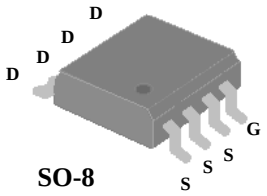
AM9569S

亞瑟萊特科技股份有限公司 AXElite Technology Co., Ltd.

P-CHANNEL ENHANCEMENT MODE POWER MOSFET

BV_{DSS}	-40V
$R_{DS(ON)}$	90mΩ
I_D	-4.2A

- **Simple Drive Requirement**
- **Fast Switching Characteristic**
- **RoHS Compliant**

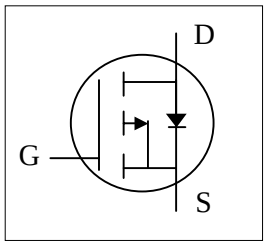


SO-8

Description

The Advanced Power MOSFETs from Axelite provide the designer with the best combination of fast switching, ruggedized device design, low on-resistance and cost-effectiveness.

The SO-8 package is universally preferred for all commercial-industrial surface mount applications and suited for low voltage applications such as DC/DC converters.



Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	-40	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D@T_A=25℃	Continuous Drain Current[3]	-4.2	A
I_D@T_A=70℃	Continuous Drain Current[3]	-3.4	A
I_{DM}	Pulsed Drain Current[1]	-40	A
P_D@T_A=25℃	Total Power Dissipation	2.5	W
	Linear Derating Factor	0.02	W/℃
T_{STG}	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	-55 to 150	℃

Thermal Data

Symbol	Parameter		Value	Unit
Rthj-a	Thermal Resistance Junction-ambient[3]	Max.	50	℃/W

Rev.1.0 May. 25, 2011

Electrical Characteristics@T_j=25°C(unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=-250uA	-40	-	-	V
$\Delta BV_{DSS}/\Delta T_j$	Breakdown Voltage Temperature Coefficient	Reference to 25℃, I_D=-1mA	-	-0.02	-	V/℃
$R_{DS(ON)}$	Static Drain-Source On-Resistance[2]	V_{GS}=-10V, I_D=-4A	-	-	90	mΩ
		V_{GS}=-4.5V, I_D=-2A	-	-	130	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=-250uA	-1	-	-3	V
g_{fs}	Forward Transconductance	V_{DS}=-10V, I_D=-4A	-	5	-	S
I_{DSS}	Drain-Source Leakage Current (T_j=25°C)	V_{DS}=-40V, V_{GS}=0V	-	-	-1	uA
	Drain-Source Leakage Current (T_j=70°C)	V_{DS}=-32V, V_{GS}=0V	-	-	-25	uA
I_{GSS}	Gate-Source Leakage	V_{GS}=± 20V	-	-	±100	nA
Q_g	Total Gate Charge[2]	I_D=-4A	-	8	13	nC
Q_{gs}	Gate-Source Charge	V_{DS}=-30V	-	1.6	-	nC
Q_{gd}	Gate-Drain ("Miller") Charge	V_{GS}=-4.5V	-	4	-	nC
$t_{d(on)}$	Turn-on Delay Time[2]	V_{DS}=-20V	-	9	-	ns
t_r	Rise Time	I_D=-1A	-	5	-	ns
$t_{d(off)}$	Turn-off Delay Time	R_G=3.3Ω,V_{GS}=-10V	-	23	-	ns
t_f	Fall Time	R_D=20Ω	-	5	-	ns
C_{iss}	Input Capacitance	V_{GS}=0V	-	500	800	pF
C_{oss}	Output Capacitance	V_{DS}=-25V	-	80	-	pF
C_{rss}	Reverse Transfer Capacitance	f=1.0MHz	-	65	-	pF
R_g	Gate Resistance	f=1.0MHz	-	6	9	Ω

Source-Drain Diode

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
V_{SD}	Forward On Voltage[2]	I_S=-1.9A, V_{GS}=0V	-	-	-1.3	V
t_{rr}	Reverse Recovery Time	I_S=-4A, V_{GS}=0V,	-	26	-	ns
Q_{rr}	Reverse Recovery Charge	dI/dt=100A/μs	-	25	-	nC

Notes:

1.Pulse width limited by Max. junction temperature.

2.Pulse width ≤300us , duty cycle ≤2%.

3.Surface mounted on 1 in^2 copper pad of FR4 board, t ≤10sec ; 125 ℃/W when mounted on Min. copper pad.

