AG82P06S-Q1

P-Channel Enhancement Mode Power MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
-60V	13mΩ@-10V	-82A
	16mΩ@-4.5V	

Feature

- High density cell design for low Rdson
- Fully characterized avalanche voltage and current
- Good stability and uniformity with high E_{AS}
- Excellent package for good heat dissipation
- Suffix "-Q1" for AEC-Q101

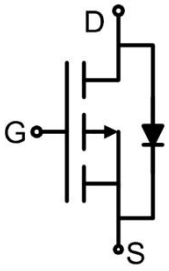
Application

- Load switch

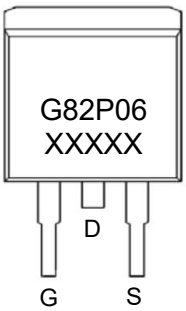
Package

TO-263AB

Circuit diagram



Marking



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Absolute maximum ratings (T_C=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	-82	A
Continuous Drain Current（T_C=100℃）	I_D（100℃）	-58	A
Pulsed Drain Current	I_{DM}	-328	A
Power Dissipation	P_D	150	W
Thermal Resistance from Junction to Case	$R_{\theta JC}$	1.0	℃/W
Single pulse avalanche energy[4]	E_{AS}	722	mJ
Junction Temperature	T_J	175	℃
Storage Temperature	T_{STG}	-55 ~ +175	℃

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	-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			±100	nA
Gate threshold voltage[2]	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =-250μA	-1.2	-1.8	-2.4	V
Drain-source on-resistance[2]	$R_{DS(on)}$	V_{GS} =-10V, I_D =-20A		11	13	mΩ
		V_{GS} =-4.5V, I_D =-20A		13	16	
Dynamic characteristics[3]						
Input Capacitance	C_{iss}	V_{DS} =-30V,V_{GS} =0V,f =1MHz		5604		pF
Output Capacitance	C_{oss}			356		
Reverse Transfer Capacitance	C_{rss}			265		
Total Gate Charge	Q_g	V_{DS} =-30V,V_{GS} =-10V,I_D =-20A		62.1		nC
Gate-Source Charge	Q_{gs}			9.3		
Gate-Drain Charge	Q_{gd}			16.8		
Turn-on delay time	$t_{d(on)}$	V_{DD}=-30V,V_{GS}=-10V R_L=1.5Ω, R_G=3Ω		18		nS
Turn-on rise time	t_r			20		
Turn-off delay time	$t_{d(off)}$			55		
Turn-off fall time	t_f			35		
Source-Drain Diode characteristics						
Diode Forward Current[1]	I_S				-82	A
Diode Forward voltage[2]	V_{SD}	V_{GS} =0V, I_S=-20A			-1.2	V
Reverse Recovery Time	t_{rr}	TJ = 25°C, I_F =-20A di/dt = 100A/μs[2]		49		nS
Reverse Recovery Charge	Q_{rr}			71		nC

Notes:

1) The value of $R_{\theta JA}$ is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with T_A =25°C. The the maximum allowed junction temperature of 150°C. The value in any given application depends on the user's specific board design, and the maximum temperature of 175°C may be used if the PCB allows it.

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

3) Guaranteed by design, not subject to production.

4) EAS condition: T_j=25℃,V_{DD}=-30V,V_G=-10V,L=0.5mH,R_g=25Ω.

