

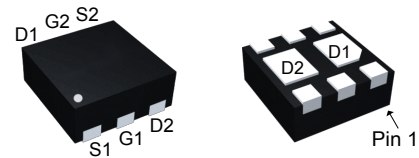
Features

- 20V/-4A
 $R_{DS(ON)} = 45m\Omega (typ.) @ V_{GS} = -4.5V$
 $R_{DS(ON)} = 55m\Omega (typ.) @ V_{GS} = -2.5V$
- 100% UIS + R_g Tested
- Reliable and Rugged
- Lead Free and Green Devices Available
 (RoHS Compliant)

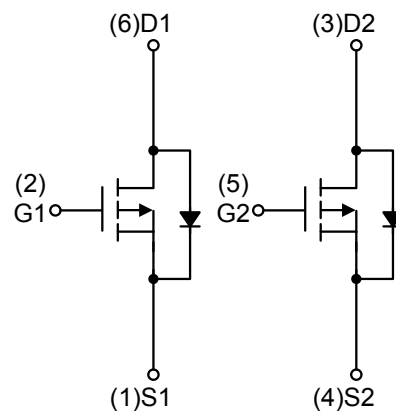
Applications

- Load Switch.
- Battery Switch for Portable Devices.
- High-Speed Line Driver.

Pin Description



DFN2x2C-6_EP2



P-Channel MOSFET

Absolute Maximum Ratings ($T_A=25^{\circ}\text{C}$ Unless Otherwise Noted)

Symbol	Parameter		Rating	Unit
Common Ratings				
V _{DSS}	Drain-Source Voltage		-20	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	-4	A
I _D	Continuous Drain Current	T _A =25°C	-4	A
		T _A =70°C	-3	
I _{DM} ^a	Pulsed Drain Current	T _A =25°C	-12	
P _D	Maximum Power Dissipation	T _A =25°C	1.56	W
		T _A =70°C	1	
R _{θJA} ^c	Thermal Resistance-Junction to Ambient	Steady state	80	°C/W
I _{AS} ^b	Avalanche Current, Single pulse	L=0.1mH	10	A
E _{AS} ^b	Avalanche Energy, Single pulse	L=0.1mH	5	mJ

Note a : Pulse width limited by maximum junction temperature.

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

Note c : Surface Mounted on 1in^2 pad area.

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

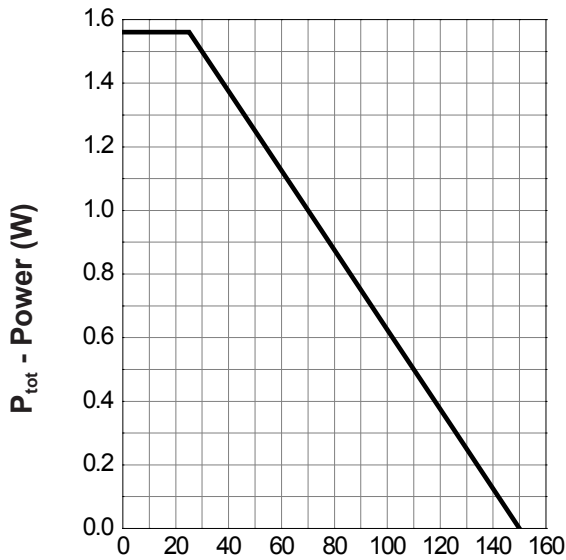
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} =-250μA	-20	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =-16V, V _{GS} =0V T _J =85°C	-	-	-1	μA
			-	-	-30	
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =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} =-2.9A	-	45	54	mΩ
		V _{GS} =-2.5V, I _{DS} =-1.7A	-	55	65	
Diode Characteristics						
V _{SD} ^d	Diode Forward Voltage	I _{SD} =-1A, V _{GS} =0V	-	-0.75	-1	V
t _{rr}	Reverse Recovery Time	I _{SD} =-2.9A, dI _{SD} /dt=100A/μs	-	17.7	-	ns
Q _{rr}	Reverse Recovery Charge		-	5.6	-	nC
Dynamic Characteristics ^e						
R _G	Gate Resistance	V _{GS} =0V,V _{DS} =0V,F=1MHz	-	3.5	-	Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =-10V, Frequency=1.0MHz	-	880	1347	pF
C _{oss}	Output Capacitance		-	273	-	
C _{rss}	Reverse Transfer Capacitance		-	173	-	
t _{d(ON)}	Turn-on Delay Time	V _{DD} =-10V, R _L =10Ω, I _{DS} =-1A, V _{GEN} =-10V, R _G =6Ω	-	6	11	ns
t _r	Turn-on Rise Time		-	14	25	
t _{d(OFF)}	Turn-off Delay Time		-	23	41	
t _f	Turn-off Fall Time		-	4	7	
Gate Charge Characteristics ^e						
Q _g	Total Gate Charge	V _{DS} =-10V, V _{GS} =-4.5V, I _{DS} =-2.9A	-	4.8	6.7	nC
Q _{gs}	Gate-Source Charge		-	0.6	-	
Q _{gd}	Gate-Drain Charge		-	1.7	-	

