



DESCRIPTION

AM7408 is available in a DFN8 (3x3) package.

ORDERING INFORMATION

Package Type	Part Number	
DFN8(3x3) SPQ: 3,000pcs/ Reel	J8	AM7408J8R
		AM7408J8VR
Note	V: Halogen free Package R: Tape & Reel	
AiT provides all RoHS products		

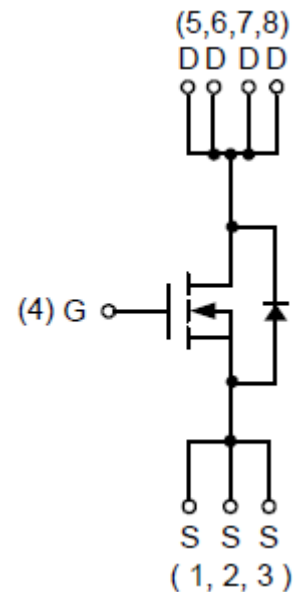
FEATURES

- 30V/23A,
 $R_{DS(ON)} = 21m\Omega(\text{max.}) @ V_{GS} = 10V$
 $R_{DS(ON)} = 30m\Omega(\text{max.}) @ V_{GS} = 4.5V$
- Provide Excellent $Q_{gd} \times R_{DS(ON)}$
- Reliable and Rugged
- 100% UIS Tested
- Available in a DFN8 (3x3) package.

APPLICATION

- Power Management in Notebook Computer, Portable Equipment and Battery Powered Systems.

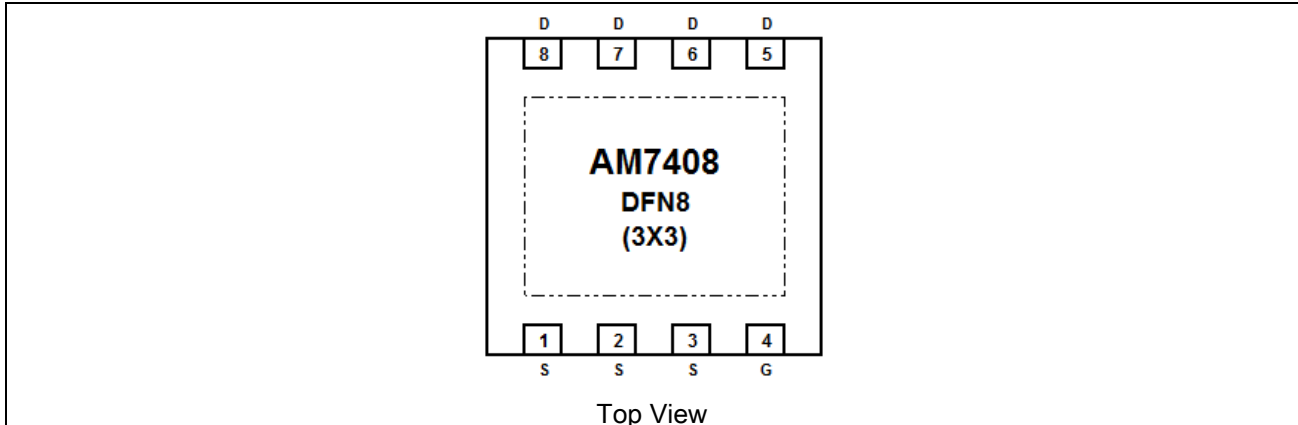
PIN DESCRIPTION



N-Channel MOSFET



PIN DESCRIPTION



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 NOTE1, Continuous Drain Current (V _{GS} =10V)	T _A =25°C	7A
	T _A =70°C	5.6A
I _{DM} NOTE1, Pulsed Drain Current (V _{GS} =10V)		28A
I _D NOTE3, Continuous Drain Current (V _{GS} =10V)	T _C =25°C	23A
	T _C =70°C	19A
I _S NOTE1, Diode Continuous Forward Current		1.5A
I _{AS} NOTE2, Avalanche Current, Single pulse	L=0.5mH	7A
E _{AS} NOTE2, Avalanche Energy, Single pulse	L=0.5mH	12.25mJ
T _J , Maximum Junction Temperature		150°C
T _{STG} , Storage Temperature Range		-55°C~150°C
P _D NOTE1, Maximum Power Dissipation	T _A =25°C	1.56W
	T _A =70°C	1W
P _D NOTE3, Maximum Power Dissipation	T _C =25°C	17.8W
	T _C =70°C	11.4W
R _{θJA} NOTE1, Thermal Resistance-Junction to Ambient	t ≤ 10s	50°C/W
	Steady State	80°C/W
R _{θJC} NOTE3, Thermal Resistance-Junction to Case	Steady State	7°C/W

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.

