

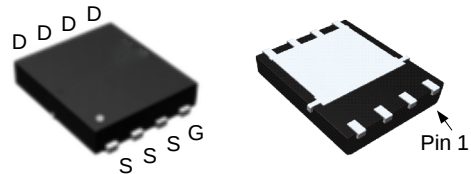
Features

- -60V/-50A ,
 $R_{DS(ON)} = 20m\Omega (typ.) @ V_{GS} = -10V$
 $R_{DS(ON)} = 22.5m\Omega (typ.) @ V_{GS} = -4.5V$
- 100% UIS + R_g Tested
- Reliable and Rugged
- Lead Free and Green Devices Available (RoHS Compliant)

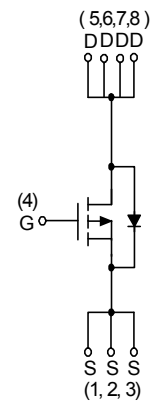
Applications

- DC/DC Converter.
- Power Management.
- Load Switch.
- For Motor Drive Application.

Pin Description



DFN5x6-8



P-Channel MOSFET

Absolute Maximum Ratings (T_A = 25°C unless otherwise noted)

Symbol	Parameter		Rating	Unit
Common Ratings				
V _{DSS}	Drain-Source Voltage		-60	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	A
		T _C =70°C	-30	
I _{DM} ^a	Pulsed Drain Current	T _C =25°C	-24	
P _D	Maximum Power Dissipation	T _C =25°C C	1.78	W
		T _C =70°C	1.14	
R _{θJA} ^c	Thermal Resistance-Junction to Ambient	Steady State	70	°C/W
I _{AS} ^b	Avalanche Current, Single pulse	L=0.5mH	20	A
E _{AS} ^b	Avalanche Energy, Single pulse	L=0.5mH	100	mJ

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

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

Note c : Surface Mounted on 1in² pad area.