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

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

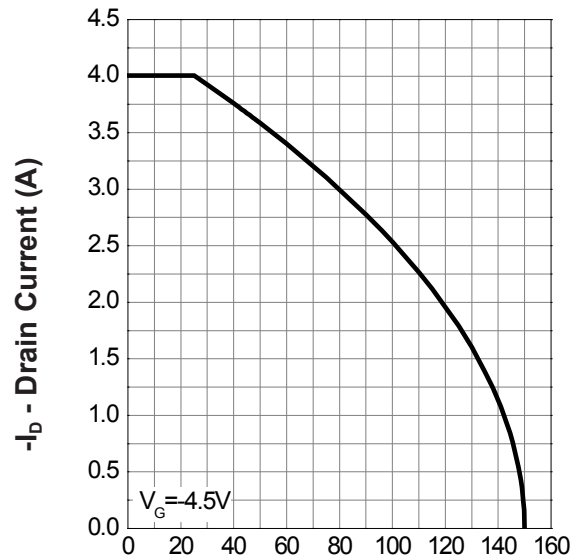
Typical Operating Characteristics

Power Dissipation



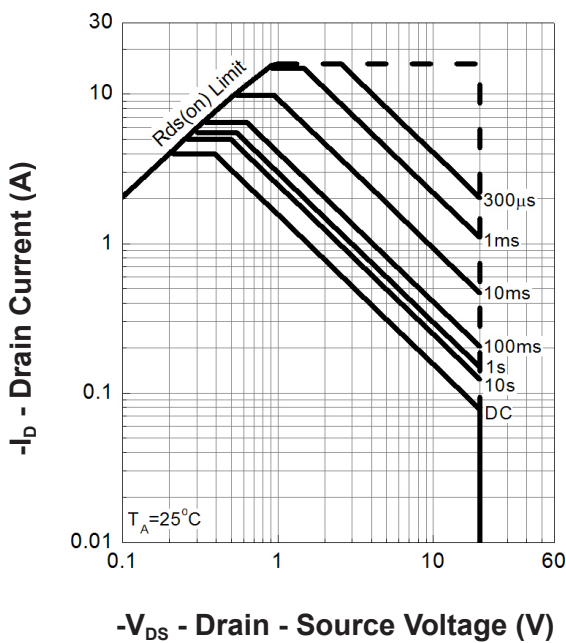
T_j - Junction Temperature (°C)

