

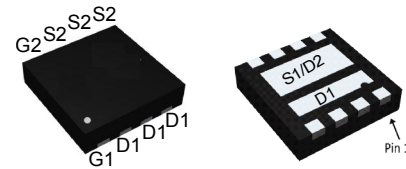
Features

- Channel 1**
30V/20A,
 $R_{DS(ON)} = 11.8m\Omega$ (max.) @ $V_{GS} = 10V$
 $R_{DS(ON)} = 16.9m\Omega$ (max.) @ $V_{GS} = 4.5V$
- Channel 2**
30V/20A,
 $R_{DS(ON)} = 11.8m\Omega$ (max.) @ $V_{GS} = 10V$
 $R_{DS(ON)} = 16.9m\Omega$ (max.) @ $V_{GS} = 4.5V$
- 100% UIS Tested
- Reliable and Rugged
- Lead Free Available (RoHS Compliant)

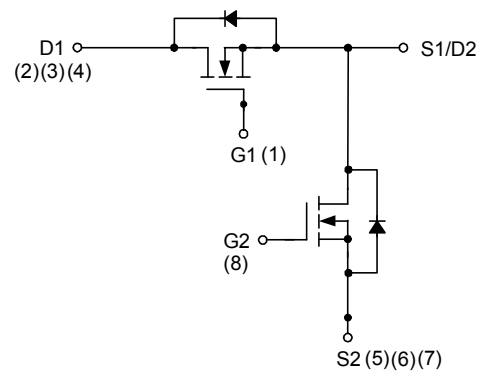
Applications

- Power Management in Desktop Computer or DC/DC Converters.

Pin Description



TDFN3x3-8_EP2



N-Channel MOSFET

Absolute Maximum Ratings ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter		Channel 1	Channel 2	Unit
Common Ratings					
V _{DSS}	Drain-Source Voltage		30	30	V
V _{GSS}	Gate-Source Voltage		±20	±20	
T _J	Maximum Junction Temperature		150		°C
T _{STG}	Storage Temperature Range		-55 to 150		
I _S	Diode Continuous Forward Current	T _C =25°C	8	8	A
I _D ^a	Continuous Drain Current	T _C =25°C	20 ^a	20 ^a	A
I _{DM} ^b	Pulse Drain Current Tested	T _C =25°C	96 ^b	96 ^b	A
P _D	Maximum Power Dissipation	T _C =25°C	23.6	23.6	W
R _{θJC}	Thermal Resistance-Junction to Case	Steady State	5.3	5.3	°C/W
I _D ^c	Continuous Drain Current	T _A =25°C	13	13	A
		T _A =70°C	10.6	10.6	
I _{DM}	Pulse Drain Current Tested	T _A =25°C	52	52	A
P _D ^c	Maximum Power Dissipation	T _A =25°C	1.9	1.9	W
		T _A =70°C	1.2	1.2	
R _{θJA} ^c	Thermal Resistance-Junction to Ambient	t ≤ 10s	66	66	°C/W
		Steady State ^c	108	108	
I _{AS} ^d	Avalanche Current, Single pulse	L=0.1mH	17.4	17.4	A
		L=0.5mH	9	9	
E _{AS} ^d	Avalanche Energy, Single pulse	L=0.1mH	15.1	15.1	mJ
		L=0.5mH	20.3	20.3	

Note a : Max. continuous current is limited by bonding wire.

Note b : Pulse width is limited by max. junction temperature.

Note c : Surface Mounted on 1in² pad area, $t \leq 10\text{s}$.

Note d : UIS tested and pulse width limited by maximum junction temperature 150 $^\circ\text{C}$ (initial temperature $T_J=25^\circ\text{C}$).

