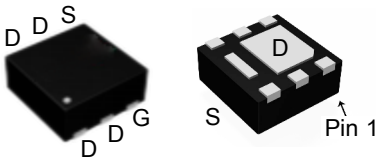
Features

- 40V/10A,
  $R_{DS(ON)}$ = 15mΩ(typ.) @ V_{GS} =4.5V
  $R_{DS(ON)}$ = 17mΩ(typ.) @ V_{GS} =2.5V
- 100% UIS + R_g Tested
- Reliable and Rugged
- Lead Free and Green Devices Available (RoHS Compliant)

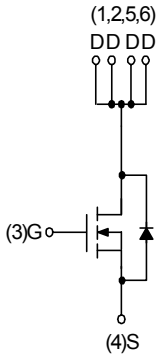
Applications

- Li-Ion Battery Pack.
- DC-DC Buck Converters.

Pin Description



DFN2x2A-6_EP



N-Channel MOSFET

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

Symbol	Parameter		Rating	Unit
Common Ratings				
V_{DSS}	Drain-Source Voltage		40	V
V_{GSS}	Gate-Source Voltage		±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	10	A
I_D	Continuous Drain Current	T_A=25°C	10	A
		T_A=70°C	7.5	
I_{DM} [a]	Pulsed Drain Current	T_A=25°C	30	A
P_D [b]	Maximum Power Dissipation	T_A=25°C	1.32	W
		T_A=70°C	0.8	
$R_{\theta JA}$ [b]	Thermal Resistance-Junction to Ambient	t ≤ 10s	54	°C/W
		Steady State	95	°C/W
I_{AS} [c]	Avalanche Current, Single pulse	L=0.1mH	16	A
E_{AS} [c]	Avalanche Energy, Single pulse	L=0.1mH	13	mJ

Note a：Pulse width limited by max. junction temperature.
Note b：$R_{\theta JA}$ 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	40	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=32V, 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	0.75	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}=9A	-	15	18	mΩ
		T_J=125°C	-	18.5	-	
		V_{GS}=2.5V, I_{DS}=8A	-	17	20	
Gfs	Forward Transconductance	V_{DS}=5V, I_{DS}=8A	-	24	-	S
Diode Characteristics						
V_{SD} [d]	Diode Forward Voltage	I_{SD}=1.5A, V_{GS}=0V	-	0.72	1.1	V
t_{rr}	Reverse Recovery Time	I_{SD}=8A, dI_{SD}/dt=100A/μs	-	10.2	-	ns
Q_{rr}	Reverse Recovery Charge		-	4.1	-	nC
Dynamic Characteristics						
R_G	Gate Resistance	V_{GS}=0V,V_{DS}=0V,F=1MHz	-	1.5	2.7	Ω
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=10V, Frequency=1.0MHz	-	2070	2375	pF
C_{oss}	Output Capacitance		-	162	-	
C_{rss}	Reverse Transfer Capacitance		-	114	-	
$t_{d(ON)}$	Turn-on Delay Time	V_{DD}=10V, R_L=10Ω, I_{DS}=1A, V_{GEN}=4.5V, R_G=1Ω	-	10.6	-	ns
t_r	Turn-on Rise Time		-	15	-	
$t_{d(OFF)}$	Turn-off Delay Time		-	17.2	-	
t_f	Turn-off Fall Time		-	4	-	
Gate Charge Characteristics						
Q_g	Total Gate Charge	Vds=10V, Vgs=4.5V, Ids=9A	-	8.9	11.5	nC
Q_{gs}	Gate-Source Charge		-	0.52	-	
Q_{gd}	Gate-Drain Charge		-	3.8	-	

