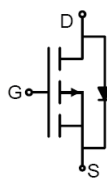


Features

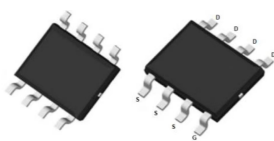
- Low Gate Charge
- 100% UIS Tested, 100% DVDS Tested
- High Power and current handing capability
- Lead free product is acquired

Application

- PWM Applications
- Load Switch
- Power Management



Schematic Diagram

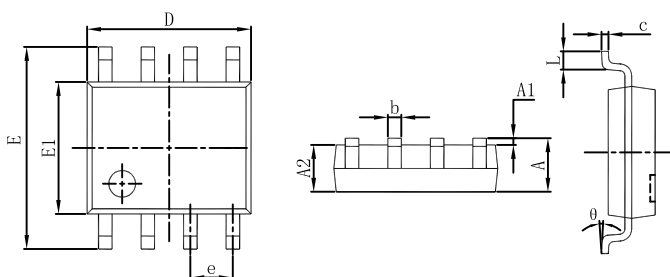


SOP-8 top & bottom view

Product Summary

BVDSS	RDSON	ID
-30V	5.8mΩ	-18 A

SOP-8



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.007	0.010
D	4.800	5.000	0.189	0.197
e	1.270 (BSC)		0.050 (BSC)	
E	5.800	6.200	0.228	0.244
E1	3.800	4.000	0.150	0.157
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°

Absolute Maximum Ratings

Symbol	Parameter	Limit	Unit
V _{DS}	Drain-Source Voltage (V _{GS} =0V)	-30	V
V _{GS}	Gate-Source Voltage (V _{DS} =0V)	±20	V
I _D	Drain Current-Continuous(T _A =25℃)	-18	A
	Drain Current-Continuous(T _A =100℃)	-14	A
I _{DM} (pulse)	Drain Current-Continuous@ Current-Pulsed (Note 1)	-88	A
P _D	Maximum Power Dissipation(T _A =25℃)	5.2	W
	Maximum Power Dissipation(T _A =100℃)	2.1	W
E _{AS}	Avalanche energy (Note 2)	380	mJ
T _J , T _{STG}	Operating Junction and Storage Temperature Range	-55 To 150	℃

Thermal Characteristic

Symbol	Parameter	Typ	Max	Unit
R _{θJA}	Thermal Resistance, Junction-to-Ambient		24	℃/W

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Electrical Characteristics (T_J=25°C unless otherwise specified)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
On/Off States						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V I _D =-250μA	-30			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =-30V, V _{GS} =0V T _J =25℃			-1	μA
		V _{DS} =-30V, V _{GS} =0V T _J =125℃			-100	μA
I _{GSS}	Gate-Body Leakage Current	V _{GS} =±20V, V _{DS} =0V			±100	nA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =-250μA	-1		-2.2	V
g _{FS}	Forward Transconductance	V _{DS} =-5V, I _D =-10A		45		S
R _{DS(ON)}	Drain-Source On-State Resistance	V _{GS} =-10V, I _D =-20A T _J =25℃		5.8	7.8	mΩ
R _{DS(ON)}	Drain-Source On-State Resistance	V _{GS} =-4.5V, I _D =-20A T _J =25℃		8	11	mΩ
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =-15V,V _{GS} =0V, f=1.0MHz		4994		pF
C _{oss}	Output Capacitance			410		pF
C _{rss}	Reverse Transfer Capacitance			221		pF
R _g	Gate resistance	V _{GS} =0V, V _{DS} =0V, f=1.0MHz		8		Ω
Switching Parameters						
t _{d(on)}	Turn-on Delay Time	V _{GS} =-10V, V _{DS} =-30V, R _L =2Ω, R _{GEN} =3Ω		13		nS
t _r	Turn-on Rise Time			115		nS
t _{d(off)}	Turn-Off Delay Time			78		nS
t _f	Turn-Off Fall Time			86		nS
Q _g	Total Gate Charge	V _{GS} =-10V, V _{DS} =-15V, I _D =-20A		40.9		nC
Q _{gs}	Gate-Source Charge			9.9		nC
Q _{gd}	Gate-Drain Charge			14.3		nC
Source-Drain Diode Characteristics						
I _{SD}	Source-Drain Current (Body Diode)				-18	A
V _{SD}	Forward on Voltage (Note 3)	V _{GS} =0V, I _S =-10A			-1.2	V
t _{rr}	Reverse Recovery Time	I _F =-10A, dI/dt=-100A/μs		13		ns
Q _{rr}	Reverse Recovery Charge	I _F =-10A, dI/dt=-100A/μs		8		nC