Typical Characteristics

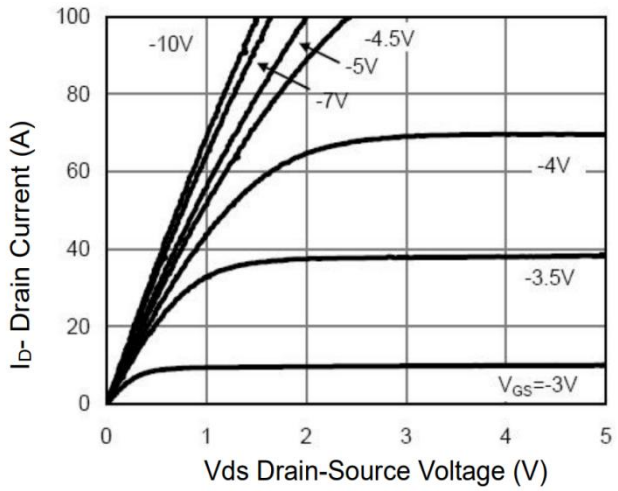


Figure 1 Output Characteristics

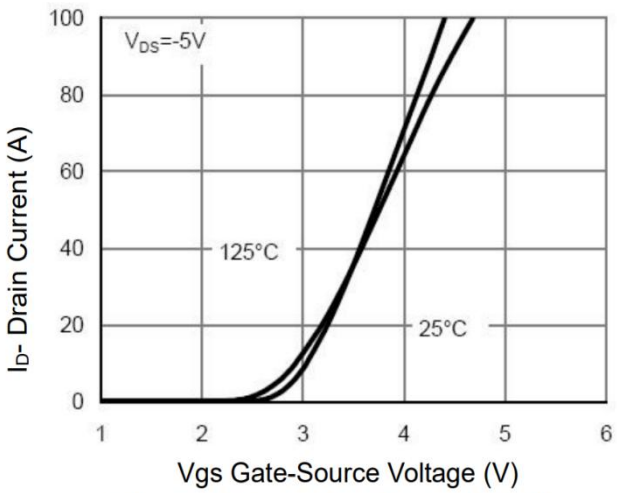


Figure 2 Transfer Characteristics

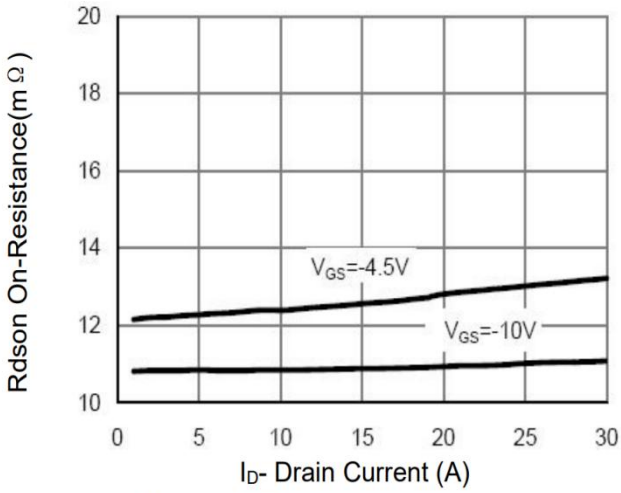


Figure 3 Rdson- Drain Current

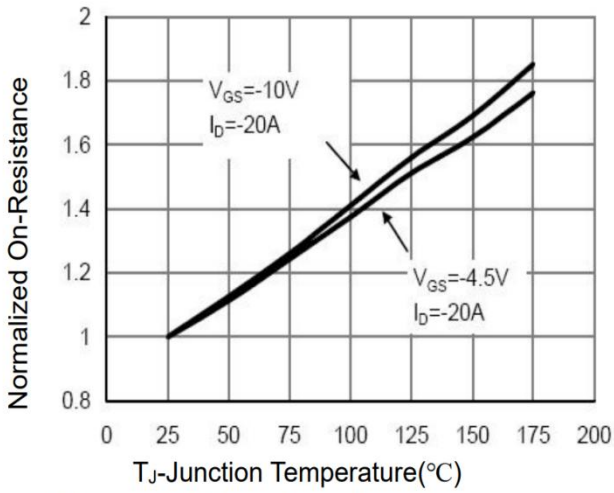


Figure 4 Rdson-Junction Temperature

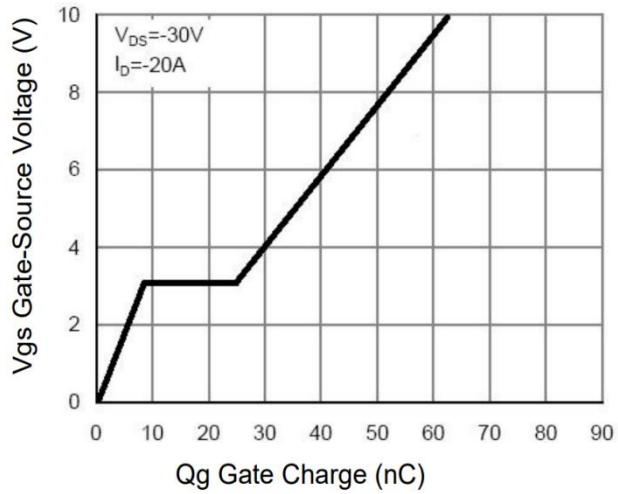


Figure 5 Gate Charge

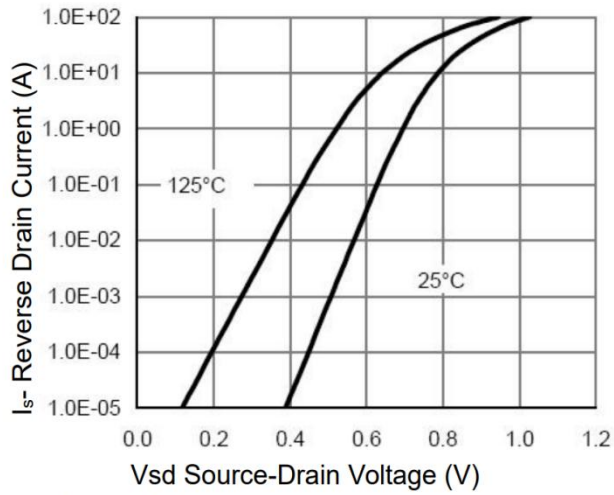


Figure 6 Source- Drain Diode Forward

