AG300SN150MTH

N-Channel Enhancement Mode MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
150V	4.2mΩ@10V	300A

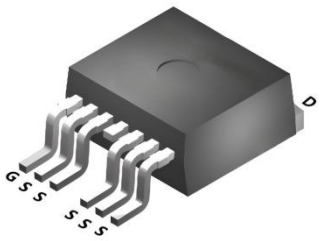
Feature

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

Application

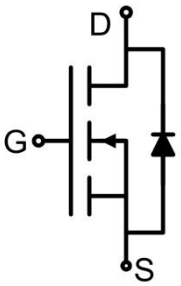
- DC/DC converter
- LED Backlighting
- Power management switches

Package



TO-263-7L

Circuit diagram



Marking

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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	150	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current[1] (V_{GS} =10V)	I_D	300	A
Continuous Drain Current[1] (V_{GS} =10V, T_C=100℃)	I_D(100℃)	188	A
Pulsed Drain Current[2]	I_{DM}	817	A
Single Pulse Avalanche Energy[3]	E_{AS}	2201	mJ
Power Dissipation[4]	P_D	600	W
Thermal Resistance Junction to Case	$R_{\theta JC}$	0.21	℃/W
Operating Junction Temperature	T_J	-55 ~ +150	℃
Storage Temperature	T_{STG}	-55 ~ +150	℃

Electrical characteristics (T_C=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	150			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =150V, 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	2.5	3.2	4.5	V
Drain-source on-resistance[2]	$R_{DS(on)}$	V_{GS} =10V, I_D =40A		3.3	4.2	mΩ
Dynamic characteristics[5]						
Input Capacitance	C_{iss}	V_{DS} =25V, V_{GS} =0V, f =1MHz		6540		pF
Output Capacitance	C_{oss}			772		
Reverse Transfer Capacitance	C_{rss}			6.7		
Total Gate Charge	Q_g	V_{DS} =75V, V_{GS} =10V, I_D =20A		88		nC
Gate-Source Charge	Q_{gs}			32		
Gate-Drain Charge	Q_{gd}			16		
Turn-on delay time	$t_{d(on)}$	V_{DS} =75V, V_{GS} =10V R_G =6Ω, R_L =3.75Ω		48		nS
Turn-on rise time	t_r			90		
Turn-off delay time	$t_{d(off)}$			94		
Turn-off fall time	t_f			60		
Source-Drain Diode characteristics						
Diode Forward Current	I_S	T_C=25℃			300	A
Diode Forward voltage	V_{SD}	V_{GS} =0V, I_S =1A			1	V
Reverse Recovery Time	T_{rr}	I_F =20A, di/dt =500A/μs		122		nS
Reverse Recovery Charge	Q_{rr}			279		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 ≤300us , duty cycle ≤2%.

3) The EAS data shows Max. rating . The test condition is V_{DD} =50V, V_{GS} =10V, L=0.1mH, I_{AS} =88A.