NOTE1: Surface Mounted on 1in² pad area, t ≤ 10sec.

NOTE2: UIS tested and pulse width limited by maximum junction temperature 150°C (initial temperature T_J=25°C).

NOTE3: The power dissipation P_D is based on T_{J(MAX)} = 150°C, and it is useful for reducing junction-to-case thermal resistance (R_{θJC}) when additional heat sink is used.



ELECTRICAL CHARACTERISTICS

T_A = 25°C, unless Otherwise Noted

Parameter	Symbol	Conditions	Min	Typ.	Max	Units
Static Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _{DS} =250μA	30	-	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =24V, V _{GS} =0V	-	-	1	μA
		T _J =85°C			30	
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _{DS} =250μA	1.5	1.8	2.5	V
Gate Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V	-	-	±100	nA
Drain-Source On-state Resistance	R _{DS(ON)} NOTE4	V _{GS} =10V, I _{DS} =8A	-	17	21	mΩ
		T _J =125°C	-	25.5	-	
		V _{GS} =4.5V, I _{DS} =5A	-	23	30	
Diode Characteristics						
Diode Forward Voltage	V _{SD} NOTE4	I _{SD} =1A, V _{GS} =0V	-	0.75	1.1	V
Reverse Recovery Time	t _{rr} NOTE5	I _{SD} =8A, dI _{SD} /dt=100A/μs	-	12	-	ns
Charge Time	t _a		-	6.2	-	
Discharge Time	t _b		-	5.8	-	
Reverse Recovery Charge	Q _{rr} NOTE5		-	3.7	-	
Dynamic Characteristics NOTE5						
Gate Resistance	R _G	V _{GS} =0V, V _{DS} =0V, f=1MHz	1	1.5	3	Ω
Input Capacitance	C _{iss}	V _{GS} =0V, V _{DS} =15V, Frequency=1.0MHz	300	415	550	pF
Output Capacitance	C _{oss}		50	70	100	
Reverse Transfer Capacitance	C _{rss}		30	40	60	
Turn-on Delay Time	t _{d(on)}	V _{DD} =15V, R _L =15Ω I _{DS} =1A, V _{GEN} =10V, R _G =6Ω	-	5.5	9	ns
Turn-on Rise Time	t _r		-	9	18	
Turn-off Delay Time	t _{d(off)}		-	14	25	
Turn-off Fall Time	t _f		-	3.6	7	
Gate Charge Characteristics NOTE5						
Total Gate Charge	Q _g	V _{DS} =15V, V _{GS} =4.5V, I _{DS} =8A	-	8	13	nC
Total Gate Charge	Q _g	V _{DS} =15V, V _{GS} =10V, I _{DS} =8A	-	3.8	5.5	
Threshold Gate Charge	Q _{gth}		-	0.4	0.7	
Gate-Source Charge	Q _{gs}		-	1.1	1.8	
Gate-Drain Charge	Q _{gd}		-	1.6	2.1	

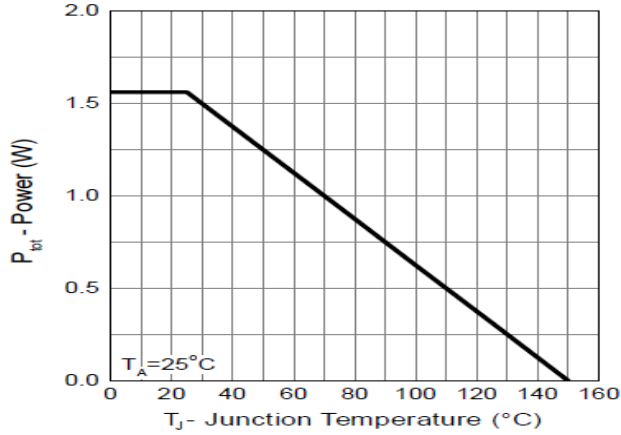
NOTE4: Pulse test; pulse width ≤ 300 ms, duty cycle ≤ 2%.

NOTE5: Guaranteed by design, not subject to production testing.

