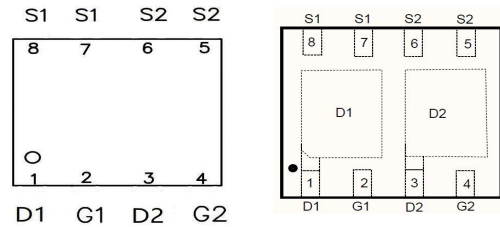


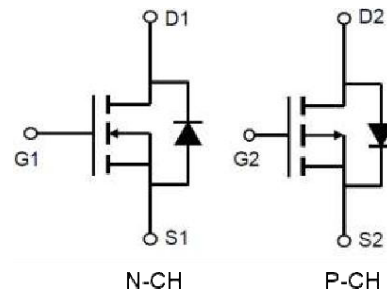
Features

- **N-Channel**
20V/8A,
 $R_{DS(ON)} = 12m\Omega(\text{typ.}) @ V_{GS}=4.5V$
 $R_{DS(ON)} = 16m\Omega(\text{typ.}) @ V_{GS}=2.5V$
- **P-Channel**
-20V/-7A,
 $R_{DS(ON)} = 22m\Omega(\text{typ.}) @ V_{GS}=-4.5V$
 $R_{DS(ON)} = 31m\Omega(\text{typ.}) @ V_{GS}=-2.5V$
- 100% UIS + R_g Tested
- Reliable and Rugged
- Lead Free and Green Devices Available (RoHS Compliant)

Pin Description



DFN2x2C-8_EP2



Applications

- Load Switch.
- Networking.

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

Symbol	Parameter		N Channel	P Channel	Unit
Common Ratings					
V _{DSS}	Drain-Source Voltage		20	-20	V
V _{GSS}	Gate-Source Voltage		±12	±12	
T _J	Maximum Junction Temperature		150		°C
T _{STG}	Storage Temperature Range		-55 to 150		
I _S	Diode Continuous Forward Current	T _A =25°C	8	-7	A
I _D	Continuous Drain Current	T _A =25°C	8	-7	
I _{DM} ^a	Pulsed Drain Current	T _A =25°C	24	-21	
P _D	Power Dissipation	T _A =25°C	0.93	0.93	W
		T _A =70°C	0.6	0.6	
R _{θJA} ^b	Thermal Resistance-Junction to Ambient	t ≤ 10s	85		°C/W
		Steady State	135		
I _{AS} ^c	Avalanche Current, Single pulse	L=0.5mH	9	-12	A
E _{AS} ^c	Avalanche Energy, Single pulse	L=0.5mH	20	36	mJ

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

Note b : Surface mounted on 1in^2 pad area, steady state $t = 999\text{s}$.

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

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

Symbol	Parameter	Test Conditions	N Channel			Unit
			Min.	Typ.	Max.	
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} =250μA	20	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =16V, V _{GS} =0V	-	-	1	μA
		T _J =85°C	-	-	30	
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =250μA	0.5	0.7	1	V
I _{GSS}	Gate Leakage Current	V _{GS} =±12V, V _{DS} =0V	-	-	±100	nA
R _{DS(ON)} ^d	Drain-Source On-state Resistance	V _{GS} =4.5V, I _{DS} =5A	-	12	15	mΩ
		V _{GS} =2.5V, I _{DS} =5A	-	16	23	
Diode Characteristics						
V _{SD} ^d	Diode Forward Voltage	I _{SD} =1A, V _{GS} =0V	-	0.7	1	V
t _{rr}	Reverse Recovery Time	I _{SD} =4.5A, dI _{SD} /dt=100A/μs	-	12.8	-	ns
Q _{rr}	Reverse Recovery Charge		-	3.8	-	nC
Dynamic Characteristics ^e						
R _g	Gate Resistance	V _{GS} =0V, V _{DS} =0V, F=1MHz	-	2.2	-	Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =15V, Frequency=1.0MHz	-	740	-	pF
C _{oss}	Output Capacitance		-	110	-	
C _{rss}	Reverse Transfer Capacitance		-	82	-	
t _{d(ON)}	Turn-on Delay Time	V _{DD} =10V, R _L =10Ω, I _{DS} =1A, V _{GEN} =10V, R _G =6Ω	-	2.4	-	ns
t _r	Turn-on Rise Time		-	13	-	
t _{d(OFF)}	Turn-off Delay Time		-	15.5	-	
t _f	Turn-off Fall Time		-	3	-	
Gate Charge Characteristics ^e						
Q _g	Total Gate Charge	V _{DS} =10V, V _{GS} =4.5V, I _{DS} =4.5A	-	4.2	6.3	nC
Q _{gs}	Gate-Source Charge		-	0.3	-	
Q _{gd}	Gate-Drain Charge		-	1.7	-	

Note d : Pulse test; pulse width≤300μs, duty cycle≤2%.

