

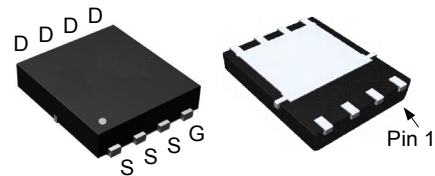
Features

- -20V/-120A,
 $R_{DS(ON)} = 1.6m\Omega(\text{typ.}) @ V_{GS} = -10V$
 $R_{DS(ON)} = 2m\Omega(\text{typ.}) @ V_{GS} = -4.5V$
 $R_{DS(ON)} = 2.7m\Omega(\text{typ.}) @ V_{GS} = -2.5V$
- 100% UIS + R_g Tested
- Reliable and Rugged
- Lead Free and Green Devices Available (RoHS Compliant)

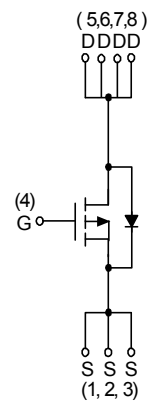
Applications

- Portable Equipment applications
- For E-cigarette battery protection application
- Load switch

Pin Description



DFN5x6-8L_EP1_P



P-Channel MOSFET

Absolute Maximum Ratings (T_A = 25°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 _C =25°C	-120	A
I _D	Continuous Drain Current	T _C =25°C	-120	
		T _C =100°C	-90	
I _{DM} ^b	Pulsed Drain Current	T _C =25°C	-360	
P _D	Maximum Power Dissipation	T _C =25°C	104	W
		T _C =100°C	41.6	
R _{θJC}	Thermal Resistance-Junction to Case	Steady State	1.2	°C/W
R _{θJA} ^c	Thermal Resistance-Junction to Ambient	Steady State	60	°C/W
I _{AS} ^d	Avalanche Current, Single pulse	L=0.5mH	-22	A
E _{AS} ^d	Avalanche Energy, Single pulse	L=0.5mH	121	mJ

Note a : Package is limited to 100A.

Note b : Pulse width limited by max. junction temperature.

Note c : Surface Mounted on 1in² pad area.

Note d : UIS tested and pulse width limited by maximum junction temperature 150°C (initial temperature T_J=25°C).

