DESCRIPTION

The AM2319A, is P-Channel enhancement mode power field effect transistors are using trench DMOS technology.

This advanced trench technology devices are well Suited for high efficiency fast switching applications

The AM2319A is available in SOT-23 packages.

ORDERING INFORMATION

Package Type	Part Number	
SOT-23 SPQ: 3,000pcs/Reel	E3	AM2319AE3R
		AM2319AE3VR
Note	V: Halogen free Package R: Tape & Reel	
AiT provides all RoHS products		

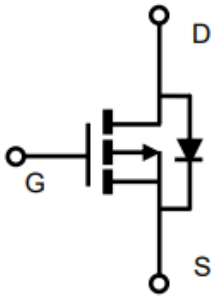
FEATURES

- Fast Switching
- 1.8V Low gate drive applications
- Improved dv/dt capability
- -20V/-4.2A,
  $R_{DS(ON)}$= 35mΩ(Typ) @ V_{GS}= -10V
  $R_{DS(ON)}$= 43mΩ(Typ) @ V_{GS}= -4.5V
  $R_{DS(ON)}$= 57mΩ(Typ) @ V_{GS}= -2.5V
  $R_{DS(ON)}$= 80mΩ(Typ) @ V_{GS}= -1.8V
- Reliable and Rugged

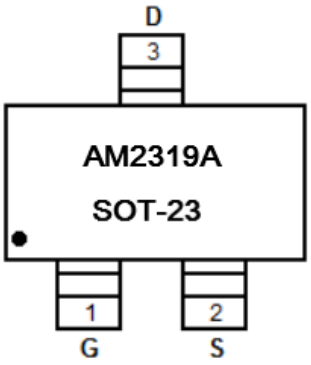
APPLICATION

- Load Switch
- DC/DC Converter
- Hend-Held Instruments

P CHANNEL MOSFET



PIN DESCRIPTION



SOT-23, E3

Top View

Pin#	Symbol	Function
1	G	Gate
2	D	Drain
3	S	Source

ABSOLUTE MAXIMUM RATINGS

T_A = 25°C, unless otherwise noted.

V_{DSS}, Drain-Source Voltage		-20V
I_D, Continuous Drain Current [A](V_{GS}=4.5V)	T_A=25℃	-4.2A
	T_A=70℃	-3.4A
I_{DM} Pulsed Drain Current (Note1)		16.8A
V_{GSS} Gate-to-Source Voltage [B]		±12V
I_{AS} Avalanche Current [B]		10A
E_{AS} Single Pulse Avalanche Energy(Note2)		5mJ
P_D Power Dissipation [A]	T_A=25℃	1.3W
	T_A=70℃	0.8W
T_J , T_{stg} Operating Junction and Storage Temperature Range		-55 to 150℃

A: Surface mounted on FR4 board using 1 in2 pad size.

B: Pulsed width limited by maximum junction temperature, $T_{J(MAX)}$ =150℃.(initial temperature T_J=25℃).

C: Using ≤10s junction-to-ambient thermal resistance is base on $T_{J(MAX)}$ =150℃.

D: Pulse test width ≤300μs and duty cycle ≤2%.

E: Guaranteed by design, not subject to production testing.

ELECTRICAL CHARACTERISTICS

TA = 25°C, unless otherwise noted.

Parameter	Symbol	Conditions	Min	Typ.	Max	Units
Static Parameters						
Drain to Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V,I_D=250μA	-20			V
Gate Threshold Voltage	$V_{GS(TH)}$	V_{DS} = V_{GS}, I_D = 250μA	-0.5	-0.7	-1	V
Gate Leakage Current	I_{GSS}	V_{DS}=0V, V_{GS}=±12V			±100	μA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} =20V,V_{GS}= 0V,T_j = 25℃			-1	μA
		V_{DS} =16V,V_{GS}= 0V,T_j = 75℃			10	μA
Drain-to-Source On-Resistance [D]	$R_{DS(ON)}$	V_{GS}=10V, I_D=4.5A		35	40	mΩ
		V_{GS}=4.5V, I_D=4.2A		43	50	
		V_{GS}=2.5V, I_D=2.5A		57	68	
		V_{GS}=1.8V, I_D=3A		80	95	
Forward Transconductance	g_{fs}	V_{DS}=100V,I_D =3A		8		S
Diode Characteristics						
Diode Forward Voltage [D]	V_{SD}	I_S=-1A, V_{GS} =0V			-1	V
Diode Continuous Forward Current.	I_S				-1.4	A
Dynamic and Switching Parameters [E]						
Total Gate Charge	Q_g	V_{DS} =10V , V_{GS} = 4.5V I_D =4.2A		7.2	10.1	nC
Gate to Source Charge	Q_{gs}			1.2	1.7	
Gate to Drain(“Miller”)Charge	Q_{gd}			3	4.2	
Input Capacitance	C_{iss}	V_{DS} = 10V, V_{DS} = 0V f = 1.0MHz		650		pF
Output Capacitance	C_{oss}			95		
Reverse Transfer Capacitance	C_{rss}			62		
Turn-on Time	$t_{d(ON)}$	V_{DD} = 10V V_{GEN} =-4.5V R_G =6Ω ,I_D =1A		8.5	16	nS
	t_f			13.3	25	
Turn-off Time	$t_{d(OFF)}$			32	61	
	t_f			25	48	

A: Surface mounted on FR4 board using 1 in2 pad size.

