DESCRIPTION

The AM4417 is available in SOP8 Package.

VDSS	RDSON	ID
	V_{GS} = - 10 V	
-60V	25mΩ	-10A

APPLICATIONS

- Load Switch

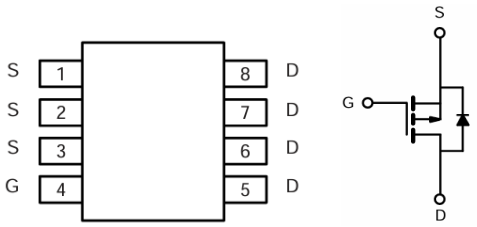
ORDERING INFORMATION

Package Type	Part Number	
SOP8 SPQ: 4,000/Reel	M8	AM4417M8R
Note	R: Tape & Reel	
AiT provides all RoHS products		

FEATURE

- -60V, -10A
- $R_{DS(ON)}$ Typ. = 25mΩ @ V_{GS} = -10V
- $R_{DS(ON)}$ Typ. = 28mΩ @ V_{GS} = -4.5V
- Trench Power MOSFET
- 100% UIS TESTED!

PIN DESCRIPTION



SOP8

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

ABSOLUTE MAXIMUM RATINGS

T_A = 25°C, unless otherwise specified.

V_{DS}, Drain-Source Voltage		-60V
V_{GS}, Gate-Source Voltage		±20V
I_D, Continuous Drain Current (T_J = 150 °C)	T_C = 25°C (1)	-10A
	T_C = 70°C (1)	-9A
	T_A = 25°C (2)	8A
	T_A = 70°C (2)	-8A
I_{DM}, Pulsed Drain Current		-50A
I_{AS}, Avalanche Current Pulse, L = 0. 1mH		-45A
E_{AS}, Single Pulsed Avalanche Energy, L = 0.1mH		101mJ
I_S, Continuous Source-Drain Diode Current	T_C = 25°C (1)	69A
	T_A = 25°C (2)	2.1A
P_D, Power Dissipation	T_C = 25°C (1)	104.2W
	T_C = 70°C (1)	66.7W
	T_A = 25°C (2)	3.1W
	T_A = 70°C (2)	2W
R_{thJA}, Maximum Junction-to-Ambient (2)		40℃/W
R_{thJC}, Maximum Junction-to-Case		1.2℃/W
T_{STG}, Storage Temperature Range		-55℃ ~ +150℃
T_J, Junction Temperature Range		-55℃ ~ +150℃

1. Based on TC = 25 °C.

b. Surface mounted on 1" x 1" FR4 board.

ELECTRICAL CHARACTERISTICS

T_J = 25°C, unless otherwise specified.