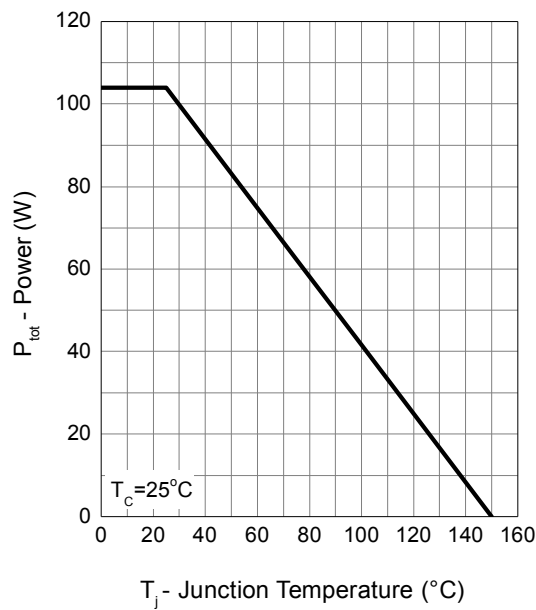
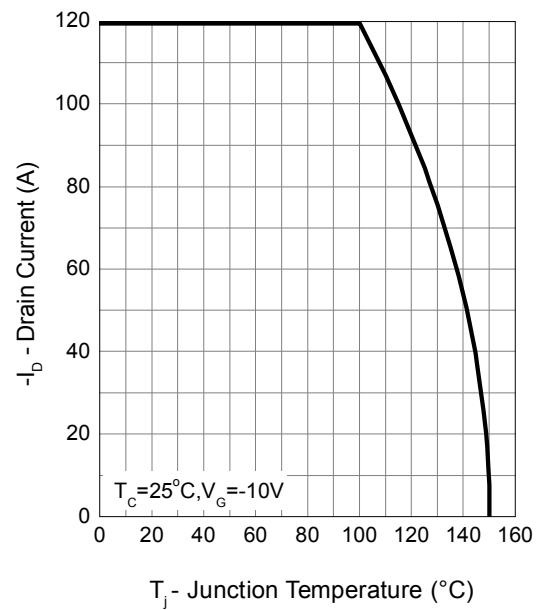
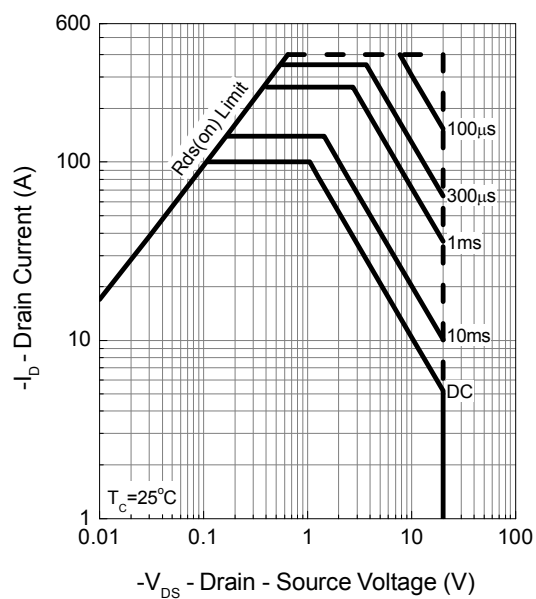
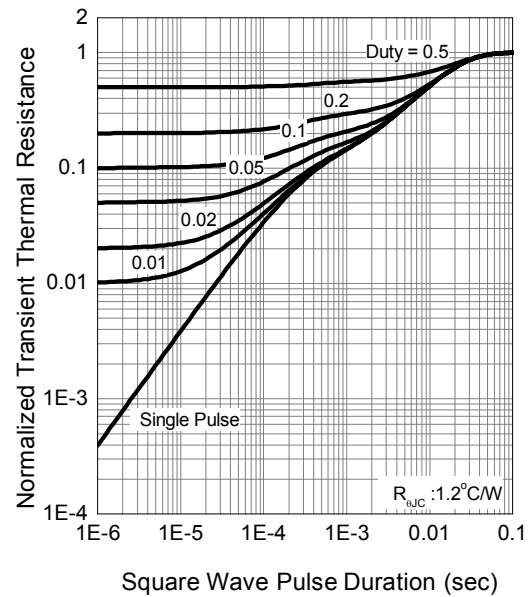
Electrical Characteristics (T_A = 25°C Unless Otherwise Noted)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} = -250μA	-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	-0.85	-1.3	V
I _{GSS}	Gate Leakage Current	V _{GS} =±12V, V _{DS} =0V	-	-	±100	nA
R _{DS(ON)} ^e	Drain-Source On-state Resistance	V _{GS} =-10V, I _{DS} =-20A	-	1.6	2	mΩ
		V _{GS} =-4.5V, I _{DS} =-20A	-	2	2.5	mΩ
		V _{GS} =-2.5V, I _{DS} =-20A	-	2.7	4.2	mΩ
Diode Characteristics						
V _{SD} ^e	Diode Forward Voltage	I _{SD} =-1A V _{GS} =0V	-0.3	-0.6	-1.0	V
t _{rr}	Reverse Recovery Time	I _{SD} =-20A, dI _{SD} /dt=100A/μs	-	75	-	ns
Q _{rr}	Reverse Recovery Charge		-	75	-	nC
Dynamic Characteristics ^f						
R _G	Gate Resistance	V _{GS} =0V, V _{DS} =0V, f=1MHz	-	2.3	-	Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =-10V, Frequency=1.0MHz	-	12500	16250	pF
C _{oss}	Output Capacitance		-	2450	-	
C _{rss}	Reverse Transfer Capacitance		-	2250	-	
t _{d(ON)}	Turn-on Delay Time	V _{DD} =-10V, R _L =10Ω, I _{DS} =-1A, V _{GEN} =-10V, R _G =6Ω	-	23	42	ns
t _r	Turn-on Rise Time		-	29	53	
t _{d(OFF)}	Turn-off Delay Time		-	720	1300	
t _f	Turn-off Fall Time		-	330	600	
Gate Charge Characteristics ^f						
Q _g	Total Gate Charge	V _{DS} =-10V, V _{GS} =-4.5V, I _{DS} =-20A	-	140	196	nC
Q _{gs}	Gate-Source Charge		-	22	-	
Q _{gd}	Gate-Drain Charge		-	41	-	