Typical Characteristics

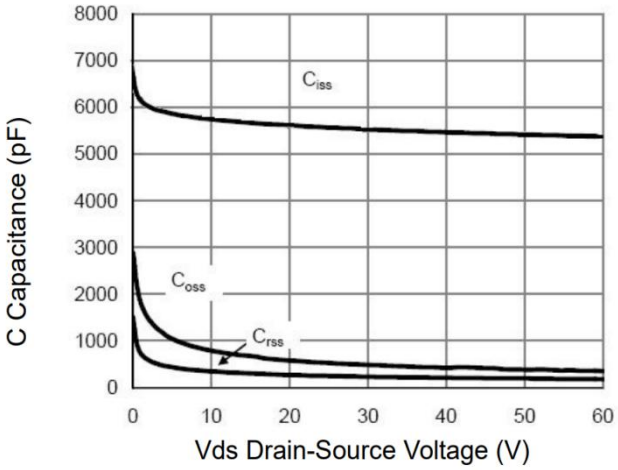


Figure 7 Capacitance vs Vds

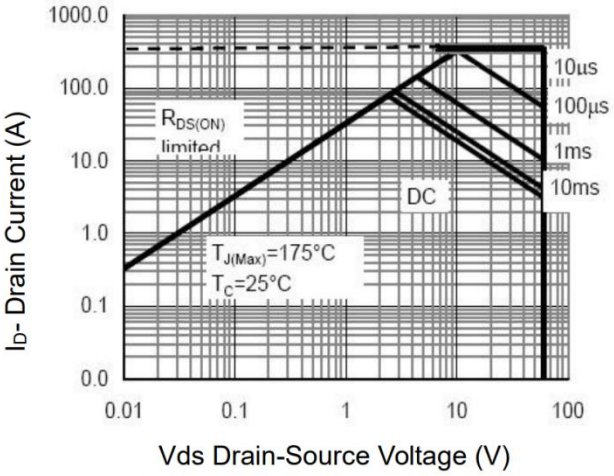


Figure 8 Safe Operation Area

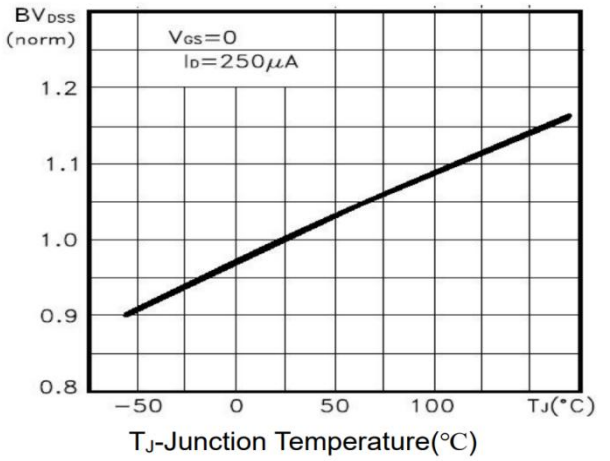


Figure 9 BV_{DSS} vs Junction Temperature

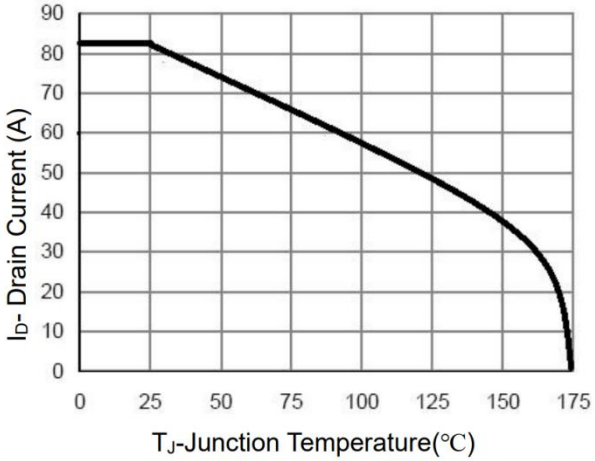


Figure 10 ID Current Derating vs Junction Temperature

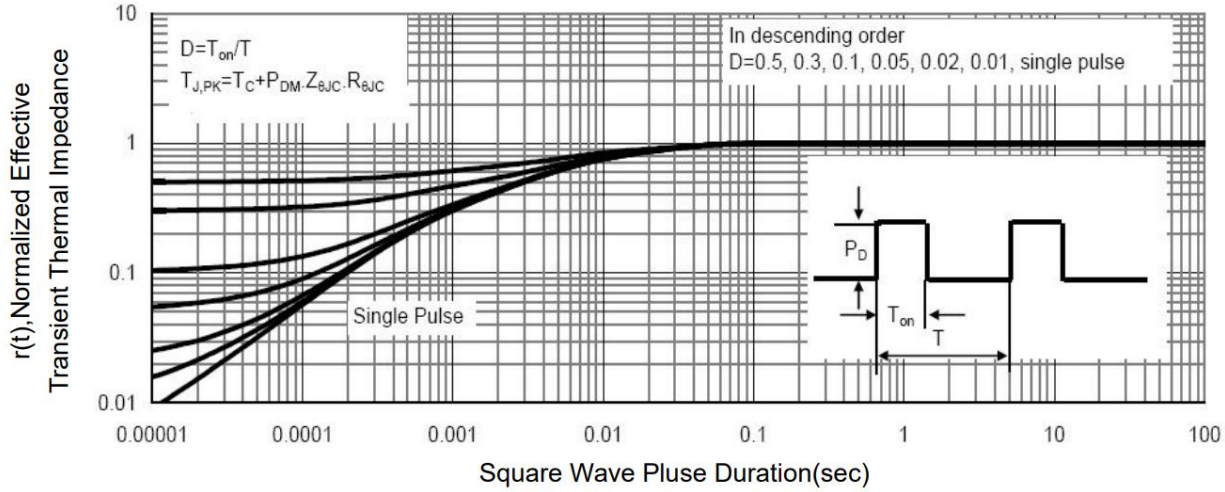
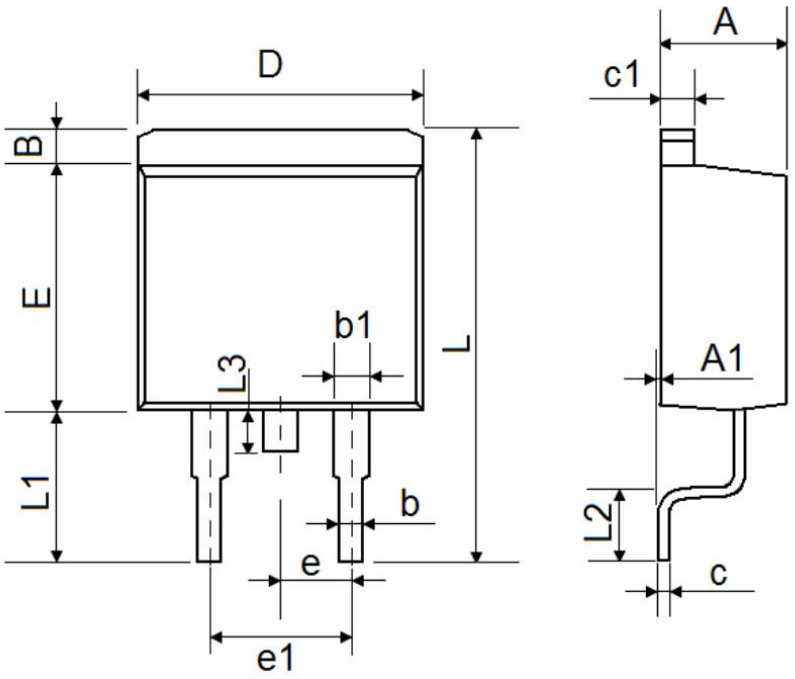


Figure 11 Normalized Maximum Transient Thermal Impedance

TO-263AB Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.200	4.670	0.165	0.184
A1	0.000	0.250	0.000	0.010
B	1.360 REF.		0.054 REF.	
b	0.700	0.910	0.028	0.036
b1	1.170	1.750	0.046	0.069
c	0.310	0.600	0.012	0.024
c1	1.150	1.400	0.045	0.055
D	9.780	10.360	0.385	0.408
E	8.500	9.300	0.335	0.366
e	2.540 BSC.		0.100 BSC.	
e1	5.080 BSC.		0.200 BSC.	
L	14.610	15.880	0.575	0.625
L1	4.400	6.000	0.173	0.236
L2	1.780	2.790	0.070	0.110
L3	1.500 REF.		0.059 REF.	