

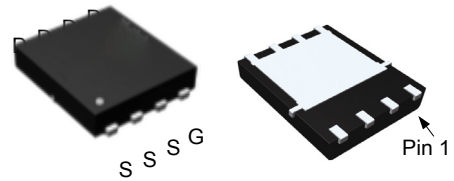
Features

- 40V/50A,
 $R_{DS(ON)} = 9m\Omega$ (typ.) @ $V_{GS}=10V$
 $R_{DS(ON)} = 12.5m\Omega$ (typ.) @ $V_{GS}=4.5V$
- 100% UIS + R_g Tested
- Reliable and Rugged
- Lead Free and Green Devices Available
 (RoHS Compliant)

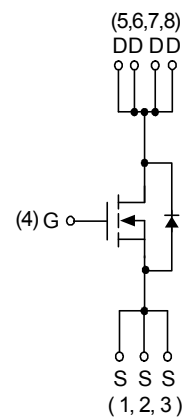
Applications

- Power Management in Desktop Computer or DC/DC Converters.

Pin Description



DFN5x6A-8_EP



N-Channel MOSFET

Absolute Maximum Ratings

Symbol	Parameter		Rating	Unit
Common Ratings (T _A =25°C Unless Otherwise Noted)				
V _{DSS}	Drain-Source Voltage		40	V
V _{GSS}	Gate-Source Voltage		±20	
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	50	A
I _D	Continuous Drain Current	T _C =25°C	50	
		T _C =100°C	20	
I _{DM} ^a	Pulsed Drain Current	T _C =25°C	150	
P _D	Maximum Power Dissipation	T _C =25°C	32	W
		T _C =100°C	12.8	
R _{θJC}	Thermal Resistance-Junction to Case	Steady State	3.9	°C/W
I _D	Continuous Drain Current	T _A =25°C	12	A
		T _A =70°C	9.5	
P _D	Maximum Power Dissipation	T _A =25°C	2.1	W
		T _A =70°C	1.3	
R _{θJA}	Thermal Resistance-Junction to Ambient	t ≤ 10s	22	°C/W
		Steady State	60	
I _{AS} ^b	Avalanche Current, Single pulse	L=0.5mH	13	A
E _{AS} ^b	Avalanche Energy, Single pulse	L=0.5mH	42	mJ

Note a : Package is limited to 60A.