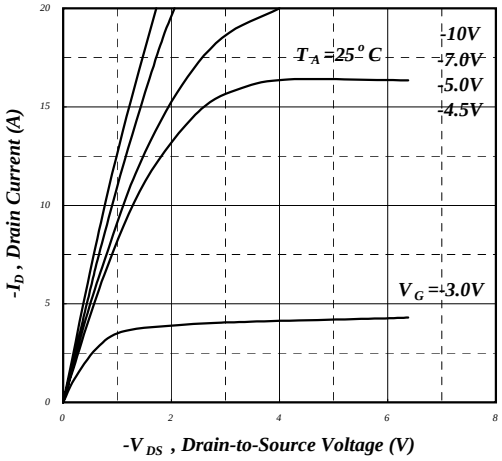


Fig 1. Typical Output Characteristics

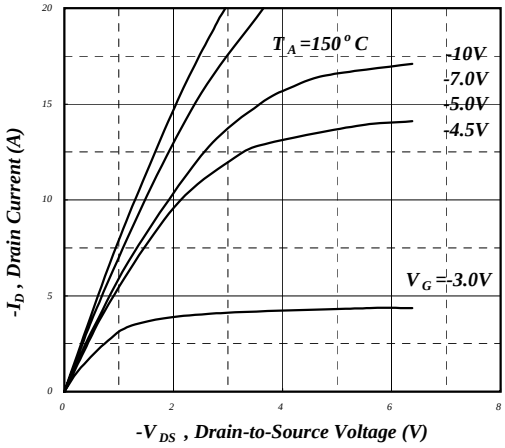


Fig 2. Typical Output Characteristics

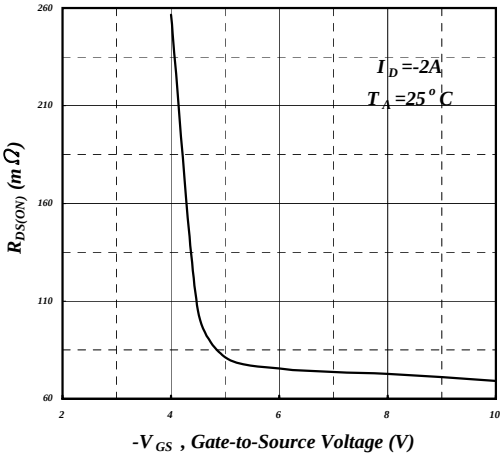


Fig 3. On-Resistance v.s. Gate Voltage

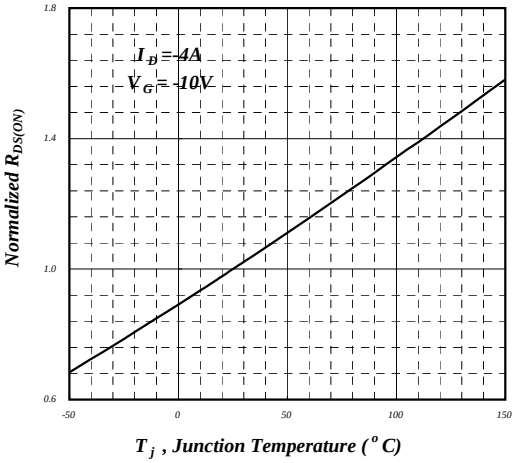


Fig 4. Normalized On-Resistance v.s. Junction Temperature

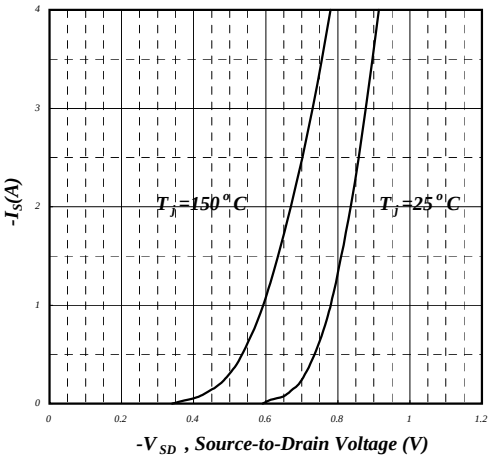


Fig 5. Forward Characteristic of Reverse Diode

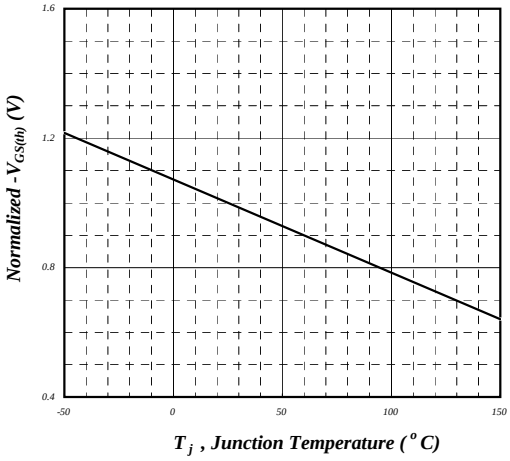


Fig 6. Gate Threshold Voltage v.s. Junction Temperature

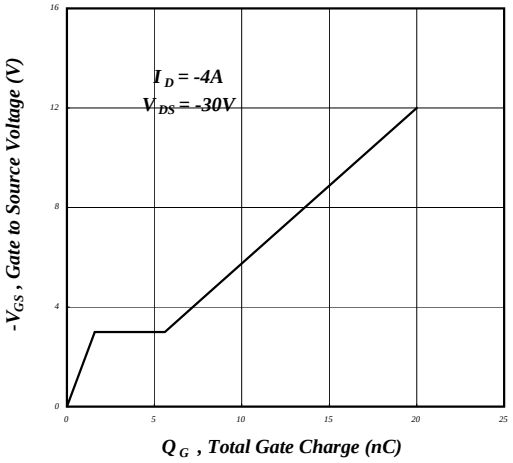