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C: Using ≤10s junction-to-ambient thermal resistance is base on $T_{J(MAX)}$ =150℃.

D: Pulse test width ≤300μs and duty cycle ≤2%.

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TYPICAL PERFORMANCE CHARACTERISTICS

Fig1 Output Characteristics

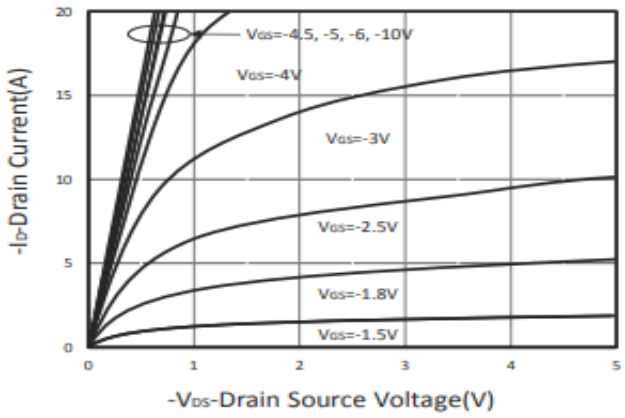


Fig2 Drain-Source On Resistance

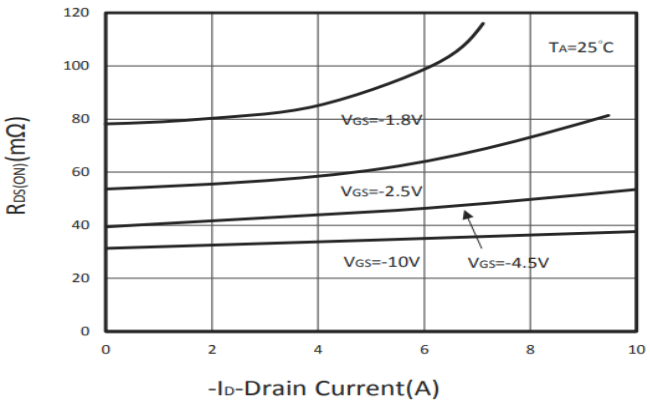


Fig3 Gate Charge

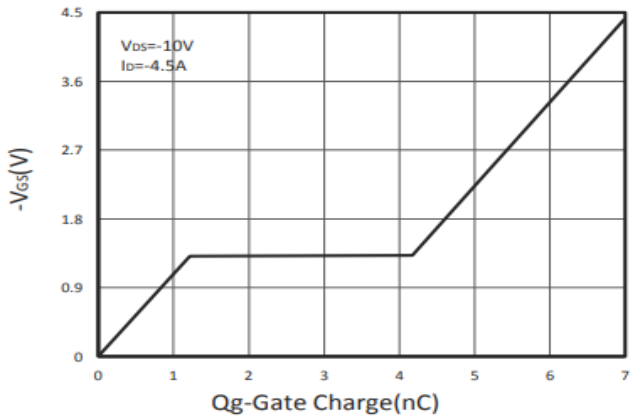


Fig4 Capacitance