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

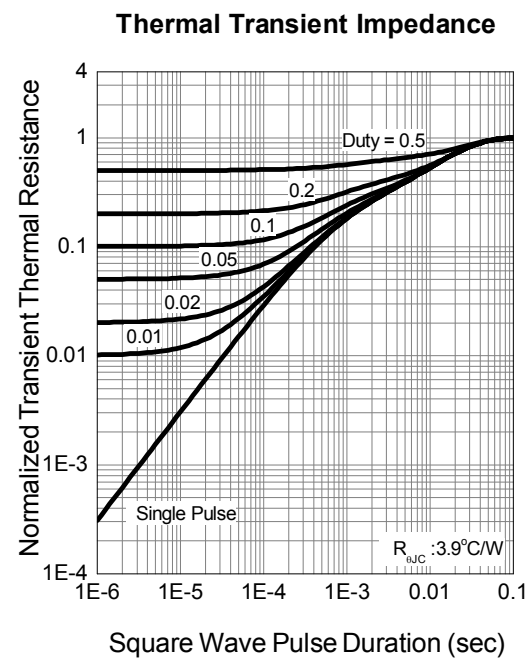
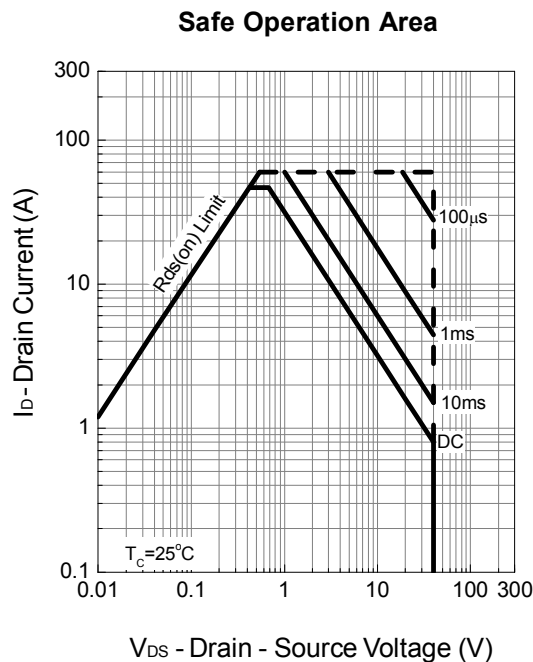
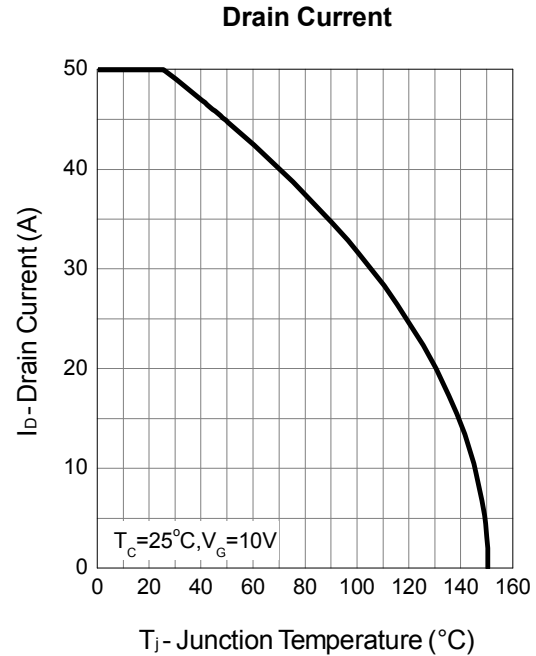
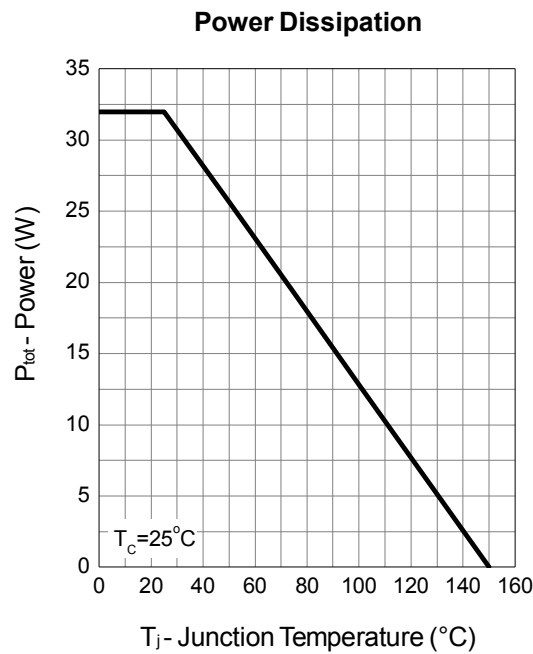
Electrical Characteristics (T_A = 25°C unless otherwise noted)

