



DESCRIPTION

AM4435A is the P-Channel enhancement mode power field effect transistors are using trench DMOS technology. This advanced technology has been especially tailored to minimize on-state resistance, provide superior, fast switching performance, and withstand high energy pulse in the avalanche and commutation mode. This device is suitable for use as a load switch or PWM applications.

The AM4435A is available in SOP8 package.

ORDERING INFORMATION

Package Type	Part Number	
SOP8 SPQ: 2,500pcs/Reel	M8	AM4435AM8R
		AM4435AM8VR
Note	V: Halogen free Package R: Tape & Reel	
AiT provides all RoHS products		

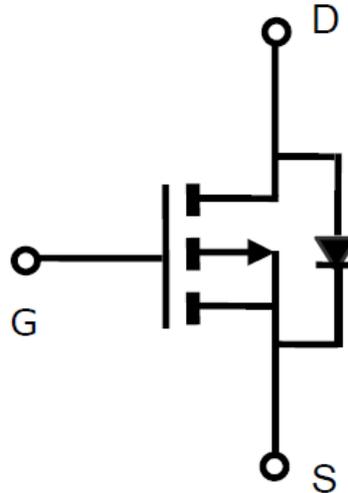
FEATURES

- $V_{DS} = -30V$, $I_D = -10.6A$
 $R_{DS(ON)} = 14m\Omega(Typ.)@V_{GS} = -10V$
 $R_{DS(ON)} = 18m\Omega(Typ.)@V_{GS} = -4.5V$
- Fast switch
- High power and current handling capability
- Available in SOP8 Package

APPLICATIONS

- Load Switch
- LED Application
- DC-DC Power Management

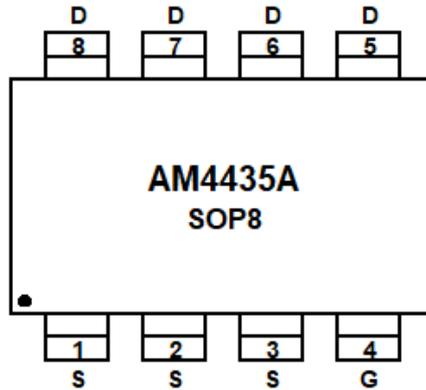
P CHANNEL MOSFET



Schematic diagram



PIN DESCRIPTION



Top View

Pin #	Symbol	Function
1	S	Source
2	S	Source
3	S	Source
4	G	Gate
5	D	Drain
6	D	Drain
7	D	Drain
8	D	Drain



ABSOLUTE MAXIMUM RATINGS

T_A = 25°C, unless otherwise noted

V _{DSS} , Drain-Source Voltage		-30V
V _{GSS} , Gate-Source Voltage		±20V
I _D , Continuous Drain Current	T _A = 25°C	-10.6A
	T _A = 70°C	-8.5A
I _{DM} , Pulsed Drain Current ^{NOTE1}		-42.4A
I _{AS} , Avalanche Current ^{NOTE1, 6}		-30A
E _{AS} , Single Pulse Avalanche Energy L=0.1mH ^{NOTE1, 6}		45mJ
P _D , Power Dissipation ^{NOTE2}	T _A = 25°C	3.1W
	T _A = 70°C	2.0W
T _J , Operation Junction Temperature		-55°C ~150°C
T _{STG} , Storage Temperature Range		-55°C ~150°C

Stress beyond above listed "Absolute Maximum Ratings" may lead permanent damage to the device. These are stress ratings only and operations of the device at these or any other conditions beyond those indicated in the operational sections of the specifications are not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

THERMAL RESISTANCE

Parameter		Symbol	Max	Unit
Thermal Resistance Junction to Ambient ^{NOTE3}	t ≤ 10s	R _{θJA}	40	°C/W
Thermal Resistance Junction to Ambient ^{NOTE3}	Steady-State		75	
Thermal Resistance Junction to Case ^{NOTE3}		R _{θJC}	27	