Notes 1.Repetitive Rating: Pulse width limited by maximum junction temperature.

Notes 2.EAS condition: T_J=25°C, V_{DD}=-30V, V_G=-10V, R_g=25Ω, L=0.5mH.

Notes 3.Repetitive Rating: Pulse width limited by maximum junction temperature.

RATING AND CHARACTERISTIC CURVES (AO4409)

Figure 1. Output Characteristics

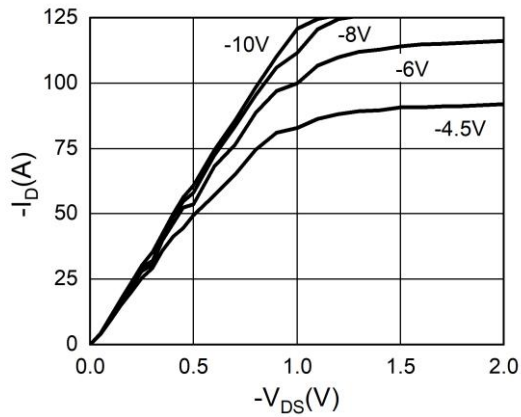


Figure 2. Transfer Characteristics

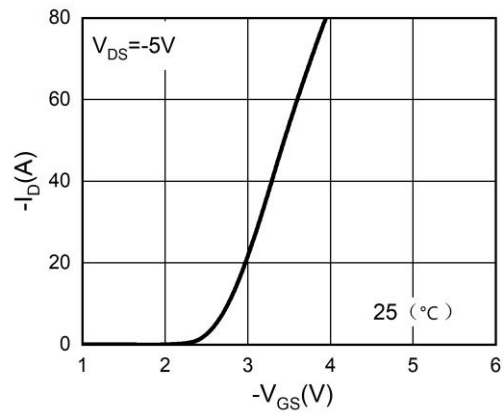


Figure 3. Power Dissipation

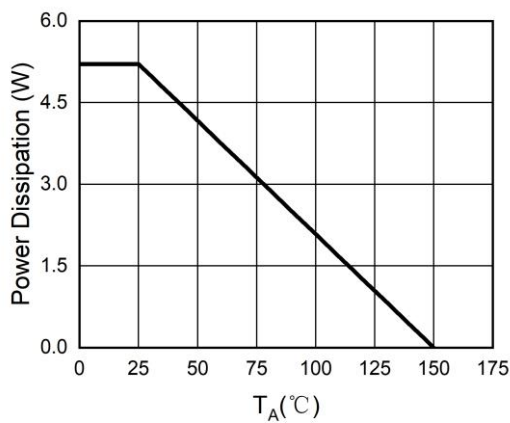


Figure 4. Drain Current