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 T _J =85°C	-	-	1 30	μA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =250μA	1.5	1.8	2.5	V
I _{GSS}	Gate Leakage Current	V _{GS} =±20V, V _{DS} =0V	-	-	±100	nA
R _{DS(ON)} ^c	Drain-Source On-state Resistance	V _{GS} =10V, I _{DS} =20A T _J =125°C	-	9 10.8	10.5 -	mΩ
G _{fs}	Forward Transconductance	V _{DS} =5V, I _{DS} =15A	-	33	-	S
Diode Characteristics						
V _{SD} ^c	Diode Forward Voltage	I _{SD} =10A, V _{GS} =0V	-	0.8	1.1	V
t _{rr}	Reverse Recovery Time	I _{SD} =10A, dI _{SD} /dt=100A/μs, V _{DD} =20V	-	15	-	ns
t _a	Charge Time		-	9	-	
t _b	Discharge Time		-	6	-	
Q _{rr}	Reverse Recovery Charge		-	8	-	nC
Dynamic Characteristics ^d						
R _G	Gate Resistance	V _{GS} =0V, V _{DS} =0V, F=1MHz	0.7	1.2	1.8	Ω
C _{iSS}	Input Capacitance	V _{GS} =0V, V _{DS} =20V, Frequency=1.0MHz	930	1150	1370	pF
C _{oSS}	Output Capacitance		100	140	180	
C _{rSS}	Reverse Transfer Capacitance		75	90	115	
t _{d(ON)}	Turn-on Delay Time	V _{DD} =20V, R _L =15Ω, I _{DS} =1A, V _{GEN} =10V, R _G =1Ω	-	12	16	ns
t _r	Turn-on Rise Time		-	9	12	
t _{d(OFF)}	Turn-off Delay Time		-	25	32	
t _f	Turn-off Fall Time		-	6	9	
Gate Charge Characteristics ^d						
Q _g	Total Gate Charge	V _{DS} =20V, V _{GS} =4.5V, I _{DS} =30A	-	10	14	nC
Q _g	Total Gate Charge	V _{DS} =20V, V _{GS} =10V, I _{DS} =30A	-	21	28	
Q _{gth}	Threshold Gate Charge		-	1.1	1.32	
Q _{gs}	Gate-Source Charge		-	1.8	2.2	
Q _{gd}	Gate-Drain Charge		-	6	7.6	