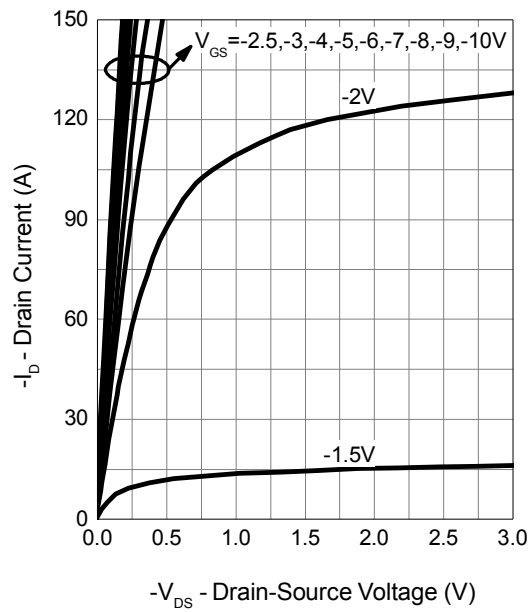
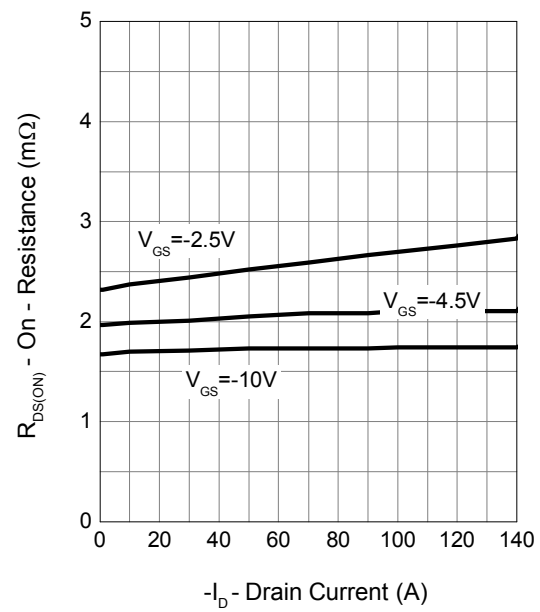
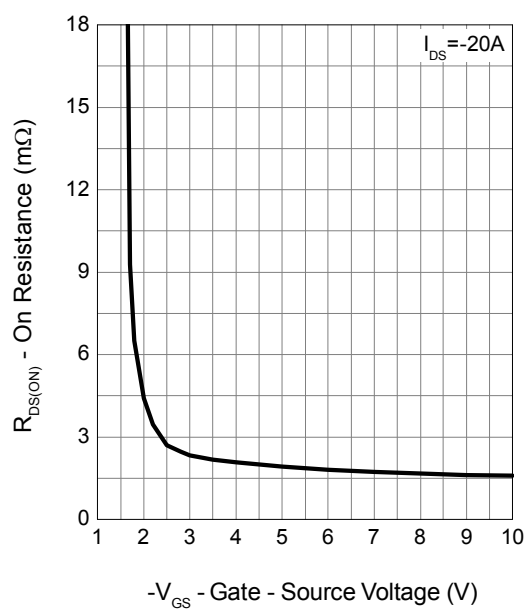
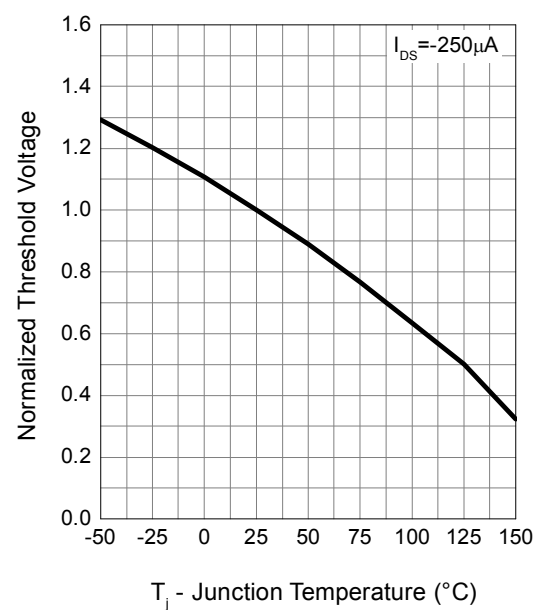
Note e : Pulse test ; pulse width≤300μs, duty cycle≤2%.

