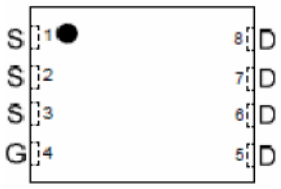
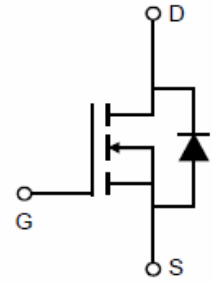
N-Channel Enhancement Mode MOSFET

Features

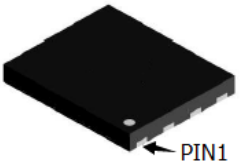
- 30V/100A
  $R_{DS(ON)}$=2.8mΩ(typ.)@V_{GS}=10V
  $R_{DS(ON)}$=4.2mΩ(typ.)@V_{GS}=4.5V
- 100% UIS + R_g Tested
- Reliable and Rugged
- Lead Free and Green Devices Available (RoHS Compliant)

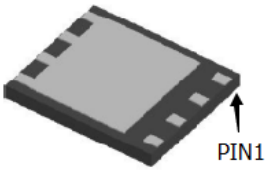


Top View



Bottom View





Applications

- Power Management in Desktop Computer or DC/DC Converters.
- Power Load Switch.
- Notebook Battery Management.

Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
XPX30100	XPX30100	DFN5X6-8L	-	-	-

Absolute Maximum Ratings (T_A=25°C Unless Otherwise Noted)

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	°C
I_S	Diode Continuous Forward Current	T_C=25°C	25.8	A
I_D	Continuous Drain Current	T_C=25°C	96	A
		T_C=100°C	61	
I_{DM} [a]	Pulse Drain Current	T_C=25°C	384	A
P_D	Maximum Power Dissipation	T_C=25°C	56.8	W
		T_C=100°C	22.7	
$R_{\theta JC}$	Thermal Resistance-Junction to Case	Steady State	2.2	°C/W
I_D	Continuous Drain Current	T_A=25°C	18	A
		T_A=70°C	14.3	
I_{DM} [a]	Pulse Drain Current	T_A=25°C	72	A
P_D	Maximum Power Dissipation	T_A=25°C	1.95	W
		T_A=70°C	1.25	
$R_{\theta JA}$ [b]	Thermal Resistance-Junction to Ambient	t ≤ 10s	25	°C/W
		Steady State	64	
I_{AS} [c]	Avalanche Current, Single pulse	L=0.1mH	62	A
E_{AS} [c]	Avalanche Energy, Single pulse	L=0.1mH	192	mJ

Note a：Pulse width is limited by max. junction temperature.
Note b：Surface mounted on 1in^2 pad area, steady state t = 999s.
Note c：UIS tested and pulse width limited by maximum junction temperature 150°C (initial temperature T_j=25°C).

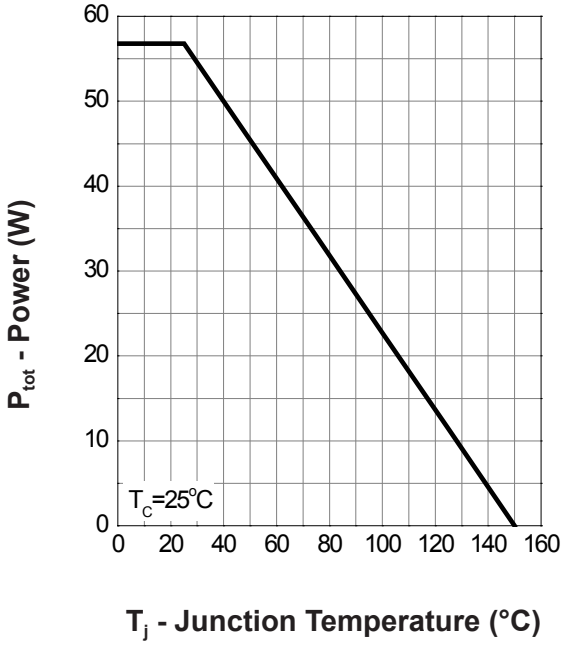
Electrical Characteristics (T_A = 25°C unless otherwise noted)