Drain Current



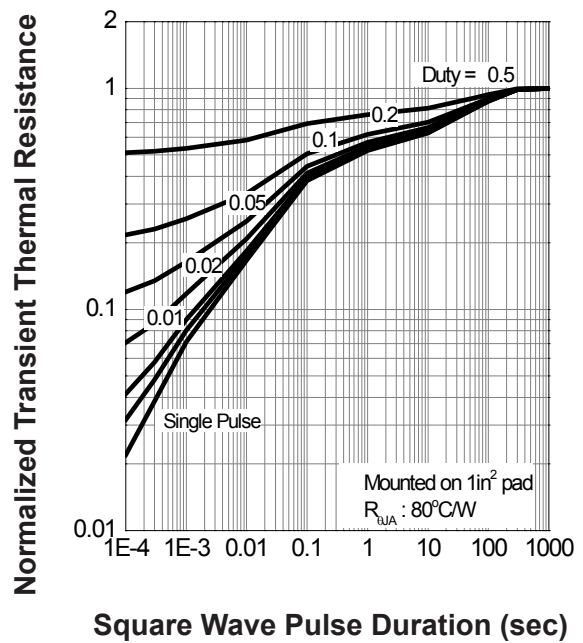
T_j - Junction Temperature (°C)

Safe Operation Area



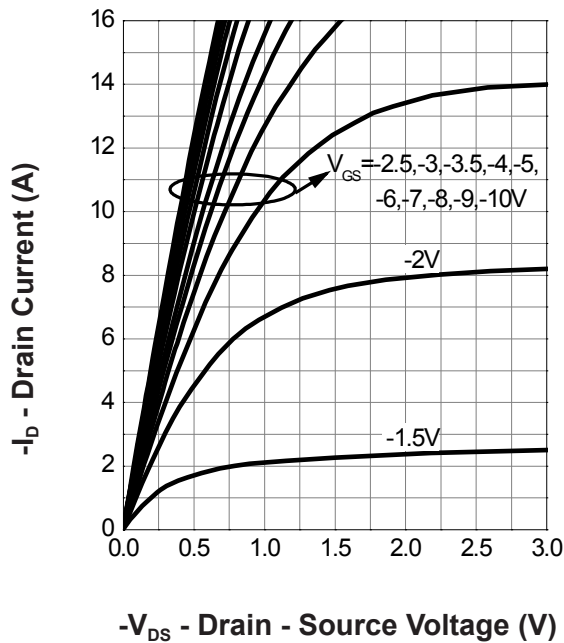
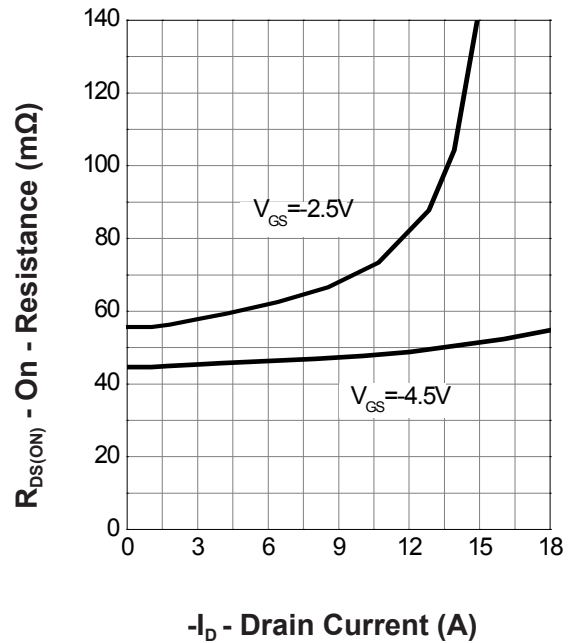
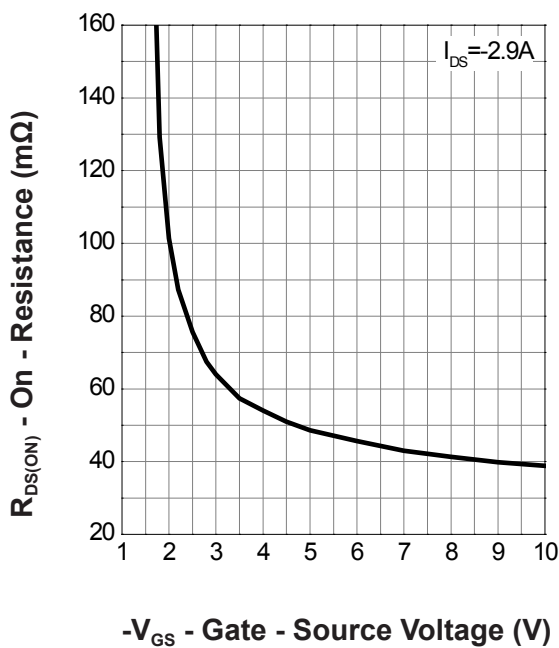
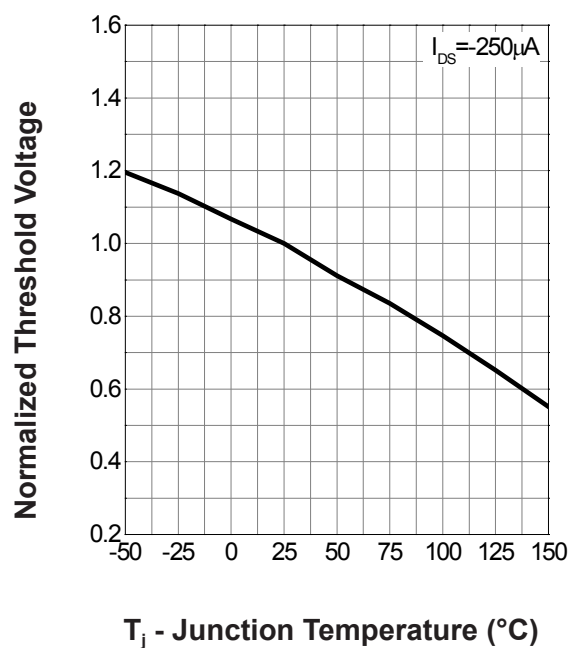
-V_{DS} - Drain - Source Voltage (V)