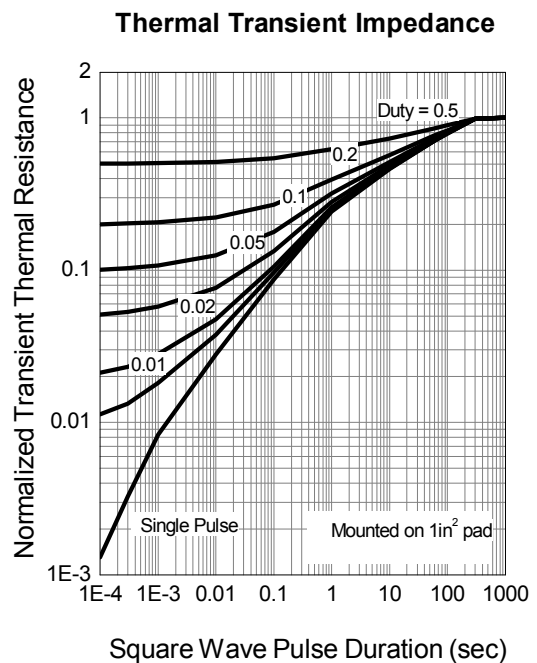
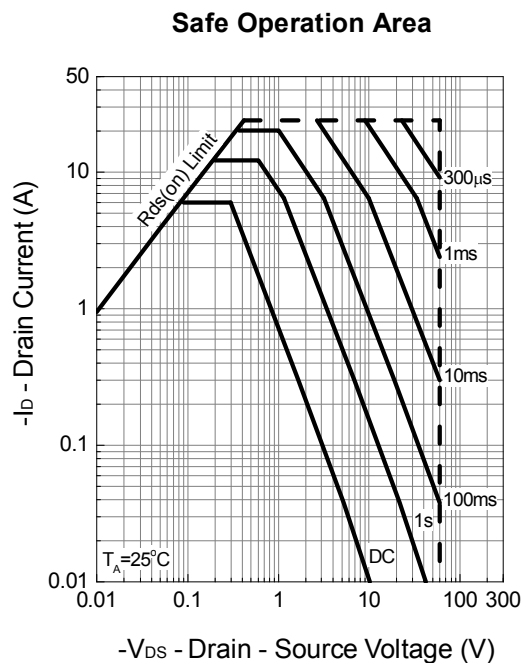
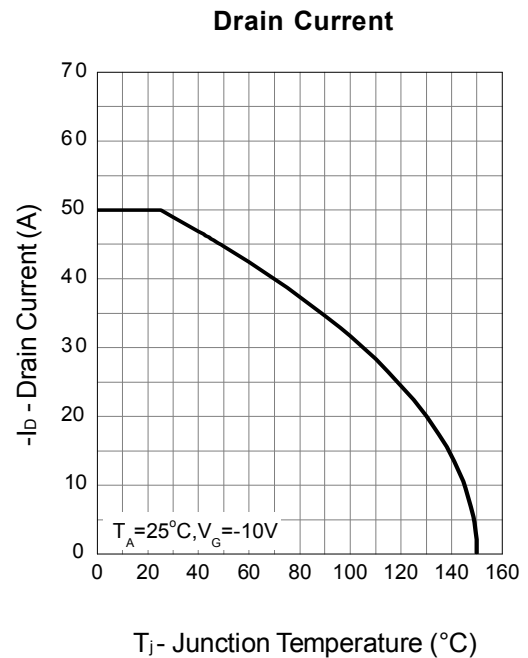
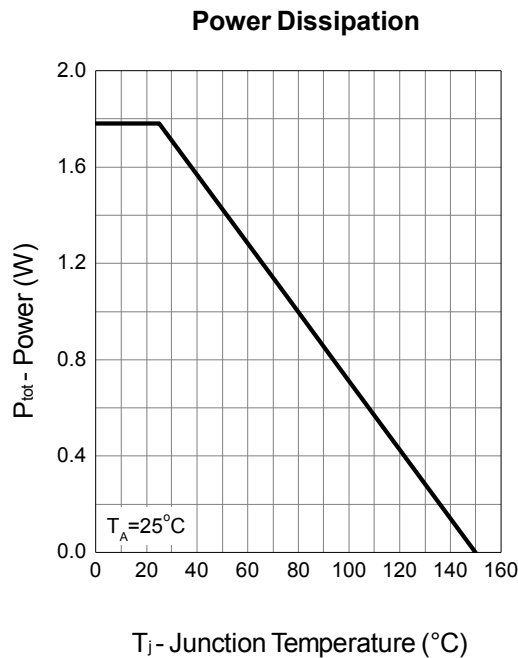
Electrical Characteristics (T_A = 25°C unless otherwise noted)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} = -250μA	-60	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =-48V, V _{GS} =0V T _J =85°C	-	-	1 30	μA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} = -250μA	-1.3	-1.8	-2.3	V
I _{GSS}	Gate Leakage Current	V _{GS} =±20V, V _{DS} =0V	-	-	±100	nA
R _{DS(ON)} ^d	Drain-Source On-state Resistance	V _{GS} =-10V, I _{DS} =-10A V _{GS} =-4.5V, I _{DS} =-8A	-	20 22.5	25 30	mΩ
Diode Characteristics						
V _{SD} ^d	Diode Forward Voltage	I _{SD} =-1A, V _{GS} =0V	-	-0.7	-1.0	V
t _{rr}	Reverse Recovery Time	I _{SD} =-10A, dI _{SD} /dt=100A/μs	-	38	-	ns
Q _{rr}	Reverse Recovery Charge		-	56	-	nC
Dynamic Characteristics ^e						
R _G	Gate Resistance	V _{GS} =0V, V _{DS} =0V, f=1MHz	-	2.5	-	Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =-30V, Frequency=1.0MHz	-	3300	4300	pF
C _{oss}	Output Capacitance		-	230	-	
C _{rss}	Reverse Transfer Capacitance		-	175	-	
t _{d(ON)}	Turn-on Delay Time	V _{DD} =-30V, R _L =30Ω, I _{DS} =-1A, V _{GEN} = -10V, R _G =6Ω	-	19	35	ns
t _r	Turn-on Rise Time		-	13	24	
t _{d(OFF)}	Turn-off Delay Time		-	116	209	
t _f	Turn-off Fall Time		-	41	74	
Gate Charge Characteristics ^e						
Q _g	Total Gate Charge	V _{DS} =-30V, V _{GS} =-4.5V, I _{DS} =-10A	-	36	-	nC
Q _g	Total Gate Charge	V _{DS} =-30V, V _{GS} =-10V, I _{DS} =-10A	-	75	105	
Q _{gs}	Gate-Source Charge		-	11.5	-	
Q _{gd}	Gate-Drain Charge		-	16	-	