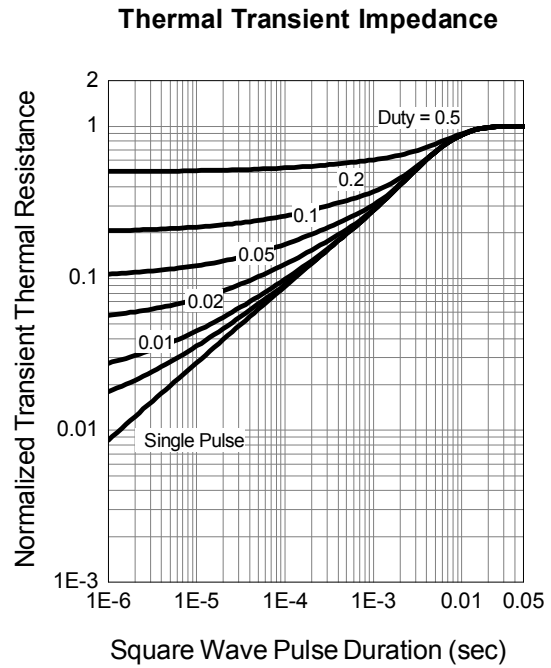
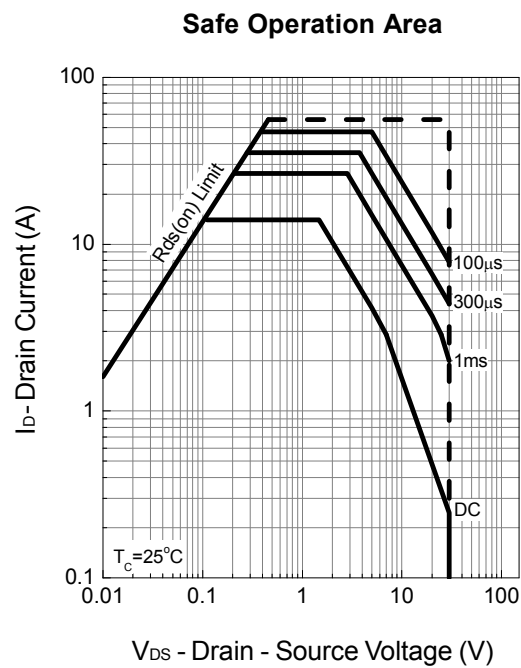
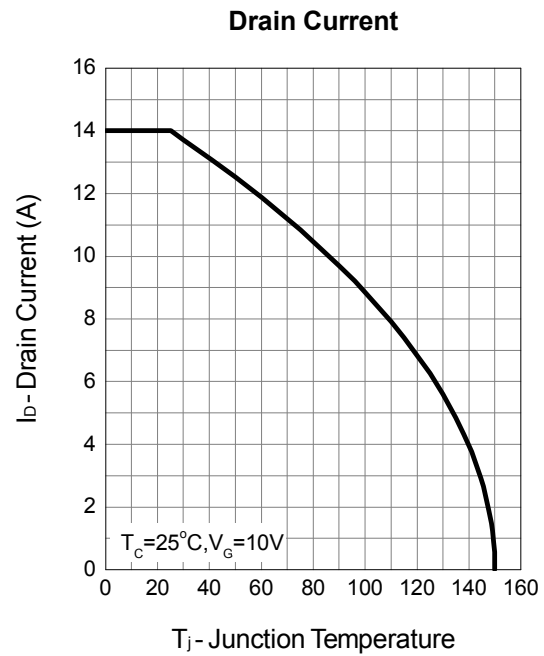
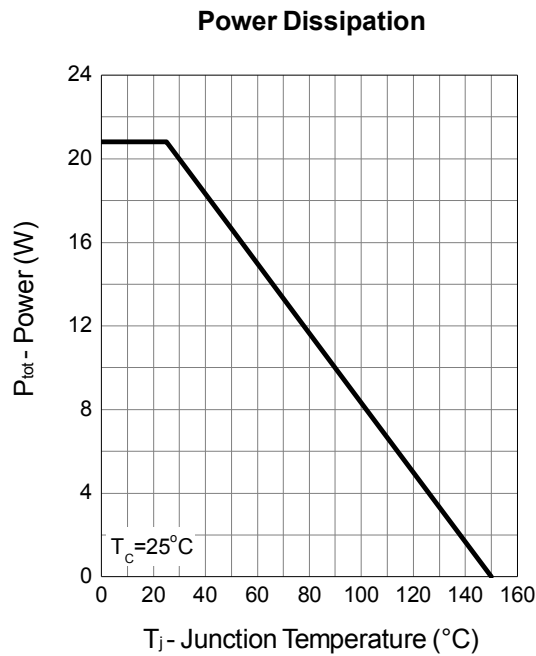
Electrical Characteristics ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Test Conditions	Channel 1			Unit
			Min.	Typ.	Max.	
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} =250μA	30	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =24V, V _{GS} =0V	-	-	1	μA
		T _J =85°C	-	-	30	
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =250μA	1.35	1.8	2.5	V
I _{GSS}	Gate Leakage Current	V _{GS} =±20V, V _{DS} =0V	-	-	±10	μA
R _{DS(ON)} ^e	Drain-Source On-state Resistance	V _{GS} =10V, I _{DS} =14A	-	9	11.8	mΩ
		V _{GS} =4.5V, I _{DS} =10A	-	13	16.9	
Diode Characteristics						
V _{SD} ^e	Diode Forward Voltage	I _{SD} =1A, V _{GS} =0V	-	0.8	1.1	V