Thermal Transient Impedance

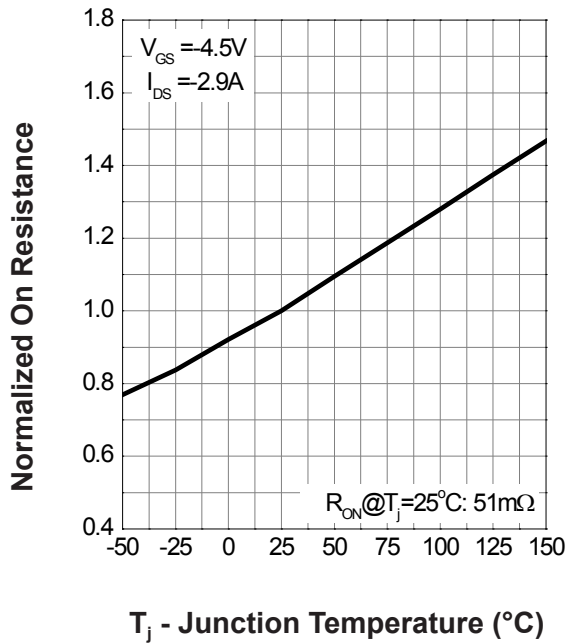
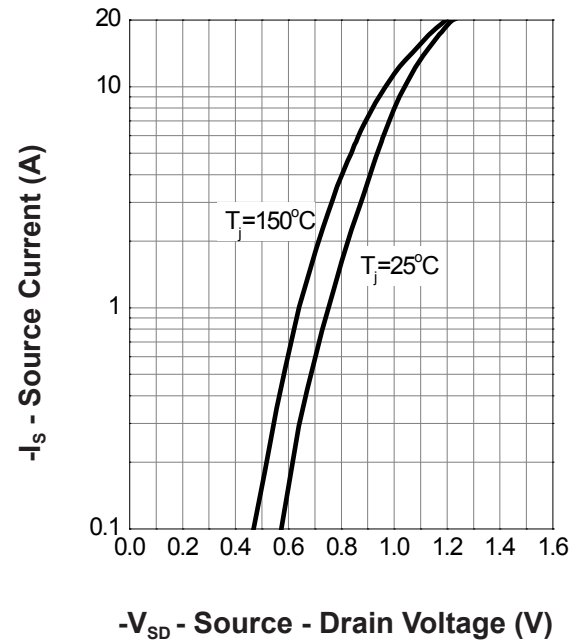
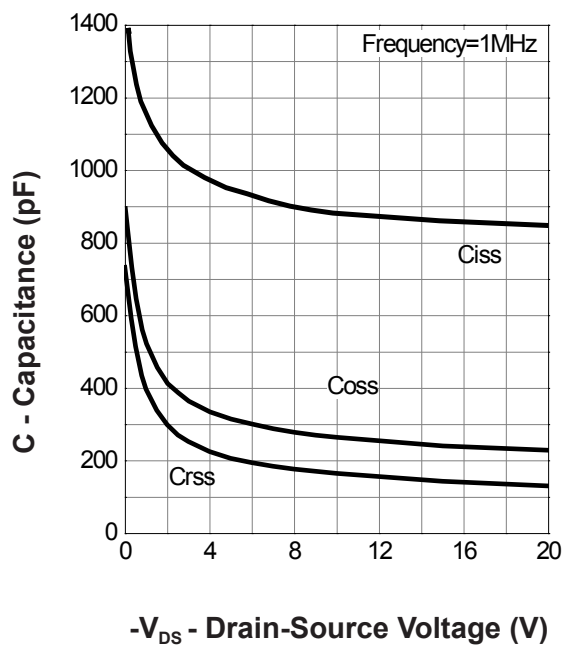
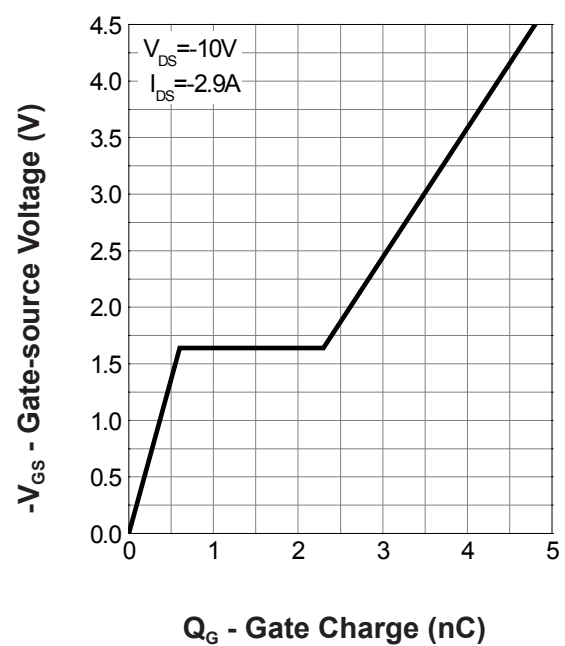