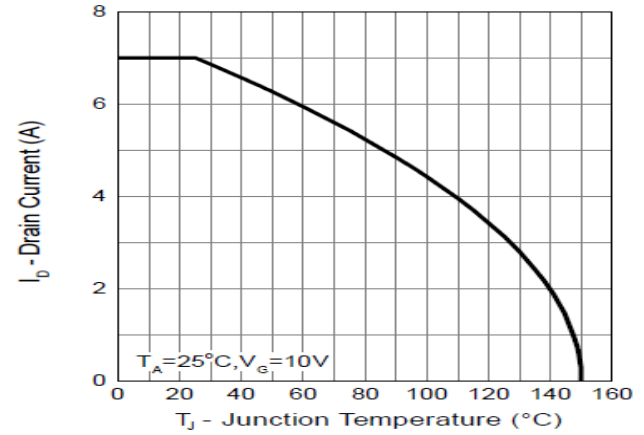


TYPICAL CHARACTERISTICS

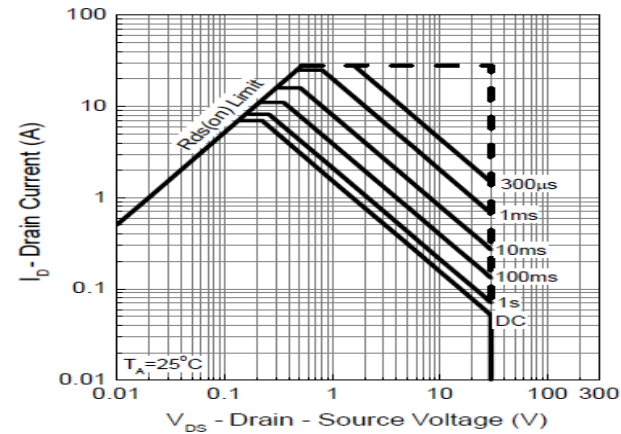
1. Power Dissipation



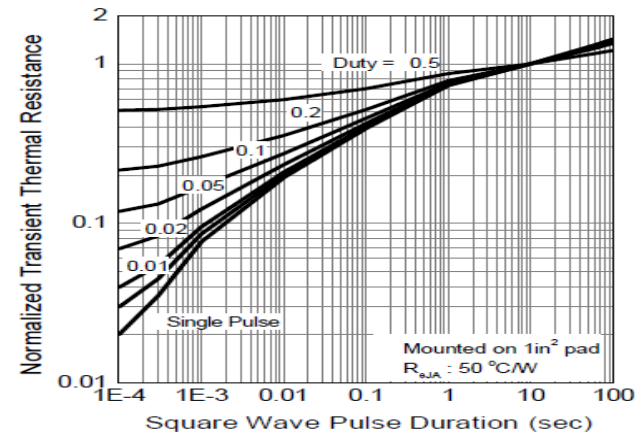
2. Drain Current



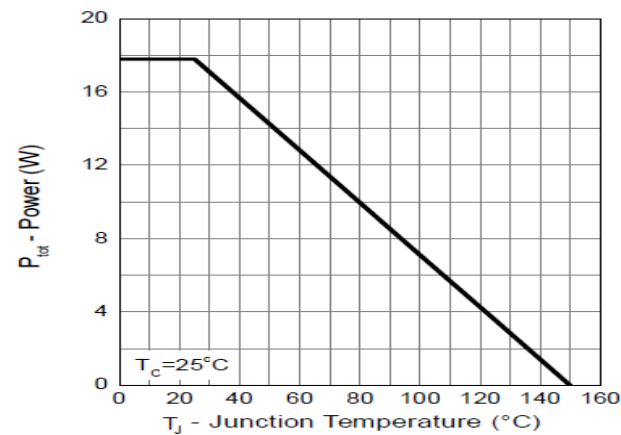
3. Safe Operation Area



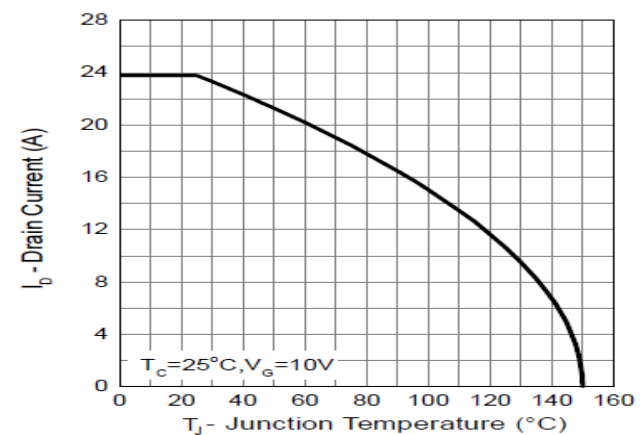