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

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

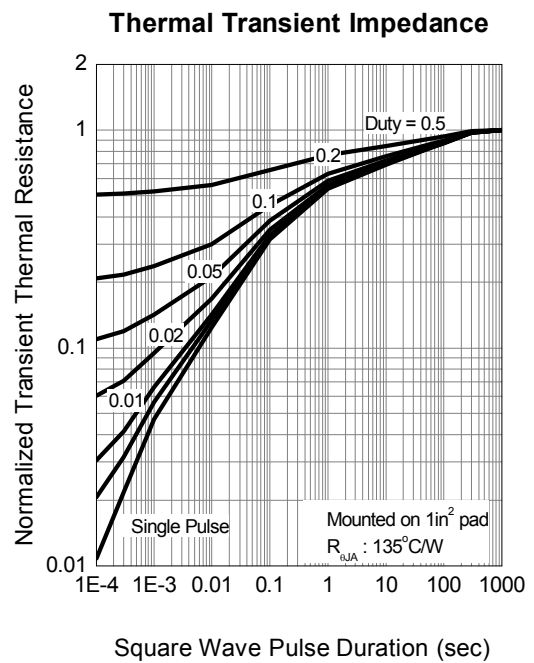
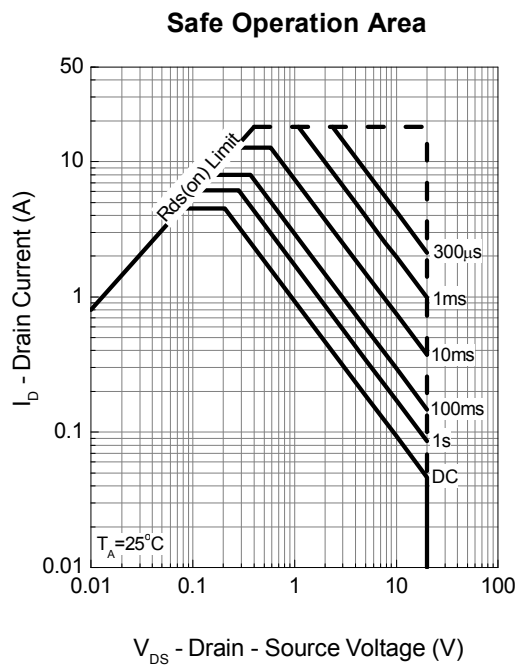
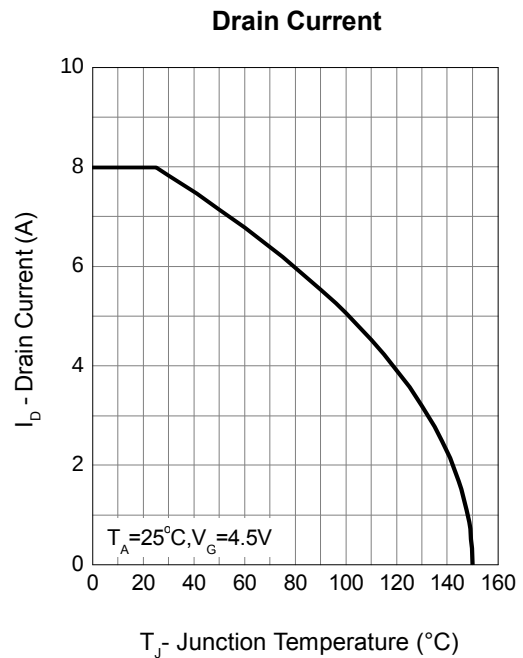
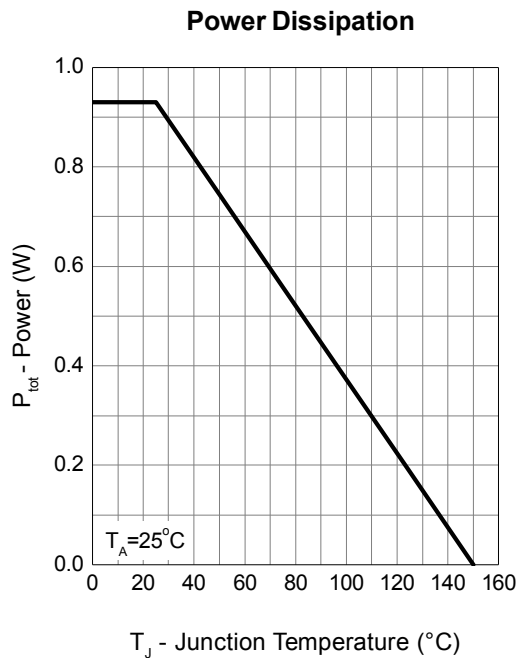
Symbol	Parameter	Test Conditions	P Channel			Unit
			Min.	Typ.	Max.	
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} =-250μA	-20	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =-16V, V _{GS} =0V	-	-	-1	μA
		T _J =85°C	-	-	-30	μA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =-250μA	-0.5	-0.7	-1	V
I _{GSS}	Gate Leakage Current	V _{GS} =±12V, V _{DS} =0V	-	-	±100	nA
R _{DS(ON)} ^d	Drain-Source On-state Resistance	V _{GS} =-4.5V, I _{DS} =-5A	-	22	28	mΩ
		V _{GS} =-2.5V, I _{DS} =-5A	-	31	36	
Diode Characteristics						
V _{SD} ^d	Diode Forward Voltage	I _{SD} =-1A, V _{GS} =0V	-	-0.8	-1.2	V
t _{rr}	Reverse Recovery Time	I _{SD} =-2.5A, dI _{SD} /dt=100A/μs	-	22	-	ns
Q _{rr}	Reverse Recovery Charge		-	6	-	nC
Dynamic Characteristics ^e						
R _g	Gate Resistance	V _{GS} =0V, V _{DS} =0V, F=1MHz	-	10.8	-	Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =-15V, Frequency=1.0MHz	-	1040	-	pF
C _{oss}	Output Capacitance		-	180	-	
C _{rss}	Reverse Transfer Capacitance		-	120	-	
t _{d(ON)}	Turn-on Delay Time	V _{DD} =-10V, R _L =10Ω, I _{DS} =-1A, V _{GEN} =-4.5V, R _G =6Ω	-	6	-	ns
t _r	Turn-on Rise Time		-	14.4	-	
t _{d(OFF)}	Turn-off Delay Time		-	26	-	
t _f	Turn-off Fall Time		-	24	-	
Gate Charge Characteristics ^e						
Q _g	Total Gate Charge	V _{DS} =-10V, V _{GS} =-4.5V, I _{DS} =-2.5A	-	4.6	-	nC
Q _{gs}	Gate-Source Charge		-	0.5	-	
Q _{gd}	Gate-Drain Charge		-	1.9	-	