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

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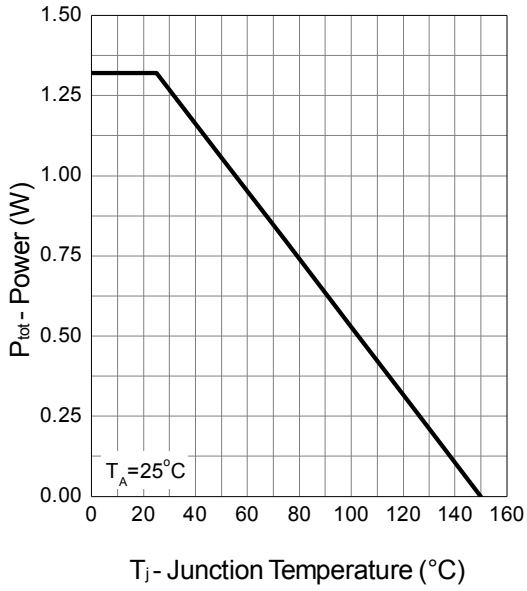
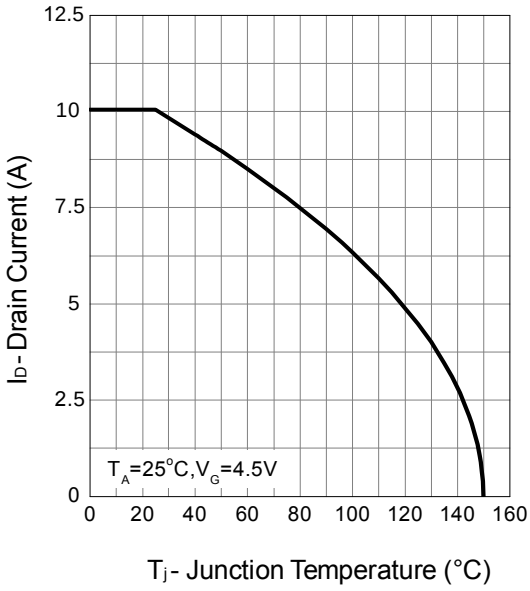
Typical Operating Characteristics