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

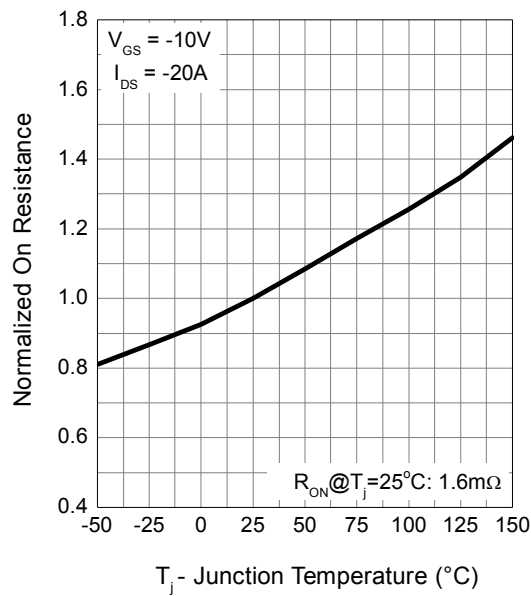
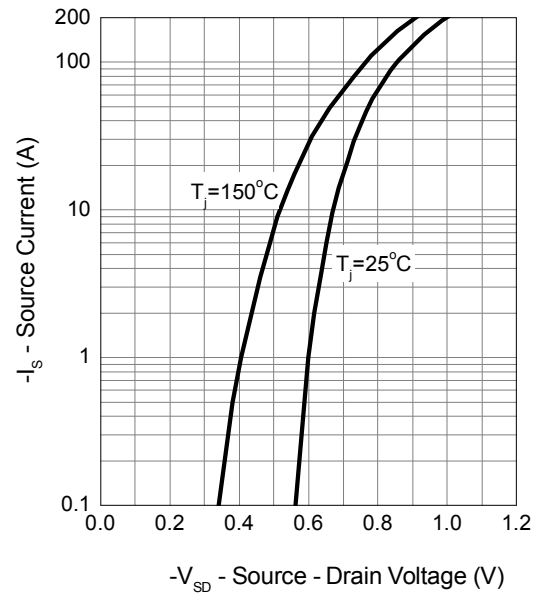
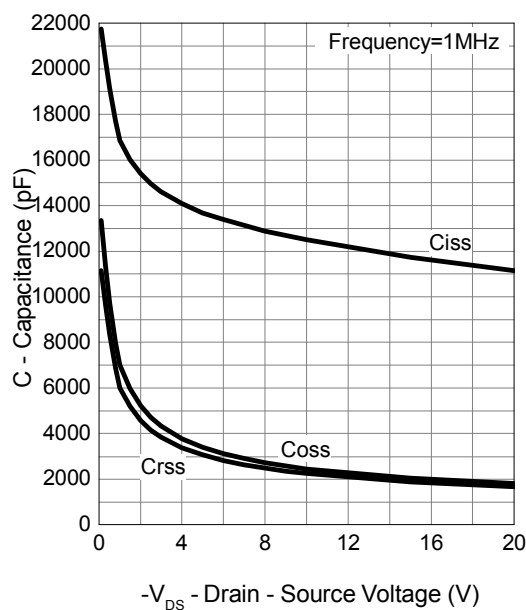
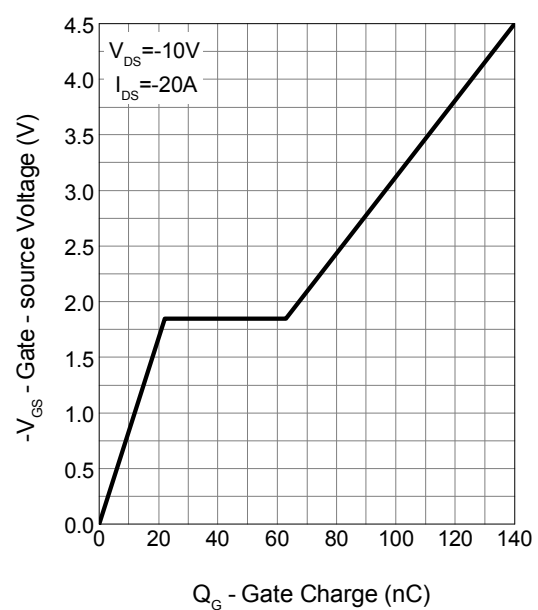
Typical Operating Characteristics

