AG280SN040MTB

N-Channel Enhancement Mode MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
40V	1.5mΩ@10V	280A
	2.5mΩ@4.5V	

Feature

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

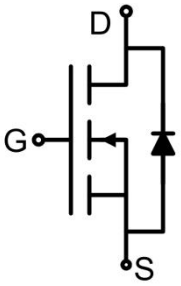
Application

- BMS
- BLDC
- UPS

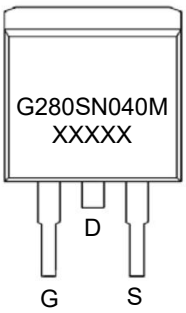
Package

TO-263AB

Circuit diagram



Marking



Absolute Maximum Ratings (T_C=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	40	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current[1] (V_{GS} =10V)	I_D	280	A
Continuous Drain Current[1] (V_{GS} =10V, T_C=100℃)	I_D(100℃)	200	A
Pulsed Drain Current[2]	I_{DM}	1120	A
Single Pulse Avalanche Energy[3]	E_{AS}	818	mJ
Power Dissipation[4]	P_D	230	W
Thermal Resistance,Junction-to-Case	$R_{\theta JC}$	0.54	℃/W
Operating Junction Temperature	T_J	-55 ~ +150	℃
Storage Temperature	T_{STG}	-55 ~ +150	℃

Electrical characteristics (T_J=25℃ 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	40			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =40V, 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	1.8	2.5	V
Drain-source on-resistance	$R_{DS(on)}$	V_{GS} =10V, I_D =30A		1.2	1.5	mΩ
		V_{GS} =4.5V, I_D =20A		1.7	2.5	
Dynamic characteristics[5]						
Input Capacitance	C_{iss}	V_{DS} =20V, V_{GS} =0V, f =1MHz		8300		pF
Output Capacitance	C_{oss}			1510		
Reverse Transfer Capacitance	C_{rss}			130		
Total Gate Charge	Q_g	V_{DS} =20V, V_{GS} =10V, I_D =85A		127		nC
Gate-Source Charge	Q_{gs}			35		
Gate-Drain Charge	Q_{gd}			26		
Turn-on delay time	$t_{d(on)}$	V_{DS} =20V, V_{GS} =10V, I_D =85A R_G =1.6Ω		22.5		nS
Turn-on rise time	t_r			6.7		
Turn-off delay time	$t_{d(off)}$			80.3		
Turn-off fall time	t_f			26.9		
Source-Drain Diode characteristics						
Diode Forward Current	I_S				280	A
Diode Forward voltage	V_{SD}	V_{GS} =0V, I_S =30A			1.2	V
Reverse Recovery Time	T_{rr}	I_F =I_S, di/dt =100A/μs		100		nS
Reverse Recovery Charge	Q_{rr}			163		nC

Notes:

1) The data tested by surface mounted on a 1 inch^2 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} =32V, V_{GS} =10V, L=0.1mH, I_{AS} =70A.

4) The power dissipation is limited by 150℃ junction temperature.

5) Guaranteed by design, not subject to production testing.

