AG150N06ES-Q1

N-Channel Enhancement Mode Power MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
60V	3.5mΩ@10V	150A
	5.0mΩ@4.5V	

Feature

- High density cell design for low Rdson
- Split gate trench MOSFET technology
- Excellent package for good heat dissipation
- Suffix "-Q1" for AEC-Q101

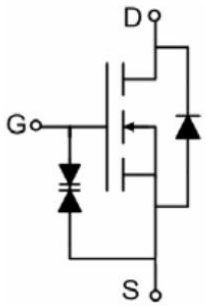
Application

- Synchronous rectification
- Battery protection circuit
- Motor drivers and uninterruptible power supplies

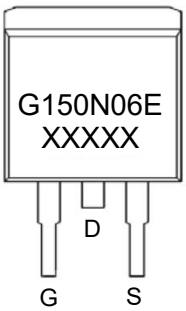
Package

TO-263AB

Circuit diagram



Marking



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Absolute maximum ratings (Ta=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	I_D	150	A
Continuous Drain Current（100℃）	I_D（100℃）	95	A
Pulsed Drain Current	I_{DM}	450	A
Power Dissipation	P_D	147	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	60	℃/W
Thermal Resistance from Junction to Case	$R_{\theta JC}$	0.85	℃/W
Single pulse avalanche energy	E_{AS}	441	mJ
Junction Temperature	T_J	150	℃
Storage Temperature	T_{STG}	-55 ~ +150	℃

Electrical characteristics (T_J=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	60			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =60V,V_{GS} = 0V			1	μA
Gate-body leakage current	I_{GSS}	V_{GS} =±20V, V_{DS} = 0V			±10	μA
Gate threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	1.0	1.7	2.5	V
Drain-source on-resistance	$R_{DS(on)}$	V_{GS} =10V, I_D =20A		2.7	3.5	mΩ
		V_{GS} =4.5V, I_D =20A		3.5	5.0	
Dynamic characteristics[2)]						
Input Capacitance	C_{iss}	V_{DS} =30V,V_{GS} =0V,f =1MHz		4650		pF
Output Capacitance	C_{oss}			850		
Reverse Transfer Capacitance	C_{rss}			65		
Total Gate Charge	Q_g	V_{DS} =30V,V_{GS} =10V,I_D =25A		71		nC
Gate-Source Charge	Q_{gs}			17		
Gate-Drain Charge	Q_{gd}			10.5		
Turn-on delay time	$t_{d(on)}$	V_{DD}=30V,V_{GS}=10V, I_D =25A, R_{GEN}=2Ω		15.9		nS
Turn-on rise time	t_r			55.2		
Turn-off delay time	$t_{d(off)}$			57.5		
Turn-off fall time	t_f			91.3		
Source-Drain Diode characteristics						
Diode Forward Current	I_S				150	A
Diode Forward voltage	V_{DS}	V_{GS} =0V, I_S=20A			1.3	V
Reverse Recovery Time	t_{rr}	TJ = 25°C, IF =20A di/dt = 100A/μs [1)]		41.6		nS
Reverse Recovery Charge	Q_{rr}			39.8		nC

Notes:

1) Pulse Test: Pulse Width < 300μs, Duty Cycle ≤2%.

