AG150SN060MTC

N-Channel Enhancement Mode MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
60V	6mΩ@10V	150A
	10mΩ@4.5V	

Feature

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

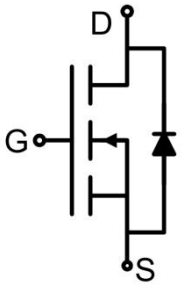
Application

- Battery protection
- UPS

Package

TO-220AB

Circuit diagram



Marking

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Absolute maximum ratings(T_J=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current[1] (V_{GS}=10V, T_C=25℃)	I_D	150	A
Continuous Drain Current[1] (V_{GS}=10V, T_C=100℃)	I_D (100℃)	85	A
Pulsed Drain Current[2]	I_{DM}	450	A
Single Pulse Avalanche Energy[3]	E_{AS}	265	mJ
Power Dissipation[4] (T_C=25℃)	P_D	87	W
Thermal Resistance from Junction to Case	$R_{\theta JC}$	1.44	℃/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	60			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =60V, 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	1.6	2.5	V
Drain-source on-resistance	$R_{DS(on)}$	V_{GS} =10V, I_D =20A		4.2	6	mΩ
		V_{GS} =4.5V, I_D =10A		6.4	10	
Dynamic characteristics[5]						
Input Capacitance	C_{iss}	V_{DS} =50V, V_{GS} =0V, f =100kHz		2136		pF
Output Capacitance	C_{oss}			331.5		
Reverse Transfer Capacitance	C_{rss}			10.6		
Total Gate Charge	Q_g	V_{DS} =50V, V_{GS} =10V, I_D =25A		30		nC
Gate-Source Charge	Q_{gs}			5.8		
Gate-Drain Charge	Q_{gd}			6.1		
Turn-on delay time	$t_{d(on)}$	V_{DS} =50V, V_{GS} =10V, I_D =25A R_G =2Ω		22.9		nS
Turn-on rise time	t_r			6.5		
Turn-off delay time	$t_{d(off)}$			45.7		
Turn-off fall time	t_f			20.4		
Source-Drain Diode characteristics						
Diode Continuous Current	I_S				150	A
Diode Forward voltage	V_{SD}	V_{GS} =0V, I_S =20A			1.3	V
Reverse recover time	T_{rr}	I_S =25A, di/dt =100A/us		50.3		nS
Reverse recovery charge	Q_{rr}			45.1		nC
Peak reverse recovery current	I_{rrm}			1.5		A

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}=25V, V_{GS}=10V, L=0.1mH, I_{AS}=15A.
4) The power dissipation is limited by 150°C junction temperature.
5) Guaranteed by design, not subject to production testing.

