DESCRIPTION

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

FEATURES

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

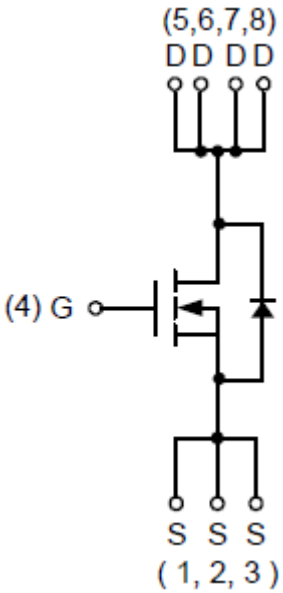
ORDERING INFORMATION

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		

APPLICATION

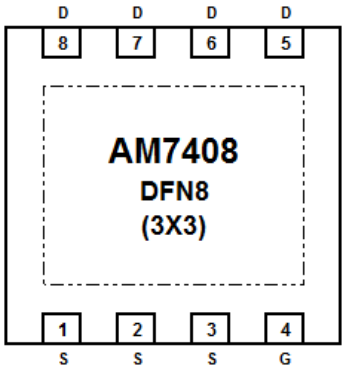
- Power Management in Notebook Computer, Portable Equipment and Battery Powered Systems.

PIN DESCRIPTION



N-Channel MOSFET

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℃, 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℃	7A
	T_A=70℃	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℃
T_{STG}, Storage Temperature Range		-55℃~150℃
P_D NOTE1, Maximum Power Dissipation	T_A=25°C	1.56W
	T_A=70℃	1W
P_D NOTE3, Maximum Power Dissipation	T_C=25°C	17.8W
	T_C=70°C	11.4W
$R_{\theta JA}$NOTE1, Thermal Resistance-Junction to Ambient	t ≤ 10s	50°C/W
	Steady State	80°C/W
$R_{\theta JC}$ 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 ($R_{\theta JC}$) when additional heat sink is used.

ELECTRICAL CHARACTERISTICS

T_A = 25°C, unless Otherwise Noted

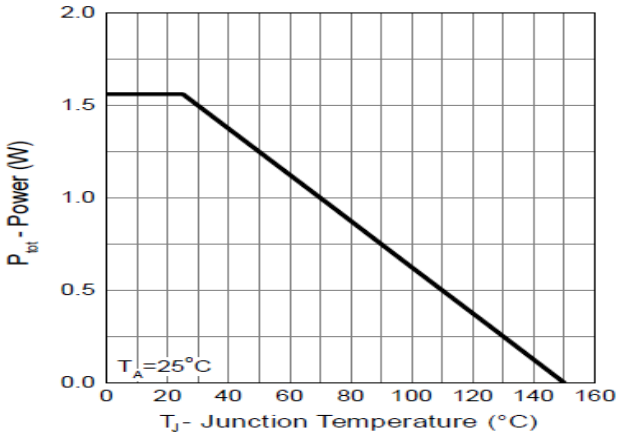
Parameter	Symbol	Conditions	Min	Typ.	Max	Units
Static Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V,I_{DS}=250μA	30	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=24V,V_{GS}=0V	-	-	1	μA
		T_J=85°C			30	
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_{DS}=250μA	1.5	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	-	nC
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,	300	415	550	pF
Output Capacitance	C_{oss}	V_{DS}=15V,	50	70	100	
Reverse Transfer Capacitance	C_{rss}	Frequency=1.0MHz	30	40	60	
Turn-on Delay Time	$t_{d(on)}$	V_{DD}=15V, R_L=15Ω	-	5.5	9	ns
Turn-on Rise Time	t_r	I_{DS}=1A, V_{GEN}=10V,	-	9	18	
Turn-off Delay Time	$t_{d(off)}$	R_G=6Ω	-	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%.

