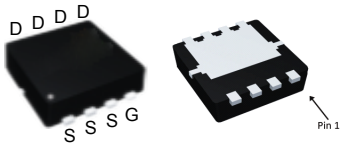
Features

- -40V/-22A,
  $R_{DS(ON)}$= 14mΩ (typ.) @ V_{GS}=-10V
  $R_{DS(ON)}$= 20mΩ (typ.) @ V_{GS}=-4.5V
- Reliable and Rugged
- Lead Free and Green Devices Available (RoHS Compliant)

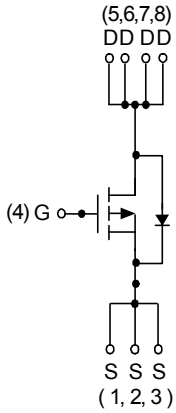
Applications

- Power Management in LCD TV Inverter.

Pin Description



DFN3.3x3.3A-8_EP



P-Channel MOSFET

Absolute Maximum Ratings

Symbol	Parameter		Rating	Unit
V_{DSS}	Drain-Source Voltage		-40	V
V_{GSS}	Gate-Source Voltage		±25	
I_D [a]	Continuous Drain Current (V_{GS}=-10V)	T_A=25°C	-22	A
		T_A=70°C	-9	
I_{DM} [a]	300μs Pulsed Drain Current (V_{GS}=-10V)		-44	
I_S [a]	Diode Continuous Forward Current		-3	
I_{AS} [b]	Avalanche Current, Single pulse (L=0.1mH)		-33	
E_{AS} [b]	Avalanche Energy, Single pulse (L=0.1mH)		54	mJ
T_J	Maximum Junction Temperature		150	°C
T_{STG}	Storage Temperature Range		-55 to 150	
P_D [a]	Maximum Power Dissipation	T_A=25°C	3.1	W
		T_A=70°C	2.0	
$R_{\theta JA}$ [a]	Thermal Resistance-Junction to Ambient	t ≤ 10s	40	°C/W
		Steady State	75	
$R_{\theta JL}$ [c]	Thermal Resistance-Junction to Lead	Steady State	24	

Note a: Surface Mounted on 1in^2 pad area, t ≤ 10sec.
Note b: UIS tested and pulse width limited by maximum junction temperature 150°C (initial temperature T_j=25°C).
Note c: The power dissipation P_D is based on $T_{J(MAX)}$ = 150°C, and it is useful for reducing junction-to-case thermal resistance ($R_{\theta JC}$) when additional heat sink is used.

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	-1.4	-1.9	-2.4	V
I_{GSS}	Gate Leakage Current	V_{GS}=±25V, V_{DS}=0V	-	-	±100	nA
$R_{DS(ON)}$ [a]	Drain-Source On-state Resistance	V_{GS}=-10V, I_{DS}=-22A	-	14	18	mΩ
		V_{GS}=-4.5V, I_{DS}=-7A	-	20	27	

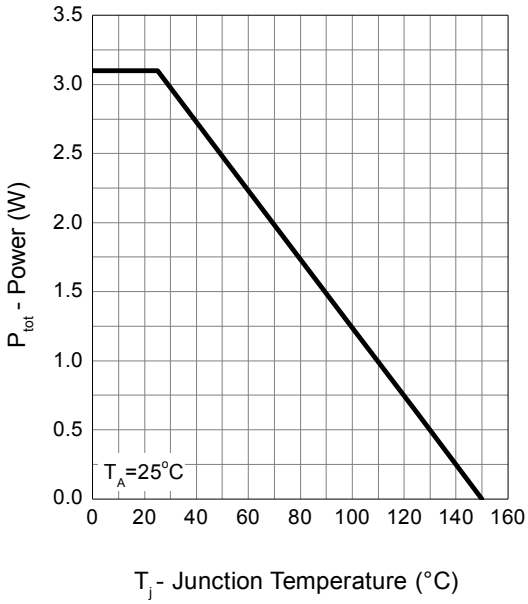
Electrical Characteristics (T_A = 25°C unless otherwise noted)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Diode Characteristics						
V_{SD} [a]	Diode Forward Voltage	I_{SD}=-1A, V_{GS}=0V	-	-0.75	-1	V
t_{rr}	Reverse Recovery Time	I_{SD}=-22A, dI_{SD}/dt=100A/μs	-	24	-	ns
Q_{rr}	Reverse Recovery Charge		-	18	-	nC
Dynamic Characteristics [b]						
R_G	Gate Resistance	V_{GS}=0V,V_{DS}=0V,F=1MHz	-	2.3	-	Ω
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=-20V, Frequency=1.0MHz	-	1500	-	pF
C_{oss}	Output Capacitance		-	235	-	
C_{rss}	Reverse Transfer Capacitance		-	180	-	
$t_{d(ON)}$	Turn-on Delay Time	V_{DD}=-20V, R_L=20Ω, I_{DS}=-1A, V_{GEN}=-10V, R_G=6Ω	-	14	-	ns
t_r	Turn-on Rise Time		-	12	-	
$t_{d(OFF)}$	Turn-off Delay Time		-	41	-	
t_f	Turn-off Fall Time		-	22	-	
Gate Charge Characteristics [b]						
Q_g	Total Gate Charge	V_{DS}=-20V, V_{GS}=-10V, I_{DS}=-22A	-	32	-	nC
Q_{gs}	Gate-Source Charge		-	5.2	-	
Q_{gd}	Gate-Drain Charge		-	8	-	