Typical Characteristics

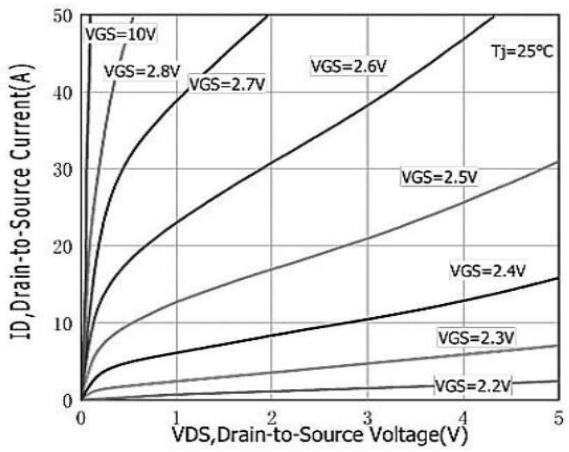


Figure.1 Typical Output Characteristics

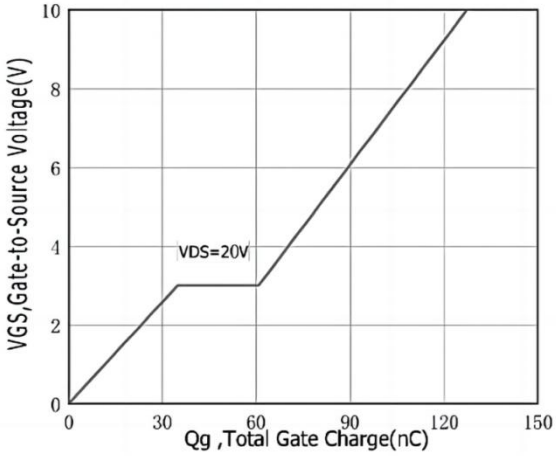


Figure.2 Typical Gate Charge vs Gate to Source Voltage

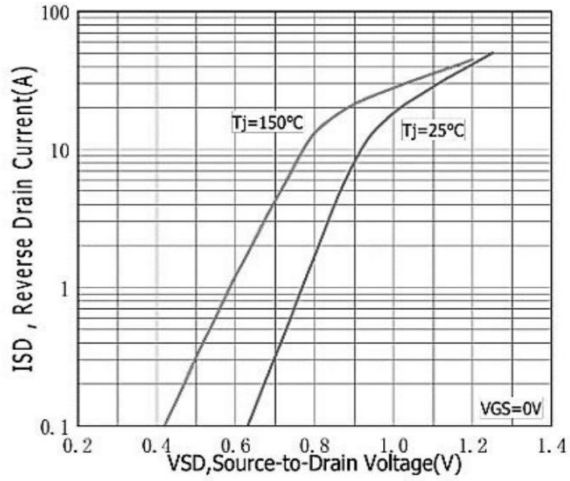


Figure.3 Typical Body Diode Transfer Characteristics

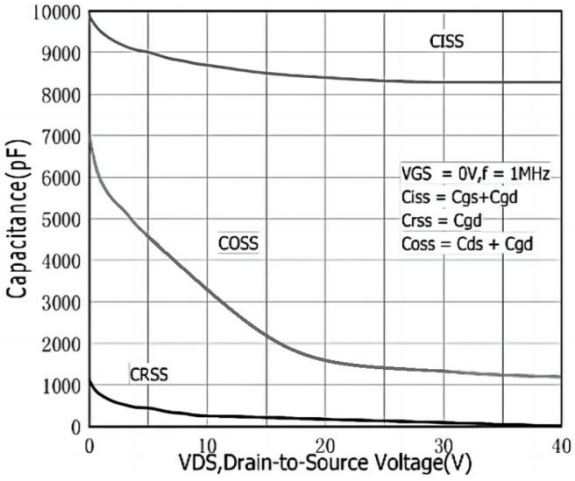


Figure 4: Body Diode Characteristics

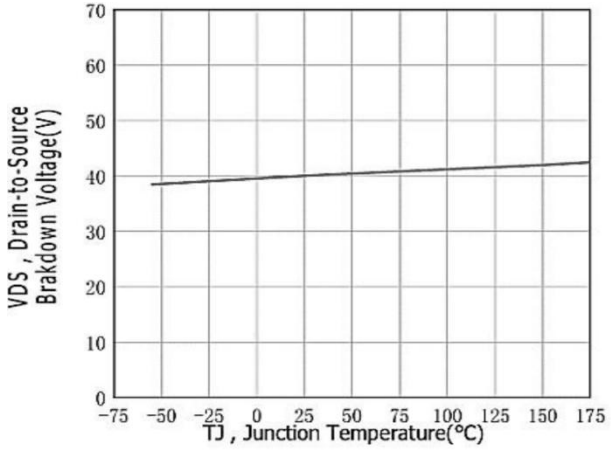