Note d : Pulse test; pulse width≤300μs, duty cycle≤2%.

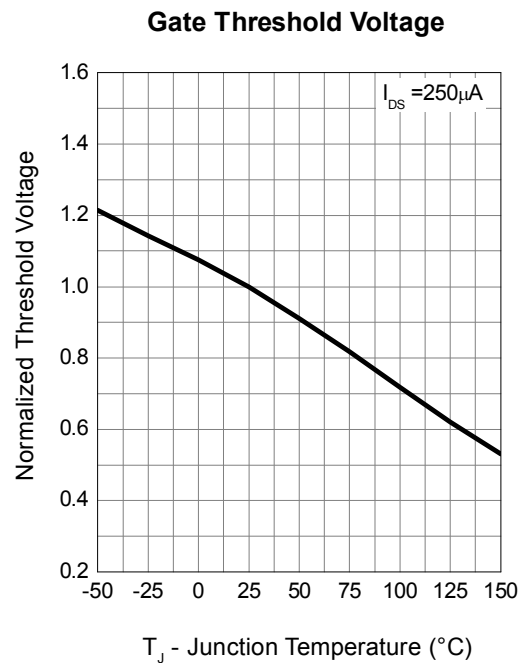
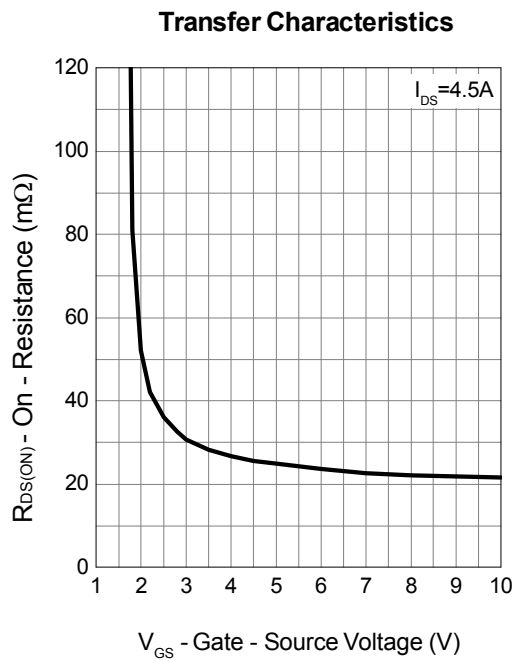
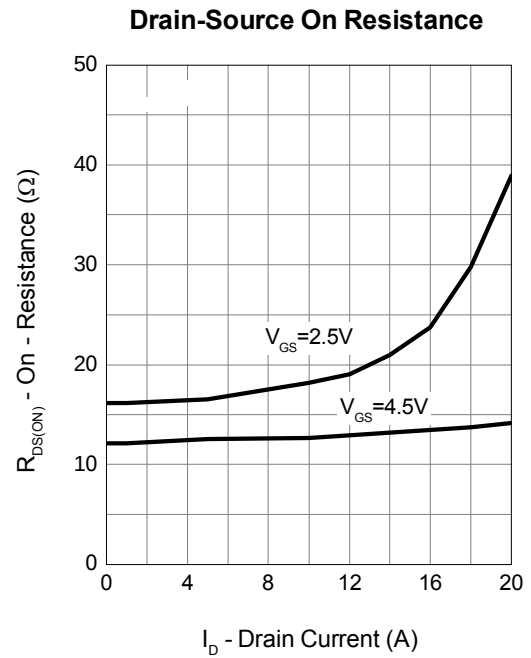
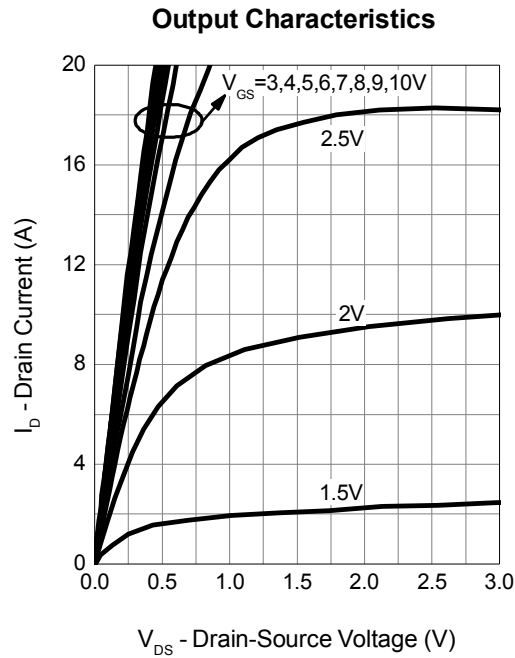
Note e : Guaranteed by design, not subject to production testing.