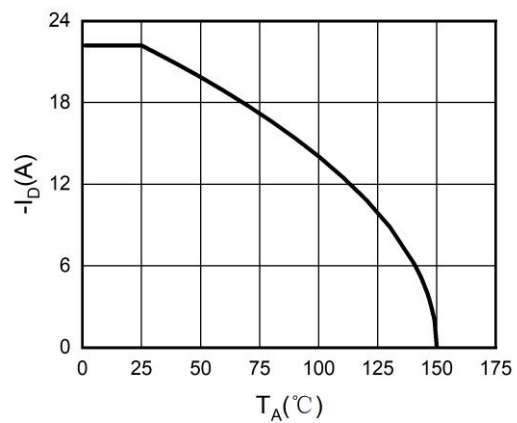


Figure 5. BV_{DSS} vs Junction Temperature

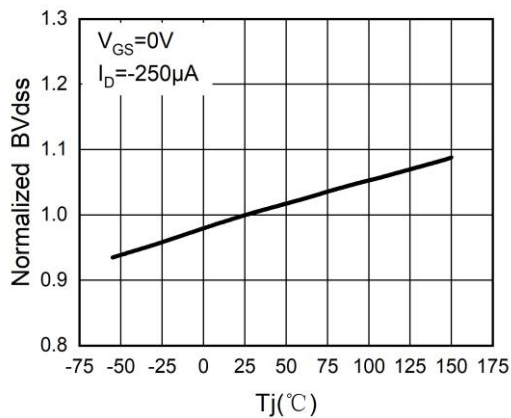
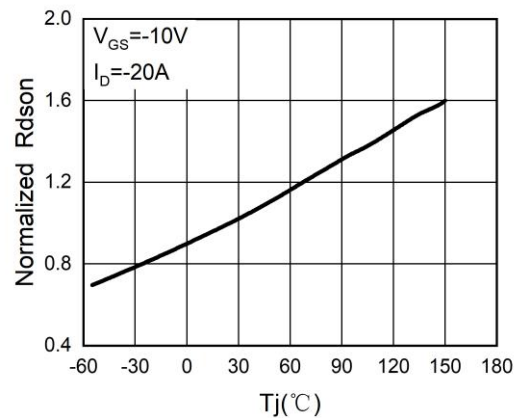


Figure 6. $R_{DS(ON)}$ vs Junction Temperature



RATING AND CHARACTERISTIC CURVES (AO4409)

Figure 7. Gate Charge Waveforms

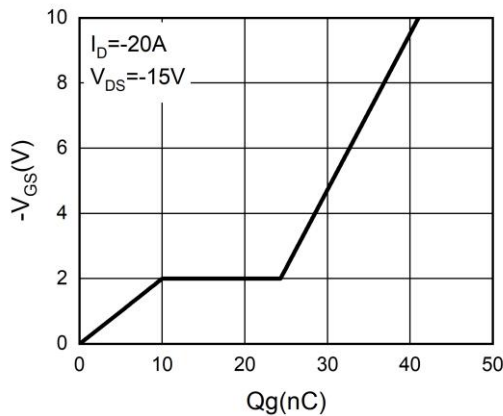


Figure 8. Capacitance

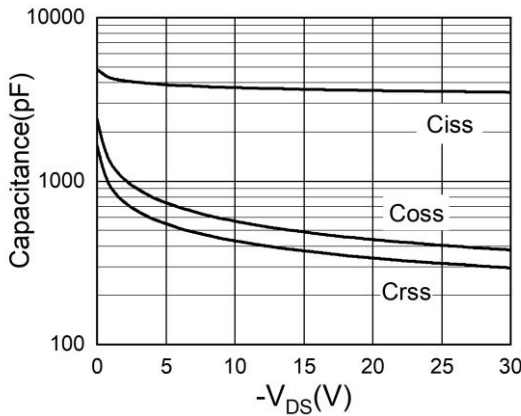


Figure 9. Body-Diode Characteristics

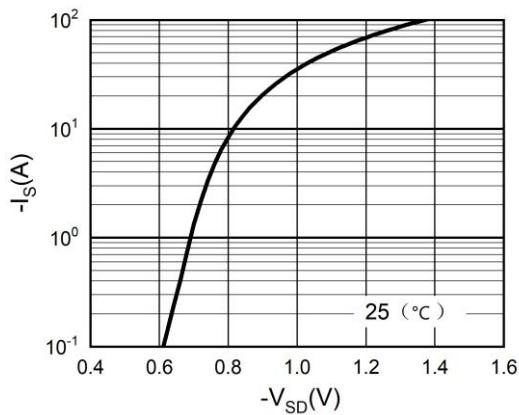


Figure 10. Maximum Safe Operating Area