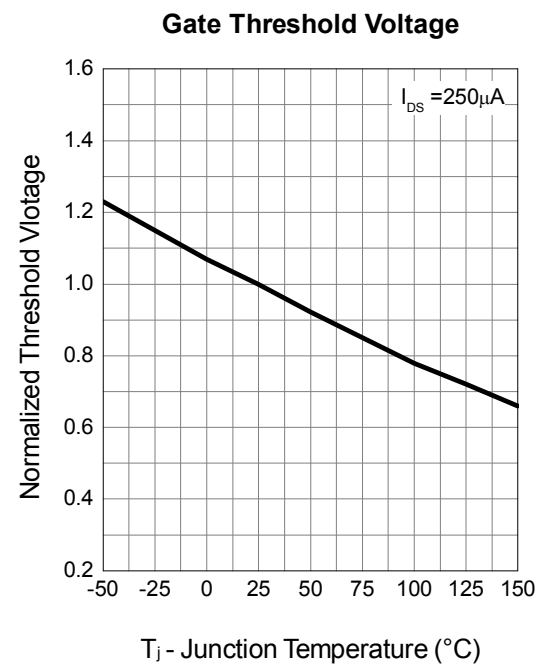
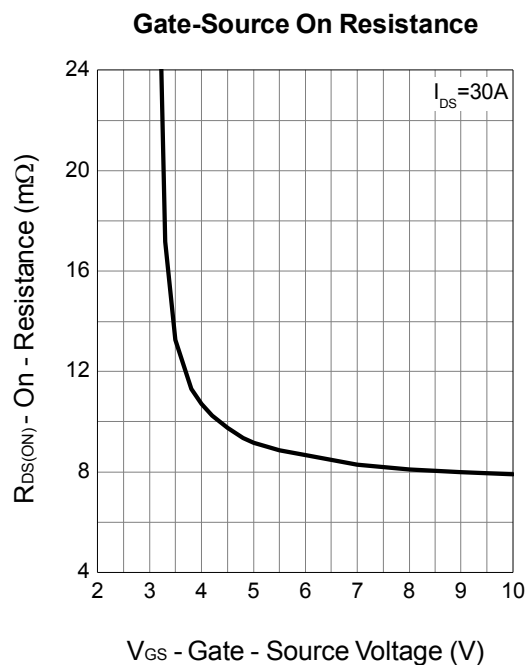
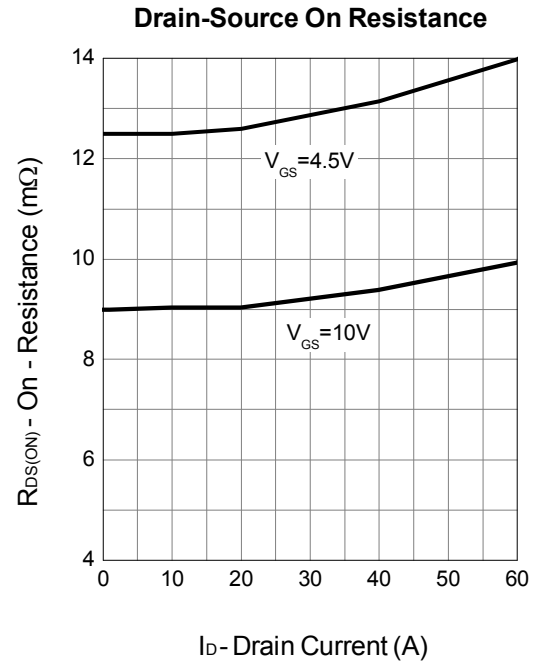
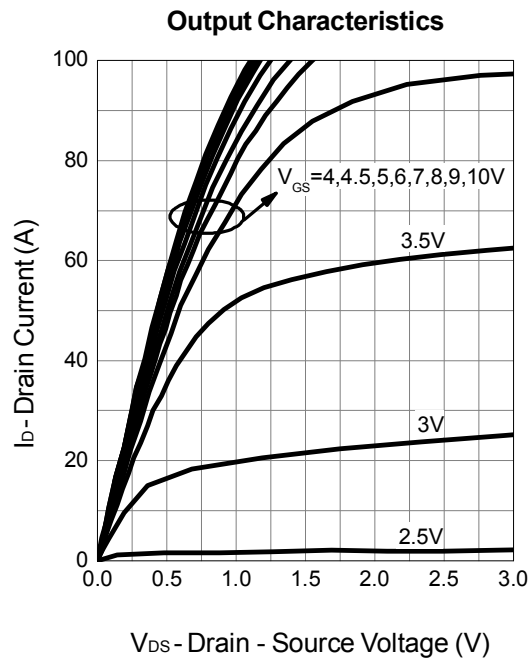
Note c : Pulse test ; pulse width≤300μs, duty cycle≤2%.