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N Channel Typical Operating Characteristics

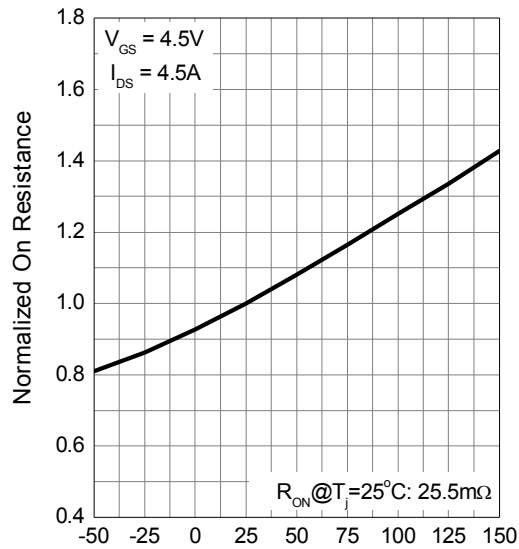


N Channel Typical Operating Characteristics (Cont.)



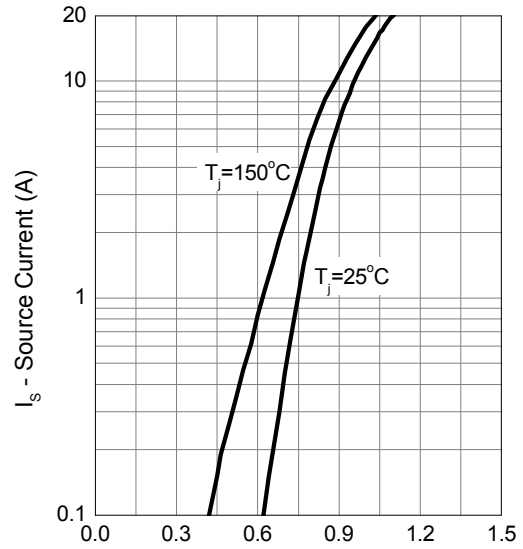
N Channel Typical Operating Characteristics (Cont.)

Drain-Source On Resistance



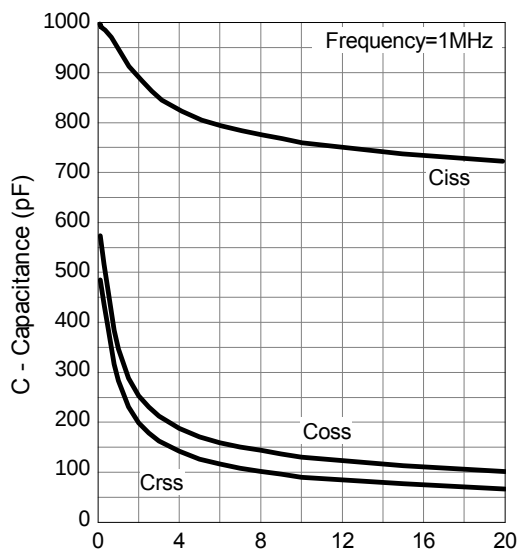
T_j - Junction Temperature ($^{\circ}\text{C}$)

Source-Drain Diode Forward



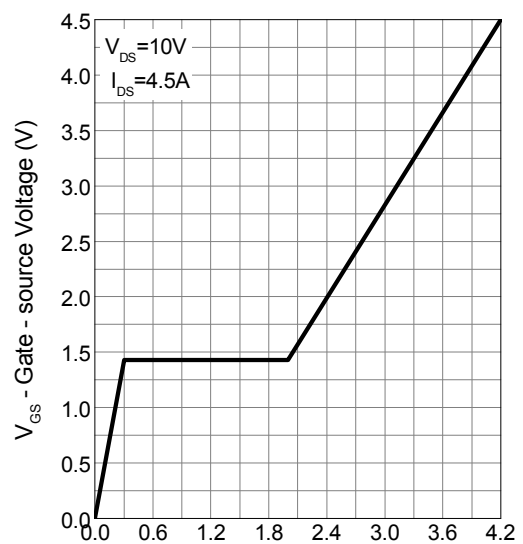
V_{SD} - Source - Drain Voltage (V)