Fig 7. Gate Charge Characteristics

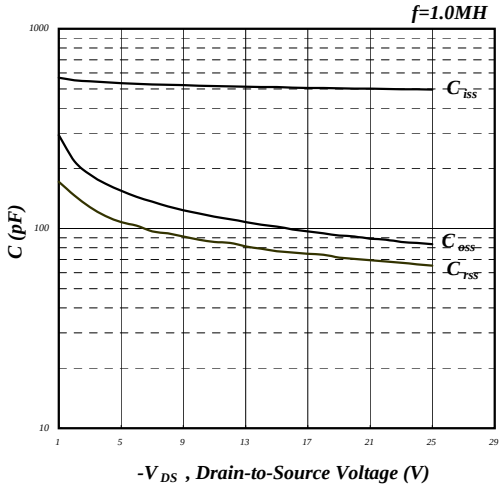


Fig 8. Typical Capacitance Characteristics

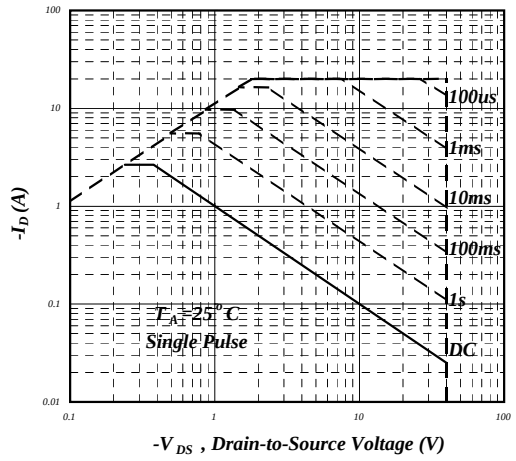


Fig 9. Maximum Safe Operating Area

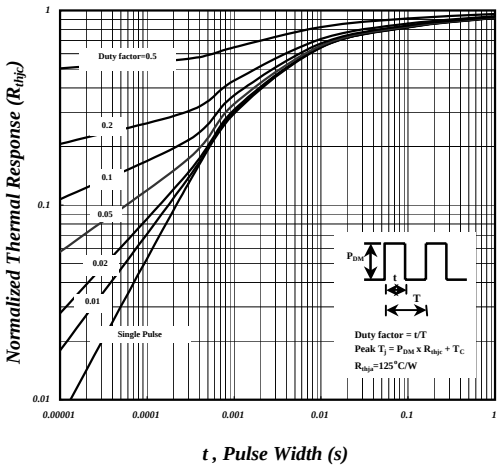


Fig 10. Effective Transient Thermal Impedance

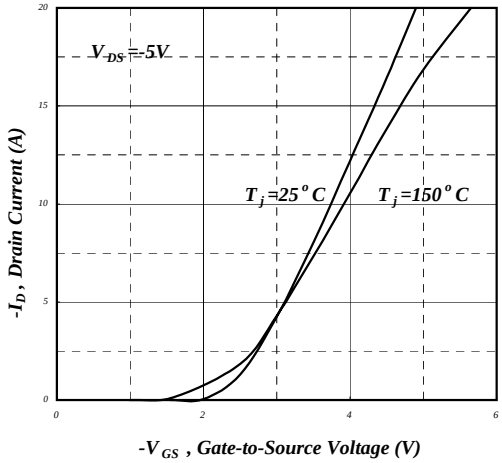


Fig 11. Switching Time Waveform

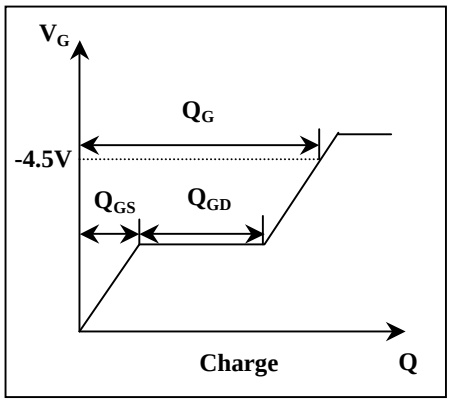
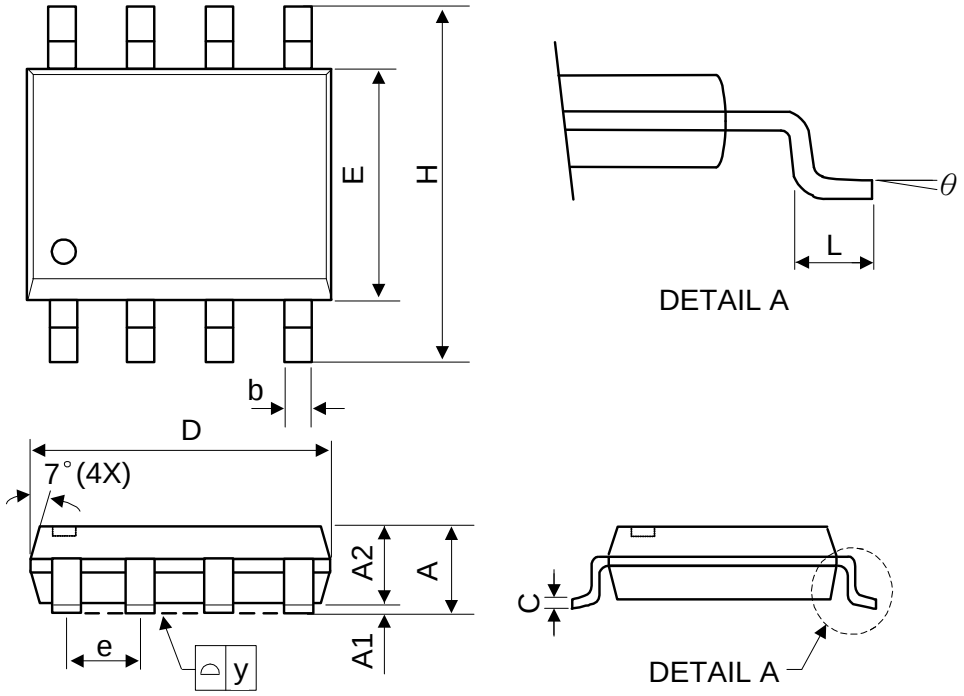


Fig 12. Gate Charge Waveform

❖ PACKAGE OUTLINES



Symbol	Dimensions in Millimeters			Dimensions in Inches		
	Min.	Nom.	Max.	Min.	Nom.	Max.
A	-	-	1.75	-	-	0.069
A1	0.1	-	0.25	0.04	-	0.1
A2	1.25	-	-	0.049	-	-
C	0.1	0.2	0.25	0.0075	0.008	0.01
D	4.7	4.9	5.1	0.185	0.193	0.2
E	3.7	3.9	4.1	0.146	0.154	0.161
H	5.8	6	6.2	0.228	0.236	0.244
L	0.4	-	1.27	0.015	-	0.05
b	0.31	0.41	0.51	0.012	0.016	0.02
e	1.27 BSC			0.050 BSC		
y	-	-	0.1	-	-	0.004
θ	0°	-	8°	0°	-	8°

Mold flash shall not exceed 0.25mm per side
JEDEC outline: MS-012 AA

❖ PIN CONFIGURATION

AM9569X- X

Packing

Package

MARKING

AM9569 YYWWA

YY: Year Code WW: Week Code
Internal Code

Package
S : SOP-8

Packing
Blank : Tube
A : Taping