Parameter	Symbol	Conditions	Min	Typ.	Max	Unit
Static						
Drain-Source Breakdown Voltage	V_{DSS}	V_{GS}= 0V, I_D = -250μA	-60	-	-	V
V_{DS} Temperature Coefficient	$\triangle V_{DS}/T_J$	I_D = -250μA	-	68	-	mV/°C
$V_{GS(th)}$ Temperature Coefficient	$\triangle V_{GS(TH)}/T_J$		-	-5.2	-	
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}= -60V, V_{GS}=0V	-	-	-1	μA
		V_{DS}= -60V, V_{GS}=0V T_J = 55°C	-	-	-10	
Gate-Body Leakage Current	I_{GSS}	V_{GS}= ±20V, V_{DS}=0V	-	-	±100	nA
On-State Drain Current (1)	$I_{D(on)}$	V_{DS} = - 5V, V_{GS}= -10 V	-12	-	-	A
Gate Threshold Voltage	$V_{GS(TH)}$	V_{DS}= V_{GS}, I_D = -250μA	-1	-	-3	V
Forward Transconductance (1)	gfs	V_{DS} = - 15V, I_D = -10A	20	-	-	S
Static Drain-Source ON-Resistance (1)	$R_{DS(ON)}$	V_{GS} = -10V, I_D = -5A	-	25	-	mΩ
		V_{GS} = -4.5V, I_D = -5A	-	28	-	
Dynamic (2)						
Input Capacitance	C_{iss}	V_{DS}= 25V, V_{GS}=0V, f=1.0MHZ	-	3500	-	pF
Output Capacitance	C_{oss}		-	390	-	
Reverse Transfer Capacitance	C_{rss}		-	290	-	
Total Gate Charge	Q_g	V_{DS} = -30V , I_D = -55A V_{GS}= -10V	-	76	115	nC
	Q_g	V_{DS} = -30V , I_D = -55A V_{GS}= -4.5V	-	38	60	
Gate-Source Charge	Q_{gs}		-	16	-	
Gate-Drain Charge	Q_{gd}		-	19	-	
Gate Resistance	Rg	f = 1 MHz	-	5.2		Ω
Turn-On Delay Time	$t_{d(on)}$	V_{DD}= -2V, R_L=2Ω, I_D = -10A, R_g=1Ω, V_{GEN}= -10V	-	10	15	ns
Turn-On Rise Time	t_r		-	7	15	
Turn-Off Delay Time	$t_{d(off)}$		-	70	110	
Turn-Off Fall Time	t_f		-	40	60	
Drain-Source Diode Characteristics						
Continuous Source-Drain Diode Current	I_S	T_C = 25 °C	-	-	-9	A
Pulsed Drain Forward Current	I_{SM}	-	-	-	-15	A
Body Diode Voltage	V_{SD}	I_S= -30A	-	-1	-1.5	V
Body Diode Reverse Recovery Time	trr	I_F = - 50 A, di/dt = 100 A/μs, T_J = 25 °C	-	45	68	ns
Body Diode Reverse Recovery Charge	Qrr		-	59	120	nC
Reverse Recovery Fall Time	t_a		-	29	-	ns
Reverse Recovery Rise Time	t_b		-	16	-	ns

(1) Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%

(2) Guaranteed by design, not subject to production testing.