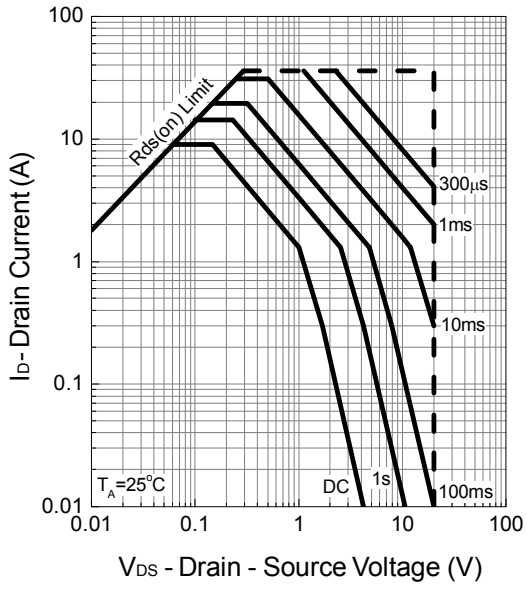
Power Dissipation



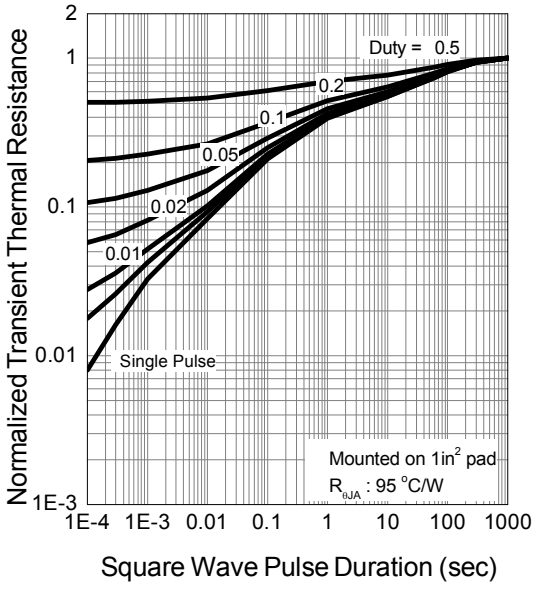
Drain Current



Safe Operation Area

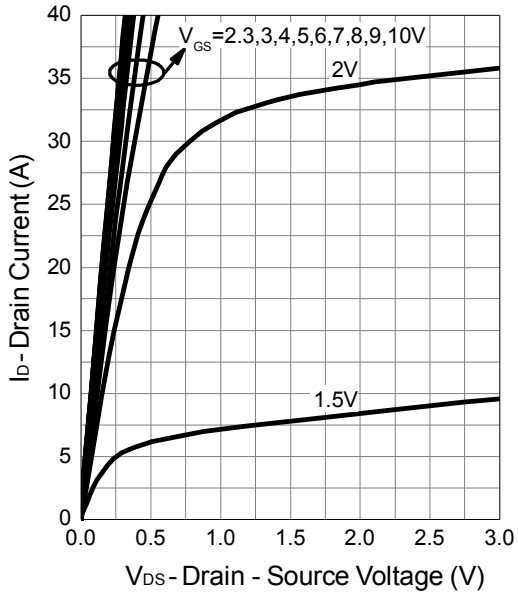


Thermal Transient Impedance

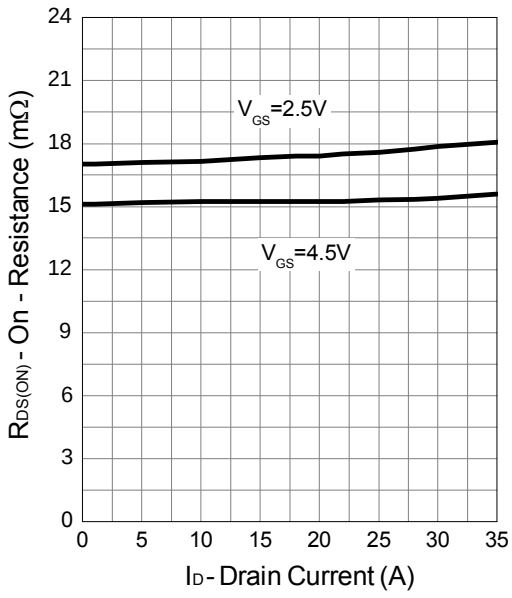


Typical Operating Characteristics (Cont.)