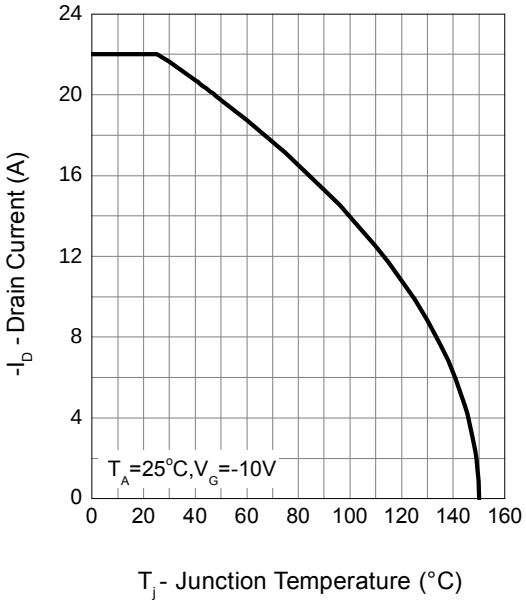
Note a: Pulse test; pulse width≤300μs, duty cycle≤2%.
Note b: Guaranteed by design, not subject to production testing.

Typical Operating Characteristics

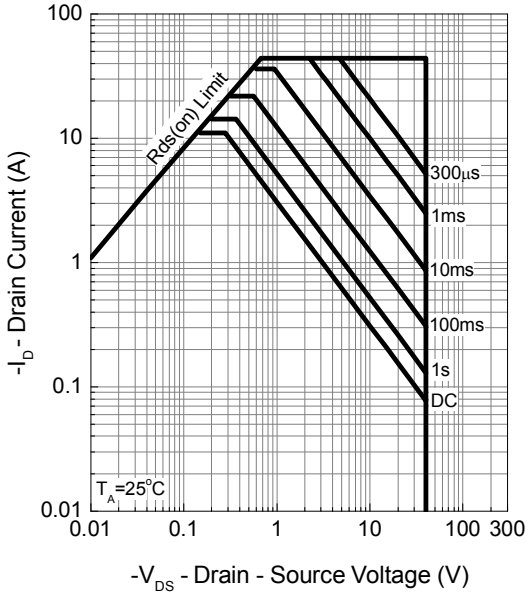
Power Dissipation



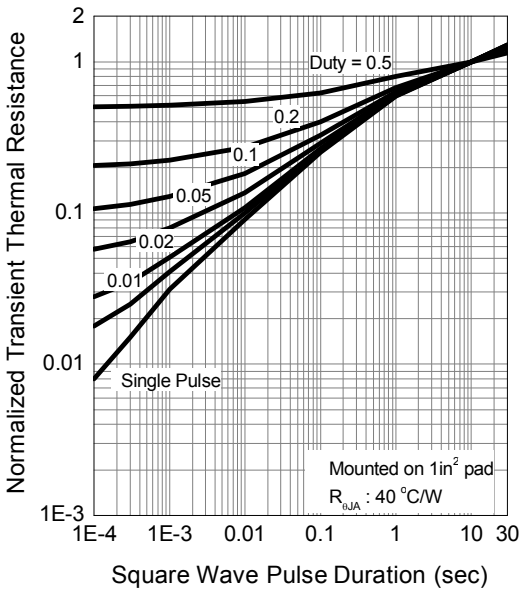
Drain Current



Safe Operation Area

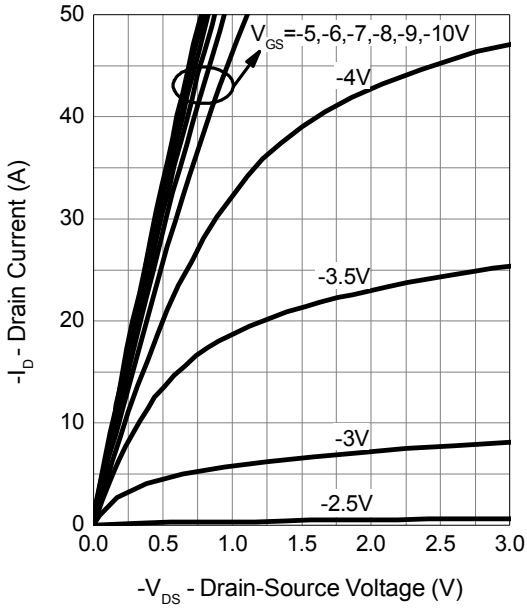


Thermal Transient Impedance

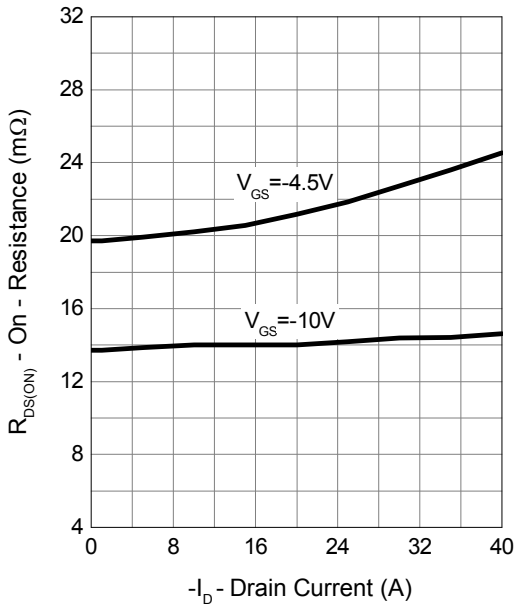


Typical Operating Characteristics (Cont.)