t _{rr}	Reverse Recovery Time	I _{DS} =14A, dI _{SD} /dt=100A/μs	-	17	-	ns
Q _{rr}	Reverse Recovery Charge		-	6	-	nC
Dynamic Characteristics ^f						
R _G	Gate Resistance	V _{GS} =0V, V _{DS} =0V, F=1MHz	-	2	4	Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =15V, Frequency=1.0MHz	-	485	630	pF
C _{oss}	Output Capacitance		-	280	-	
C _{rss}	Reverse Transfer Capacitance		-	24	-	
t _{d(ON)}	Turn-on Delay Time	V _{DD} =15V, R _L =15Ω, I _{DS} =1A, V _{GEN} =10V, R _G =6Ω	-	9.6	17.3	ns
t _r	Turn-on Rise Time		-	8.8	15.8	
t _{d(OFF)}	Turn-off Delay Time		-	17.6	32	
t _f	Turn-off Fall Time		-	10.8	19.4	
Gate Charge Characteristics ^f						
Q _g	Total Gate Charge	V _{DS} =15V, V _{GS} =10V, I _{DS} =14A	-	8.3	10.8	nC
Q _{gs}	Gate-Source Charge		-	1.4	-	
Q _{gd}	Gate-Drain Charge		-	1.3	-	