4. Thermal Transient Impedance



5. Power Dissipation

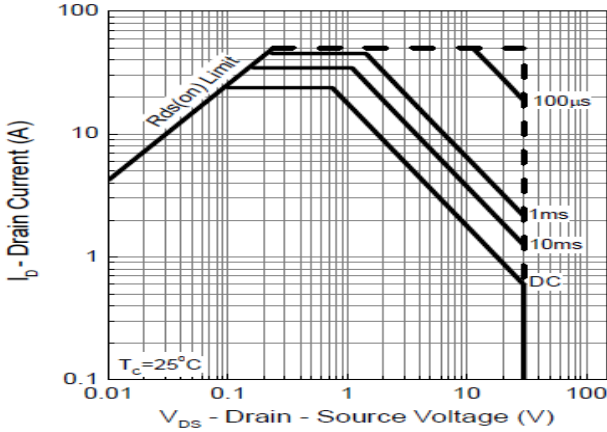


6. Drain Current

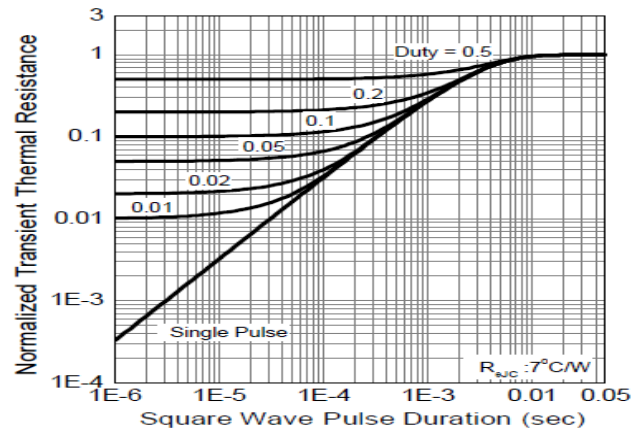




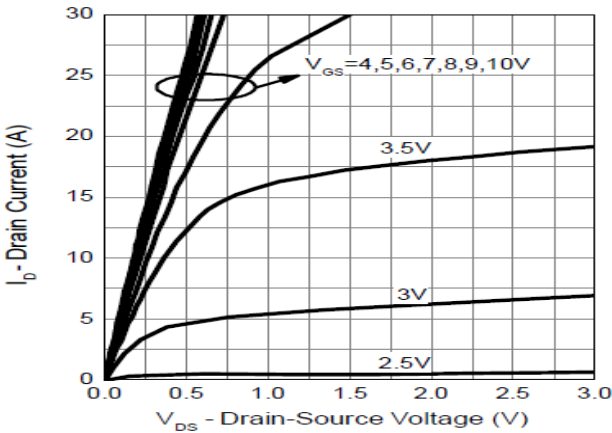
7. Safe Operation Area



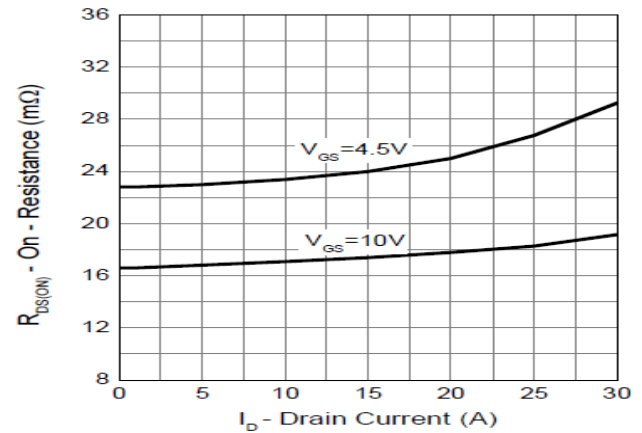
8. Thermal Transient Impedance