Typical Characteristics

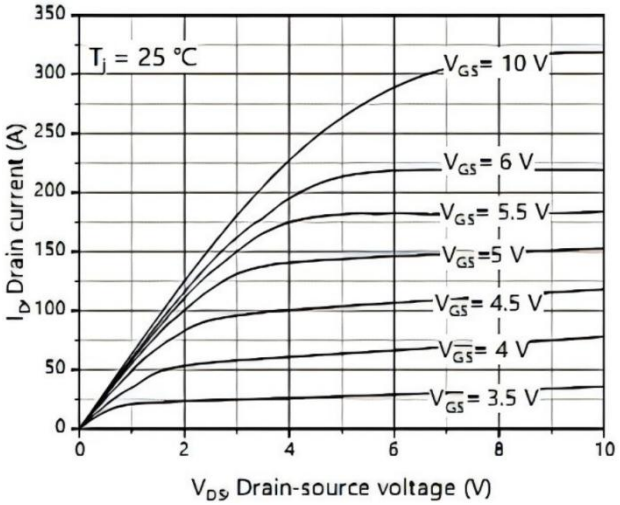

Figure 1. Typ. output characteristics

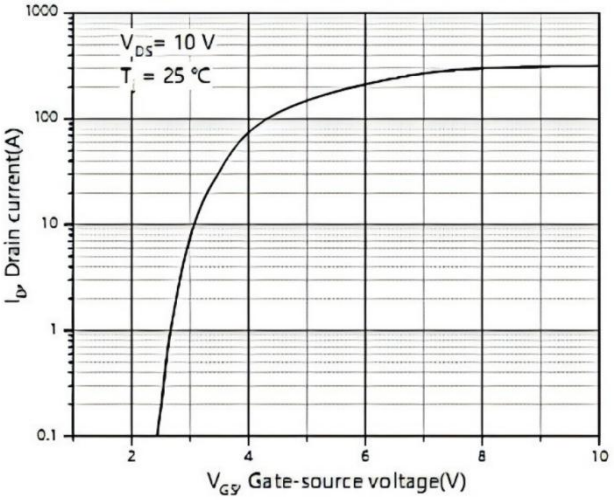

Figure 2. Typ. transfer characteristics

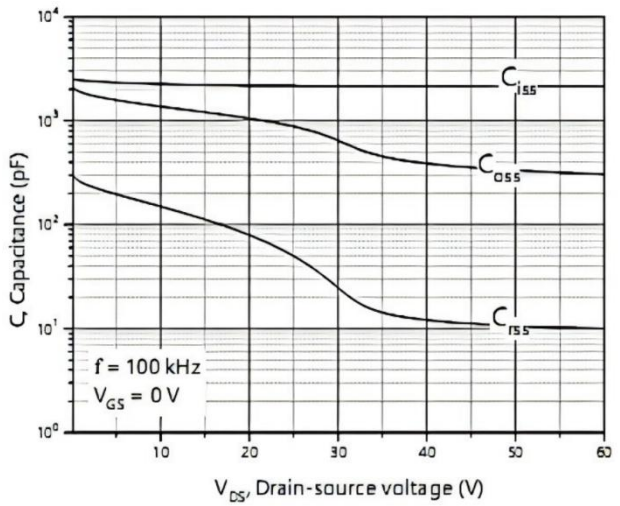

Figure 3. Typ. capacitances

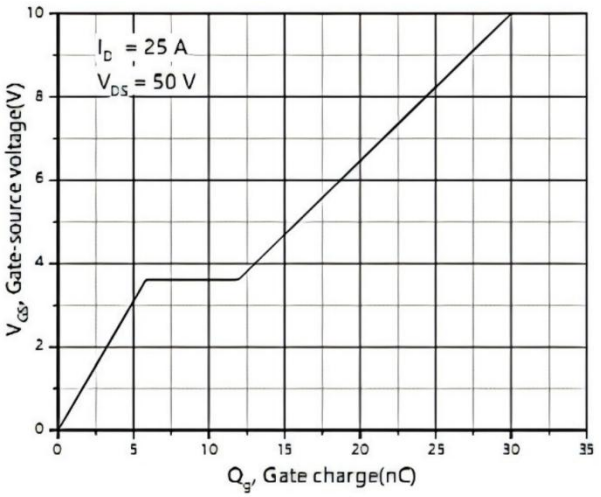

Figure 4. Typ. gate charge

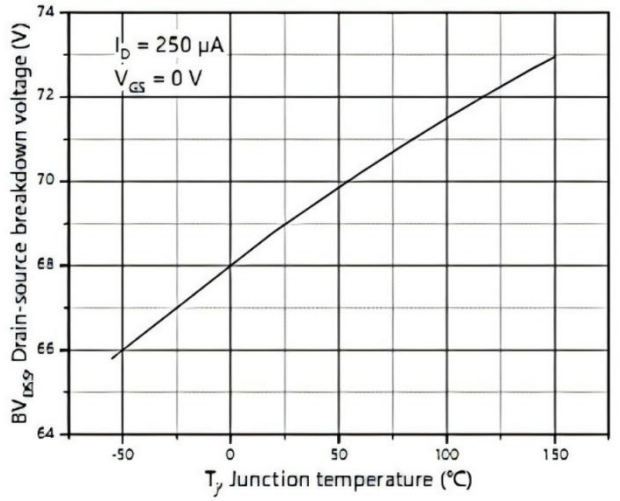

Figure 5. Drain-source breakdown voltage

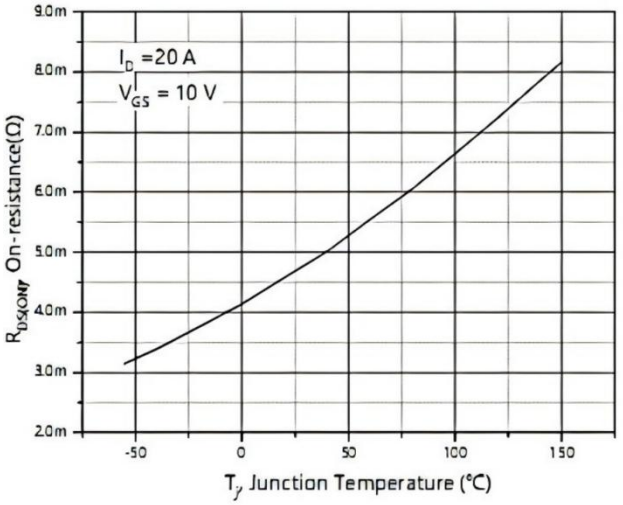

Figure 6. Drain-source on-state resistance

Typical Characteristics

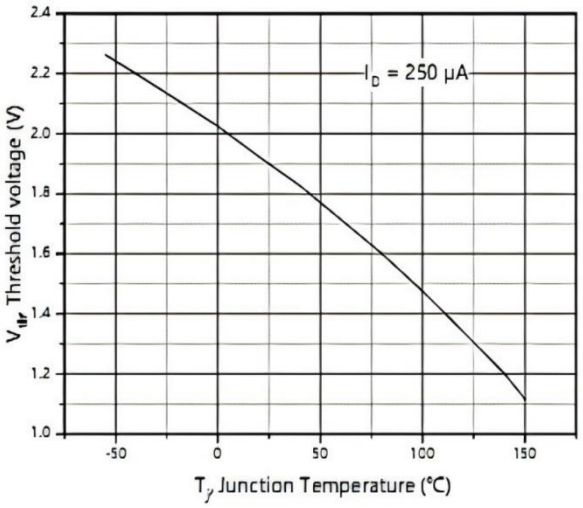

Figure 7. Threshold voltage