ELECTRICAL CHARACTERISTICS

T_A= 25°C, unless otherwise noted

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static Parameters						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =-250μA	-30	-	-	V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =-250μA	-1	-1.6	-2.5	V
Gate Leakage Current	I _{GSS}	V _{DS} =0V, V _{GS} =±20V	-	-	±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-30V, V _{GS} =0V T _J =25°C	-	-	-1	μA
		V _{DS} =-24V, V _{GS} =0V T _J =75°C	-	-	-10	
Drain-source On-Resistance ^{NOTE4}	R _{DS(ON)}	V _{GS} =-10V, I _D =-10.6A	-	14	18	mΩ
		V _{GS} =-4.5V, I _D =-8A	-	18	25	
Forward Transconductance	G _{fs}	V _{DS} =-10V, I _D =-10A	-	12.5	-	S
Diode Characteristics						
Diode Forward Voltage ^{NOTE2}	V _{SD}	I _S =-1A, V _{GS} =0V	-	-0.7	-1	V
Continuous Source Current	I _S		-	-	-5.3	A
Body Diode Reverse Recovery Time	t _{rr}	I _S =-10A, dI/dt=100A/μs	-	13.8	-	ns
Body Diode Reverse Recovery Charge	Q _{rr}		-	12.3	-	nC
Dynamic and Switching Parameters						
Total Gate Charge(10V)	Q _g	V _{DS} =-15V, V _{GS} =-10V, I _D =-10A	-	36	48.6	nC
Total Gate Charge(4.5V)	Q _g		-	18	24.3	
Gate-Source Charge	Q _{gs}		-	8.1	10.9	
Gate-Drain Charge	Q _{gd}		-	10.3	13.9	
Input Capacitance	C _{iss}	V _{DS} =-15V, V _{GS} =0V, f=1MHz	-	2590	3626	pF
Output Capacitance	C _{oss}		-	283	396	
Reverse Transfer Capacitance	C _{rss}		-	172	241	
Gate Resistance	R _g	V _{GS} =0V, V _{DS} =0V, f=1MHz	-	8.8	13	Ω
Turn-On Time ^{NOTE5}	t _{d(on)}	V _{DD} =-15V, V _{GEN} =-10V, R _G =3Ω, I _D =-1A	-	19.1	-	ns
	t _r		-	4.8	-	
Turn-Off Time ^{NOTE5}	t _{d(off)}		-	58	-	
	t _f		-	11.5	-	

NOTE1: The value of R_{θJA} is measured with the device in a still air environment with maximum junction temperature T_{J(MAX)}=150°C (initial temperature T_A=25°C).

NOTE2: The T_{J(MAX)}=150°C, using junction-to-ambient thermal resistance.

NOTE3: Surface-mounted on FR-4 board using 1 sq-in pad, 2 oz Cu, in a still air environment with T_A=25°C.

NOTE4: The data tested by pulsed, pulse width ≤ 300us, duty cycle ≤ 2%

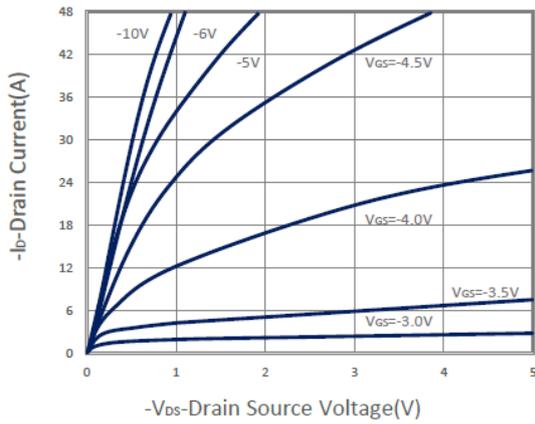
NOTE5: Pulsed width limited by maximum junction temperature.

NOTE6: The E_{AS} data shows Max.