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

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

Typical Characteristics

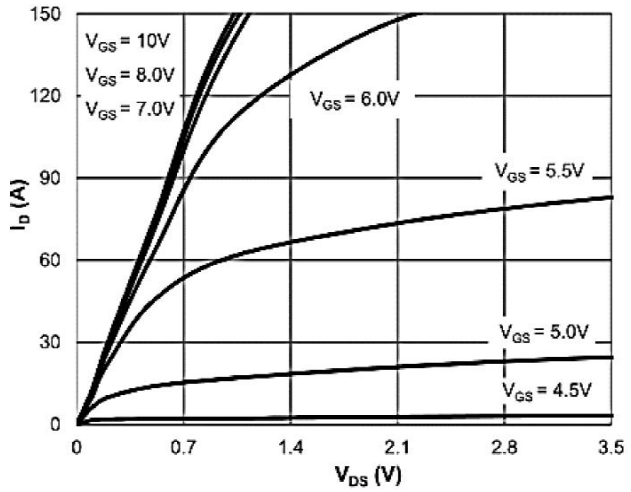


Figure 1: Saturation Characteristics

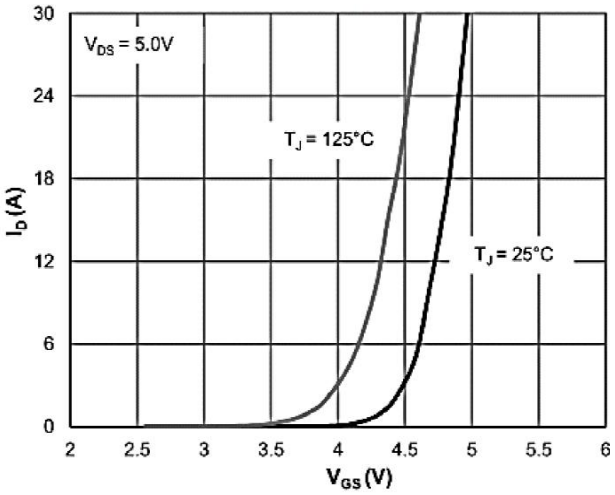


Figure 2: Transfer Characteristics

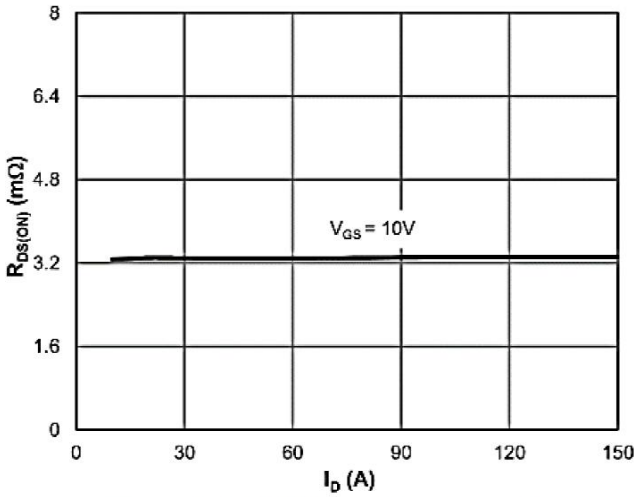


Figure 3: RDS(ON) vs. Drain Current

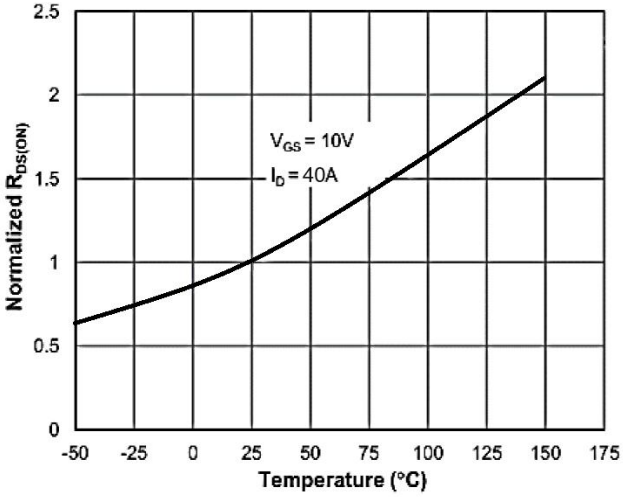


Figure 4: RDS(ON) vs. Junction Temperature

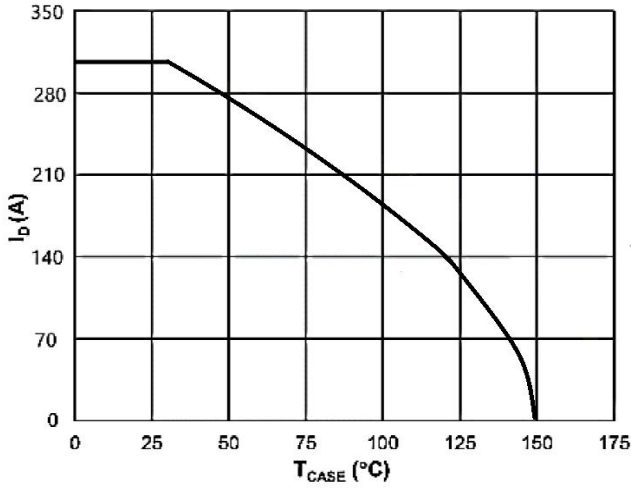


Figure 5: Current De-rating