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	1.4	1.7	2.5	V
I_{GSS}	Gate Leakage Current	V_{GS}=±20V, V_{DS}=0V	-	-	±100	nA
$R_{DS(ON)}$ [d]	Drain-Source On-state Resistance	V_{GS}=10V, I_{DS}=20A	-	2.8	3.4	mΩ
		T_J=125°C	-	4.4	-	
		V_{GS}=4.5V, I_{DS}=15A	-	4.2	5.5	
Gfs	Forward Transconductance	V_{DS}=5V, I_{DS}=10A	-	24.6	-	S
Diode Characteristics						
V_{SD} [d]	Diode Forward Voltage	I_{SD}=20A, V_{GS}=0V	-	0.8	1.1	V
t_{rr}	Reverse Recovery Time	I_{DS}=20A, dI_{SD}/dt=100A/μs	-	35.6	-	ns
t_a	Charge Time		-	19.3	-	
t_b	Discharge Time		-	16.3	-	
Q_{rr}	Reverse Recovery Charge		-	26	-	nC
Dynamic Characteristics [e]						
R_G	Gate Resistance	V_{GS}=0V,V_{DS}=0V,F=1MHz	-	1	2	Ω
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=15V, Frequency=1.0MHz	-	1285	1671	pF
C_{oss}	Output Capacitance		-	850	-	
C_{rss}	Reverse Transfer Capacitance		-	85	-	
$t_{d(ON)}$	Turn-on Delay Time	V_{DD}=15V, R_L=15Ω, I_{DS}=1A, V_{GEN}=10V, R_G=6Ω	-	12.4	23	ns
t_r	Turn-on Rise Time		-	9.5	18	
$t_{d(OFF)}$	Turn-off Delay Time		-	27.2	49	
t_f	Turn-off Fall Time		-	35.2	64	
Gate Charge Characteristics [e]						
Q_g	Total Gate Charge	V_{DS}=15V, V_{GS}=10V, I_{DS}=20A	-	20.6	28.8	nC
Q_g	Total Gate Charge	V_{DS}=15V, V_{GS}=4.5V, I_{DS}=20A	-	9.8	-	
Q_{gth}	Threshold Gate Charge		-	1.8	-	
Q_{gs}	Gate-Source Charge		-	3.8	-	
Q_{gd}	Gate-Drain Charge		-	3.7	-	

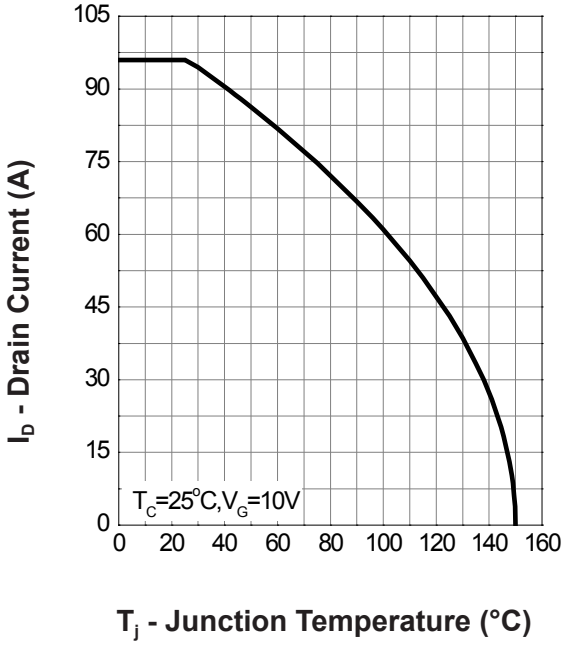
Note d：Pulse test ; pulse width≤300μs, duty cycle≤2%.
Note e：Guaranteed by design, not subject to production testing.