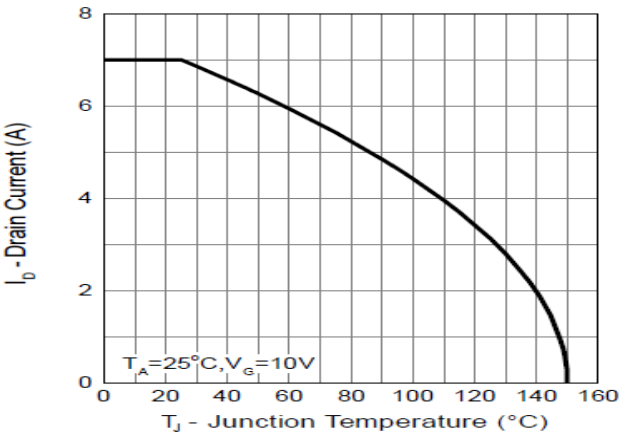
NOTE5: Guaranteed by design, not subject to production testing.

TYPICAL CHARACTERISTICS

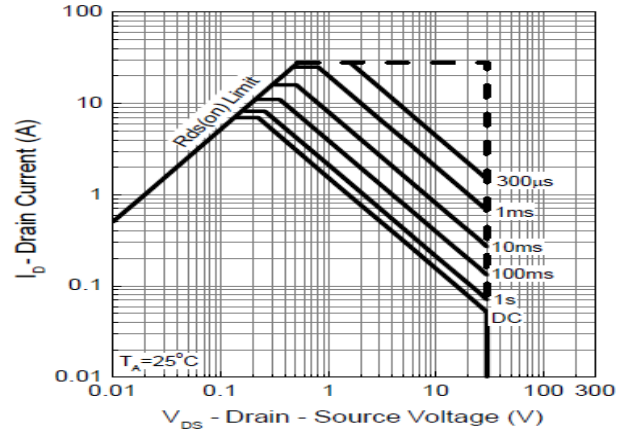
1. Power Dissipation



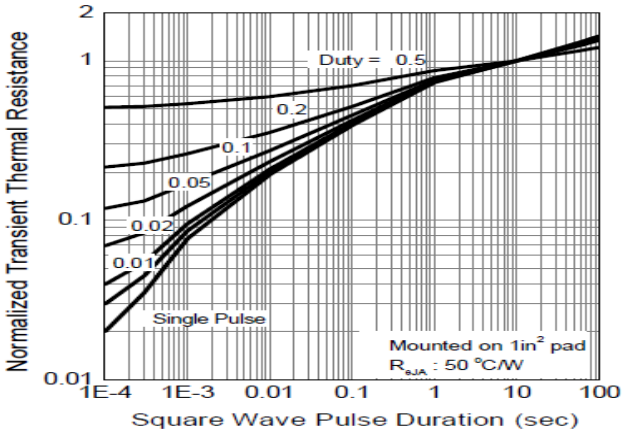
2. Drain Current



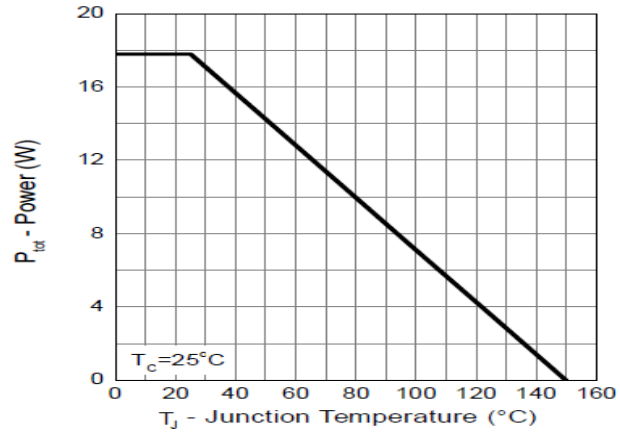
3. Safe Operation Area