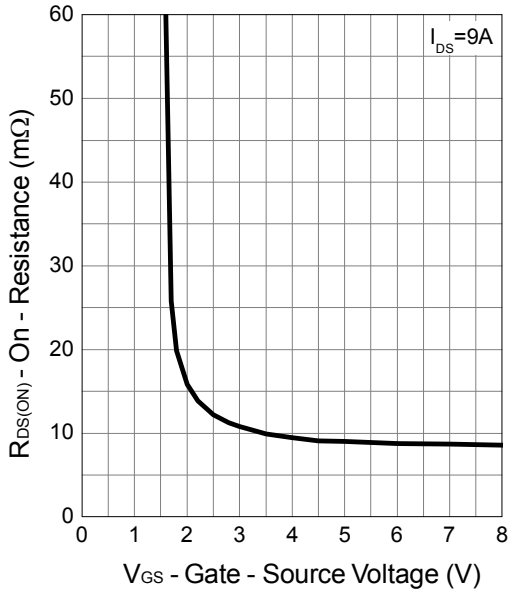
Output Characteristics



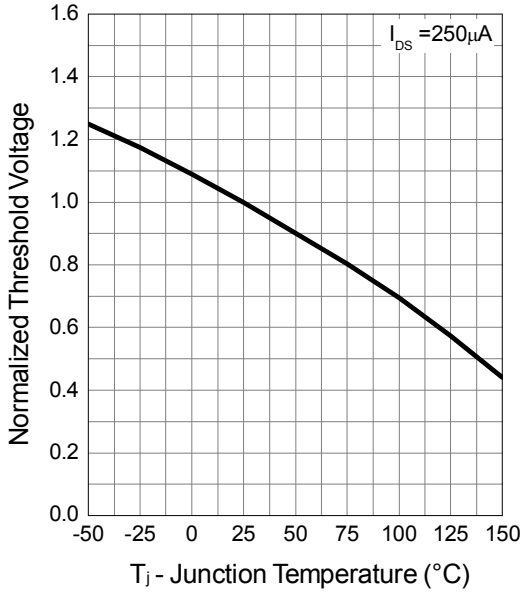
Drain-Source On Resistance



Gate-Source On Resistance

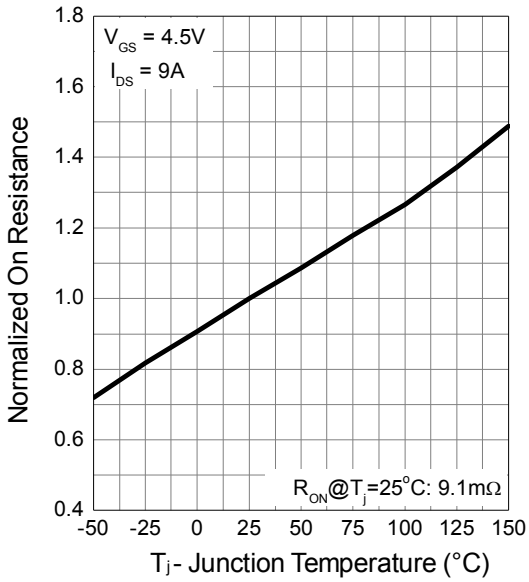


Gate Threshold Voltage

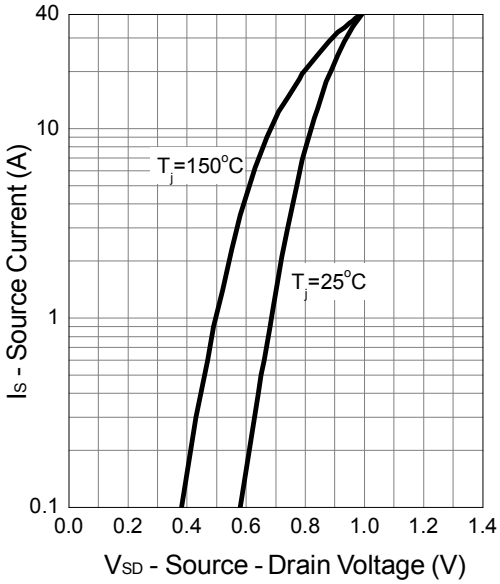


Typical Operating Characteristics (Cont.)