Typical Operating Characteristics

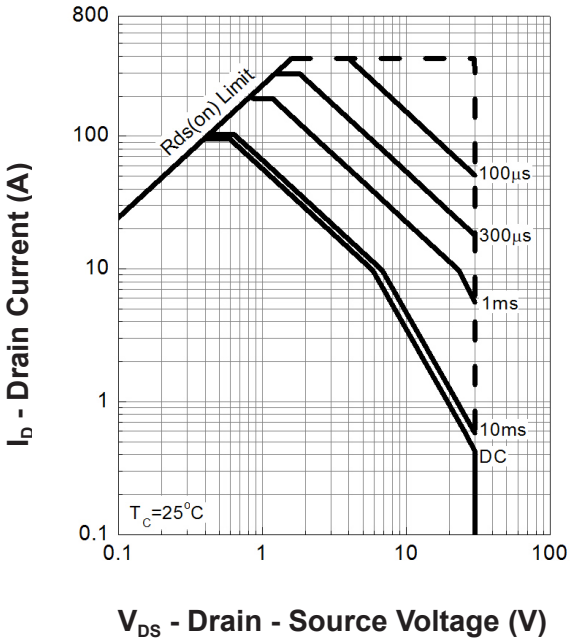
Power Dissipation



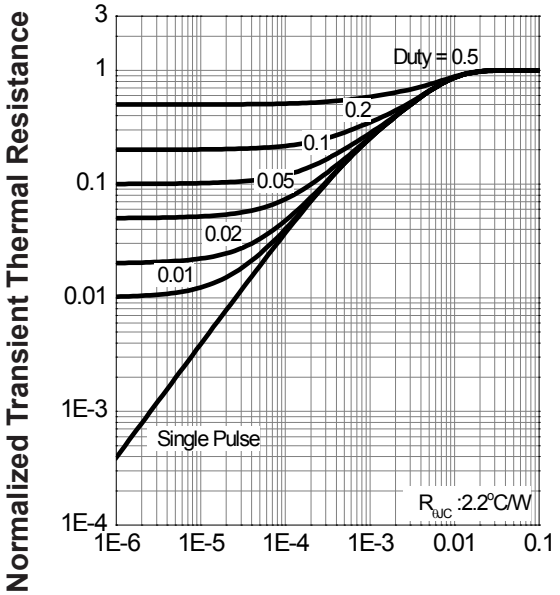
Drain Current



Safe Operation Area

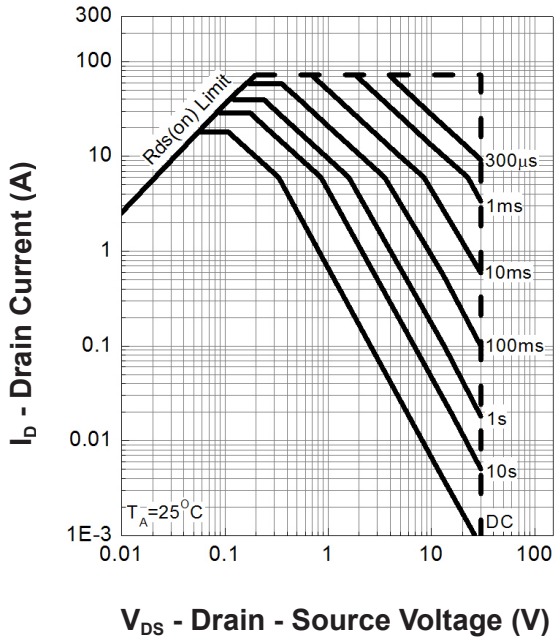


Thermal Transient Impedance

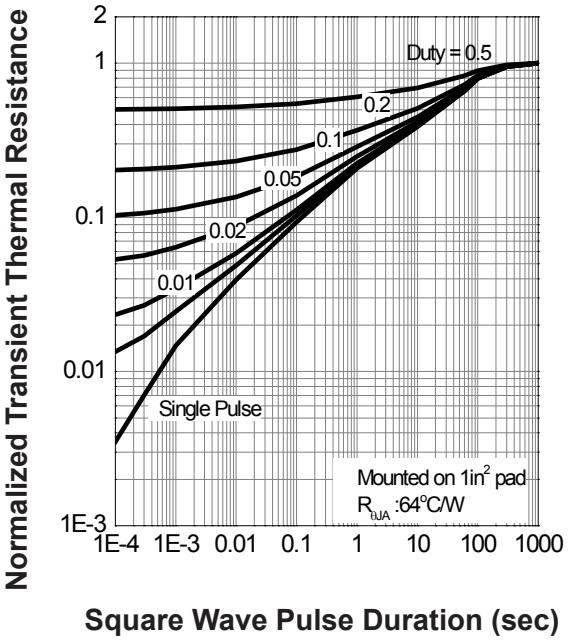


Typical Operating Characteristics(Cont.)