Figure.5 Typical Breakdown Voltage vs Junction Temperature

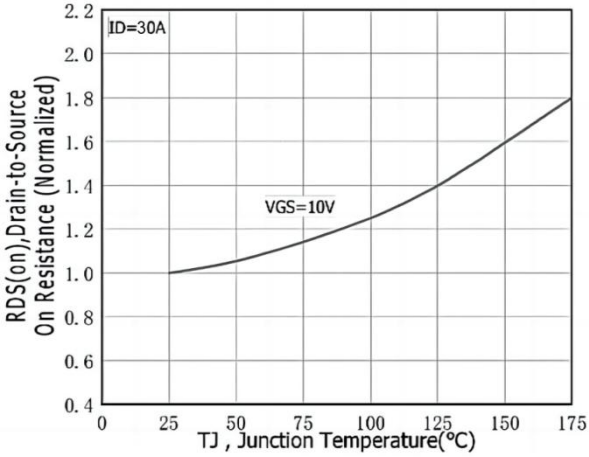


Figure 6: CapacitanceCharacteristics

Typical Characteristics

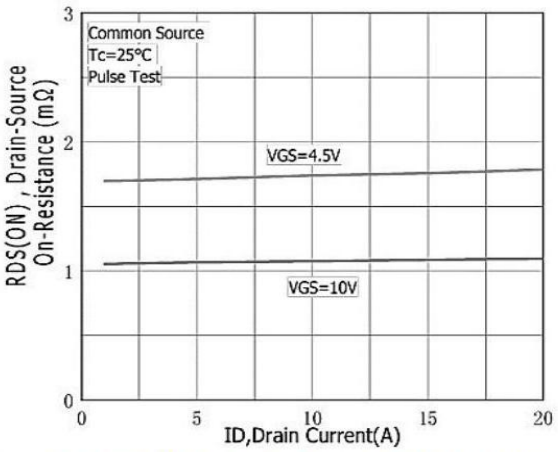


Figure.7 Typical Drain to Source ON Resistance vs Drain Current

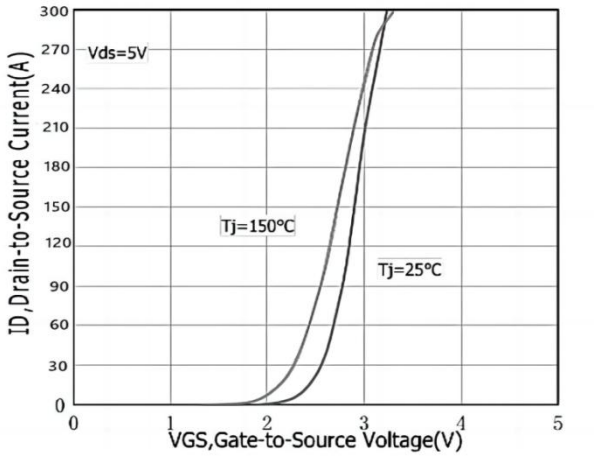


Figure. 8 Typical Transfer Characteristics

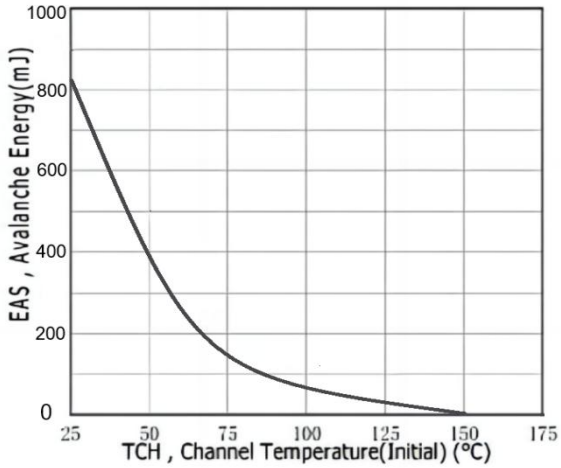


Figure.9 Maximum EAS vs Channel Temperature