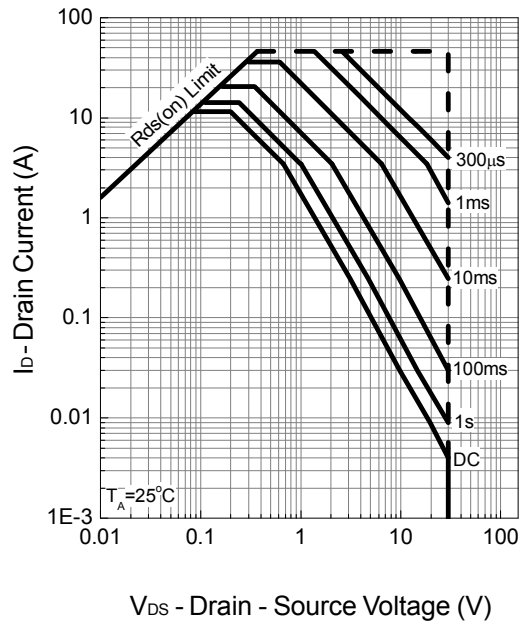
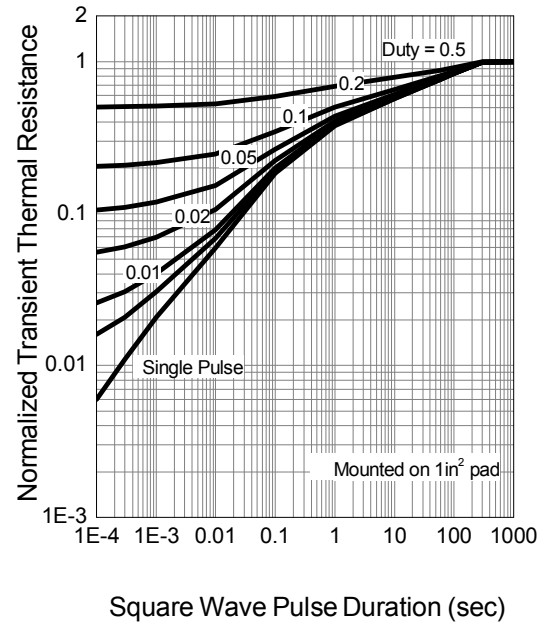
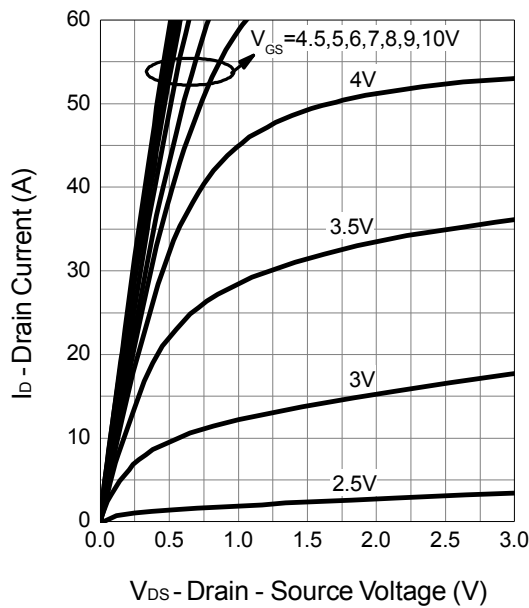
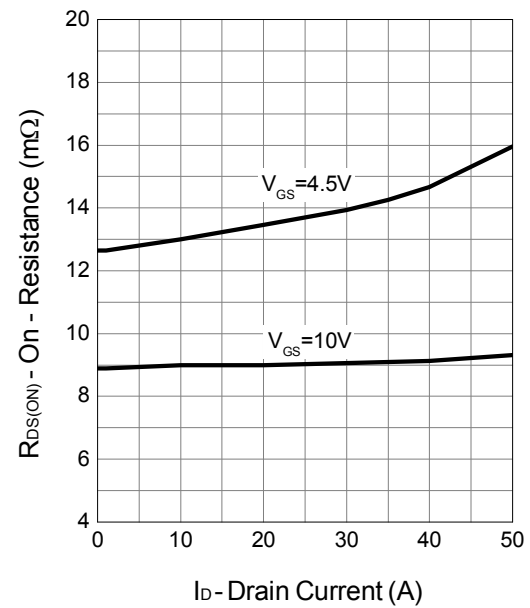
Note e : Pulse test ; pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.