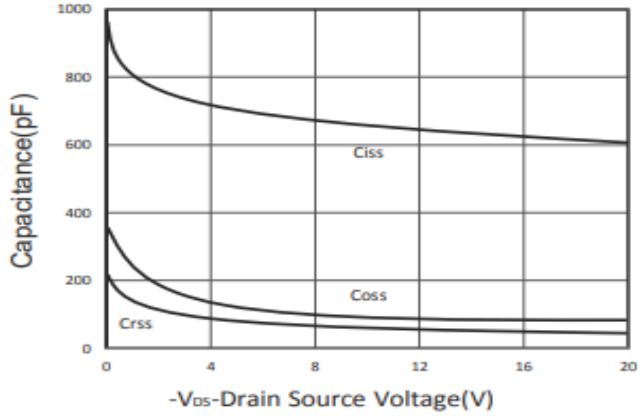


Fig5 Gate Threshold Voltage

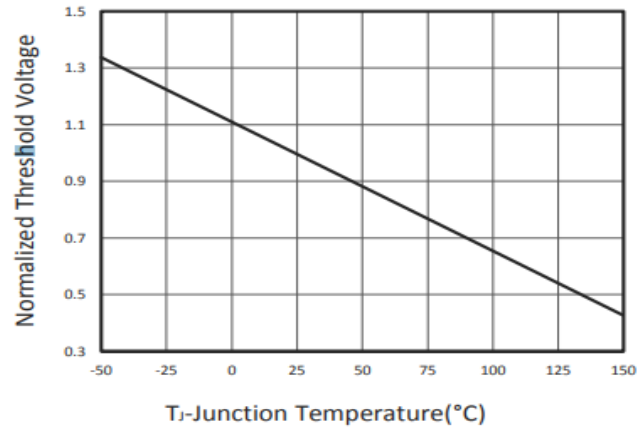


Fig6 Power Dissipation

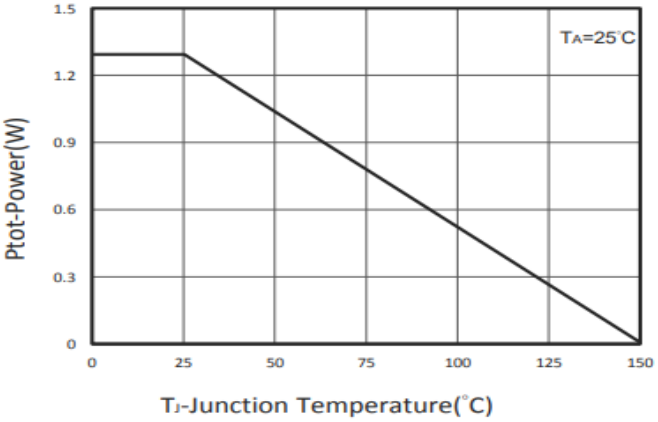


Fig7 $R_{DS(ON)}$ vs Junction Temperature

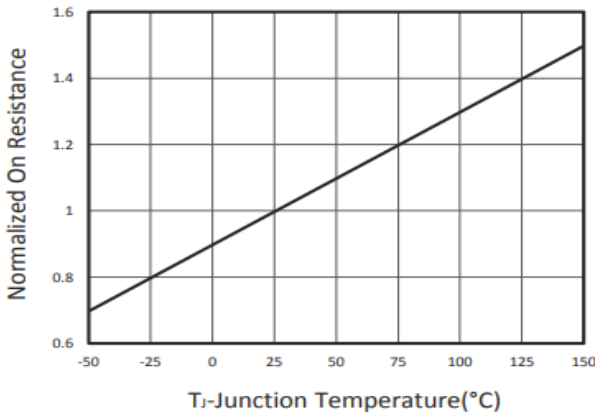


Fig8 Drain Current vs TJ

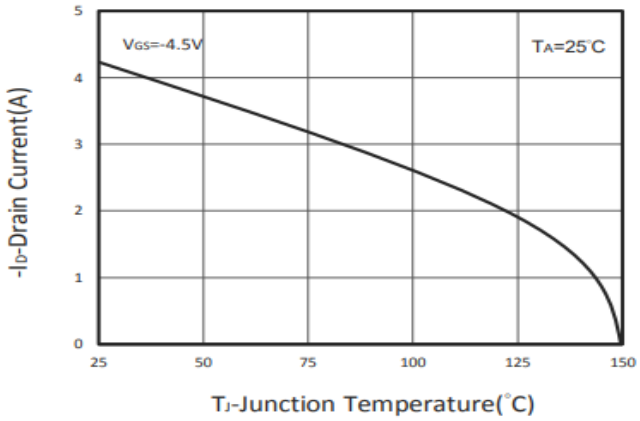


Fig9 Maximum Safe Operation Area

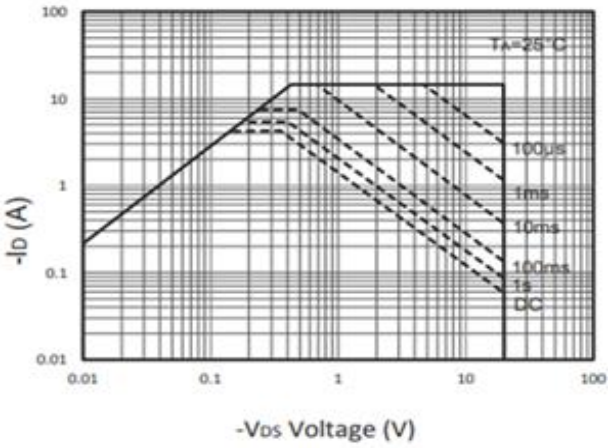


Fig10 Thermal Transient Impedance

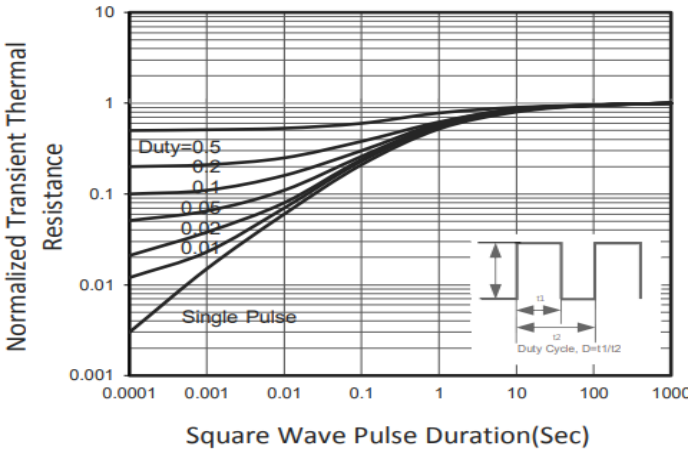


Fig11 Gate Charge Waveform

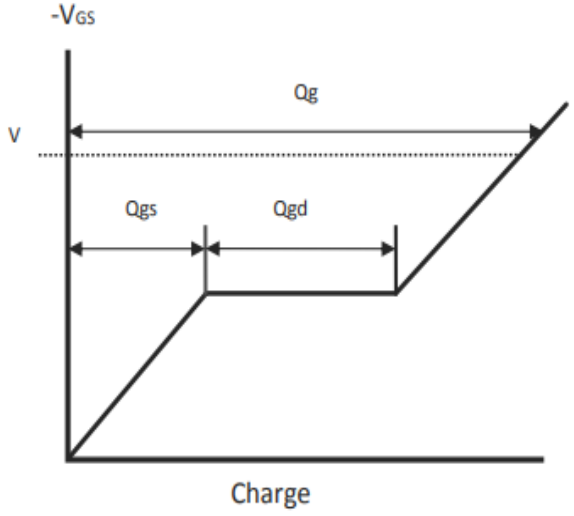