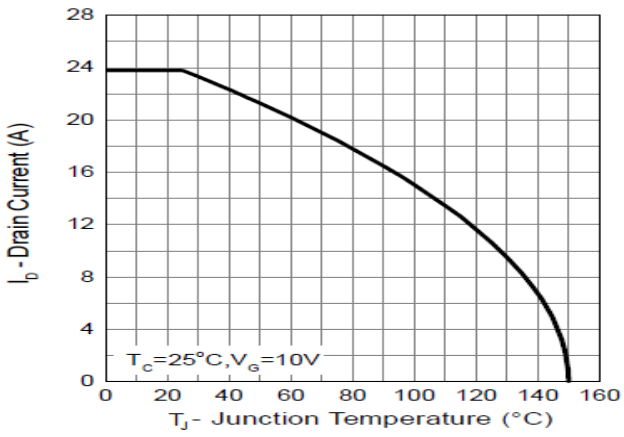
4. Thermal Transient Impedance



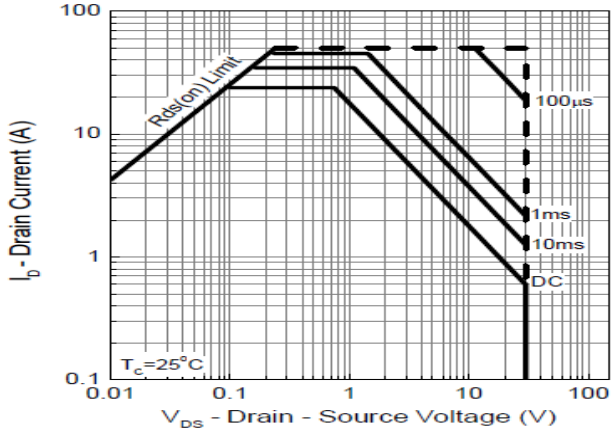
5. Power Dissipation



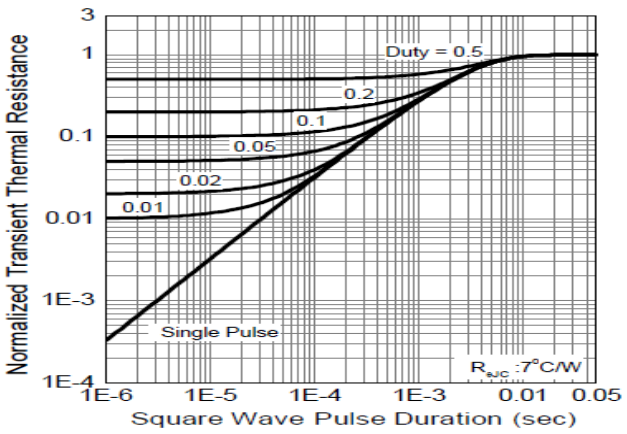
6. Drain Current



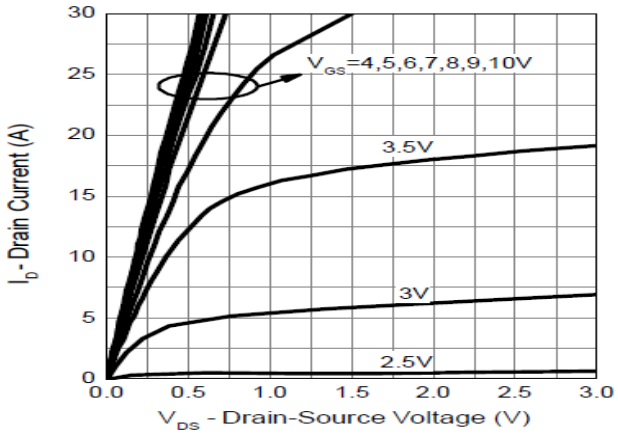
7. Safe Operation Area



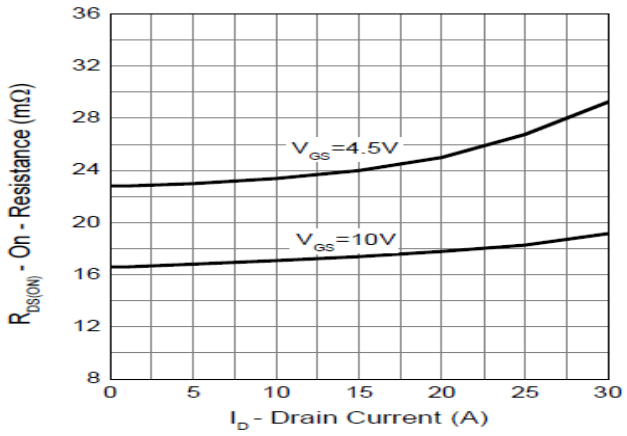
8. Thermal Transient Impedance