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

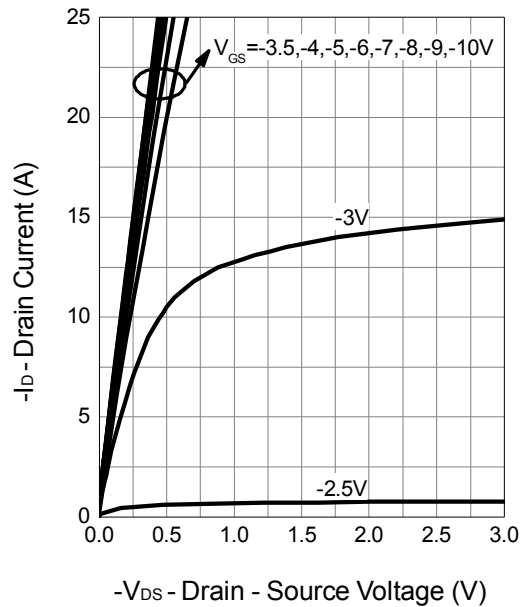
Note e : Guaranteed by design, not subject to production testing.

Typical Characteristics

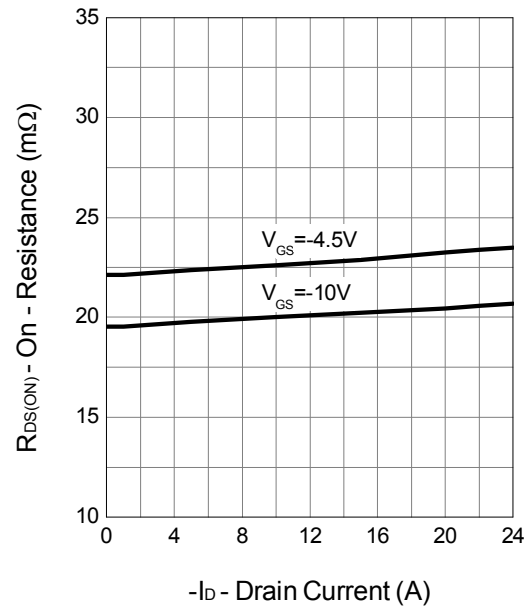


Typical Characteristics (Cont.)