Power Dissipation

Drain Current

Safe Operation Area

Thermal Transient Impedance


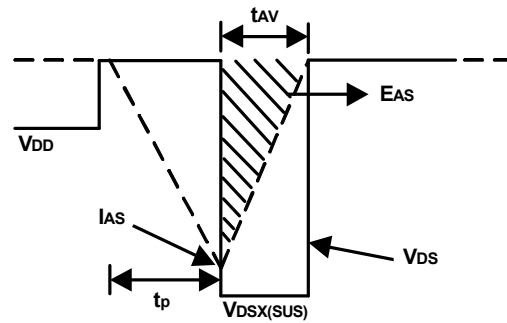
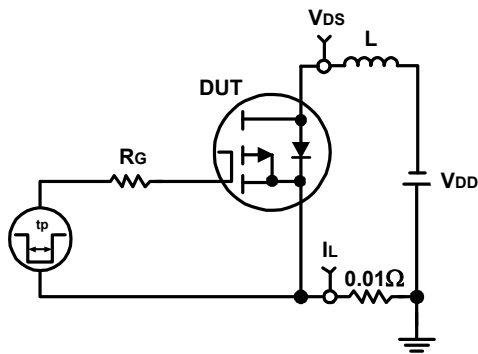
Typical Operating Characteristics (Cont.)

Output Characteristics

Drain-Source On Resistance

Gate-Source On Resistance

Gate Threshold Voltage


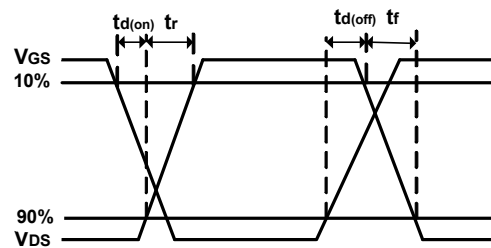
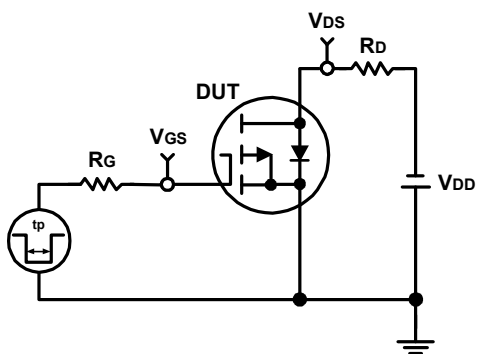
Typical Operating Characteristics (Cont.)