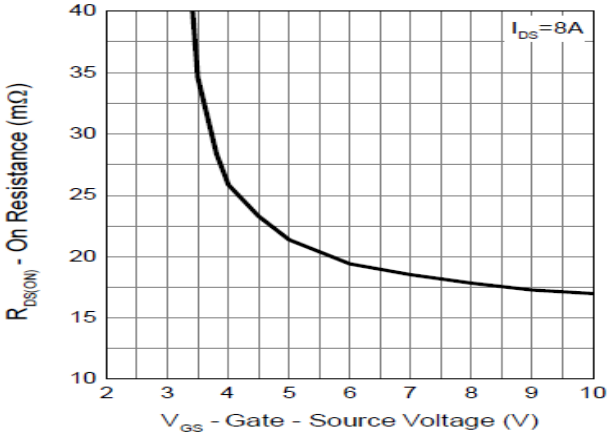
9. Output Characteristics



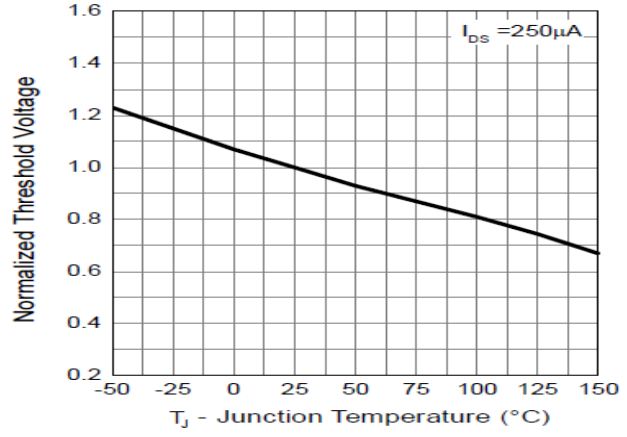
10. Drain-Source On Resistance



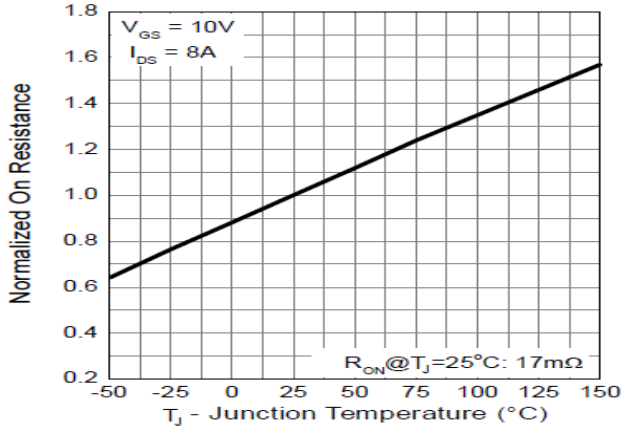
11. Gate-Source On Resistance



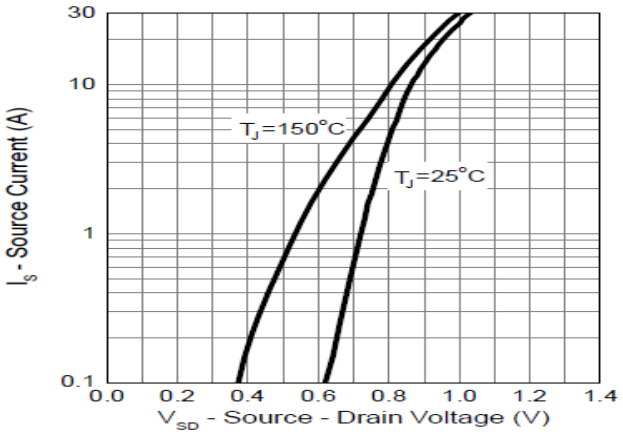
12. Gate Threshold Voltage



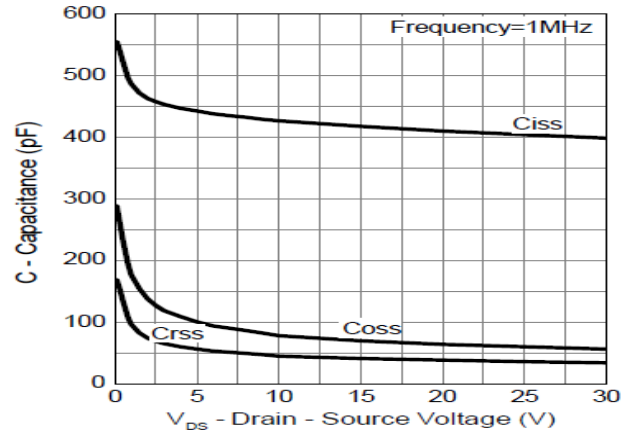
13. Drain-Source On Resistance