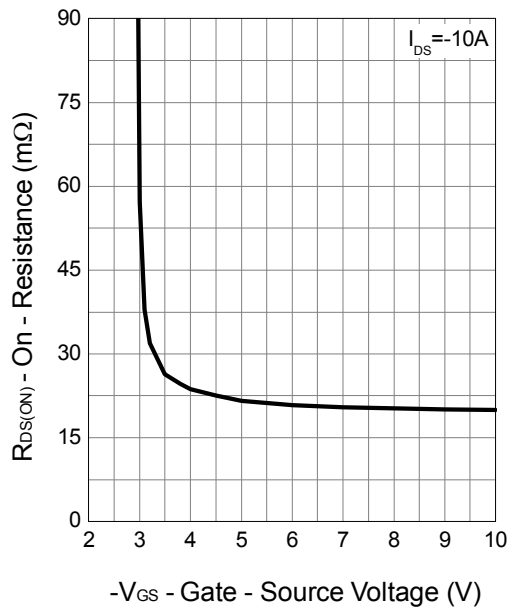
Output Characteristics



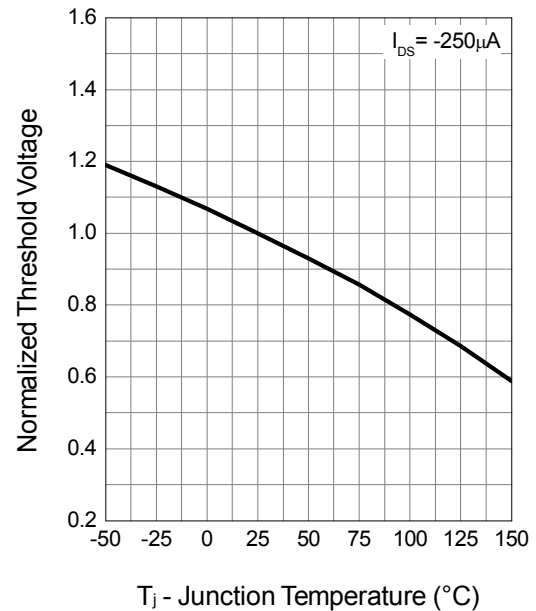
Drain-Source On Resistance



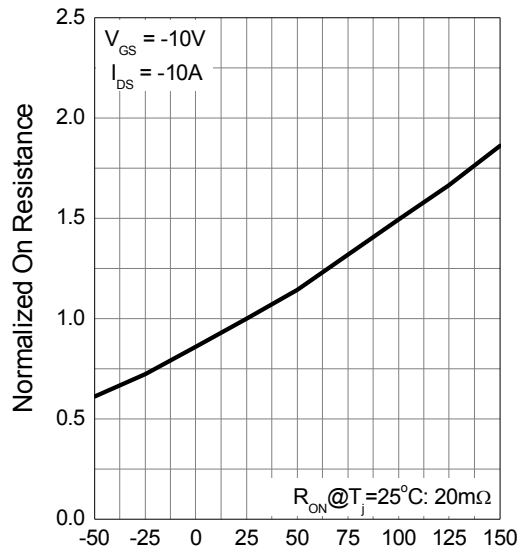
Gate-Source On Resistance



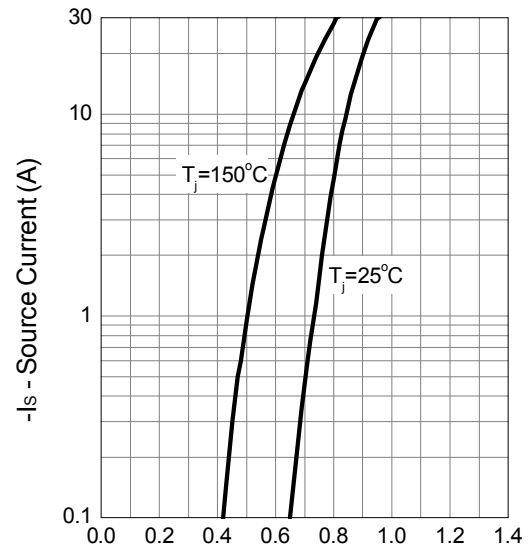
Gate Threshold Voltage



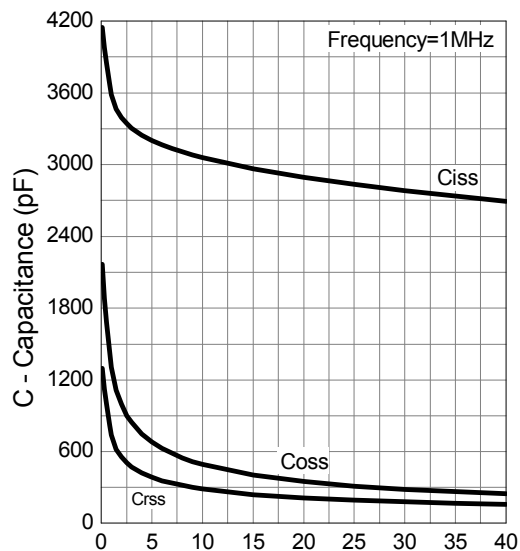
Typical Characteristics (Cont.)

Drain-Source On Resistance


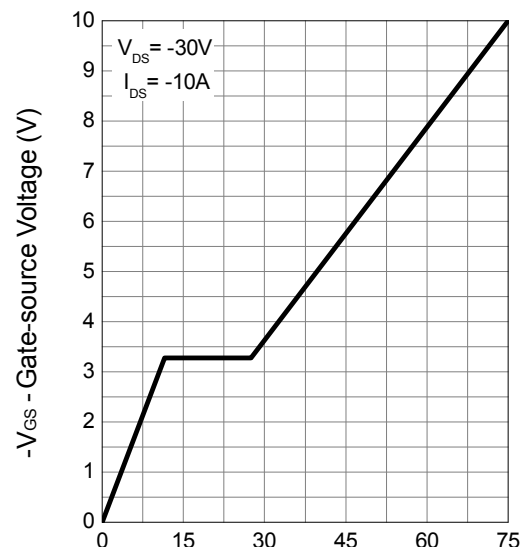
T_j - Junction Temperature ($^{\circ}\text{C}$)