Square Wave Pulse Duration (sec)

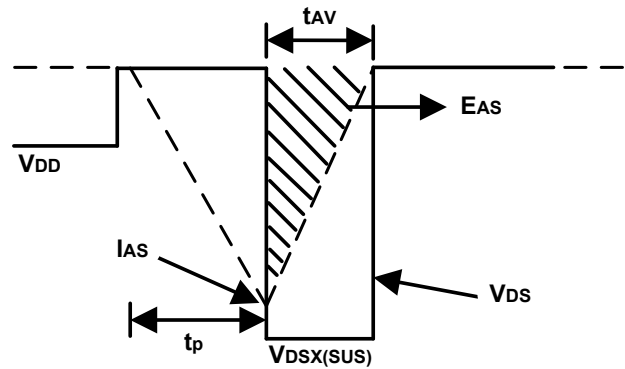
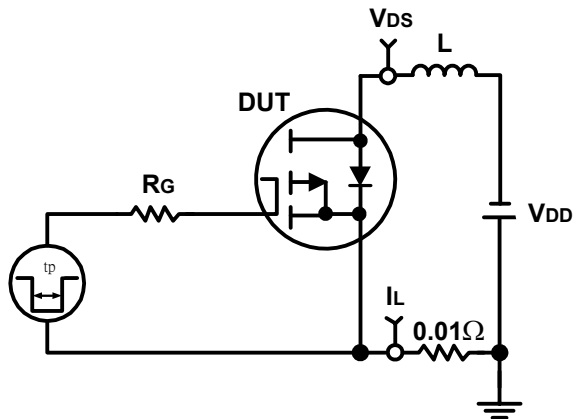
Typical Operating Characteristics(Cont.)

