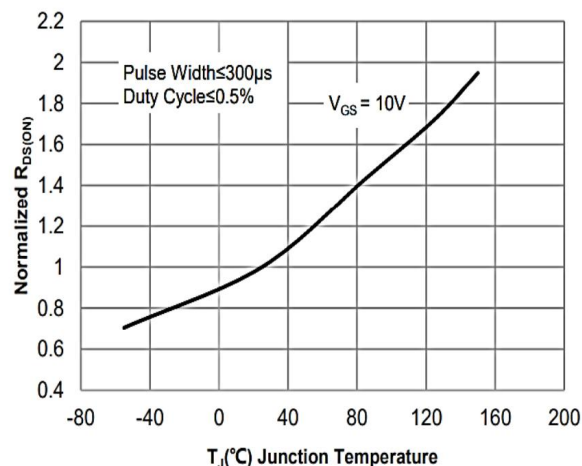


Figure 8: Normalized on Resistance vs. Junction Temperature

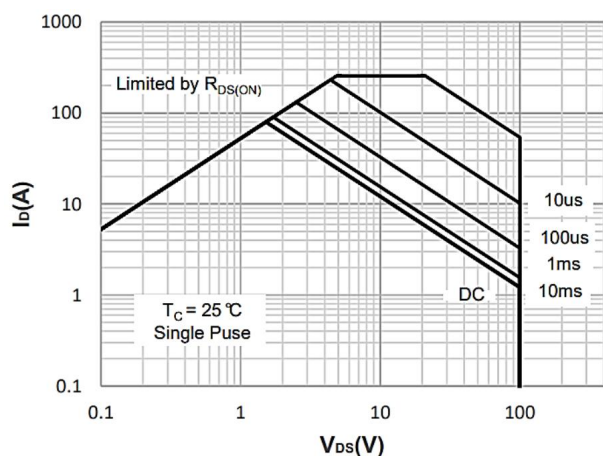


Figure 9: Maximum Safe Operating Area

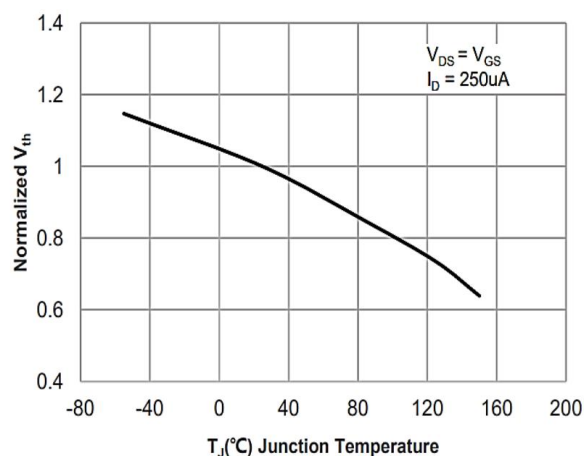


Figure 10: Normalized Threshold Voltage vs. Case Temperature

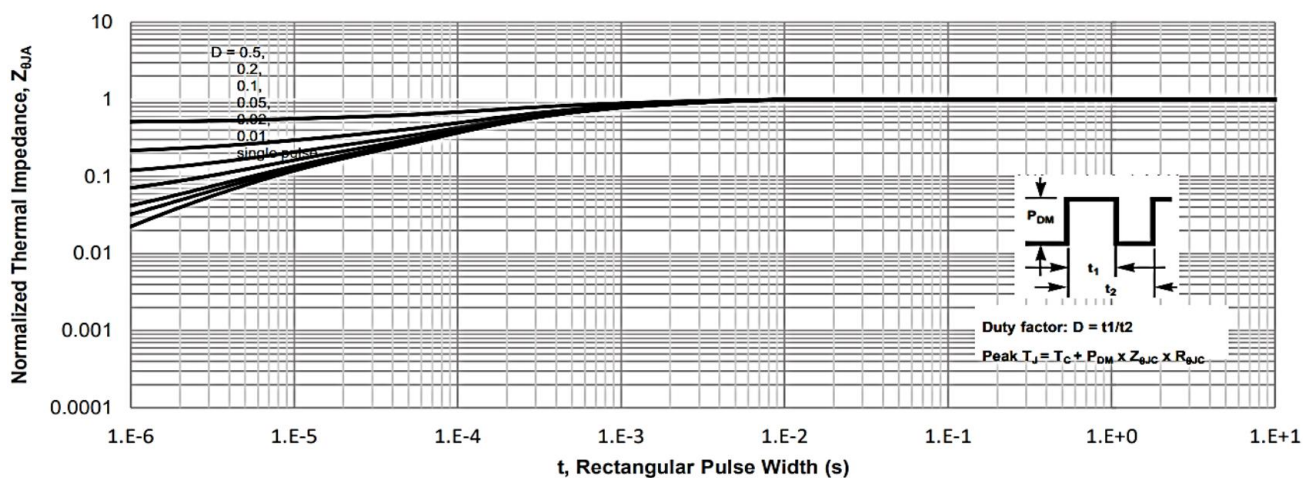
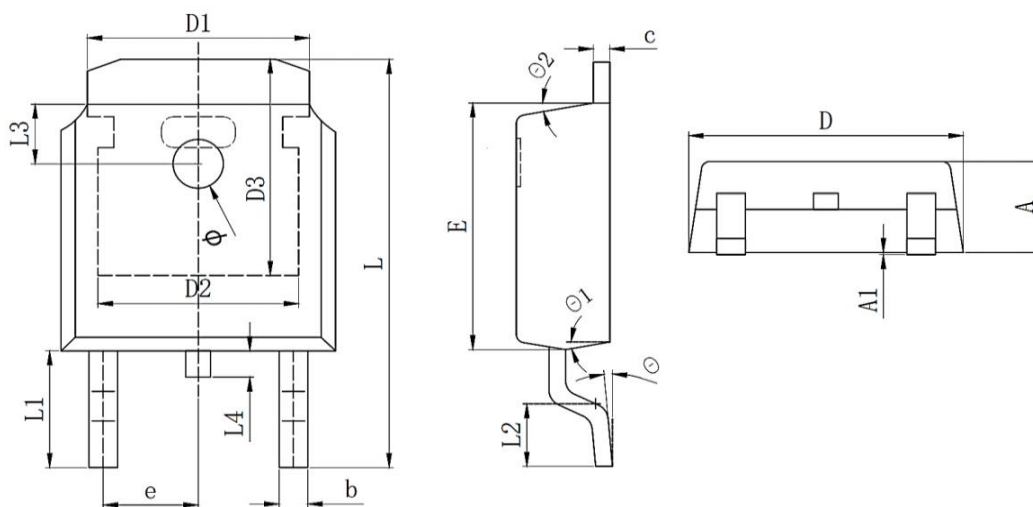


Figure 11: Normalized Maximum Transient Thermal Impedance

TO-252AB Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.100	2.500	0.083	0.098
A1	0.000	0.128	0.000	0.005
b	0.640	0.860	0.025	0.034
c	0.450	0.600	0.018	0.024
D	6.400	6.800	0.252	0.268
D1	5.330 REF.		0.210 REF.	
D2	4.830 REF.		0.190 REF.	
D3	5.250 REF.		0.207 REF.	
E	5.900	6.300	0.232	0.248
e	2.286 BSC.		0.090 BSC.	
L	9.800	10.400	0.386	0.409
L1	2.888 REF.		0.114 REF.	
L2	1.400	1.700	0.055	0.067
L3	1.650 REF.		0.065 REF.	
L4	0.600	1.000	0.024	0.039
φ	1.100	1.300	0.043	0.051
θ	0°	10°	0°	10°
θ1	5°	10°	5°	10°
θ2	5°	10°	5°	10°