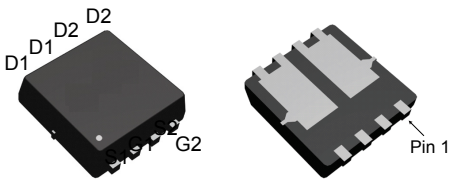
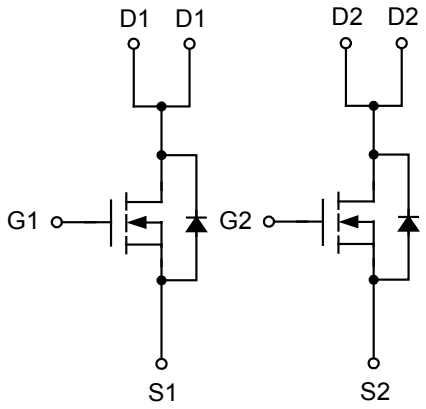
Features

- 30V/8A
  $R_{DS(ON)}$=12.8mΩ(max.)@V_{GS}=10V
  $R_{DS(ON)}$=17.6mΩ(max.)@V_{GS}=4.5V
- 100% UIS + R_g Tested
- Reliable and Rugged
- Lead Free and Green Devices Available (RoHS Compliant)



DFN3.3x3.3G-8_EP2



N-Channel MOSFET

Applications

- Motor Control.
- High Current, High Speed Switching.
- Protable equipment application.

Symbol	Parameter		Rating	Unit
Common Ratings				
V_{DSS}	Drain-Source Voltage		30	V
V_{GSS}	Gate-Source Voltage		±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 [a]	A
I_D	Continuous Drain Current	T_C=25°C	8 [a]	A
		T_C=100°C	8 [a]	
I_{DM} [b]	Pulsed Drain Current	T_C=25°C	32 [a]	A
P_D	Maximum Power Dissipation	T_C=25°C	21	W
		T_C=100°C	8.3	
$R_{\theta JC}$	Thermal Resistance-Junction to Case	Steady State	6	°C/W
I_D [c]	Continuous Drain Current	T_A=25°C	8	A
		T_A=70°C	6.4	
I_{DM} [b]	Pulsed Drain Current	T_A=25°C	32	A
P_D [c]	Maximum Power Dissipation	T_A=25°C	1.3	W
		T_A=70°C	0.83	
$R_{\theta JA}$ [c]	Thermal Resistance-Junction to Ambient	t ≤ 10s	55	°C/W
		Steady State	96	
I_{AS} [d]	Avalanche Current, Single pulse	L=0.1mH	19	A
E_{AS} [d]	Avalanche Energy, Single pulse	L=0.1mH	18	mJ

Electrical Characteristics (T_A= 25°C unless otherwise noted)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
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	1.3	1.8	2.5	V
I_{GSS}	Gate Leakage Current	V_{GS}=±20V, V_{DS}=0V	-	-	±100	nA
$R_{DS(ON)}$ [e]	Drain-Source On-state Resistance	V_{GS}=10V, I_{DS}=8A	-	10.2	12.8	mΩ
		T_J=125°C	-	16	-	
		V_{GS}=4.5V, I_{DS}=7A	-	13	17.6	
Gfs	Forward Transconductance	V_{DS}=5V, I_{DS}=8A	-	12.5	-	S
Diode Characteristics						
V_{SD} [e]	Diode Forward Voltage	I_{SD}=8A, V_{GS}=0V	-	0.82	1.2	V
t_{rr}	Reverse Recovery Time	I_{SD}=8A, dI_{SD}/dt=100A/μs	-	11.8	-	ns
t_a	Charge Time		-	7	-	
t_b	Discharge Time		-	5.5	-	
Q_{rr}	Reverse Recovery Charge		-	5	-	nC
Dynamic Characteristics [f]						
R_G	Gate Resistance	V_{GS}=0V,V_{DS}=0V,F=1MHz	-	2.1	4.2	Ω
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=15V, Frequency=1.0MHz	-	833	1083	pF
C_{oss}	Output Capacitance		-	130	-	
C_{rss}	Reverse Transfer Capacitance		-	73	-	
$t_{d(ON)}$	Turn-on Delay Time	V_{DD}=15V, R_L=15Ω, I_{DS}=1A, V_{GEN}=10V, R_G=6Ω	-	8	15	ns
t_r	Turn-on Rise Time		-	9.4	17	
$t_{d(OFF)}$	Turn-off Delay Time		-	23.4	43	
t_f	Turn-off Fall Time		-	5.2	10	
Gate Charge Characteristics [f]						
Q_g	Total Gate Charge	V_{DS}=15V, V_{GS}=10V, I_{DS}=8A	-	15.3	21.42	nC
Q_g	Total Gate Charge	V_{DS}=15V, V_{GS}=4.5V, I_{DS}=8A	-	7	-	
Q_{gth}	Threshold Gate Charge		-	1.5	-	
Q_{gs}	Gate-Source Charge		-	2.9	-	
Q_{gd}	Gate-Drain Charge		-	2.4	-	