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

Typical Characteristics

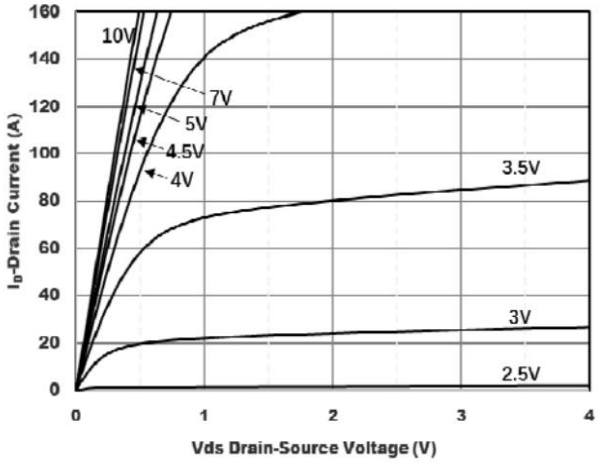


Figure1. Output Characteristics

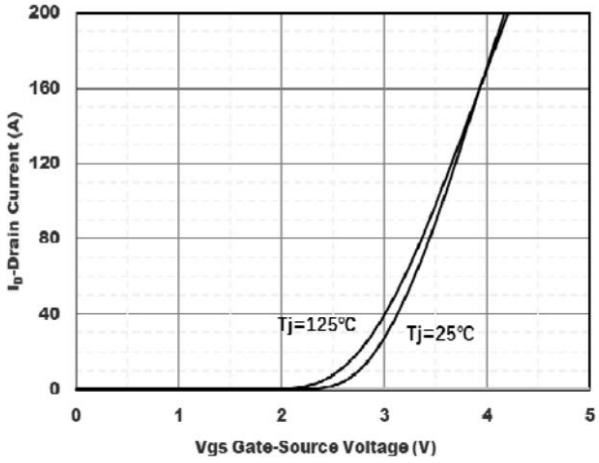


Figure2. Transfer Characteristics

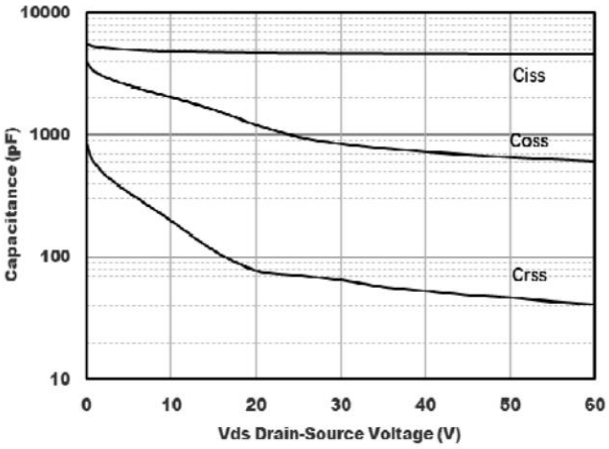


Figure3. Capacitance Characteristics

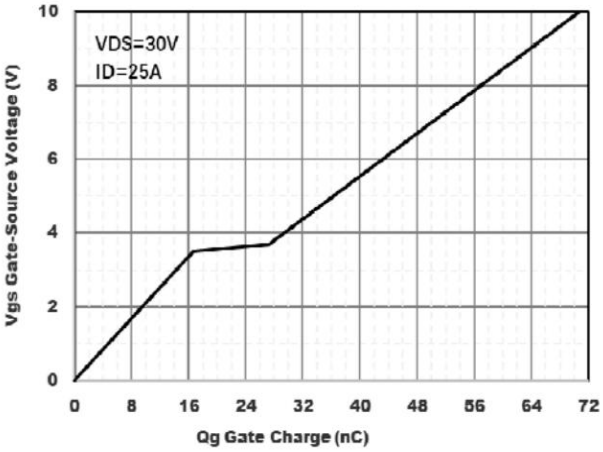


Figure4. Gate Charge

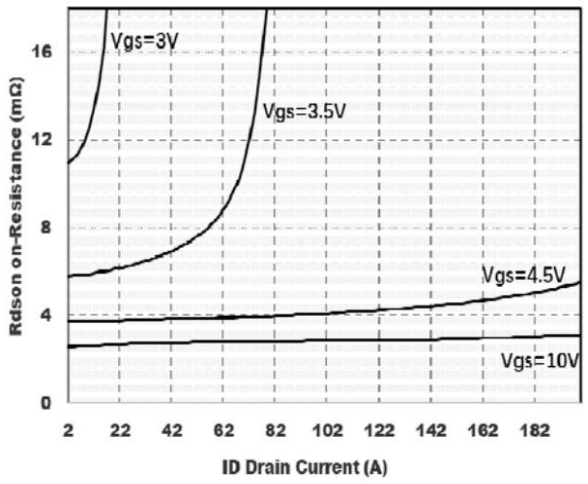


Figure5. : On-Resistance vs. Drain Current and Gate Voltage