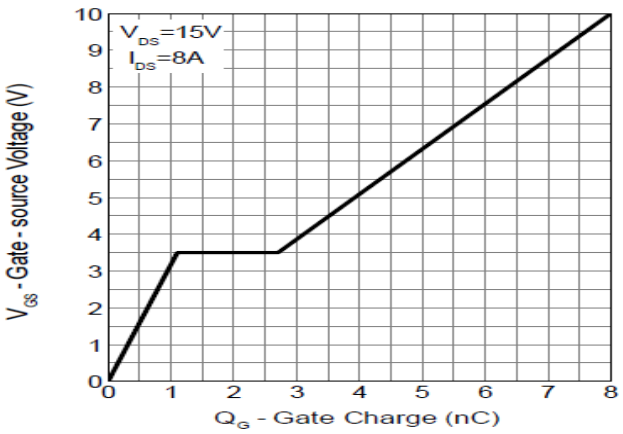
14. Source-Drain Diode Forward



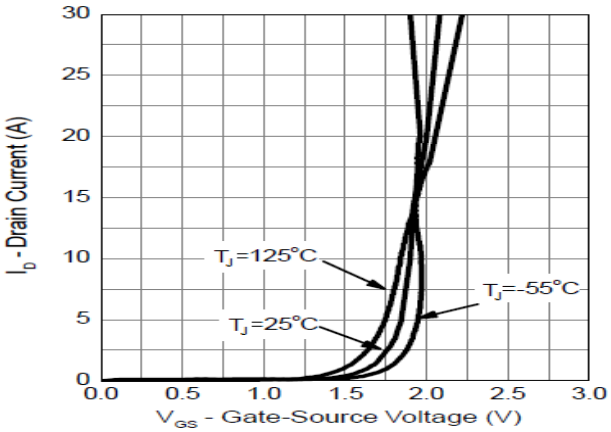
15. Capacitance



16. Gate Charge

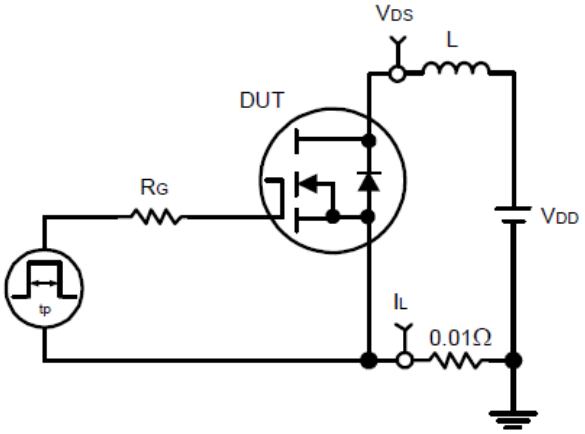


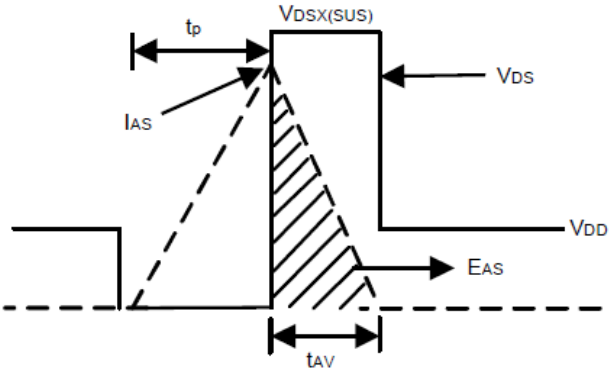
17. Transfer Characteristics



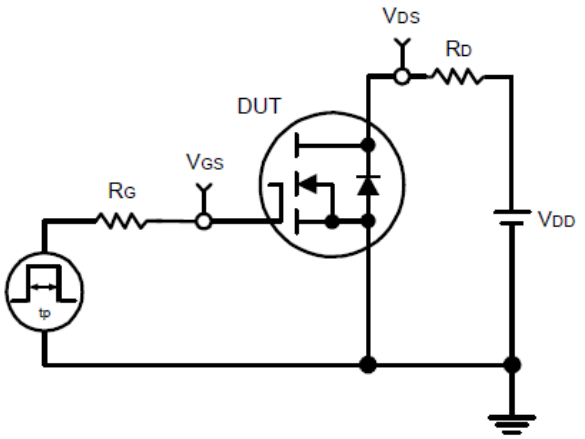
DETAILED INFORMATION