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

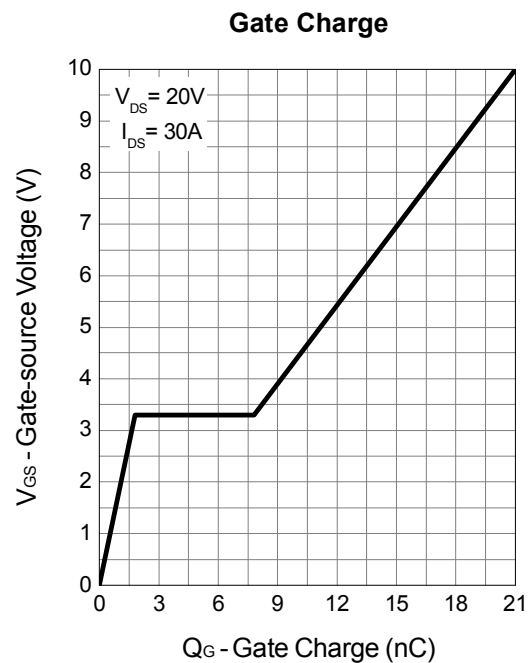
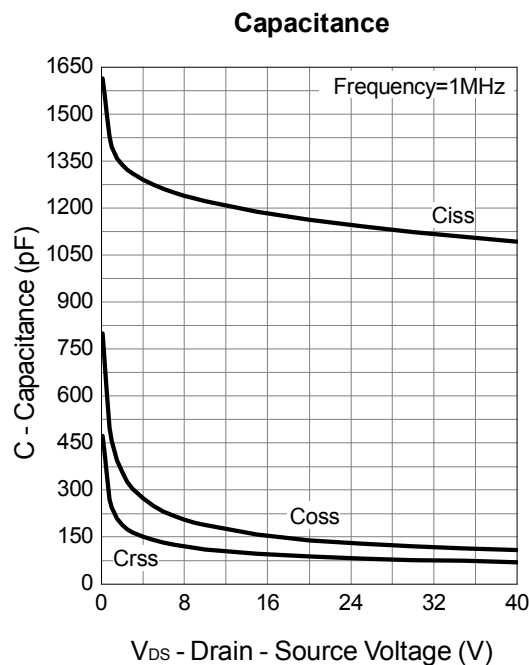
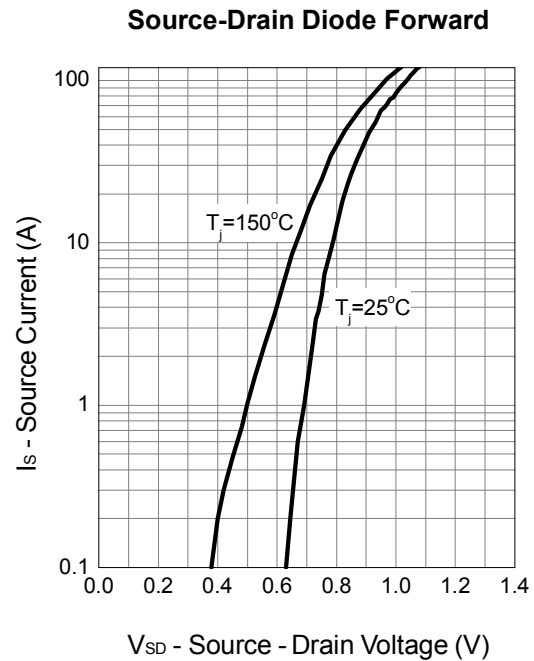
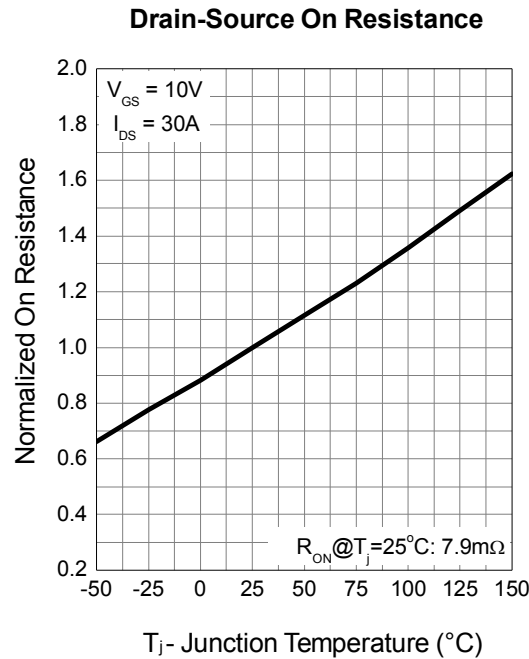
Typical Operating Characteristics



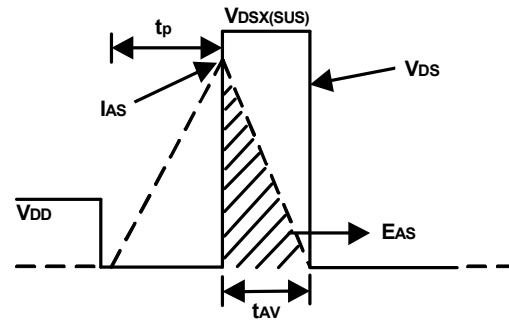
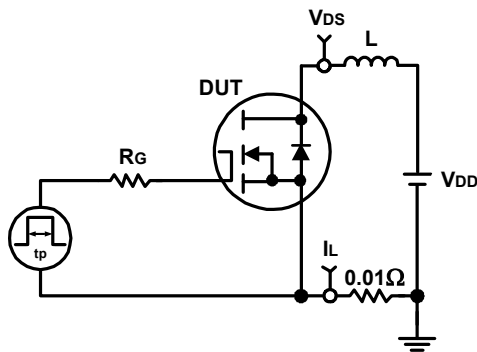
Typical Operating Characteristics (Cont.)