TYPICAL PERFORMANCE CHARACTERISTICS

Fig 1. Output Characteristics

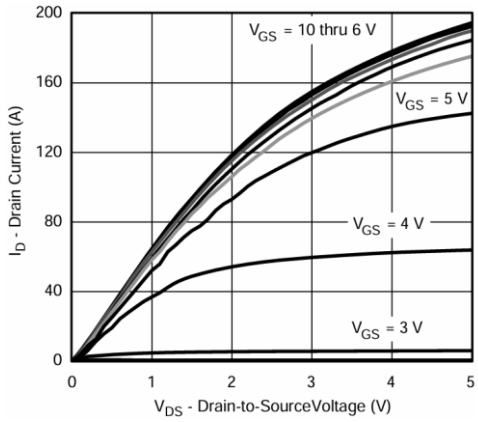


Fig 2. Transfer Characteristics

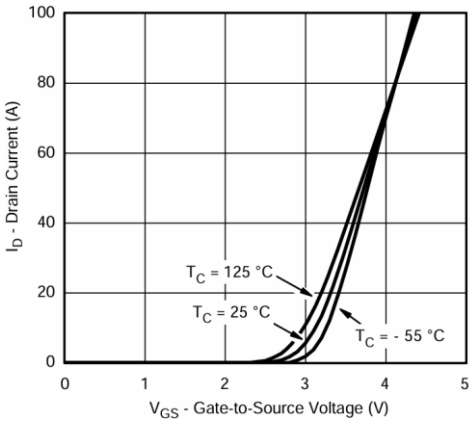


Fig 3. Transfer Characteristics

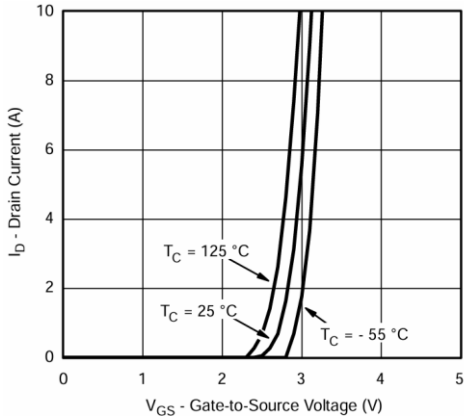


Fig 4. Transconductance

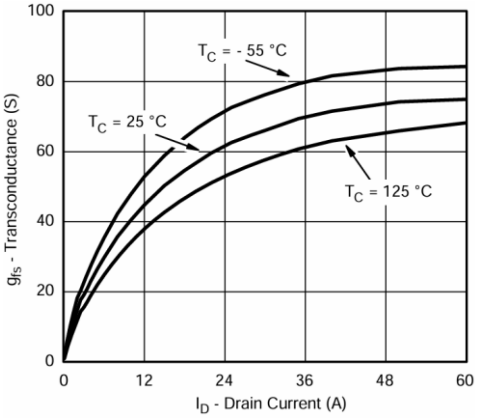


Fig 5. s On-Resistance vs. Drain Current

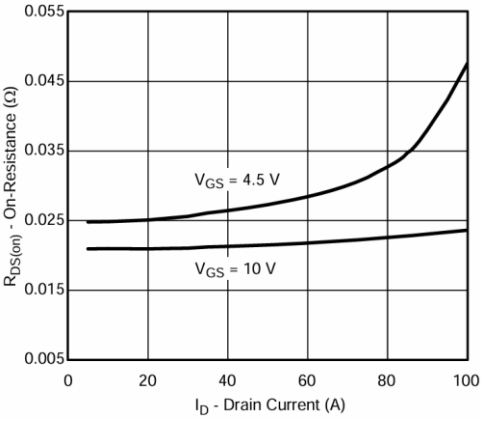


Fig 6. Capacitance

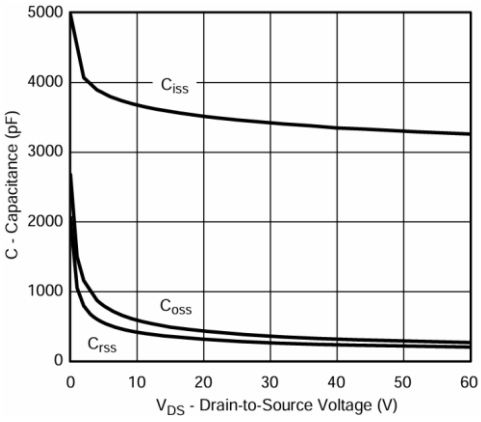


Fig 7. Gate Charge

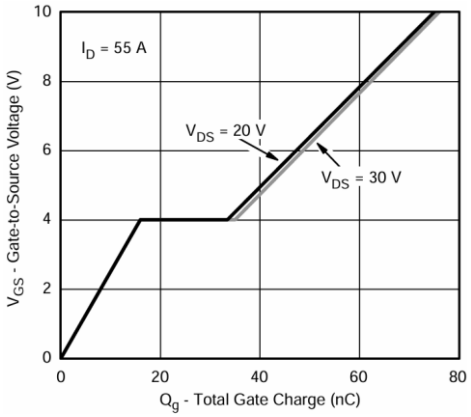


Fig 8. On-Resistance vs. Gate-to-Source Voltage