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

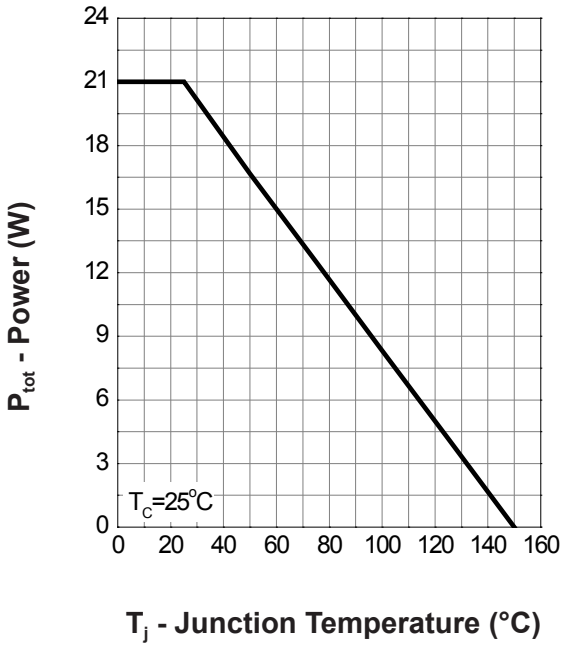
Note f：Guaranteed by design, not subject to production testing.

Package Marking and Ordering Information

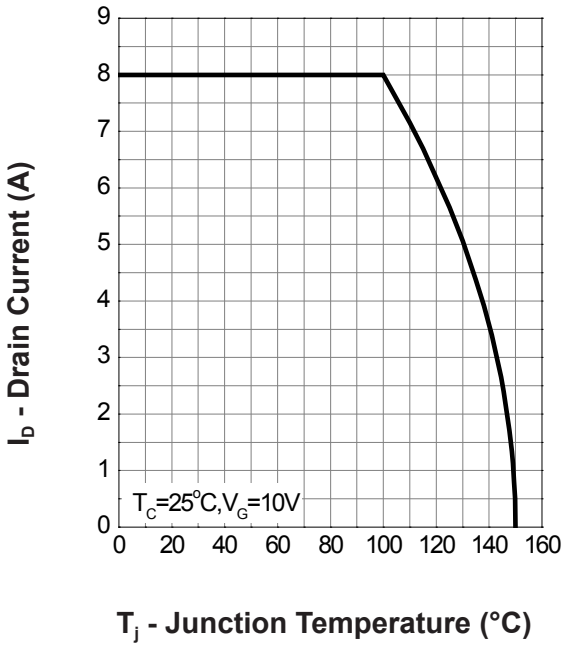
Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
XPX3016ARX	XPX3016ARX	DFN 3x3-8	-	-	5000