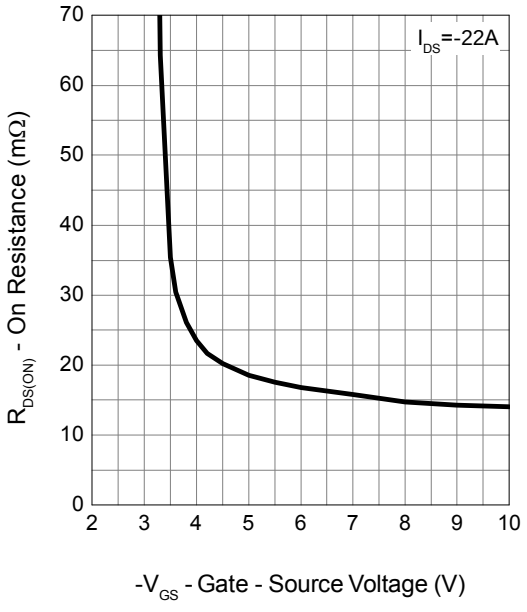
Output Characteristics



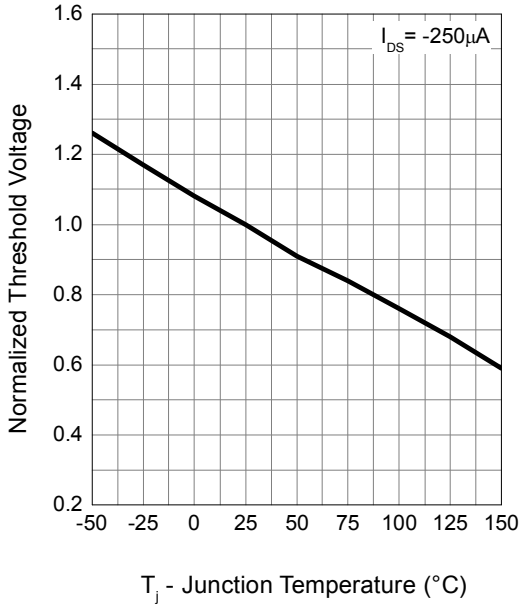
Drain-Source On Resistance



Gate-Source On Resistance

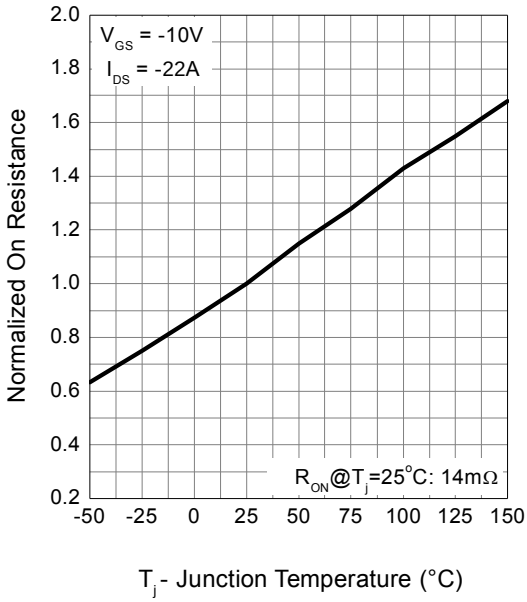


Gate Threshold Voltage