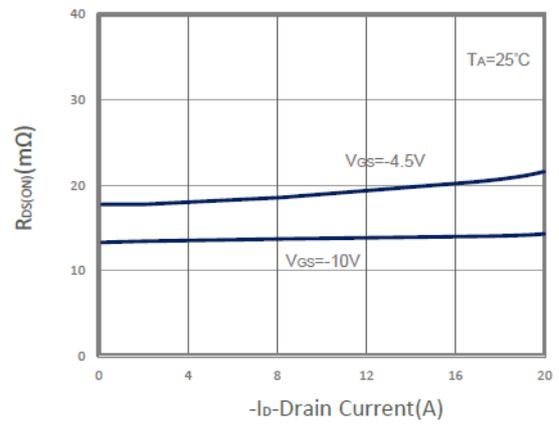


TYPICAL ELECTRICAL CHARACTERISTICS

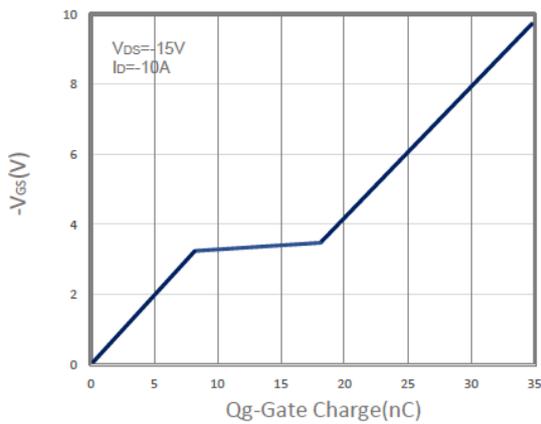
1. Output Characteristics



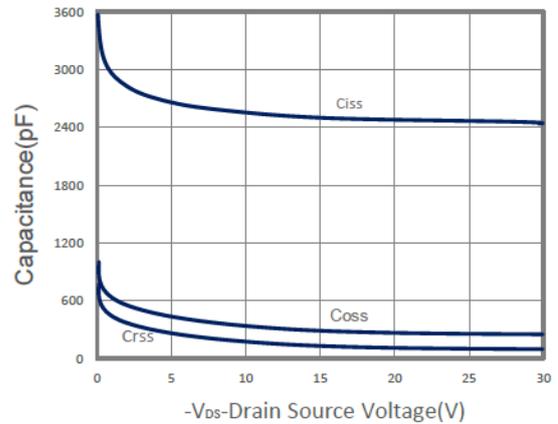
2. Drain-Source On Resistance



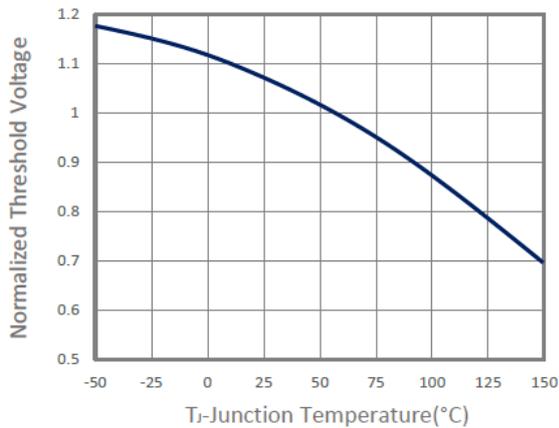
3. Gate Charge