Typical Operating Characteristics

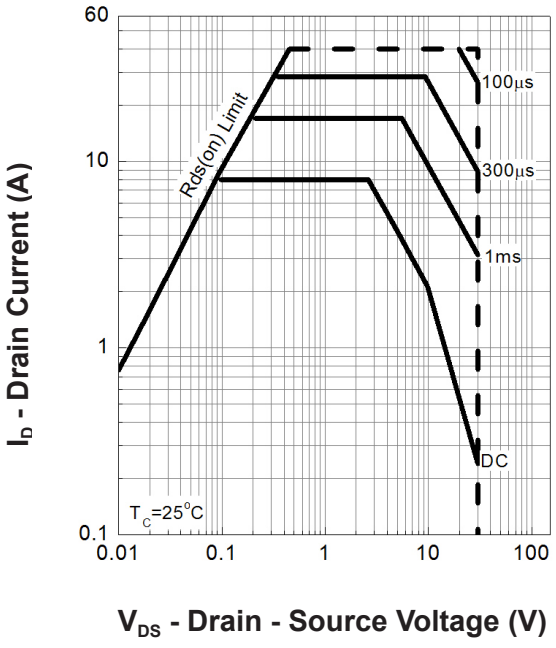
Power Dissipation



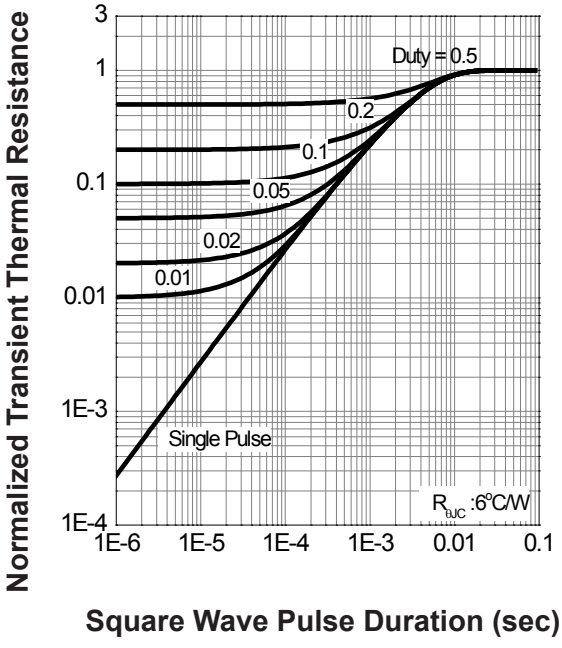
Drain Current



Safe Operation Area

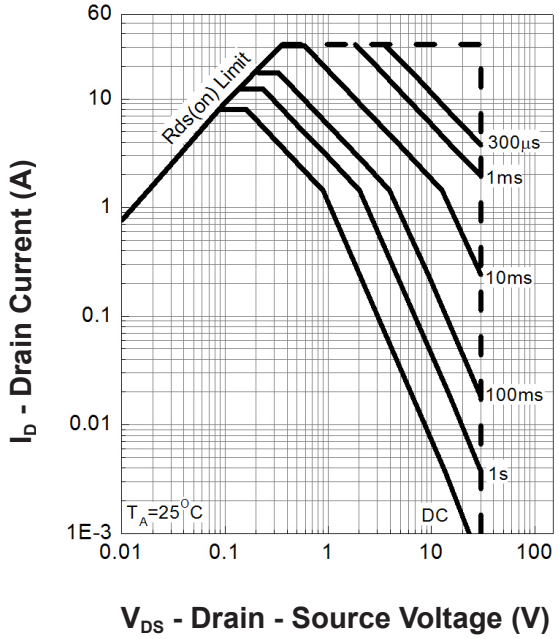


Thermal Transient Impedance

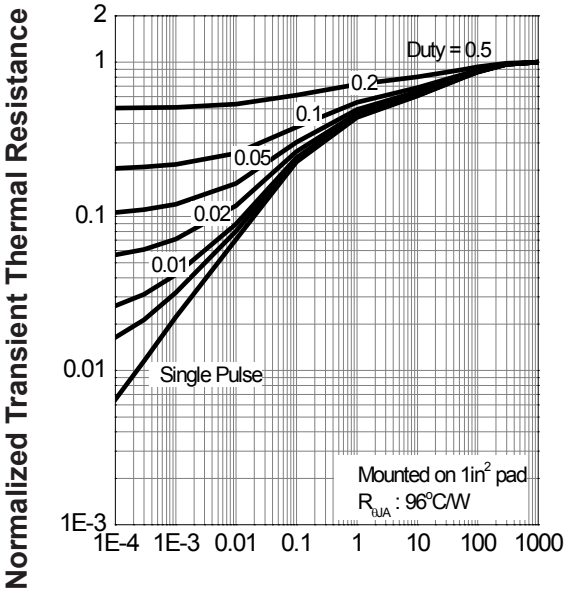


Typical Operating Characteristics(Cont.)