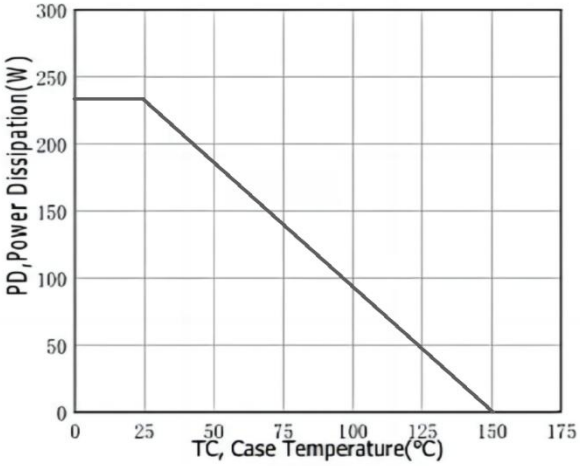


Figure.10 Maximum Power Dissipation vs Case Temperature

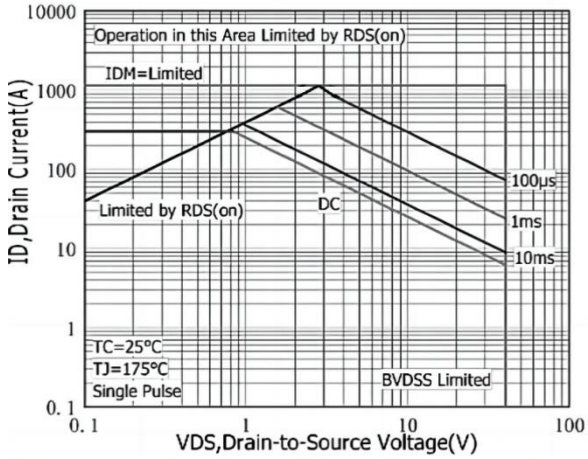


Figure 11: Maximum Safe Operating Area

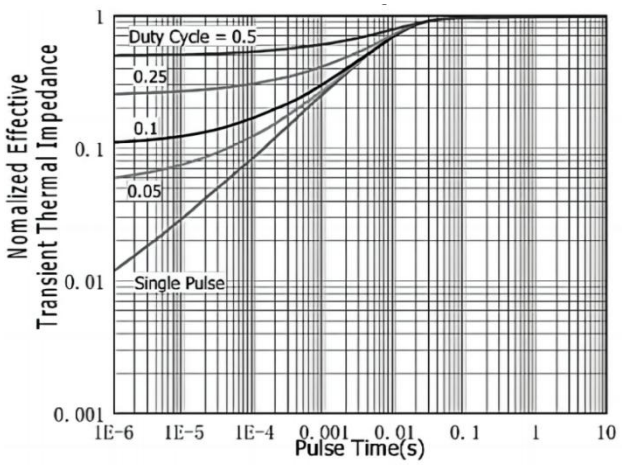
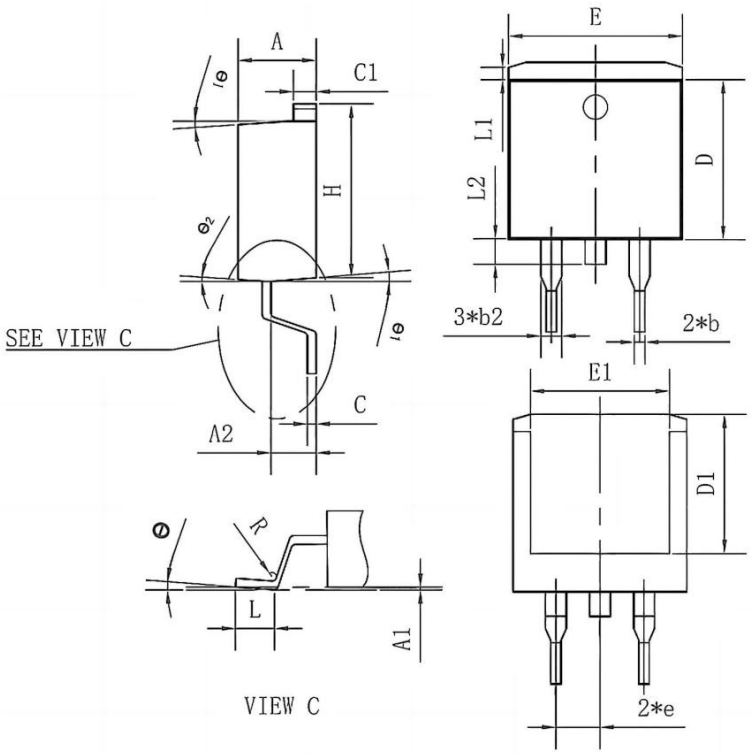


Figure.12: Maximum EffectiveTransient Thermal Impedance, Junction-to-Cas

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	2.54 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°