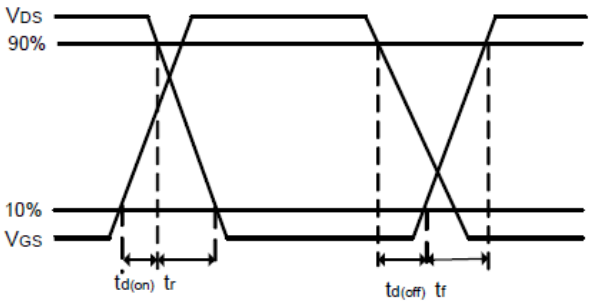
Avalanche Test Circuit and Waveforms





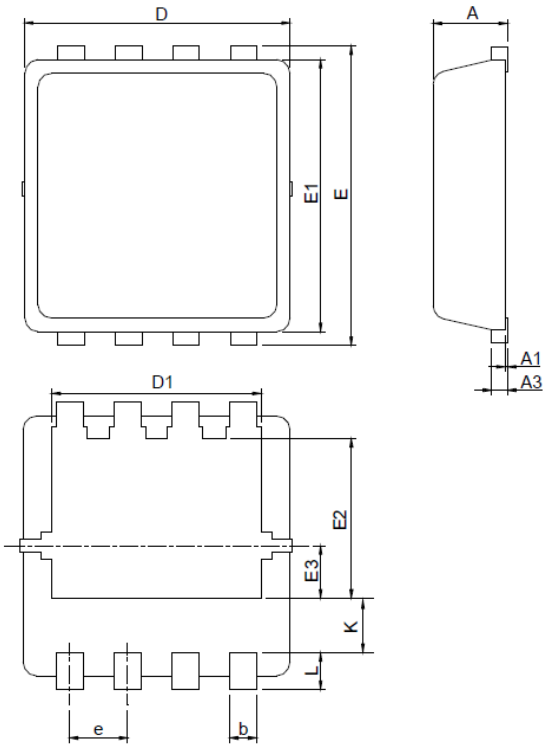
Switching Time Test Circuit and Waveforms

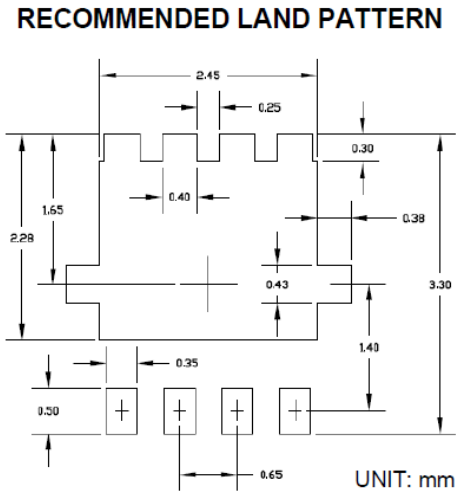




PACKAGE INFORMATION

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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