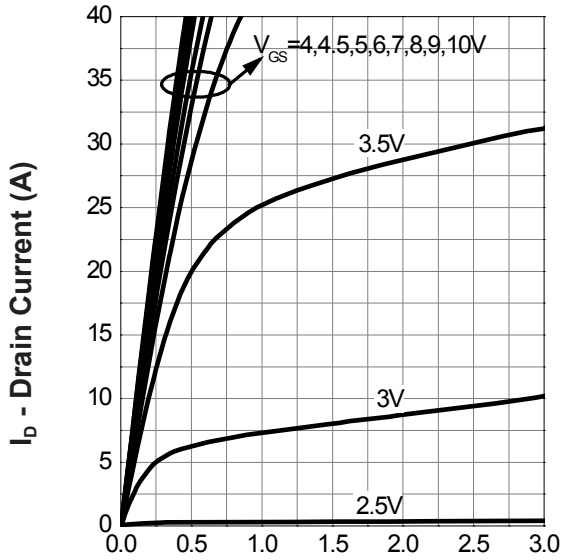
Safe Operation Area



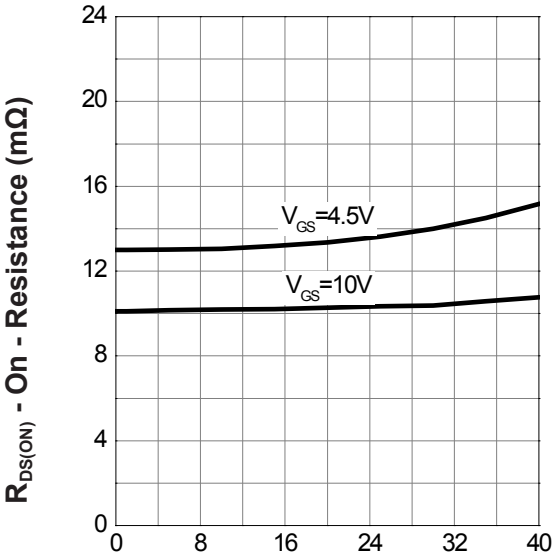
Thermal Transient Impedance



Output Characteristics

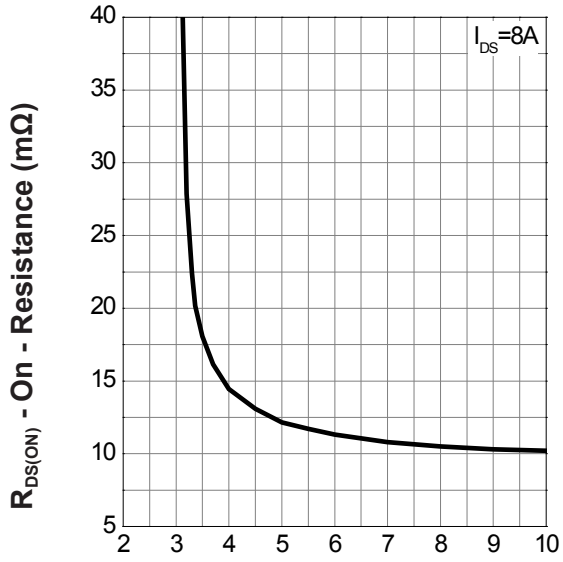


Drain-Source On Resistance

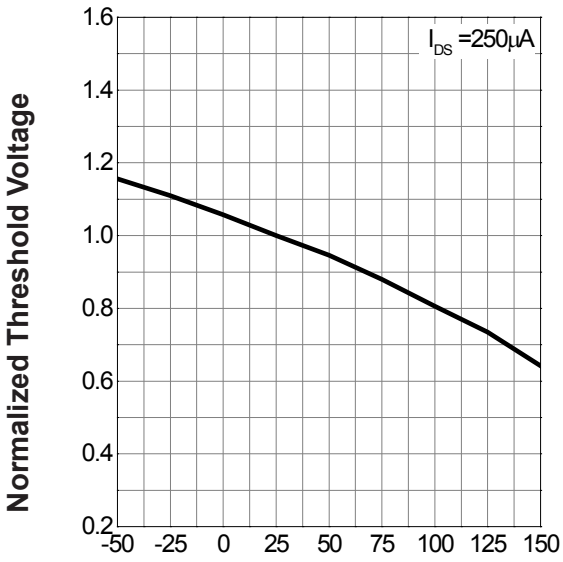


Typical Operating Characteristics(Cont.)