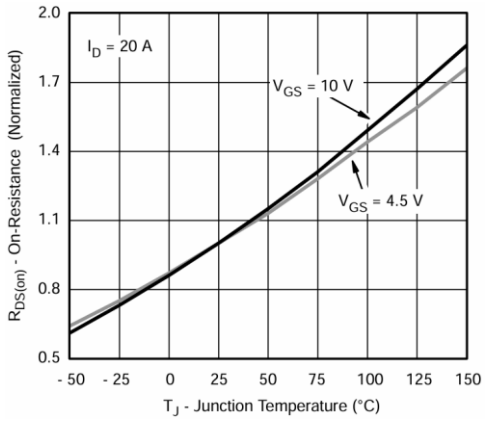


Fig 9. Source-Drain Diode Forward Voltage

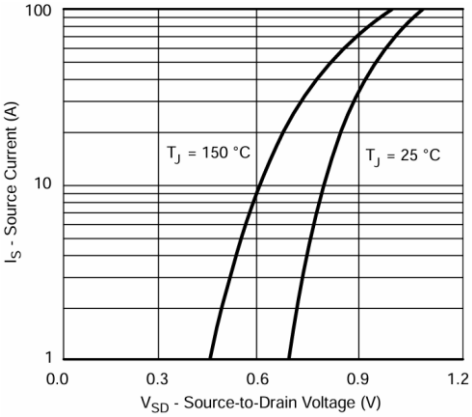


Fig 10. On-Resistance vs. Gate-to-Source Voltage

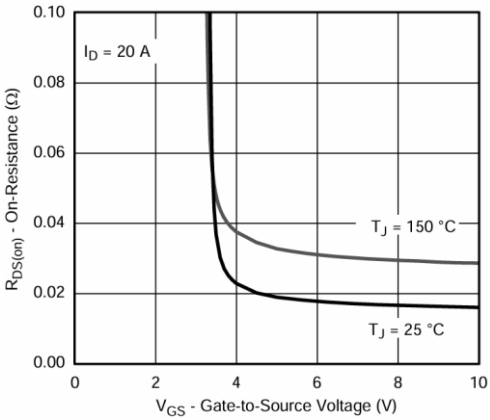


Fig 11. Single Pulse Avalanche Current Capability vs. Time

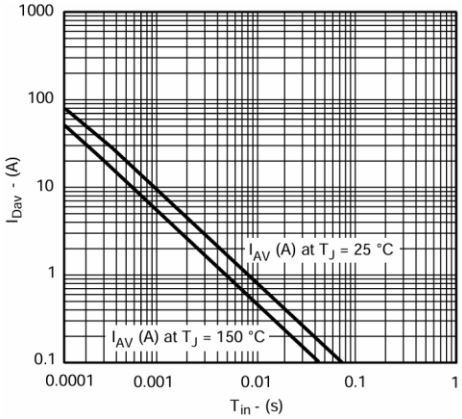


Fig 12. Drain-Source Breakdown Voltage vs. Junction Temperature

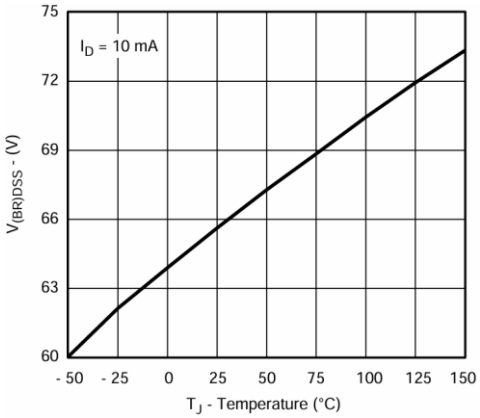


Fig 13. Threshold Voltage

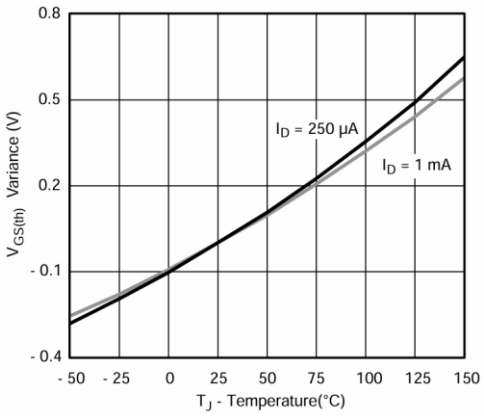


Fig 14. Max. Drain Current vs. Case Temperature

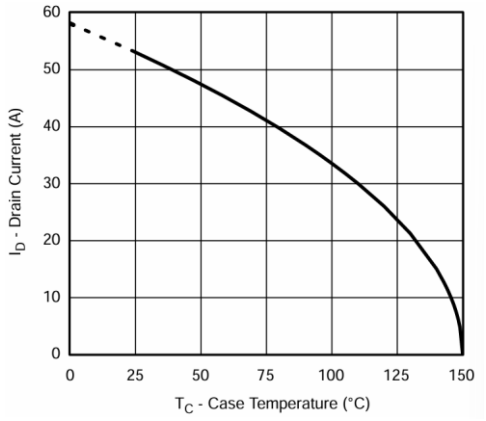


Fig 15. Power Derating, Junction-to-Case