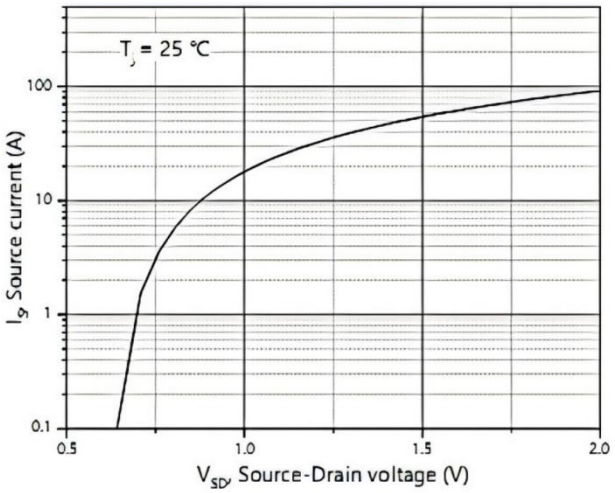

Figure 8. Forward characteristic of body diode

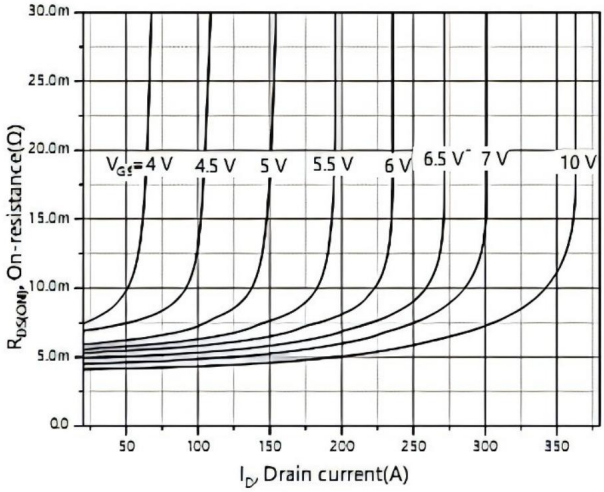

Figure 9. Drain-source on-state resistance

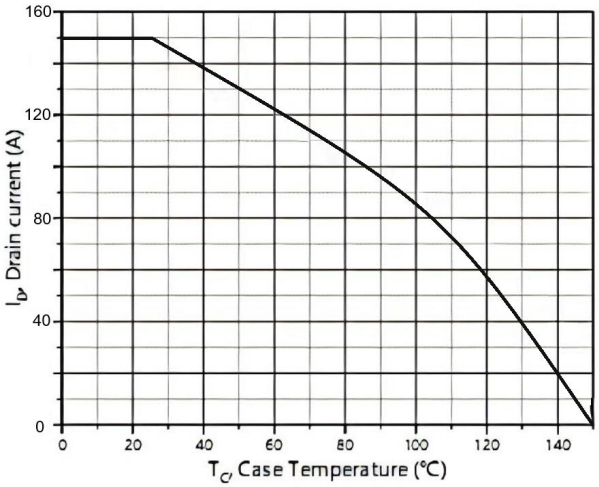

Figure 10. Drain current

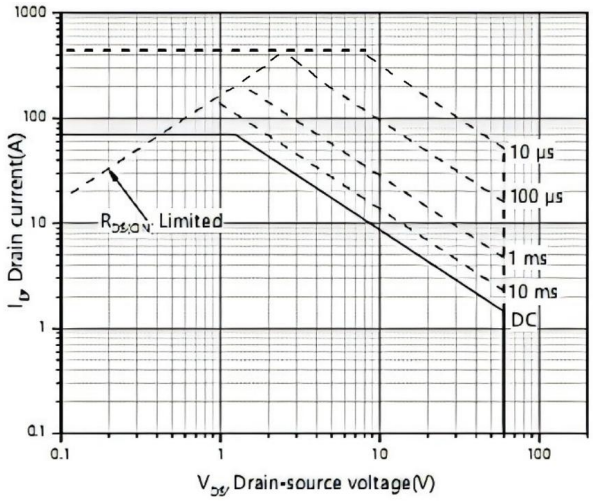

Figure 11. Safe operation area T_C=25 °C

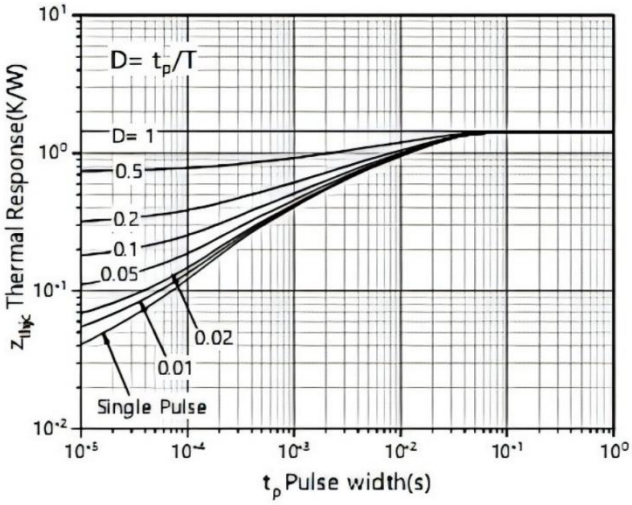

Figure 12. Max. transient thermal impedance

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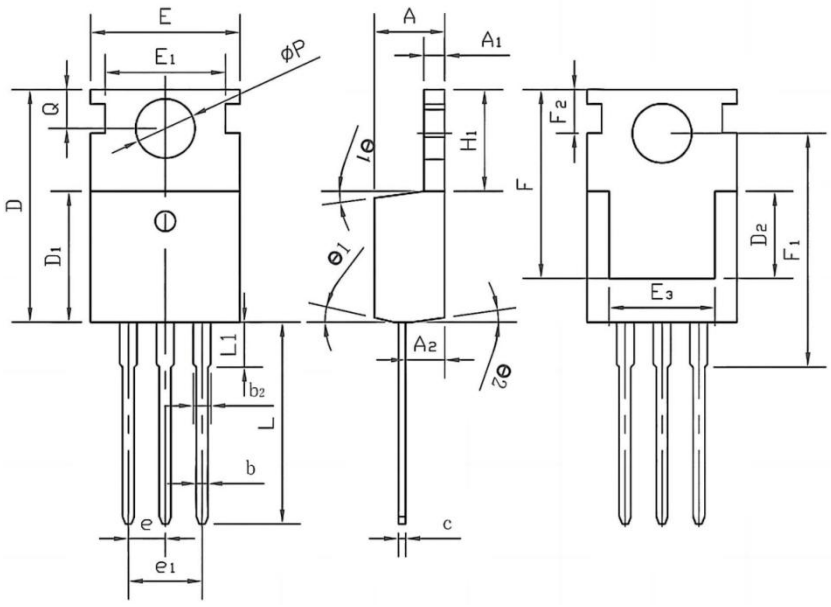
TO-220AB Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.270	4.870	0.168	0.192
A1	1.150	1.450	0.045	0.057
A2	2.100	2.700	0.083	0.106
b	0.700	1.000	0.028	0.039
b2	1.170	1.500	0.046	0.059
D	0.400	0.650	0.016	0.026
D1	8.800	9.400	0.346	0.370
D2	5.700	7.000	0.224	0.276
E	9.700	10.300	0.382	0.406
E1	8.700 REF.		0.343 REF.	
E2	9.630	10.350	0.379	0.407
E3	7.000	8.400	0.276	0.331
e	0.370 BSC.		0.015 BSC.	
e1	0.100 BSC.		0.004 BSC.	
H1	6.000	6.850	0.236	0.270
L	12.750	13.900	0.502	0.547
L1	-	3.400	-	0.134
ϕ p	3.450	3.750	0.136	0.148
Q	2.600	3.000	0.102	0.118
θ1	4°	10°	4°	10°
θ2	0°	6°	0°	6°
F	13.300	13.700	0.524	0.539
F1	15.500	16.300	0.610	0.642
F2	2.800	3.200	0.110	0.126