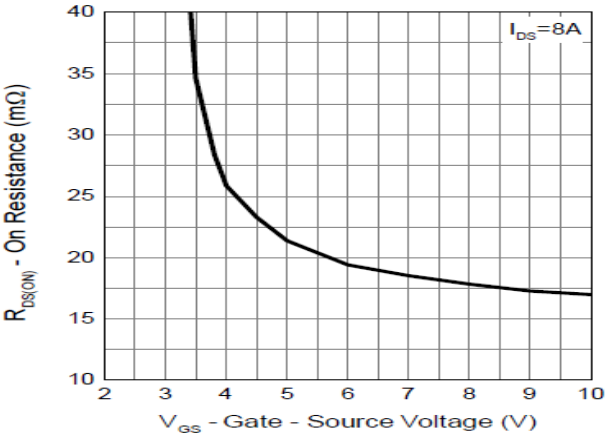
9. Output Characteristics



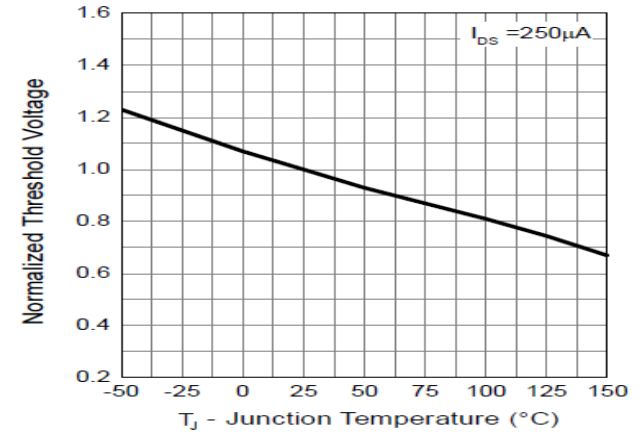
10. Drain-Source On Resistance



11. Gate-Source On Resistance

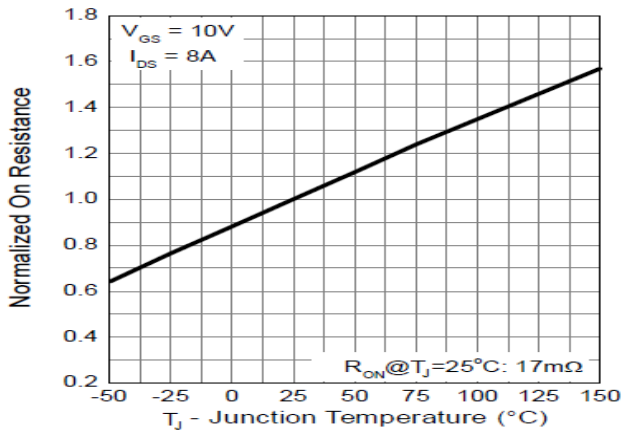


12. Gate Threshold Voltage

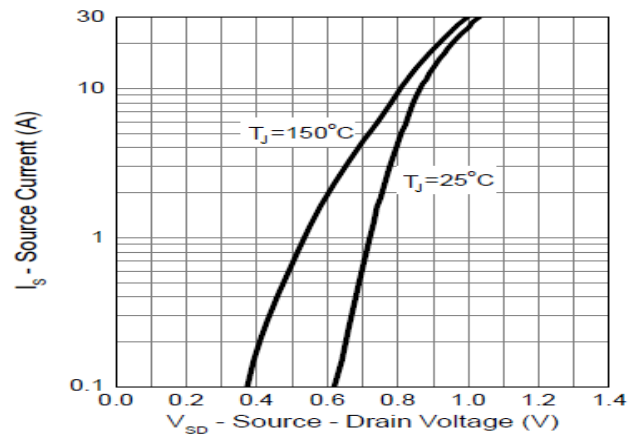




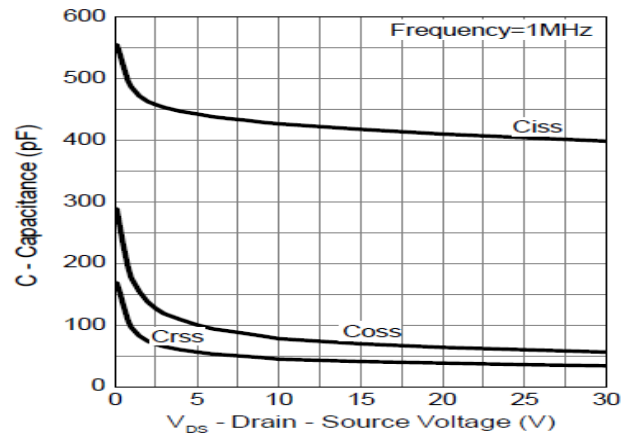