Capacitance



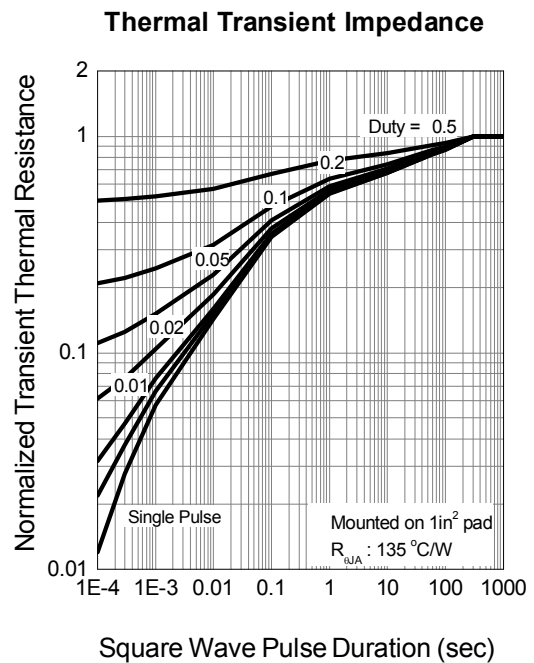
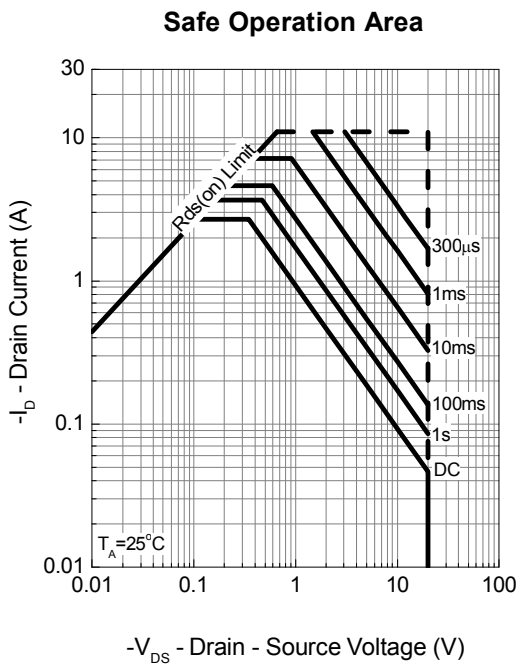
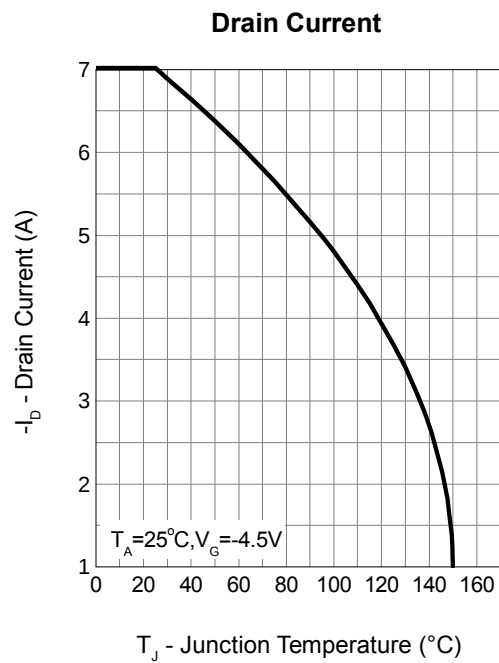
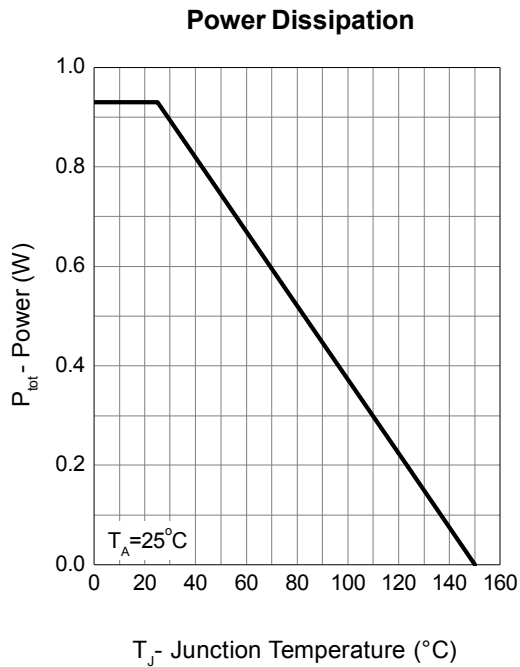
V_{DS} - Drain - Source Voltage (V)