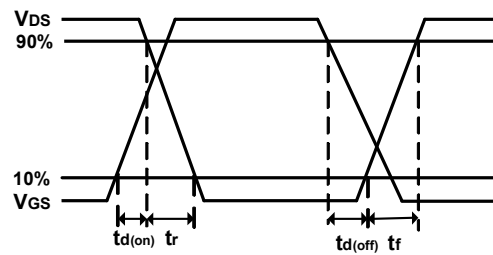
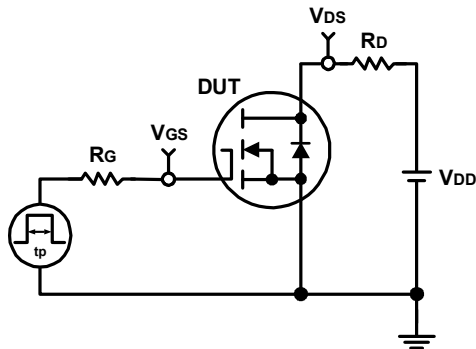
Typical Operating Characteristics (Cont.)



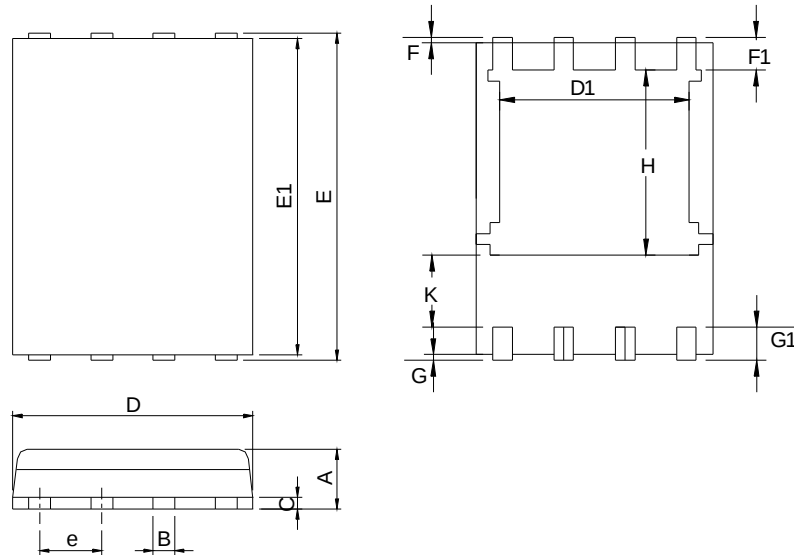
Avalanche Test Circuit and Waveforms



Switching Time Test Circuit and Waveforms

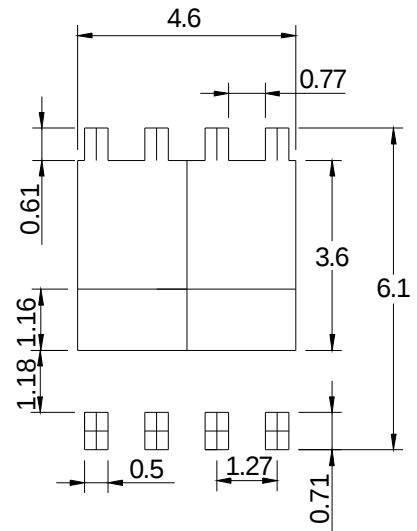


Package Information

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	-

RECOMMENDED LAND PATTERN



UNIT: mm

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