Note f : Guaranteed by design, not subject to production testing.

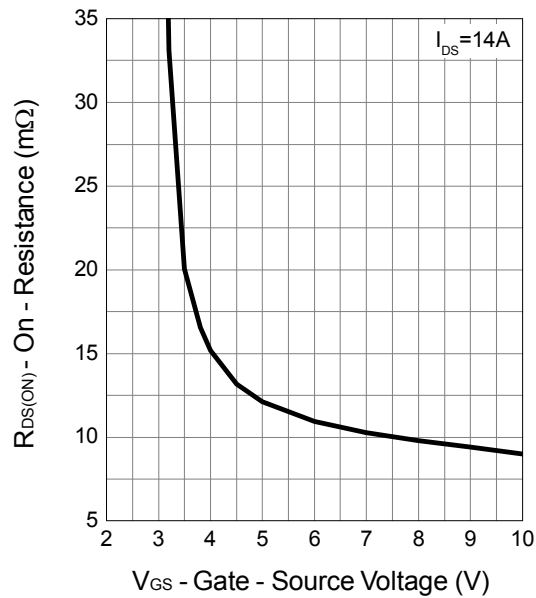
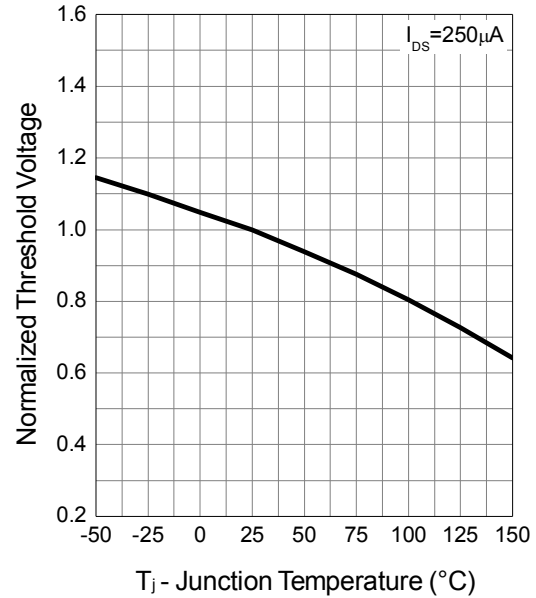
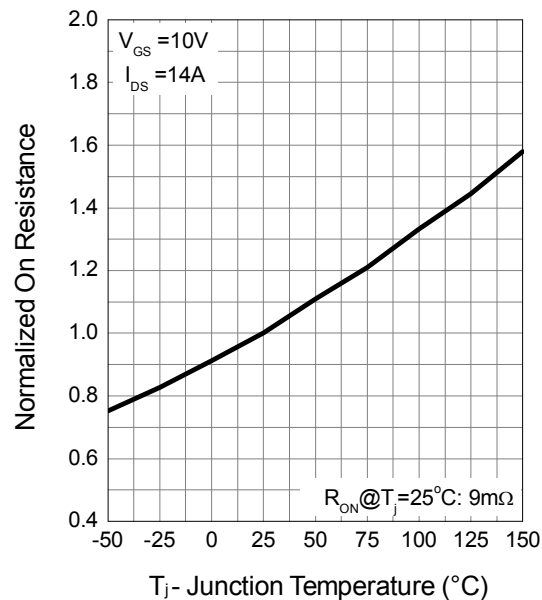
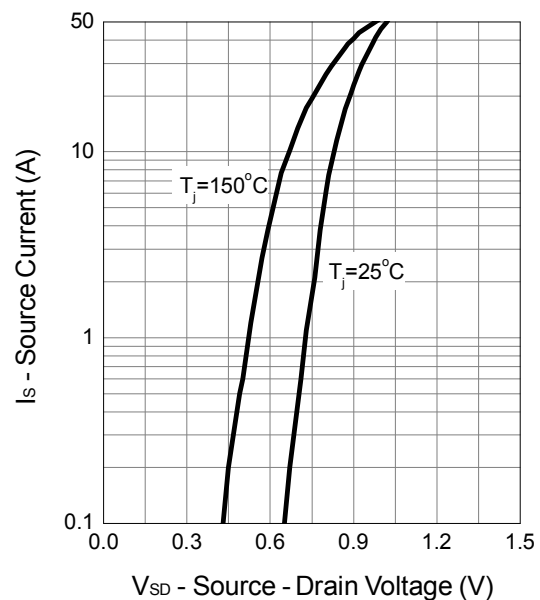
Typical Operating Characteristics