Gate Charge

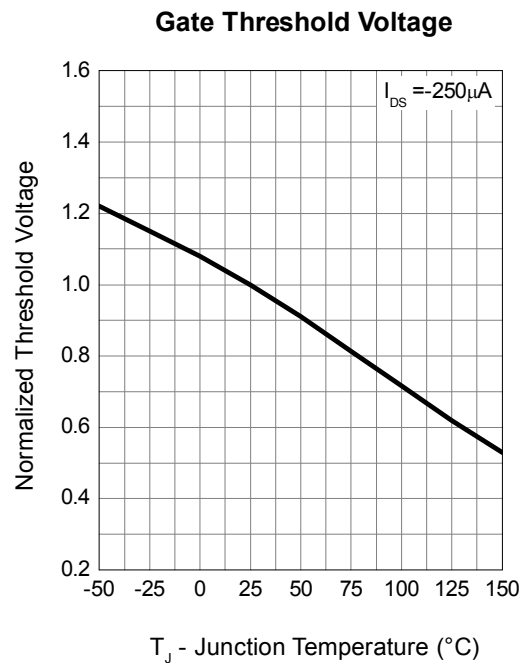
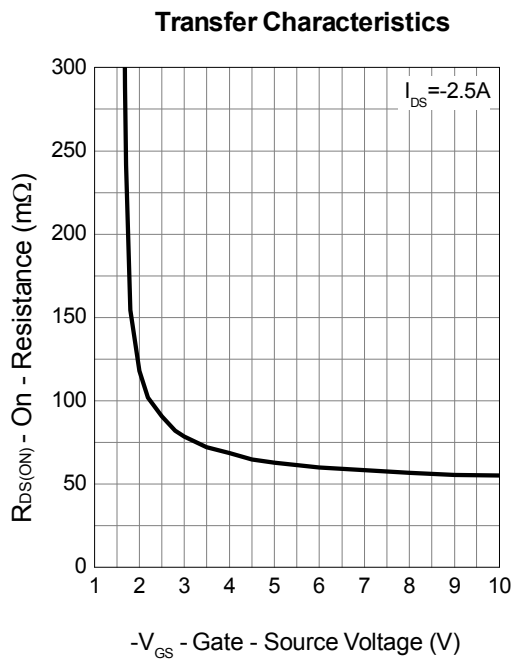
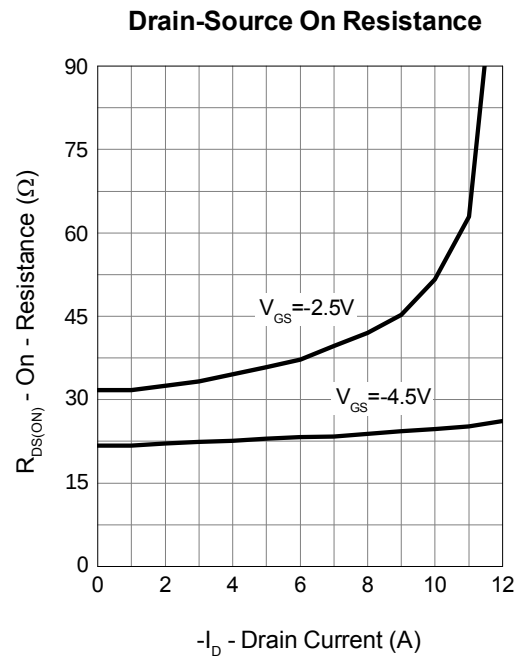
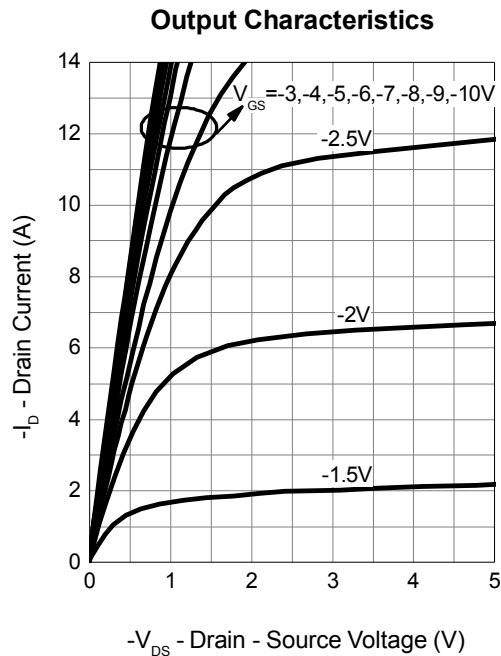


Q_G - Gate Charge (nC)