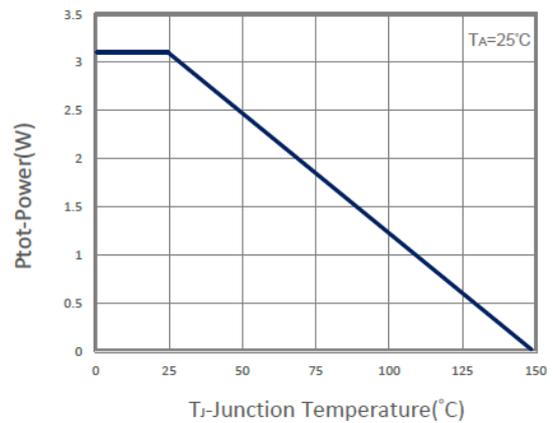
4. Capacitance



5. Gate Threshold Voltage

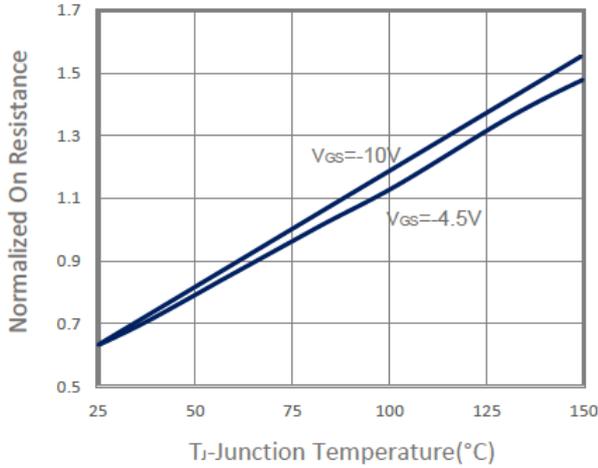


6. Power Dissipation

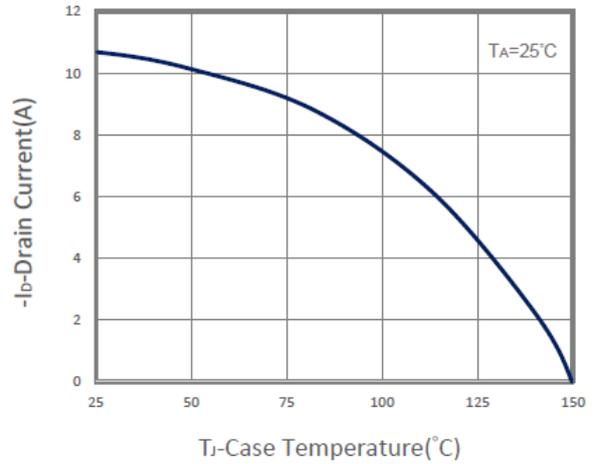




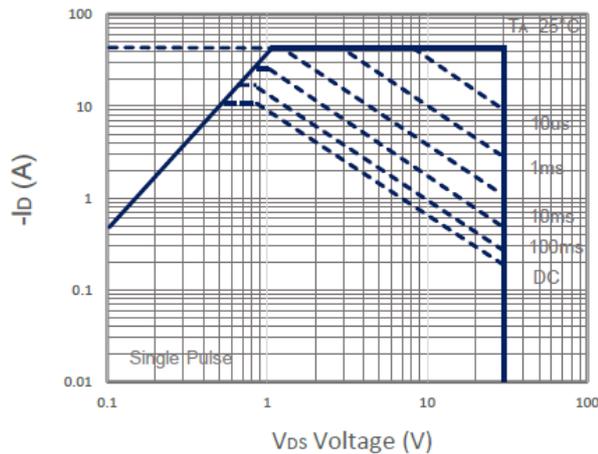
7. $R_{DS(ON)}$ vs. Junction Temperature