Output Characteristics

Drain-Source On Resistance

Gate-Source On Resistance

Gate Threshold Voltage


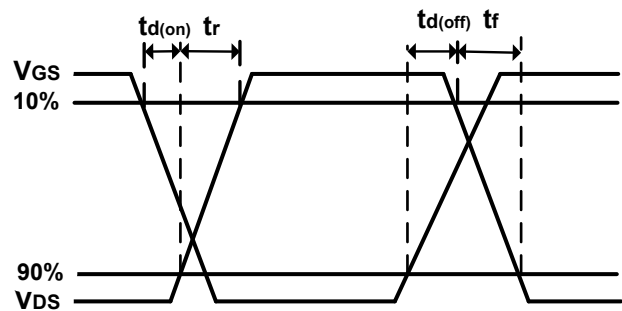
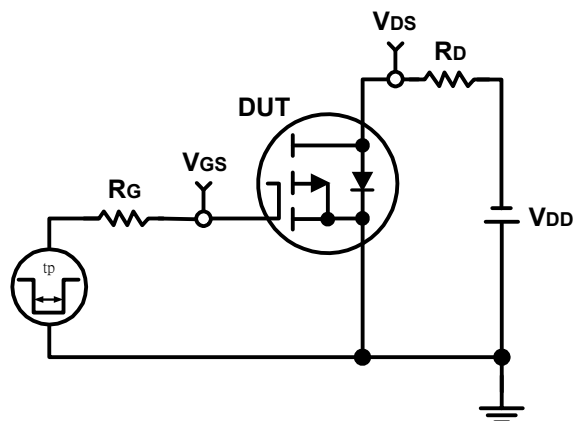
Typical Operating Characteristics(Cont.)

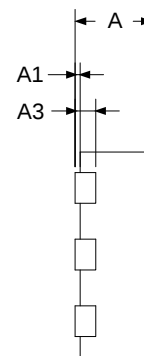
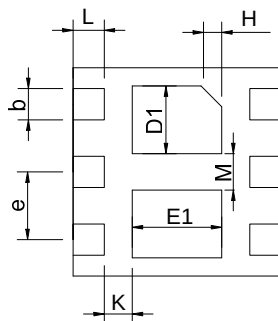
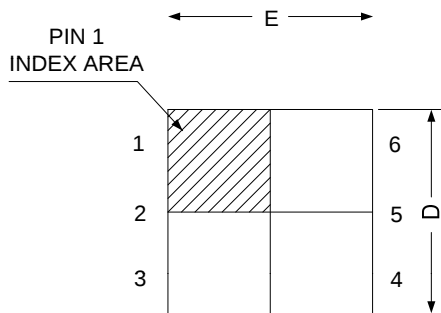
Drain-Source On Resistance

Source-Drain Diode Forward

Capacitance

Gate Charge


Avalanche Test Circuit and Waveforms



Switching Time Test Circuit and Waveforms





SYMBOL	DFN2x2C-6_EP2_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	0.200 REF		0.008 REF	
b	0.25	0.35	0.010	0.014
D	1.90	2.10	0.075	0.083
D1	0.55	0.75	0.022	0.030
E	1.90	2.10	0.075	0.083
E1	0.76	0.96	0.030	0.038
e	0.65 BSC		0.026 BSC	
H	0.20 BSC		0.008 BSC	
K	0.17	0.37	0.007	0.015
L	0.25	0.35	0.010	0.014
M	0.25	0.45	0.010	0.018

RECOMMENDED LAND PATTERN