P Channel Typical Operating Characteristics

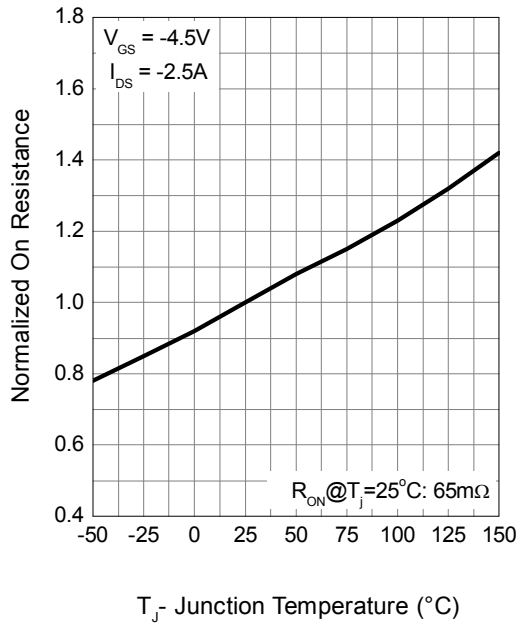


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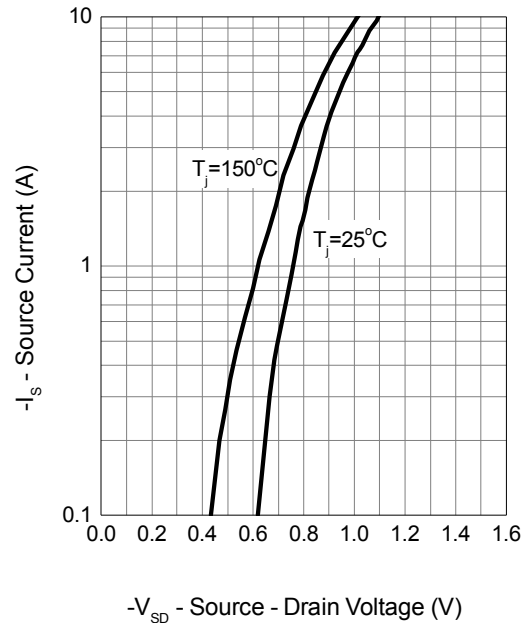


P Channel Typical Operating Characteristics (Cont.)

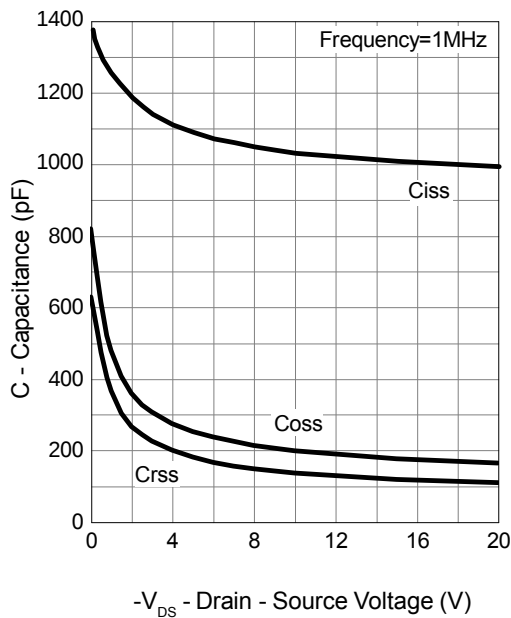
Drain-Source On Resistance



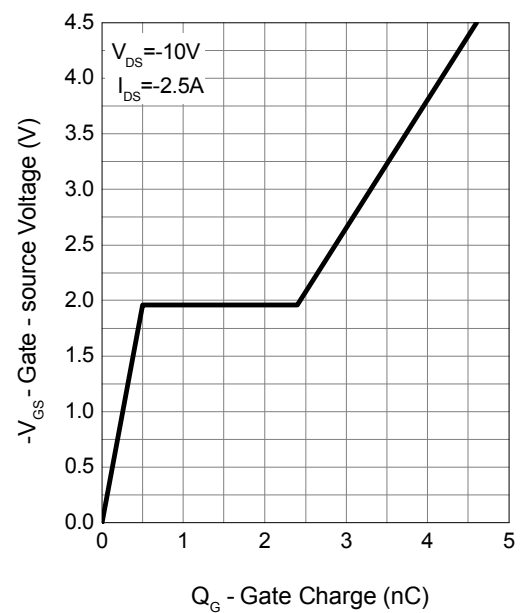
Source-Drain Diode Forward



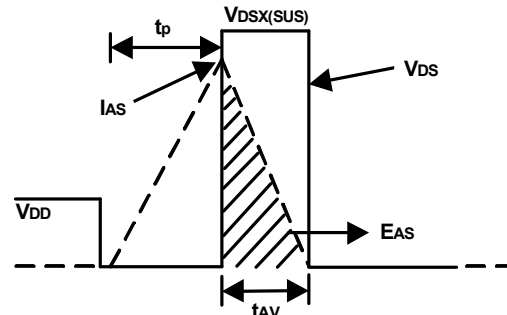
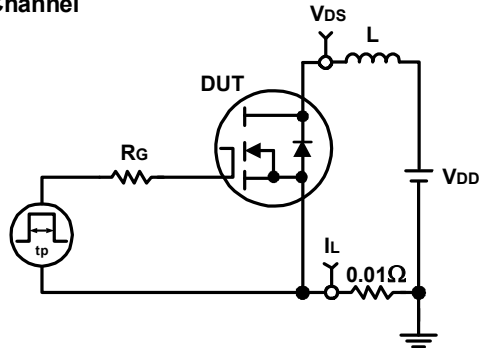
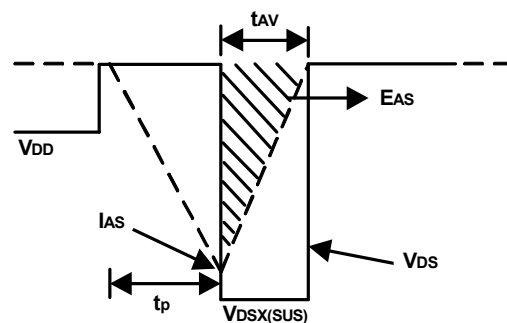
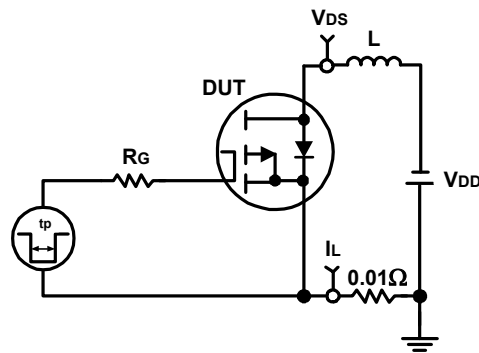
Capacitance