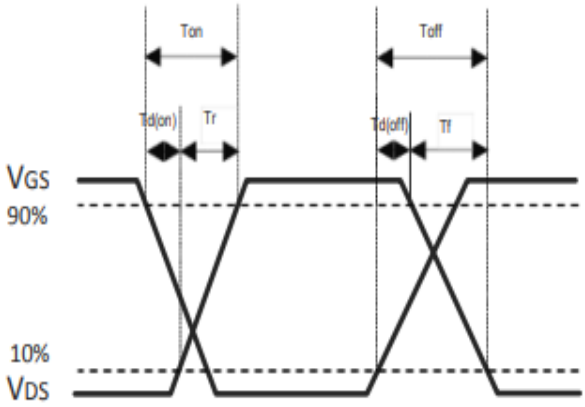
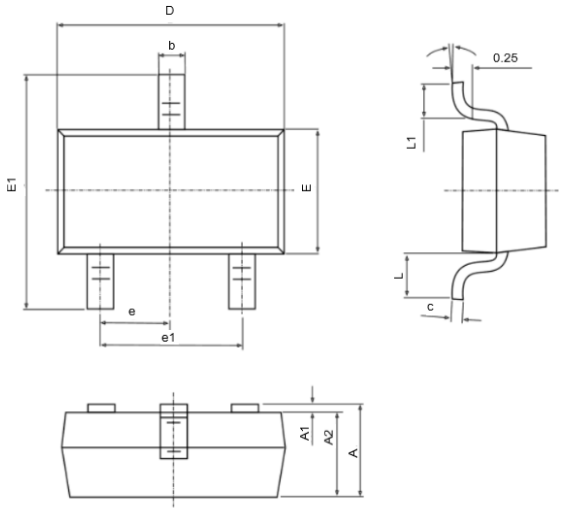


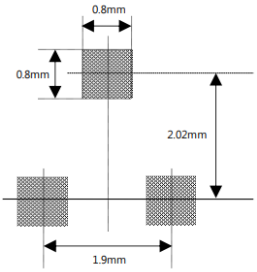
Fig12 Switching Time Waveform



PACKAGE INFORMATION

Dimension in SOT-23 (Unit: mm)





RECOMMENDED LAND PATTERN

Symbol	Millimeters	
	Min	Max
A	0.900	1.150
A1	0.000	0.100
A2	0.900	1.050
B	0.300	0.500
C	0.080	0.150
D	2.800	3.000
E	1.200	1.400
E1	2.250	2.550
e	0.950 TYP	
e1	1.800	2.000
L	0.550 REF	
L1	0.300	0.500
θ	0°	8°

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