

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
250V	20mΩ@10V	80A

Feature

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

Application

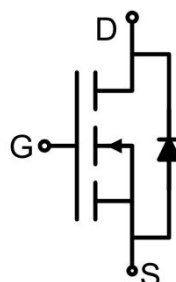
- DC/DC converter
- Power management switches
- BMS / UPS

Package

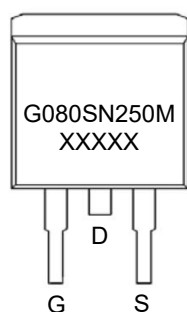


TO-263AB

Circuit diagram



Marking



Absolute Maximum Ratings (T_c=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V _{DS}	250	V
Gate-Source Voltage	V _{GS}	±20	V
Continuous Drain Current ¹⁾ (V _{GS} =10V)	I _D	80	A
Continuous Drain Current ¹⁾ (V _{GS} =10V, T _C =100°C)	I _D (100°C)	65	A
Pulsed Drain Current ²⁾	I _{DM}	330	A
Single Pulse Avalanche Energy ³⁾	E _{AS}	2000	mJ
Power Dissipation ⁴⁾	P _D	278	W
Thermal Resistance Junction to Case	R _{θJC}	0.45	°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	250			V
Zero gate voltage drain current	I _{DSS}	V _{DS} =250V, 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	3.5	4.5	V
Drain-source on-resistance ²⁾	R _{DS(on)}	V _{GS} =10V, I _D =20A		18	20	mΩ
Dynamic characteristics ⁶⁾						
Input Capacitance	C _{iss}	V _{DS} =125V, V _{GS} =0V, f =1MHz		10602		pF
Output Capacitance	C _{oss}			8.1		
Reverse Transfer Capacitance	C _{rss}			270		
Total Gate Charge	Q _g	V _{DS} =100V, V _{GS} =10V, I _D =55A		136		nC
Gate-Source Charge	Q _{gs}			52		
Gate-Drain Charge	Q _{gd}			25		
Turn-on delay time	t _{d(on)}	V _{DS} =100V, V _{GS} =10V, I _D =55A R _G =4.7Ω		54.5		nS
Turn-on rise time	t _r			24.2		
Turn-off delay time	t _{d(off)}			73.6		
Turn-off fall time	t _f			15.6		
Source-Drain Diode characteristics						
Diode Forward Current ^{1,5)}	I _S	V _D =V _G =0V , Force Current			80	A
Diode Forward voltage ²⁾	V _{SD}	V _{GS} =0V, I _F =20A			1.2	V
Reverse Recovery Time	T _{rr}	I _F =40A, di/dt =100A/μs		267		nS
Reverse Recovery Charge	Q _{rr}			765		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_{DS} = 50V, V_{GS} = 10V, L = 0.5mH, I_{AS} = 45A.
- 4) The power dissipation is limited by 150°C junction temperature.
- 5) The data is theoretically the same as I_D and I_{DM}, in real applications, should be limited by total power dissipation.
- 6) Guaranteed by design, not subject to production testing.