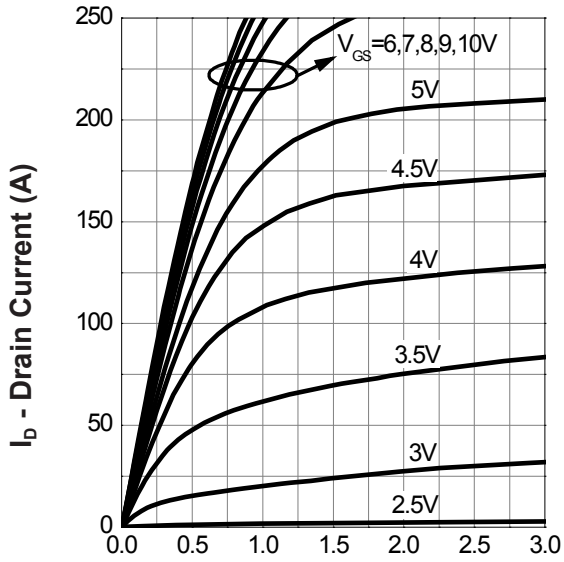
Safe Operation Area



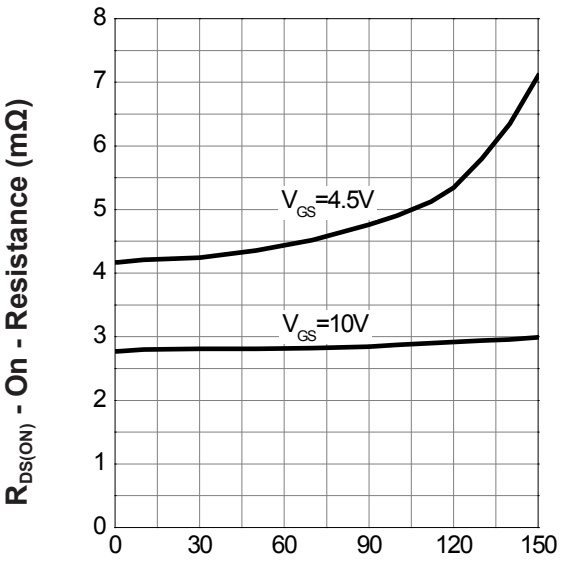
Thermal Transient Impedance



Output Characteristics

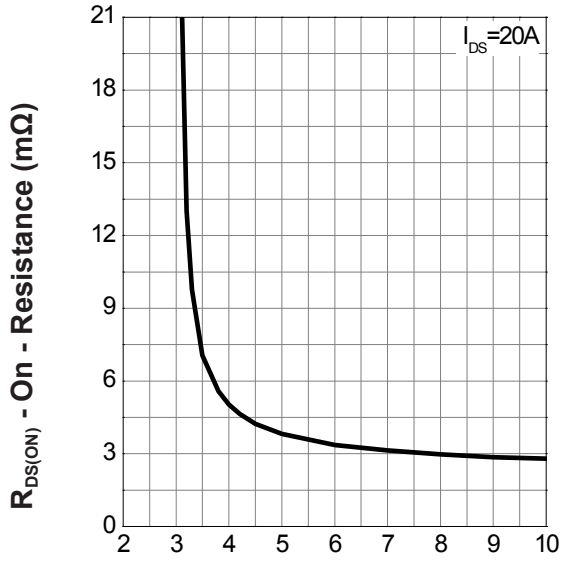


Drain-Source On Resistance



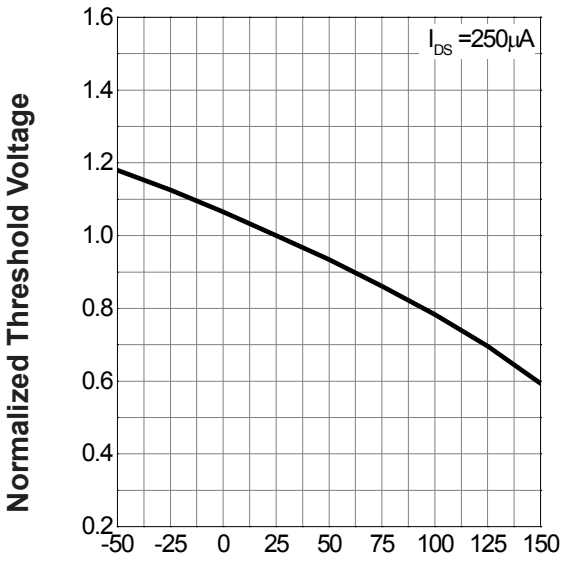
Typical Operating Characteristics(Cont.)