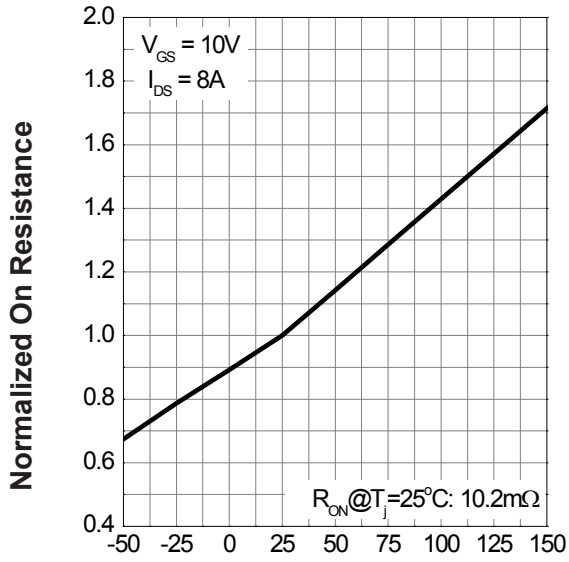
Gate-Source On Resistance



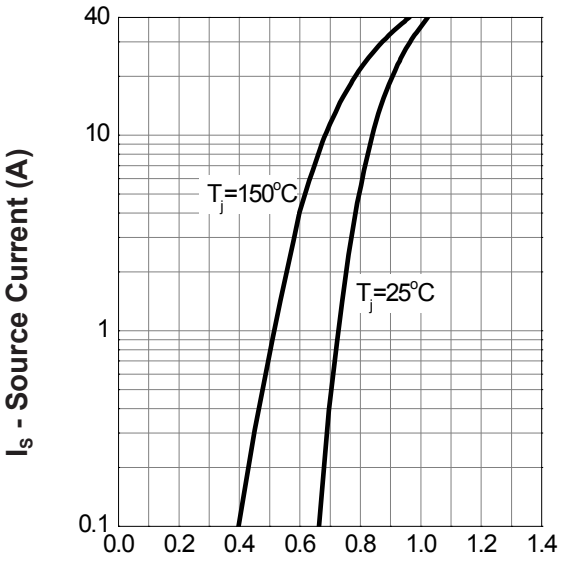
Gate Threshold Voltage



Drain-Source On Resistance

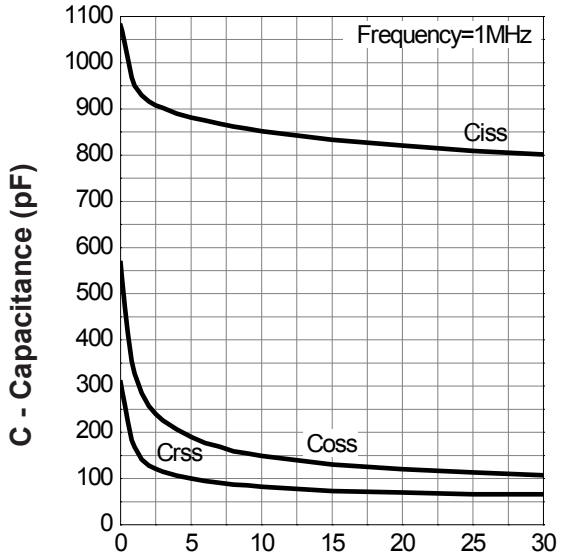


Source-Drain Diode Forward



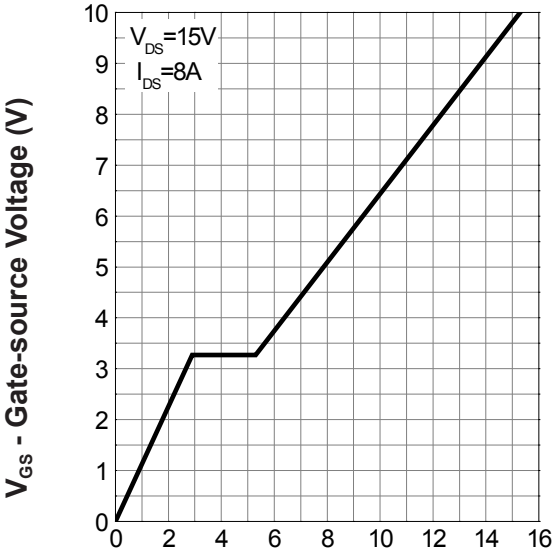
Typical Operating Characteristics(Cont.)