Typical Characteristics

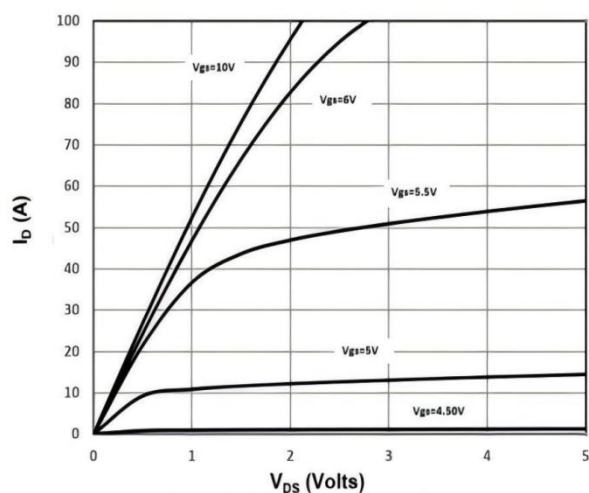


Figure 1: On-Region Characteristics

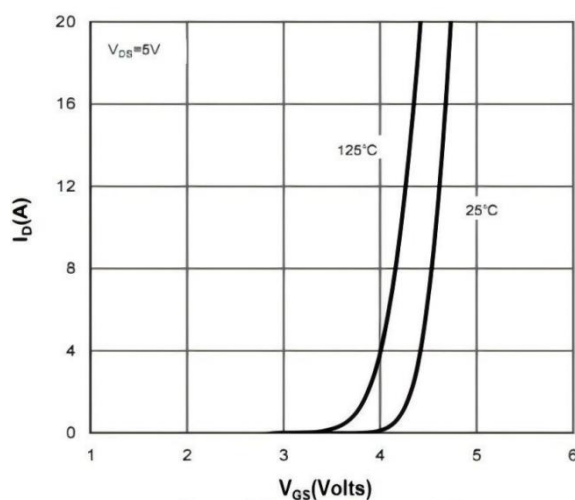


Figure 2: Transfer Characteristics

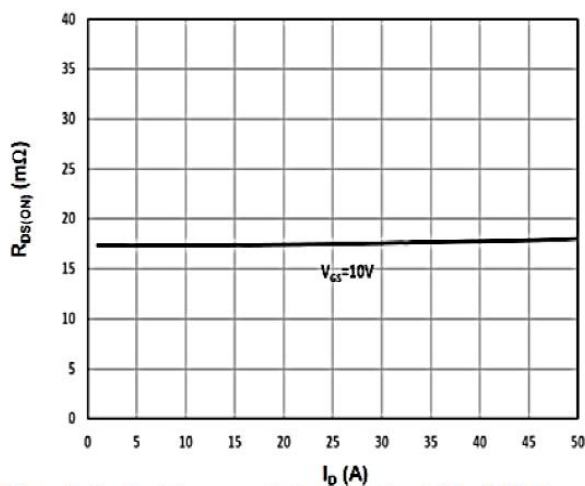


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

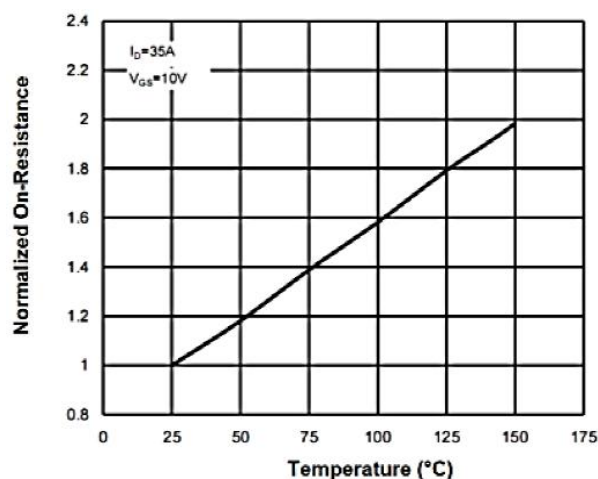


Figure 4: On-Resistance vs. Junction Temperature

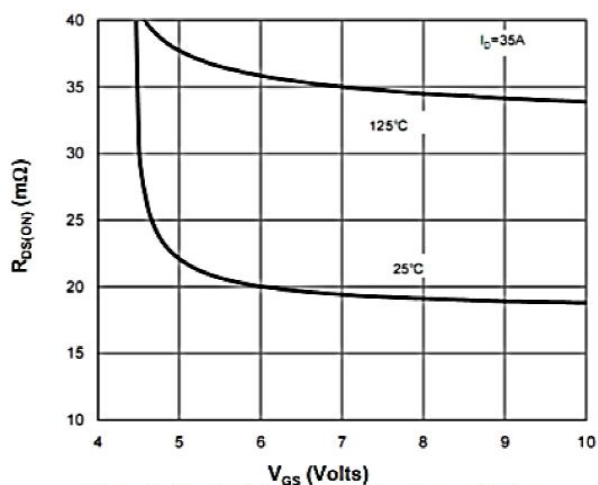


Figure 5: On-Resistance vs. Gate-Source Voltage

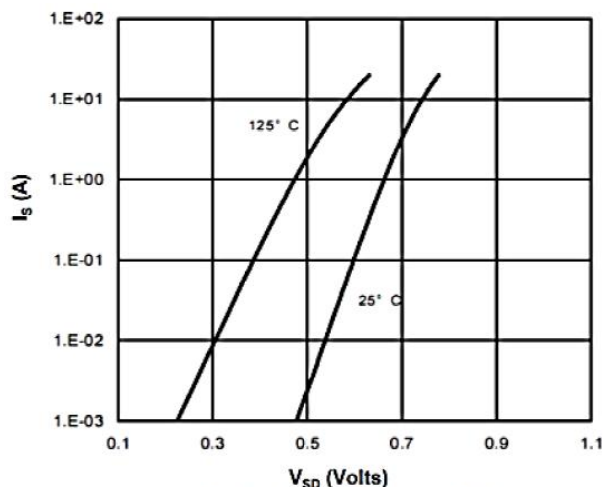
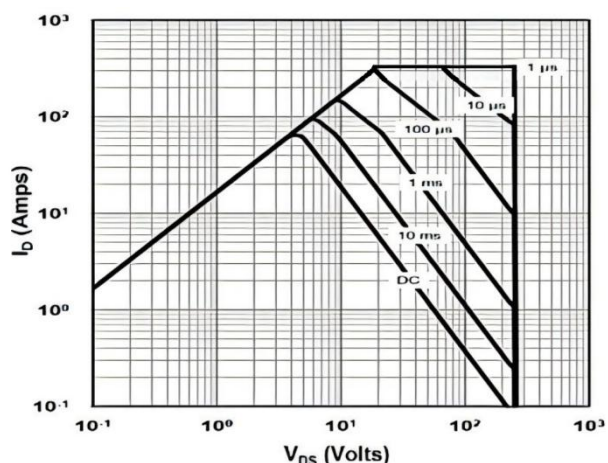
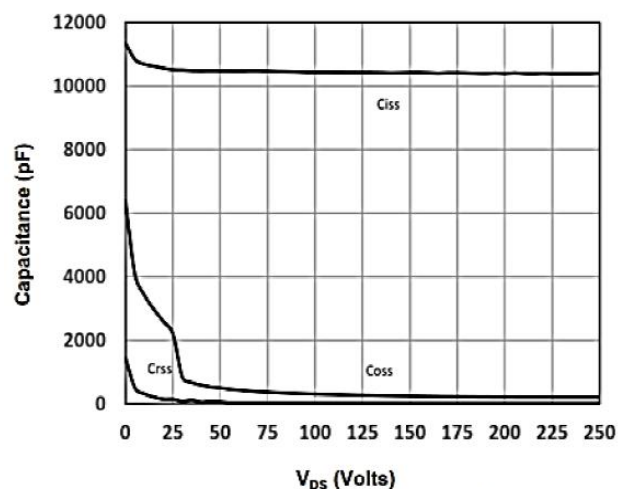
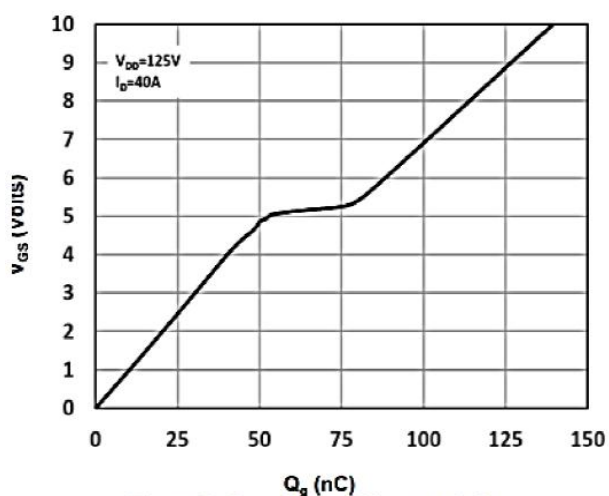