Drain-Source On Resistance

Source-Drain Diode Forward

Capacitance

Gate Charge


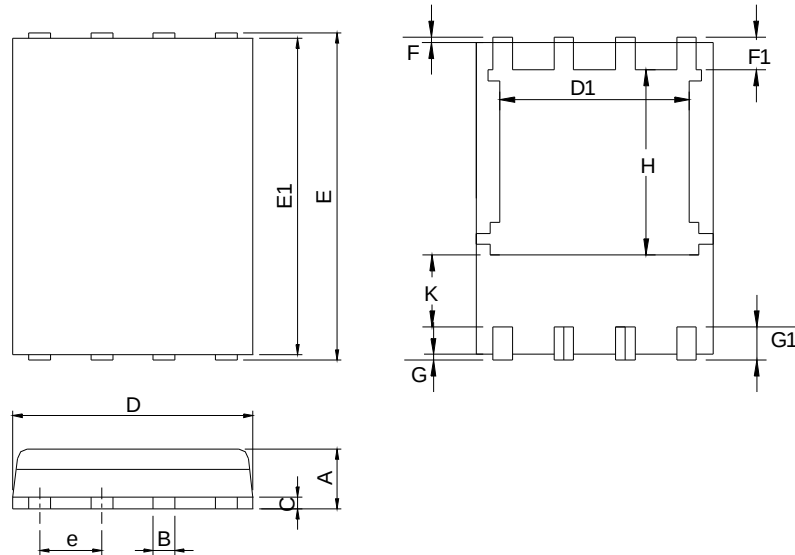
Avalanche Test Circuit and Waveforms



Switching Time Test Circuit and Waveforms



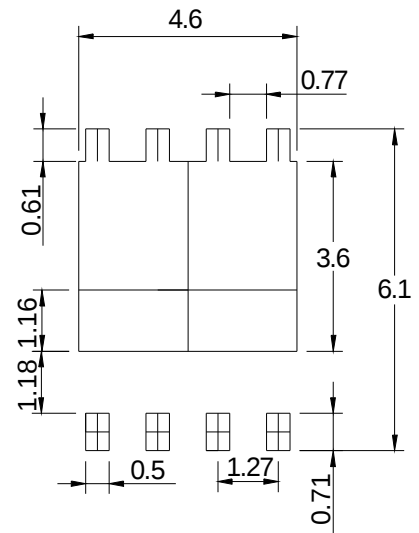
Package Information

DFN5x6-8


SYMBOL	DFN5x6-8			
	MILLIMETERS		INCHES	
	MIN.	MAX.	MIN.	MAX.
A	0.90	1.20	0.035	0.047
B	0.3	0.51	0.012	0.020
C	0.19	0.25	0.007	0.010
D	4.80	5.30	0.189	0.209
D1	4.00	4.40	0.157	0.173
E	5.90	6.20	0.232	0.244
E1	5.50	5.80	0.217	0.228
e	1.27 BSC		0.050 BSC	
F	0.05	0.30	0.002	0.012
F1	0.35	0.75	0.014	0.030
G	0.05	0.30	0.002	0.012
G1	0.35	0.75	0.014	0.030
H	3.34	3.9	0.131	0.154
K	0.762	-	0.03	-

Note : 1.Dimension D, D1,D2 and E1 do not include mold flash or protrusions.
Mold flash or protrusions shall not exceed 10 mil.

RECOMMENDED LAND PATTERN



UNIT: mm