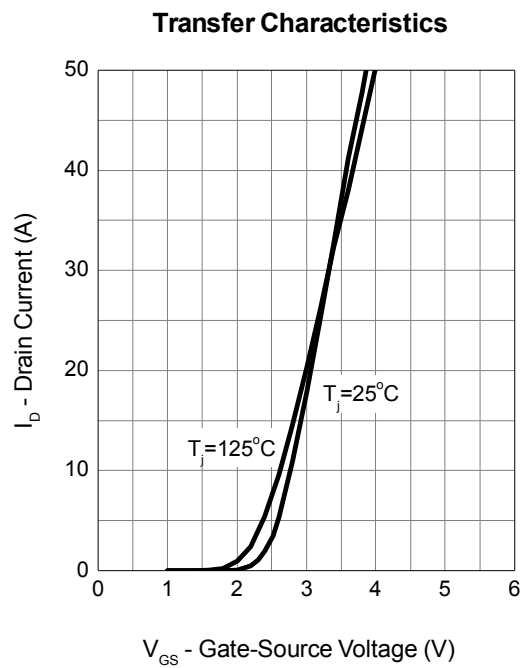
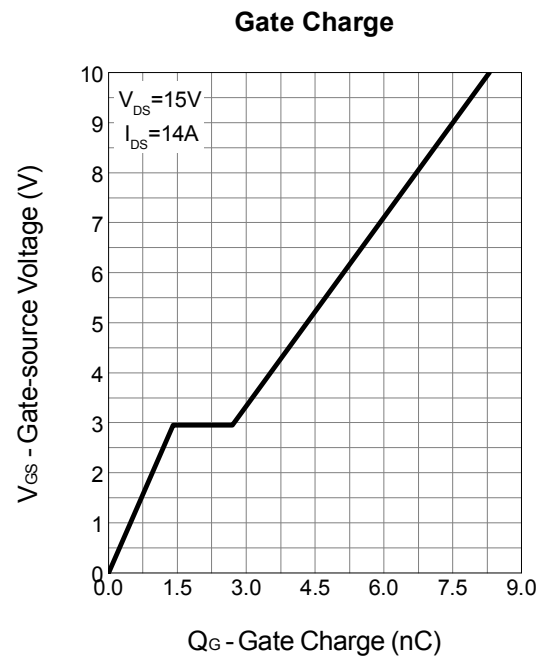
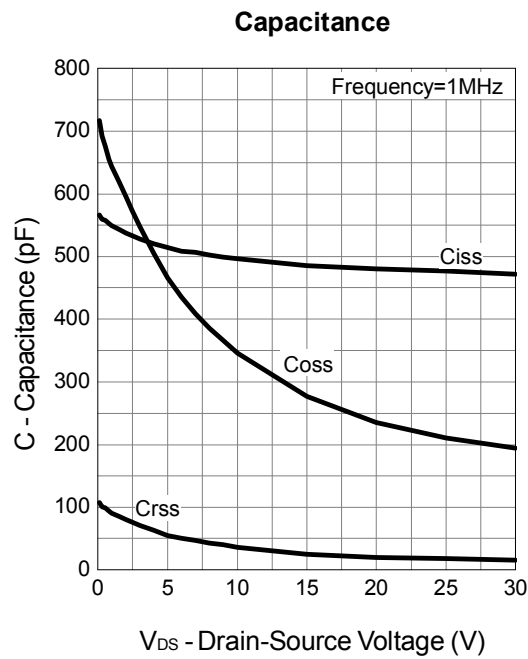
Typical Operating Characteristics (Cont.)

Safe Operation Area

Thermal Transient Impedance

Output Characteristics

Drain-Source On Resistance


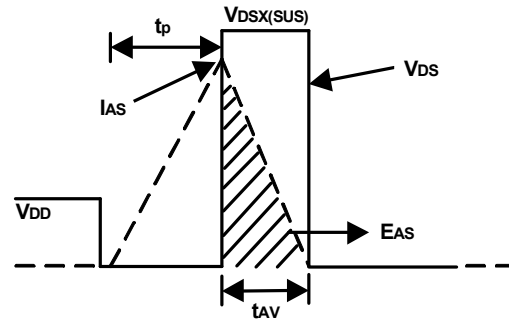
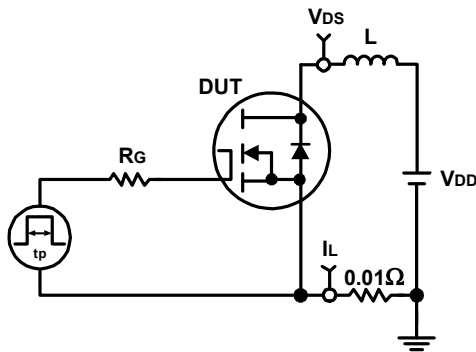
Typical Operating Characteristics (Cont.)

Gate-Source On Resistance

Gate Threshold Voltage

Drain-Source On Resistance

Source-Drain Diode Forward


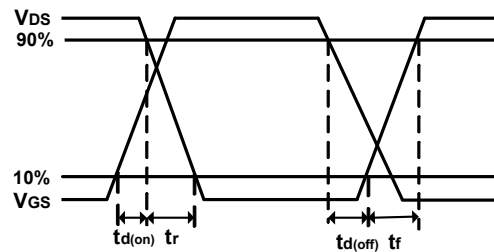
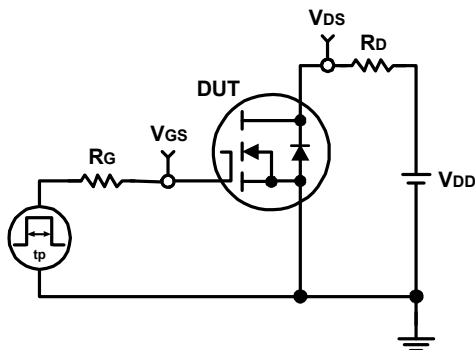
Typical Operating Characteristics (Cont.)