Gate-Source On Resistance



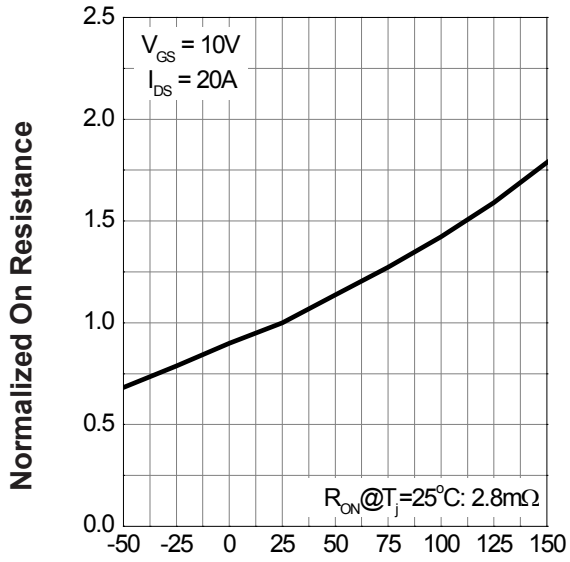
V_{GS} - Gate - Source Voltage (V)

Gate Threshold Voltage



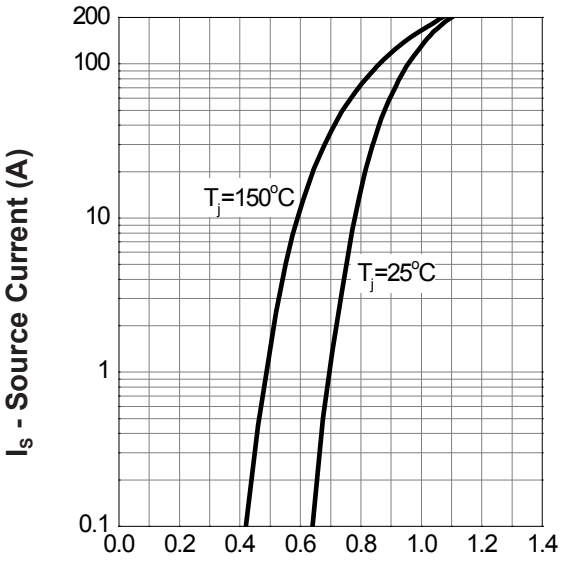
T_j - Junction Temperature (°C)

Drain-Source On Resistance



T_j - Junction Temperature (°C)