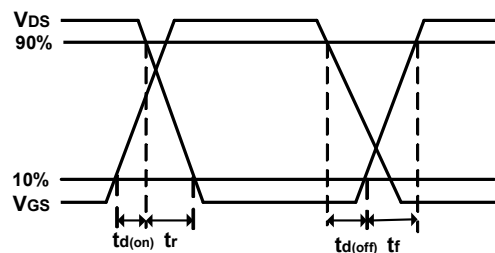
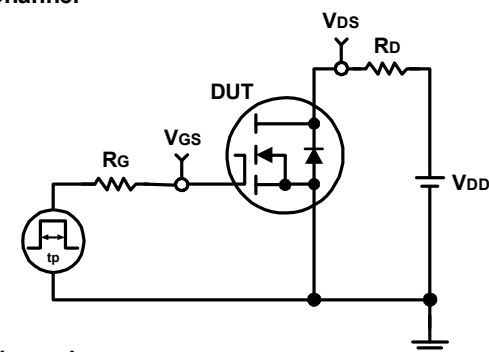
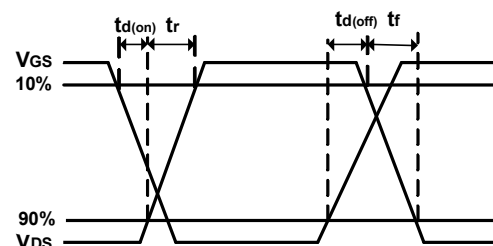
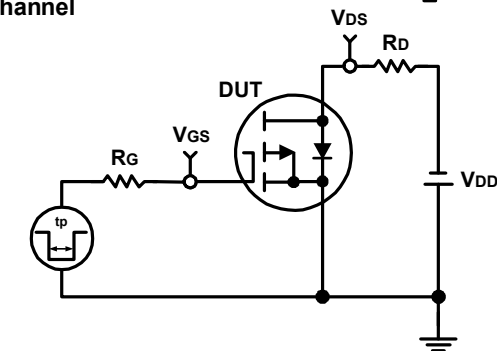
Gate Charge



Avalanche Test Circuit and Waveforms

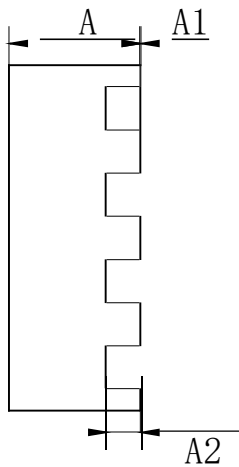
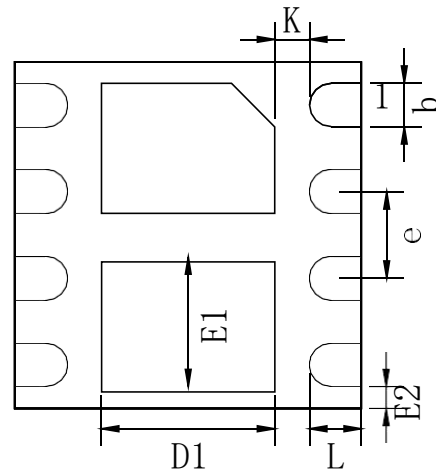
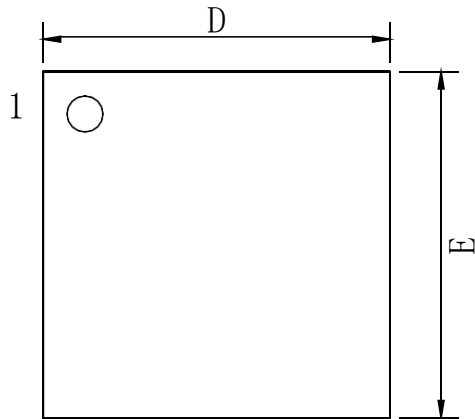
N Channel

P Channel


Switching Time Test Circuit and Waveforms

N Channel

P Channel


Package Information

DFN2X2-8L



SYMBOL	MILLMETER		
	MIN	NOM	MAX
A	—	—	0.80
A1	0.00	—	0.05
A2	0.203 TIY		
b	0.20	0.25	0.30
D	1.95	2.00	2.05
D1	0.95	1.00	1.05
E	1.95	2.00	2.05
E1	0.70	0.75	0.80
E2	0.125 TIY		
e	0.50 BSC		
K	0.20 BSC		
L	0.25	0.30	0.35