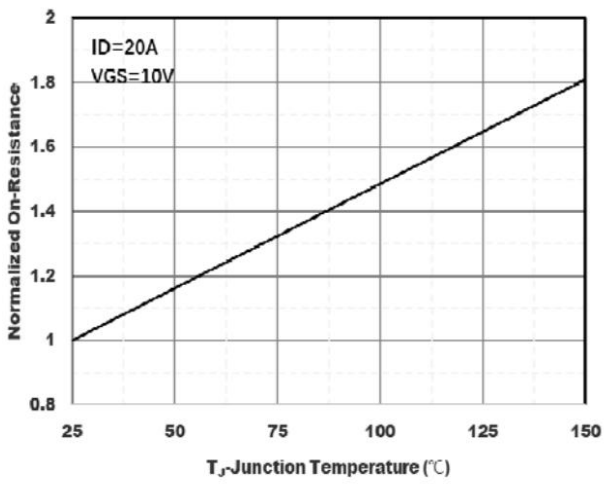


Figure6.Normalized On-Resistance

Typical Characteristics

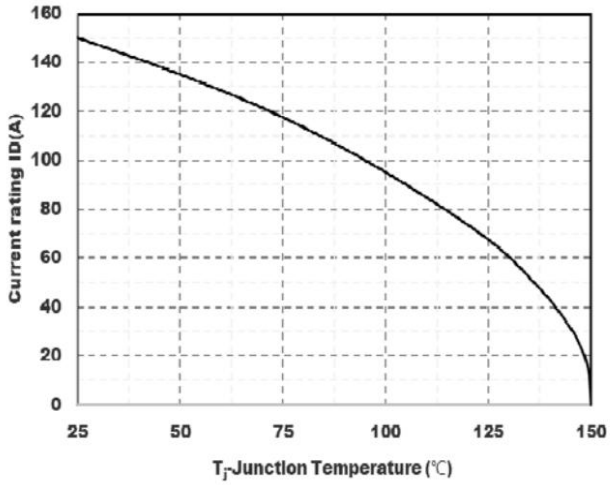


Figure7. Drain current

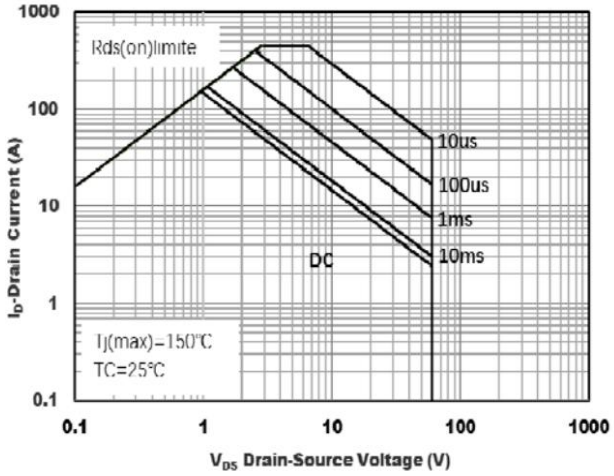


Figure8.Safe Operation Area

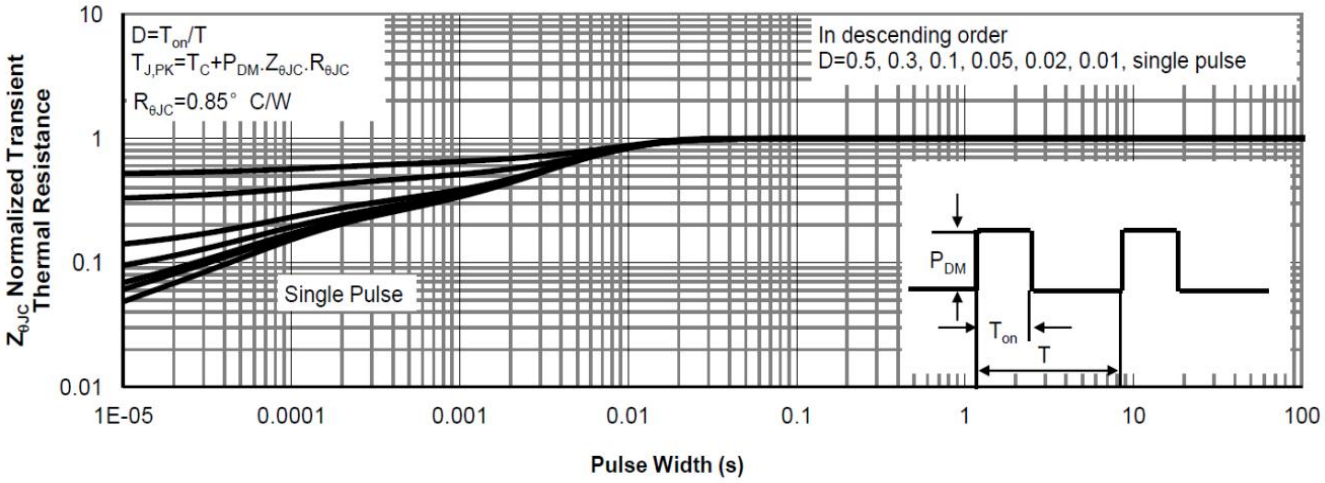
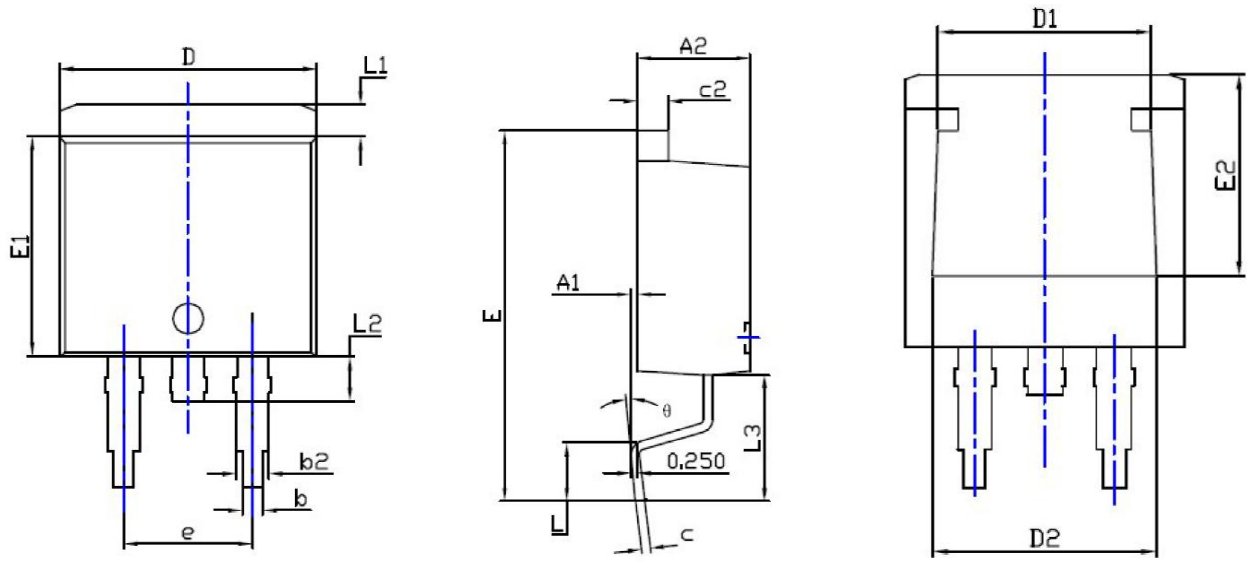


Figure9.Normalized Maximum Transient thermal impedance

TO-263AB Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A1	0.000	0.250	0.000	0.010
A2	4.430	4.730	0.174	0.186
b	0.720	0.920	0.028	0.036
b2	1.180	1.380	0.046	0.054
c	0.330	0.450	0.013	0.018
c2	1.220	1.340	0.048	0.053
D	10.000	10.300	0.394	0.406
D1	7.500	8.100	0.295	0.319
D2	7.700	8.300	0.303	0.327
E	14.500	15.500	0.571	0.610
E1	8.550	8.850	0.337	0.348
E2	7.000	7.600	0.276	0.299
e	5.080 BSC		0.200 BSC	
L	1.790	2.790	0.070	0.110
L1	1.120	1.420	0.044	0.056
L2	0.770	1.770	0.030	0.070
L3	5.000 REF		0.197 REF	
θ	0°	8°	0°	8°