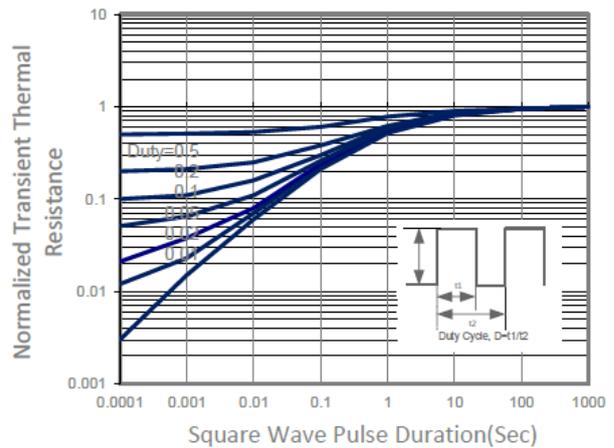
8. Drain Current vs. T_J



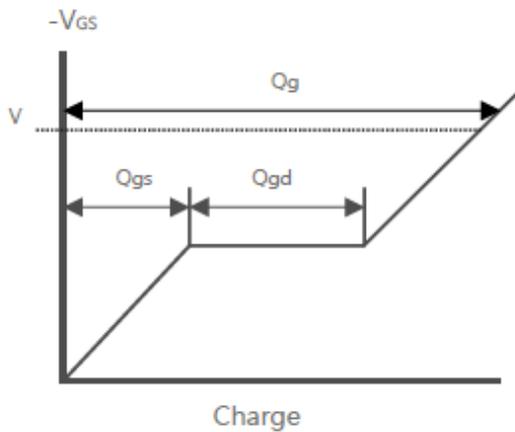
9. Maximum Safe Operation Area



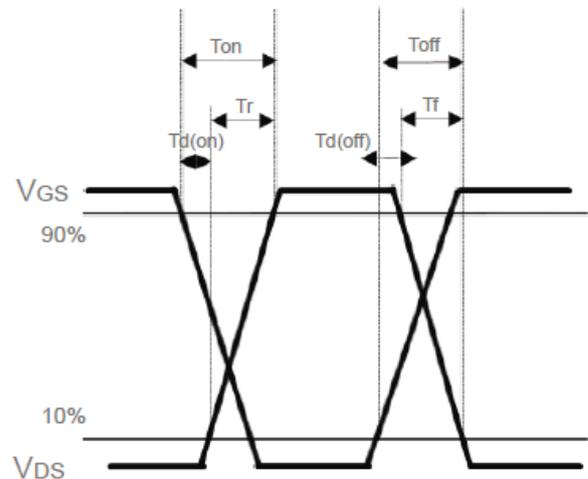
10. Thermal Transient Impedance



11. Gate Charge Waveform



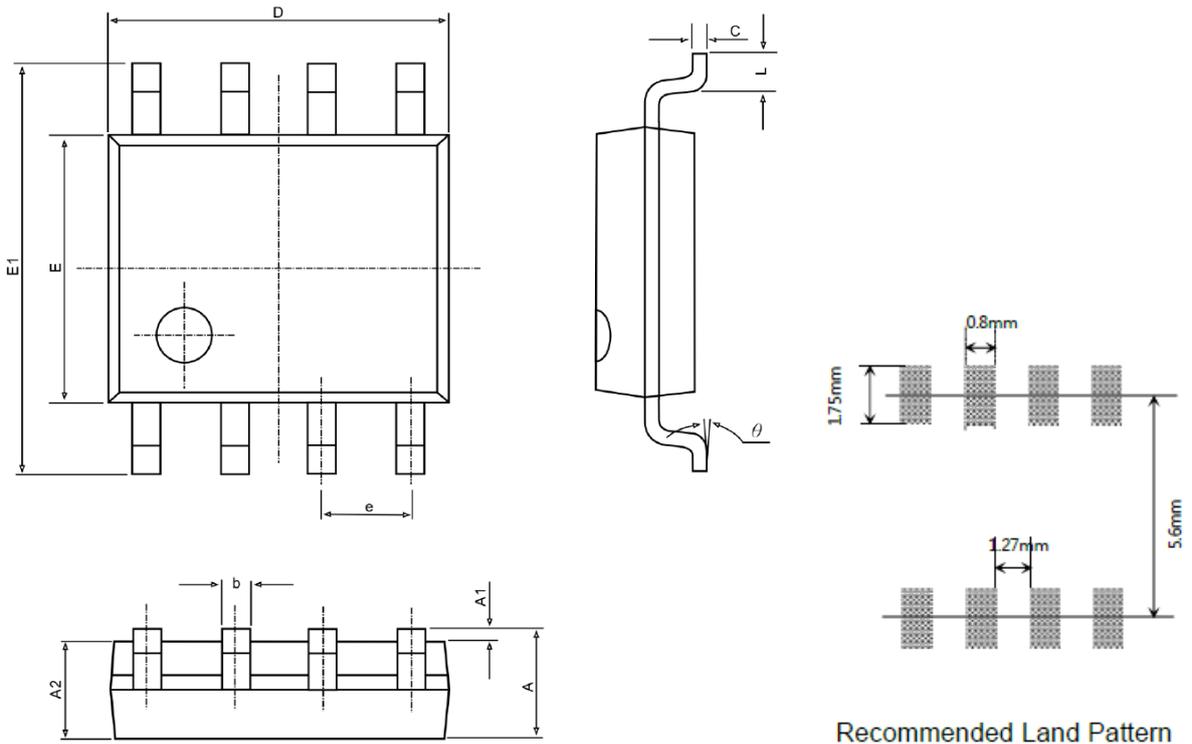
12. Switching Time Waveform





PACKAGE INFORMATION

Dimension in SOP8 Package (Unit: mm)



Symbol	Millimeters		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	0.006	0.010
D	4.700	5.100	0.185	0.200
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.270 BSC		0.050 BSC	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°



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