13. Drain-Source On Resistance



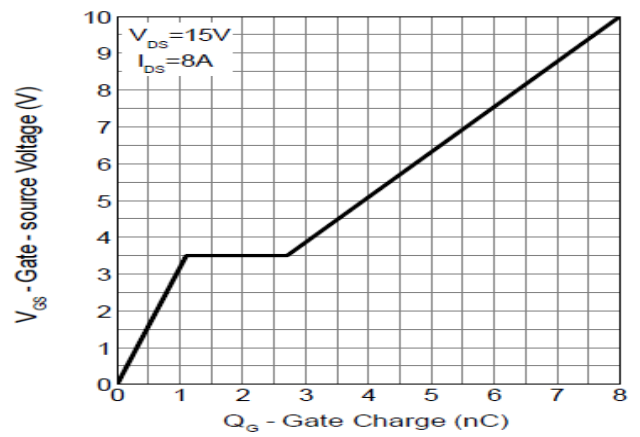
14. Source-Drain Diode Forward



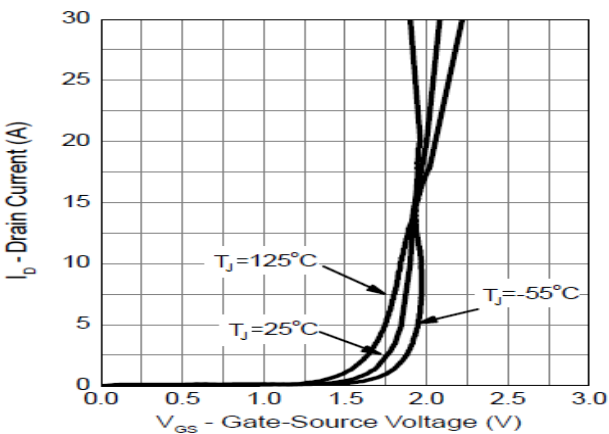
15. Capacitance



16. Gate Charge



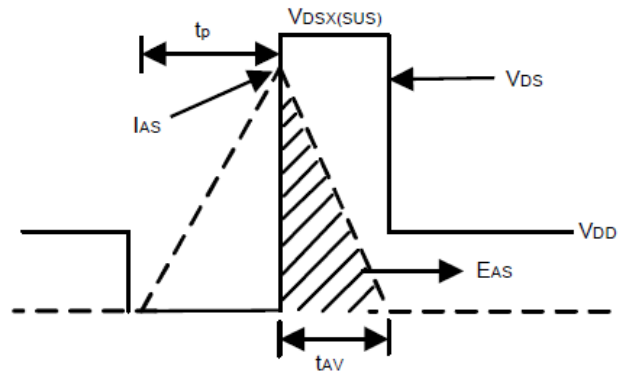
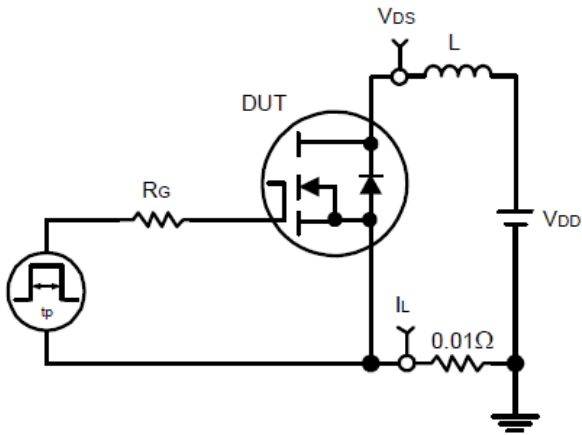
17. Transfer Characteristics