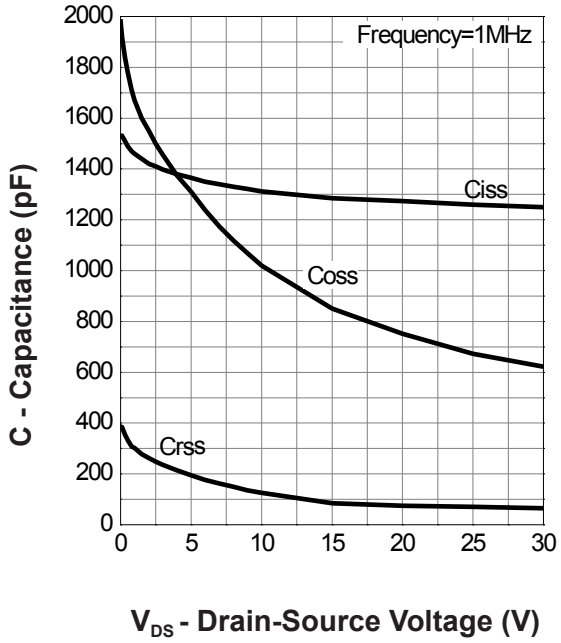
Source-Drain Diode Forward



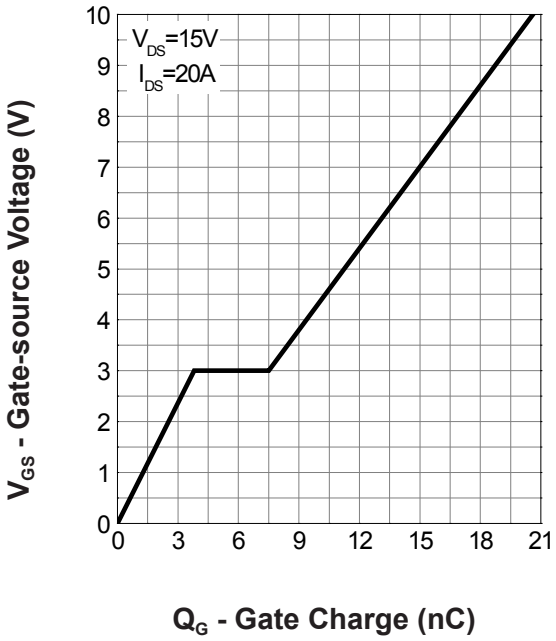
V_{SD} - Source - Drain Voltage (V)

Typical Operating Characteristics(Cont.)

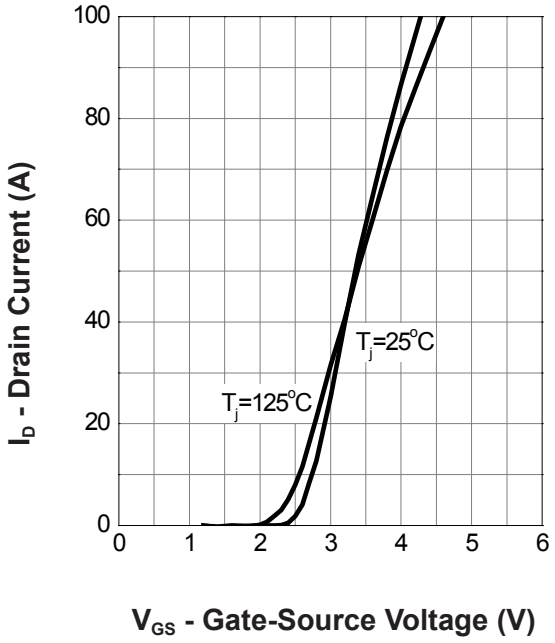
Capacitance



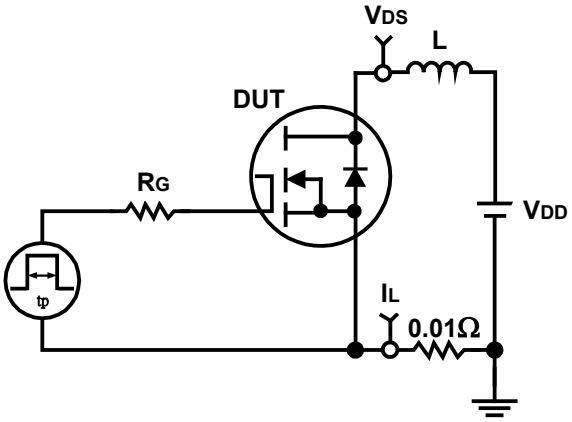
Gate Charge

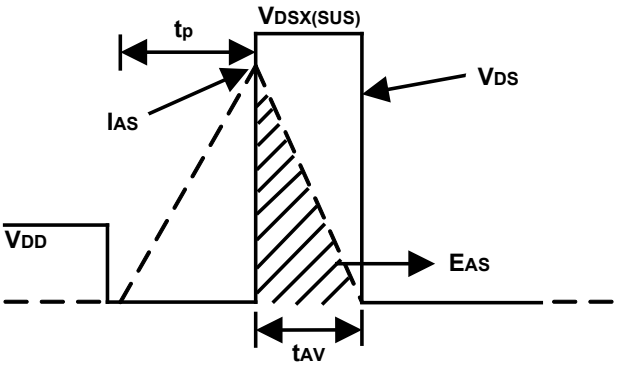


Transfer Characteristics



Avalanche Test Circuit and Waveforms





Switching Time Test Circuit and Waveforms