Capacitance



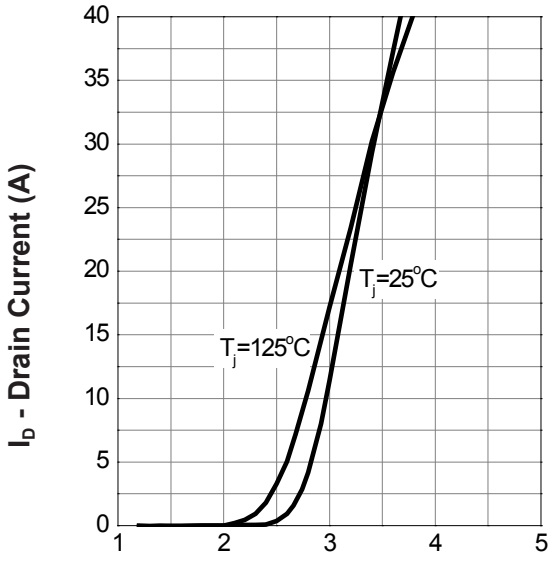
V_{DS} - Drain-Source Voltage (V)

Gate Charge



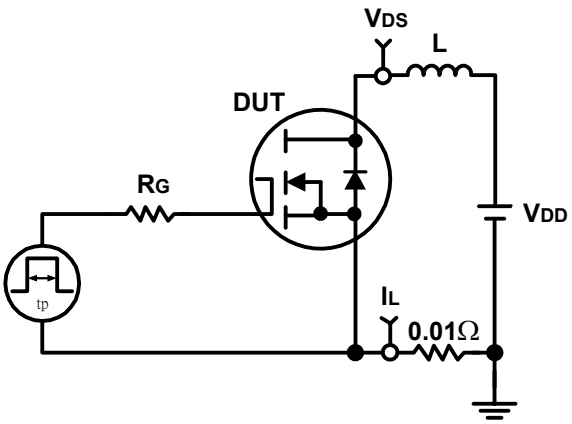
Q_G - Gate Charge (nC)

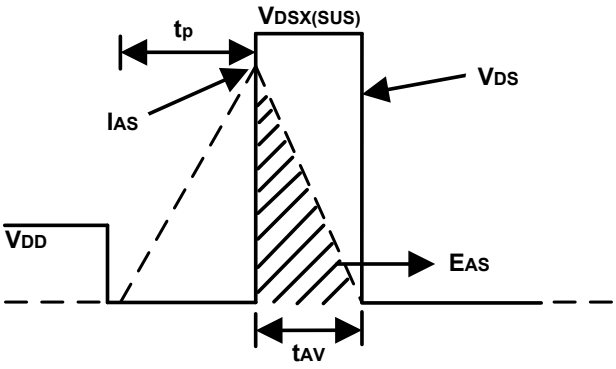
Transfer Characteristics



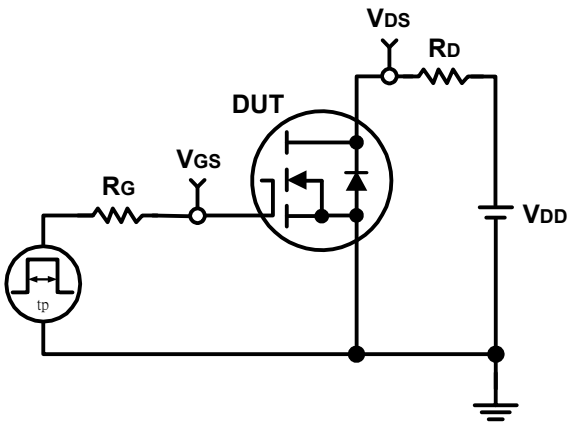
V_{GS} - Gate-Source Voltage (V)

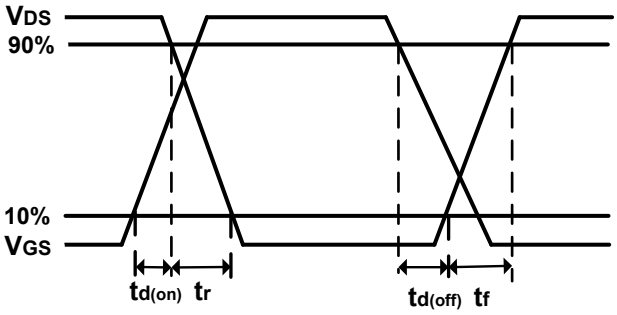
Avalanche Test Circuit and Waveforms





Switching Time Test Circuit and Waveforms





Flow (wave) soldering (solder dipping)

Product	Peak Temperature	Dipping Time
Pb device	245℃±5℃	5sec±1sec
Pb-Free device	260℃+0/-5℃	5sec±1sec

This integrated circuit can be damaged by ESD UniverChip Corporation recommends that all integrated circuits be handled with appropriate precautions. Failure to observe proper handling and installation procedure can cause damage. ESD damage can range from subtle performance degradation to complete device failure. Precision integrated circuits may be more susceptible to damage because very small parametric changes could cause the device not to meet its published specifications.

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