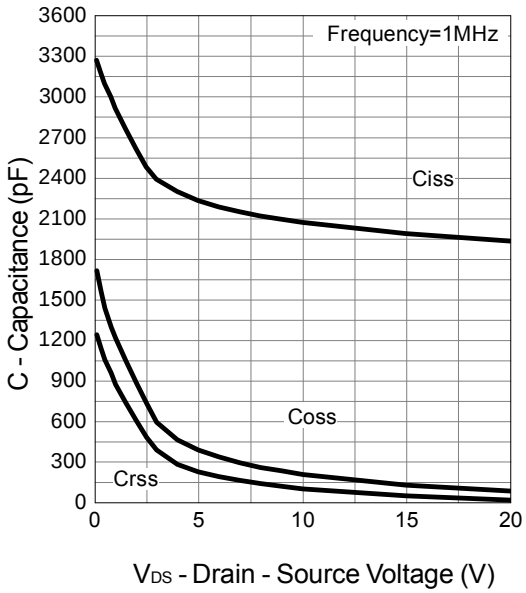
Drain-Source On Resistance



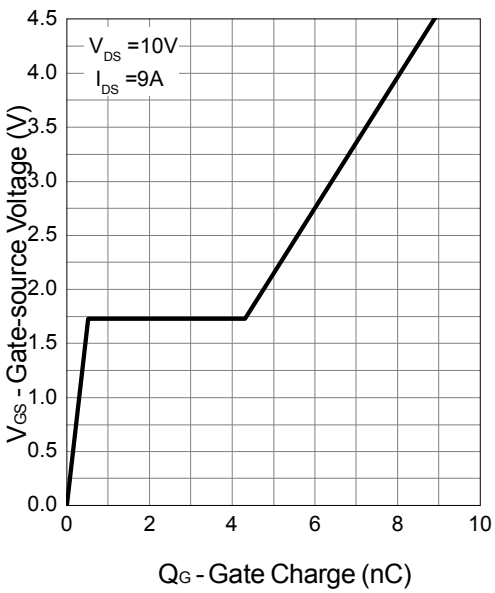
Source-Drain Diode Forward



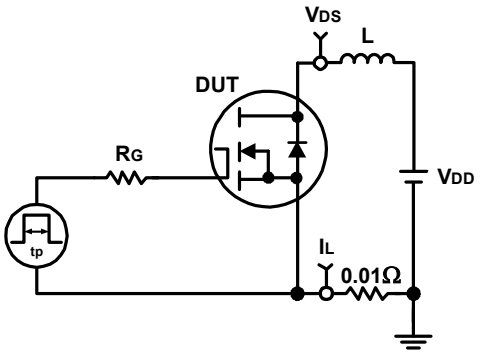
Capacitance

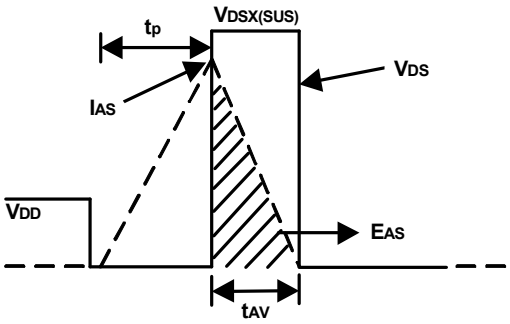


Gate Charge

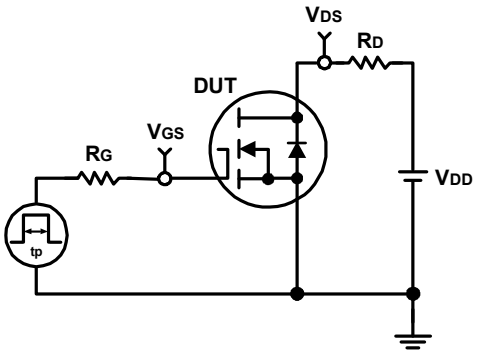


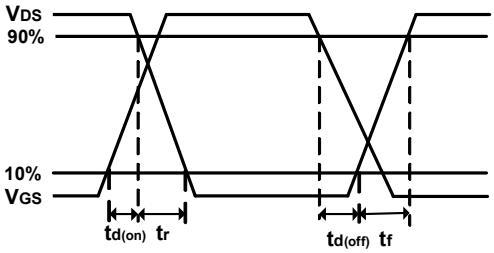
Avalanche Test Circuit and Waveforms

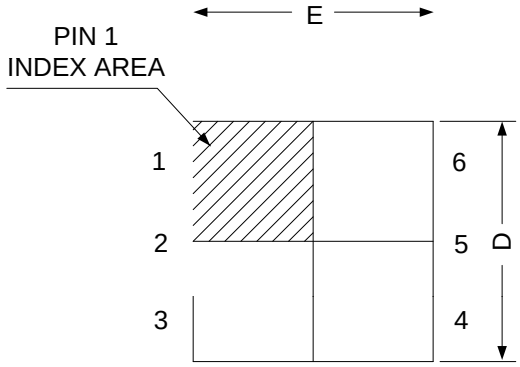




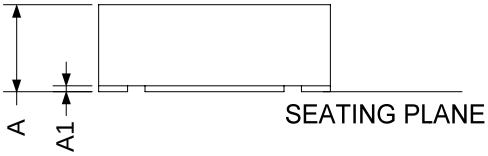
Switching Time Test Circuit and Waveforms

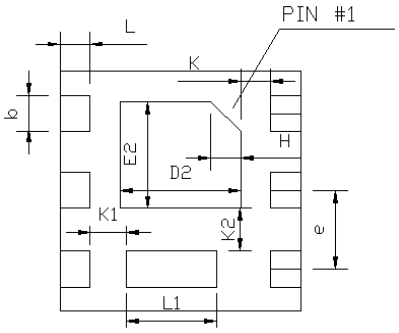




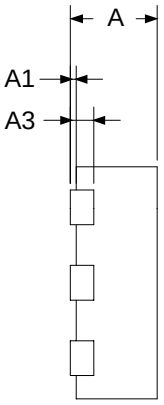


Top View





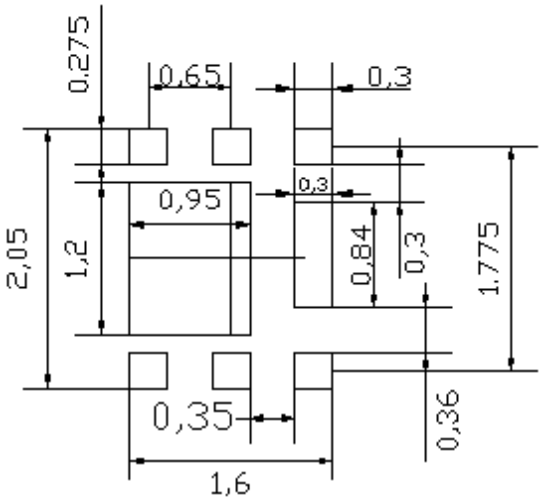
Bottom View



Side View

SYMBOLS	DFN2x2A-6_EP1_S			
	MILLIMETERS		INCHES	
	MIN.	MAX.	MIN.	MAX.
A	0.70	0.80	0.028	0.031
A1	0.00	0.05	0.000	0.002
A3	0.2 REF		0.008 REF	
b	0.25	0.35	0.010	0.014
D	1.90	2.10	0.075	0.083
D2	0.90	1.10	0.035	0.043
E	1.90	2.10	0.075	0.083
E2	0.80	1.00	0.031	0.039
e	0.55	0.75	0.022	0.030
H	0.25 REF		0.01 REF	
K	0.15		0.006	
K1	0.20		0.008	
K2	0.25		0.010	
L	0.20	0.30	0.008	0.012
L1	0.65	0.85	0.026	0.033

RECOMMENDED LAND PATTERN



UNIT: mm