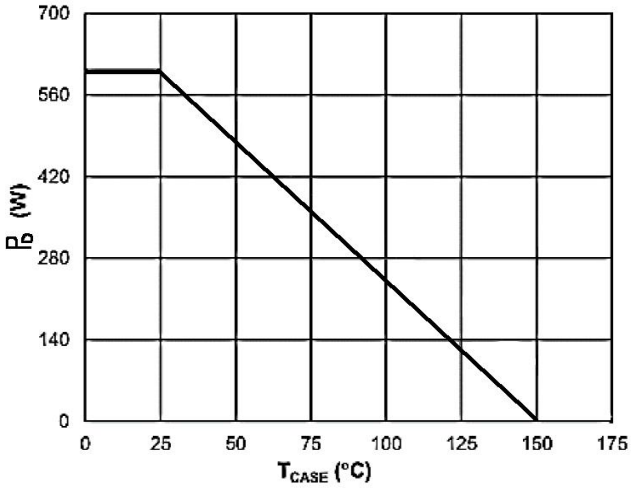


Figure 6: Power De-rating

Typical Characteristics

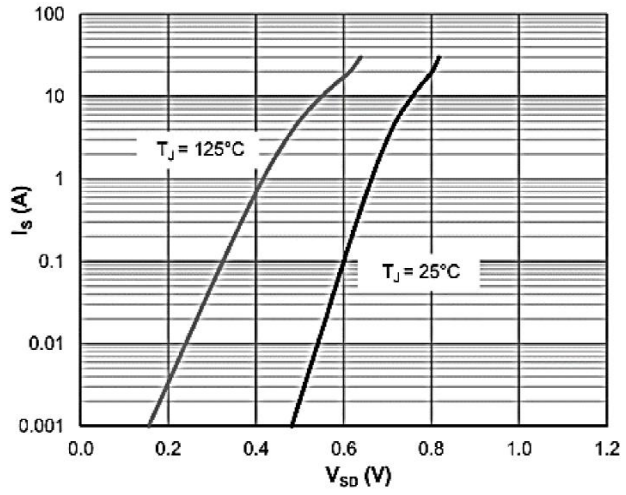


Figure 7: Body-Diode Characteristics

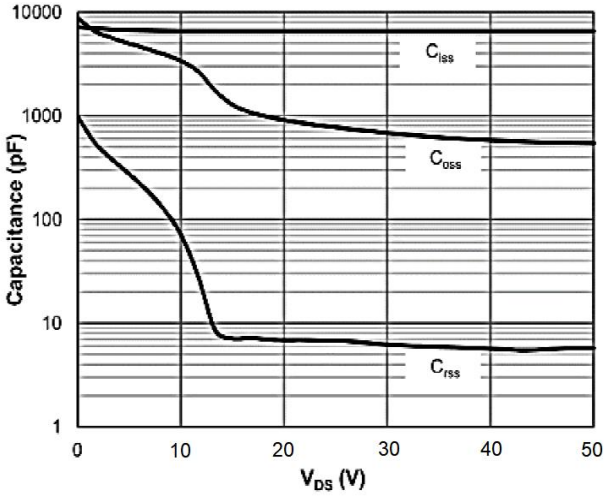


Figure 8: Capacitance Characteristics

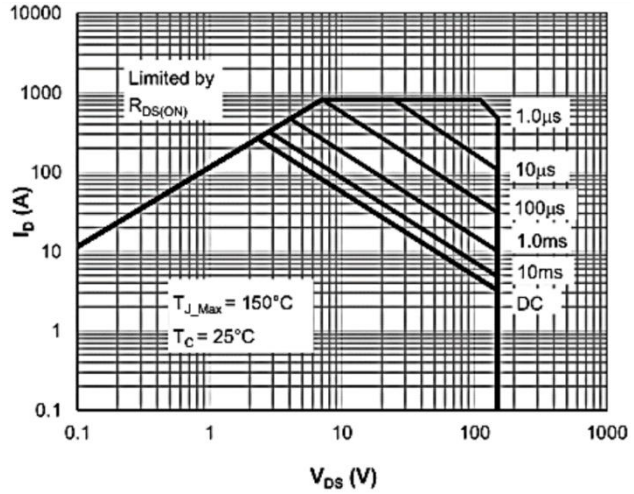


Figure 9: Maximum Safe Operating Area

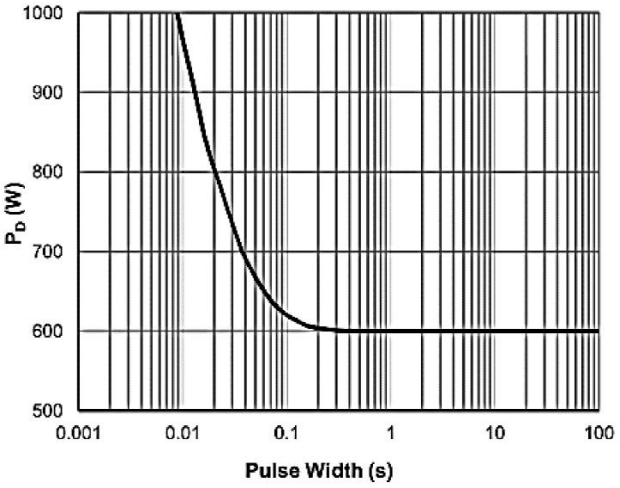


Figure 10: Single Pulse Power Rating, Junction-to-Case

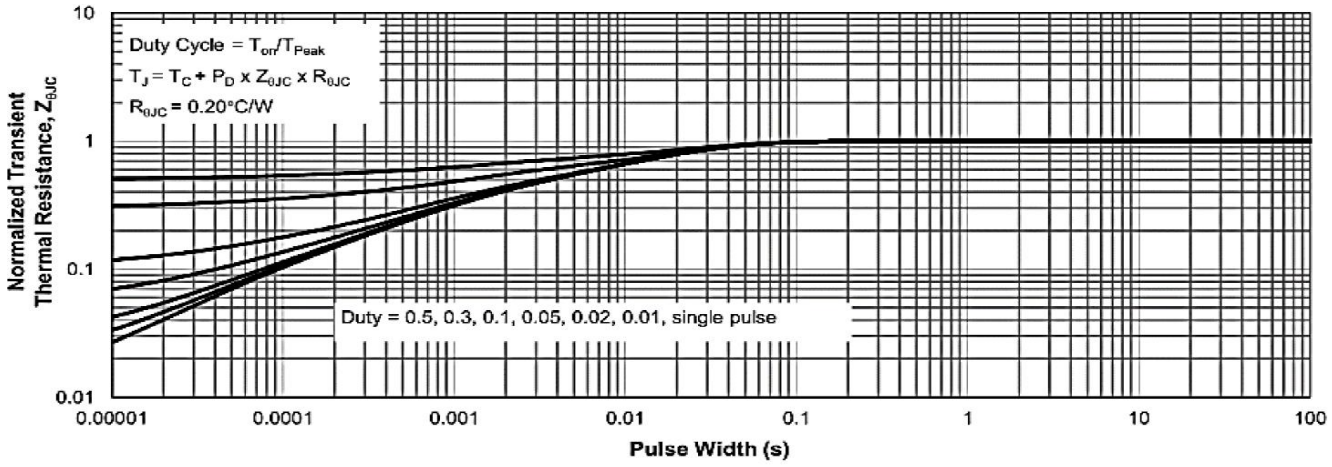
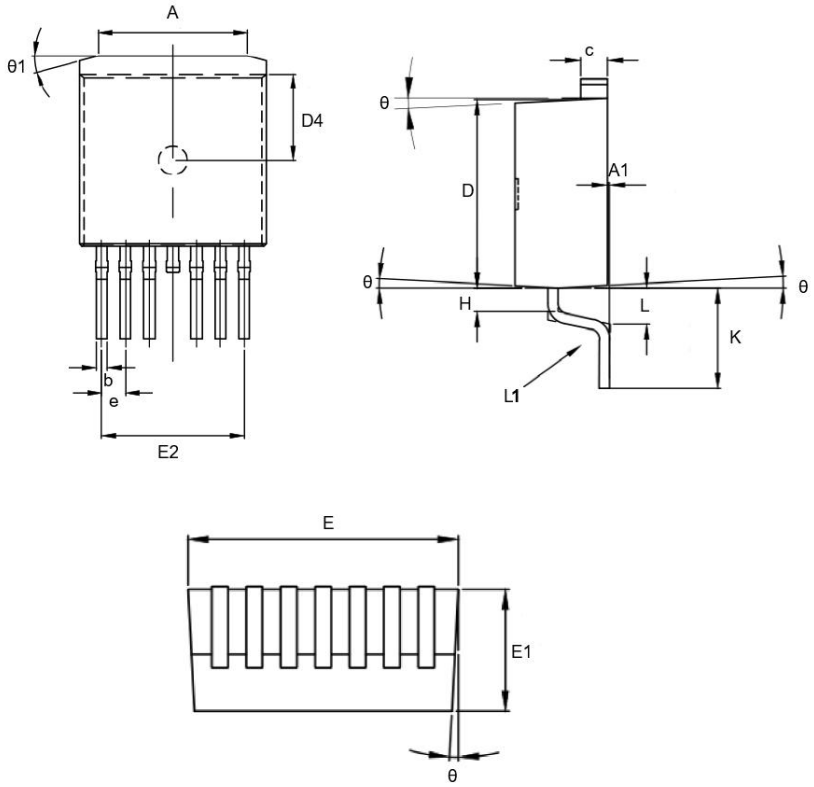


Figure 11: Normalized Maximum Transient Thermal Impedance

TO-263-7L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	7.700	8.300	0.303	0.327
A1	0.000	0.200	0.000	0.008
b	0.550	0.650	0.022	0.026
c	1.270	1.330	0.050	0.052
D	9.090	9.290	0.358	0.366
D4	4.500	4.700	0.177	0.185
e	1.230	1.310	0.048	0.052
E	9.880	10.080	0.389	0.397
E1	4.420	4.580	0.174	0.180
E2	7.540	7.700	0.297	0.303
H	1.050	1.250	0.041	0.049
K	4.700	5.100	0.185	0.201
L	1.750	1.770	0.069	0.070
L1	0.500 REF.		0.020 REF	
θ	3°		3°	
θ1	15°		15°	