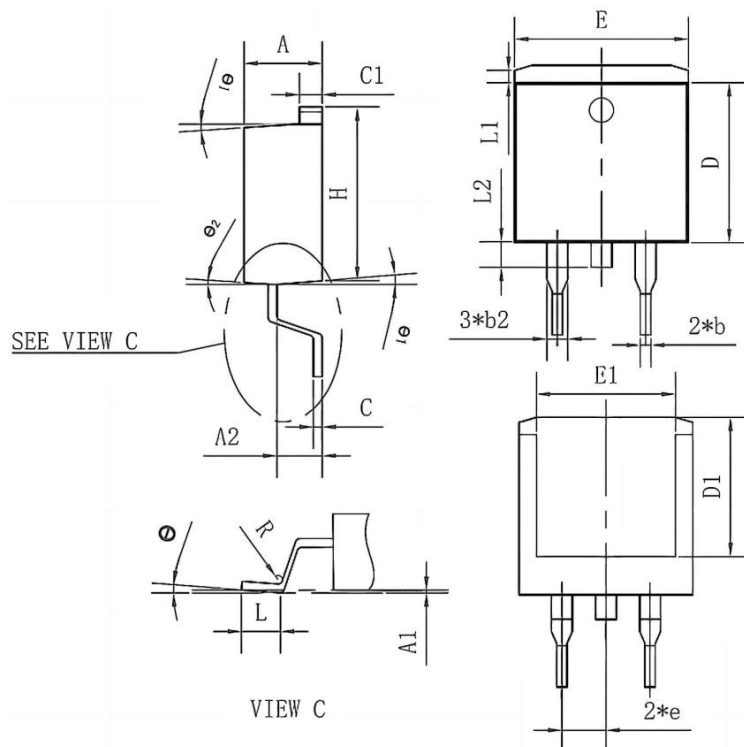


Figure 6: Body-Diode Characteristics

Typical Characteristics



TO-263AB Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.350	4.600	0.171	0.181
A1	0.090	0.110	0.004	0.004
A2	2.300	2.700	0.091	0.106
b	0.700	1.000	0.028	0.039
b2	1.250	1.500	0.049	0.059
C	0.450	0.650	0.018	0.026
C1	1.290	9.400	0.051	0.370
D	9.100	9.300	0.358	0.366
D1	7.900	8.100	0.311	0.319
E	9.850	10.200	0.388	0.402
E1	7.900	8.100	0.311	0.319
H	15.300	15.700	0.602	0.618
e	2.540 BSC.		0.100 BSC.	
L	2.340	2.740	0.092	0.108
L1	1.000	1.200	0.039	0.047
L2	1.300	1.500	0.051	0.059
R	0.240	0.260	0.009	0.010
θ	0°	8°	0°	8°
θ1	4°	10°	4°	10°
θ2	0°	6°	0°	6°