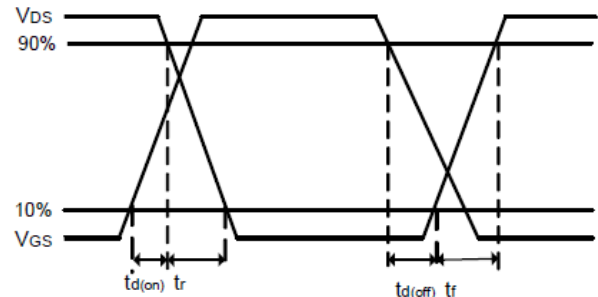
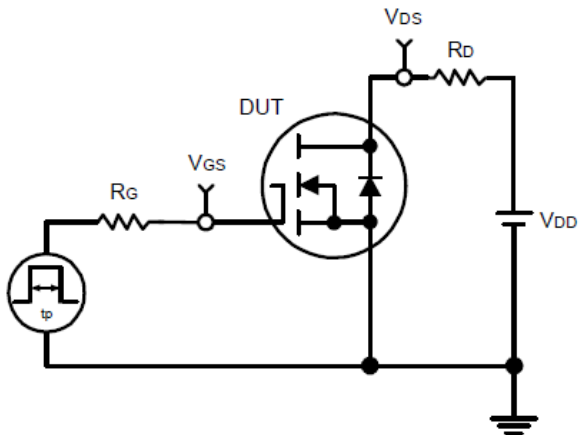


DETAILED INFORMATION

Avalanche Test Circuit and Waveforms



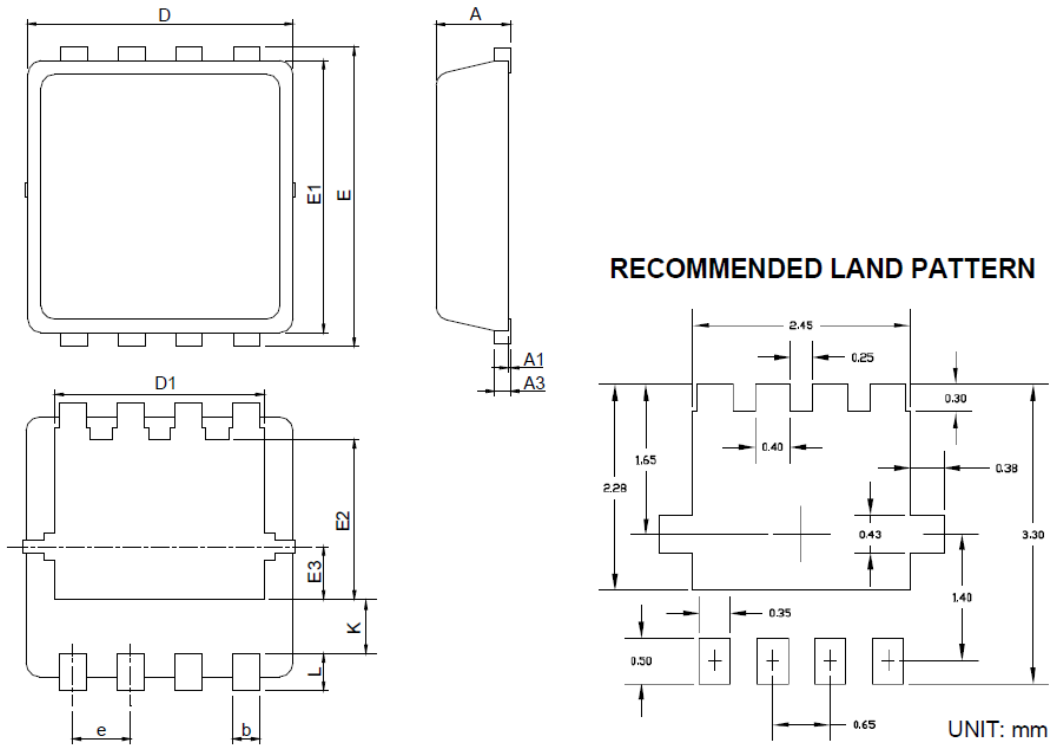
Switching Time Test Circuit and Waveforms





PACKAGE INFORMATION

Dimension in DFN8(3x3) Package (Unit: mm)



Symbol	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	0.80	1.00	0.031	0.039
A1	0.00	0.05	0.000	0.002
A3	0.10	0.25	0.004	0.010
b	0.24	0.35	0.009	0.014
D	2.90	3.10	0.114	0.122
D1	2.25	2.45	0.089	0.096
E	3.10	3.30	0.122	0.130
E1	2.90	3.10	0.114	0.122
E2	1.65	1.85	0.065	0.073
E3	0.56	0.58	0.022	0.023
e	0.65 BSC		0.026 BSC	
K	0.475	0.775	0.019	0.031
L	0.30	0.50	0.012	0.020



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