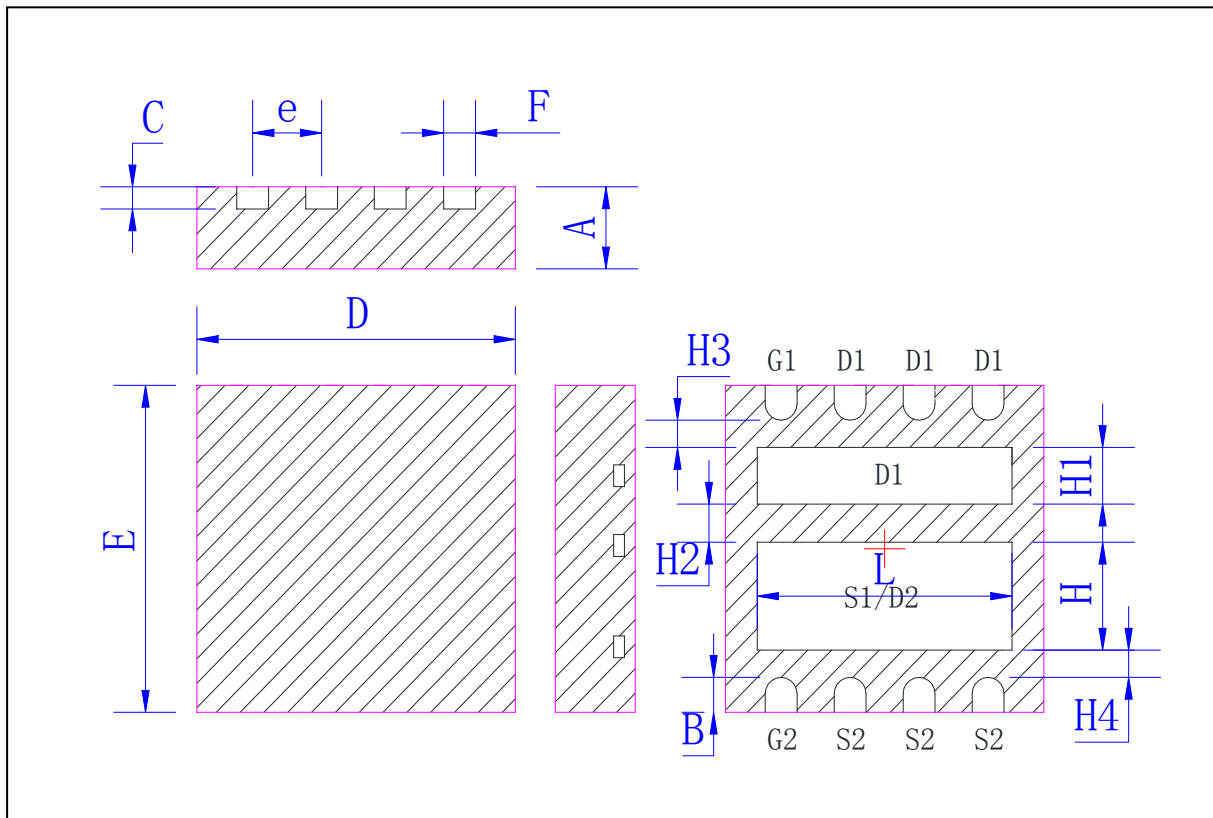


Avalanche Test Circuit and Waveforms



Switching Time Test Circuit and Waveforms



TDFN3*3-8_EP2 OUTLINE


Symbol	Min	Typ	Max
A	0.70	0.75	0.80
B	0.27	0.32	0.37
C	0.153	0.203	0.253
D	2.90	3.00	3.10
E	2.90	3.00	3.10
e	0.60	0.65	0.70
F	0.25	0.30	0.35
H	0.89	0.99	1.09
H1	0.42	0.52	0.62
H2	0.25	0.35	0.45
H3	0.15	0.25	0.35
H4	0.15	0.25	0.35
L	2.30	2.40	2.50