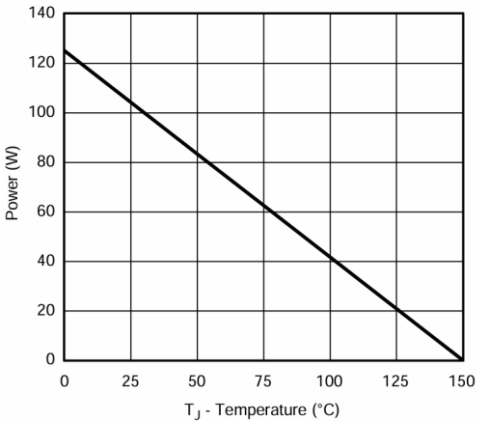


Fig 16. Safe Operating Area, Junction-to-Case

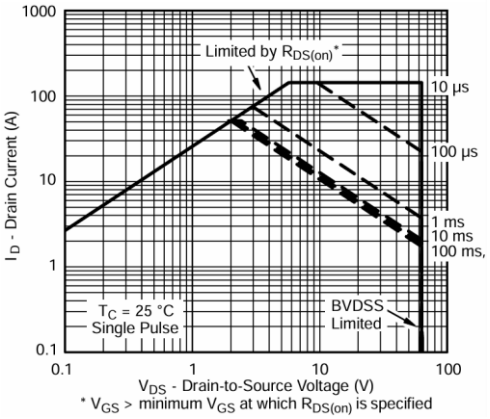
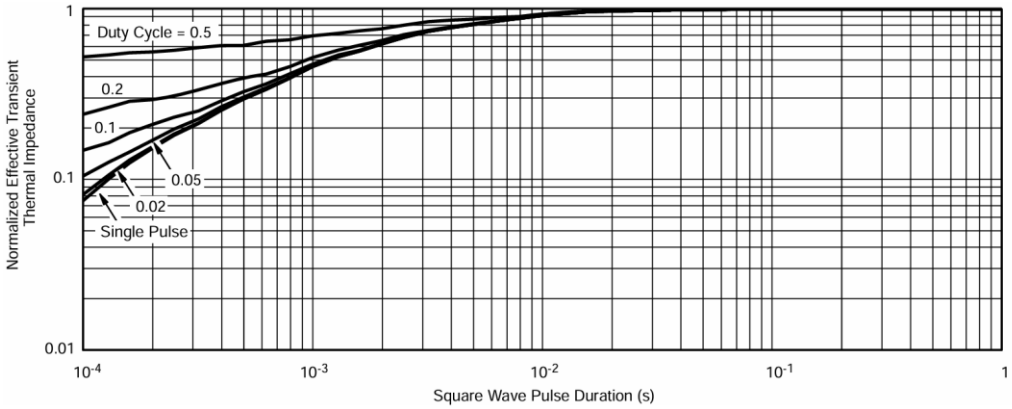
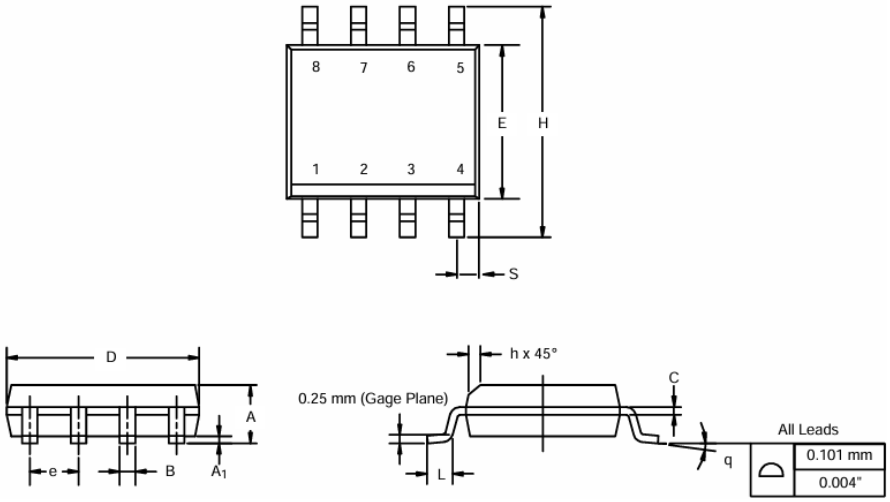


Fig 17. Normalized Thermal Transient Impedance, Junction-to-Case



PACKAGE INFORMATION

Dimension in SOP8 (Unit: mm)



Symbol	Millimeters	
	Min.	Max.
A	1.350	1.750
A1	0.100	0.200
B	0.350	0.510
C	0.190	0.250
D	4.800	5.000
E	3.800	4.000
e	1.270 BSC.	
H	5.800	6.200
h	0.250	0.500
L	0.500	0.930
q	0°	8°
S	0.440	0.640

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