Source-Drain Diode Forward


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

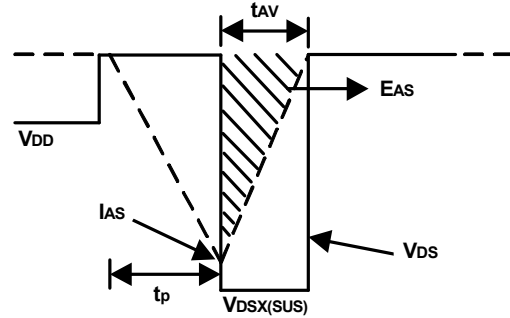
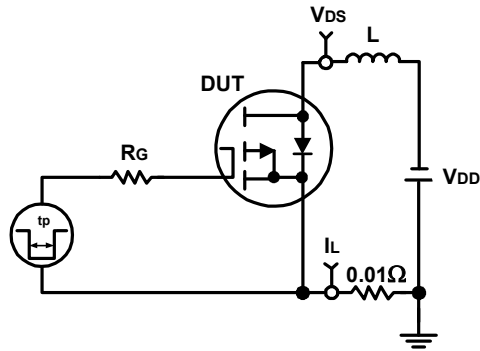
Capacitance


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

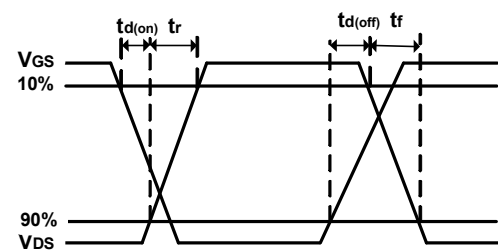
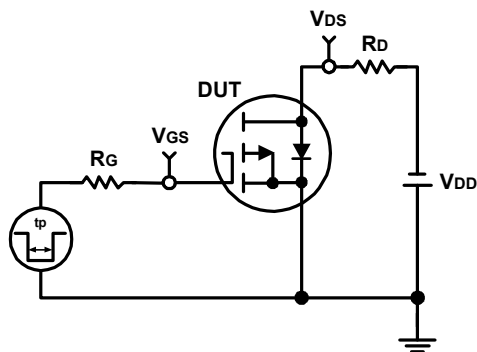
Gate Charge


Q_G - Gate Charge (nC)

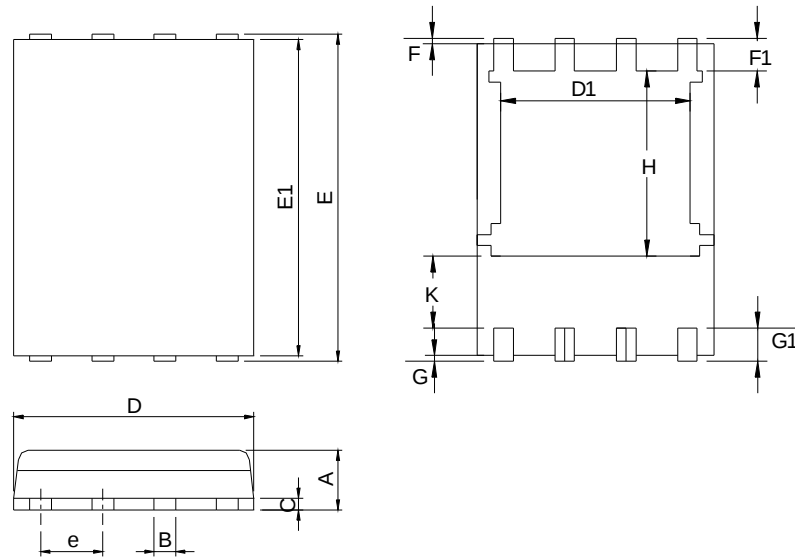
Avalanche Test Circuit and Waveforms



Switching Time Test Circuit and Waveforms



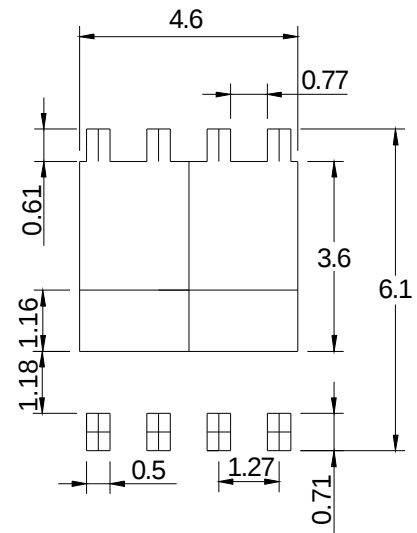
Package Information

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