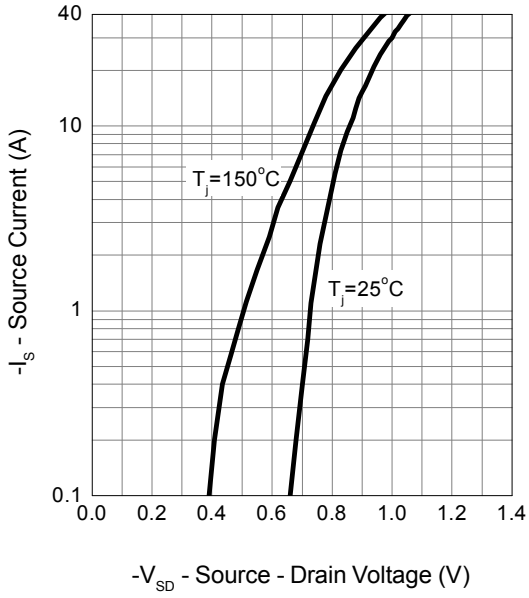


Typical Operating Characteristics (Cont.)

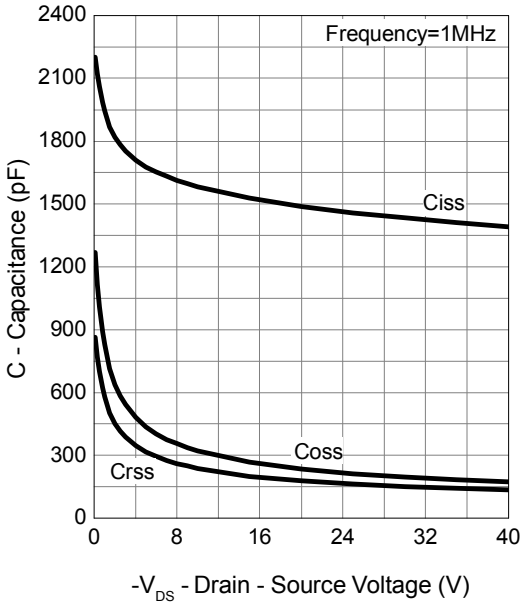
Drain-Source On Resistance



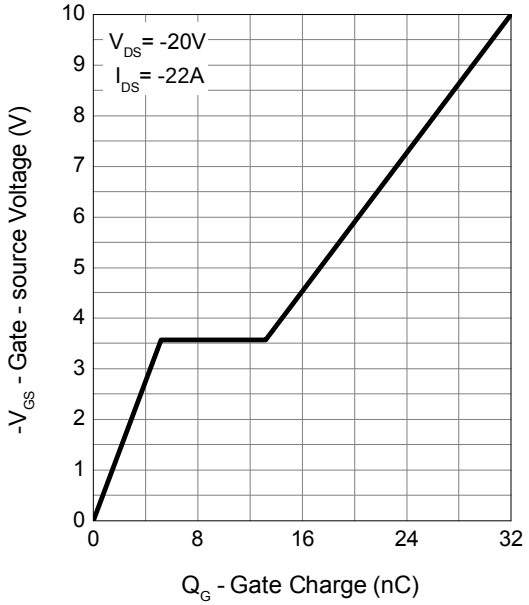
Source-Drain Diode Forward



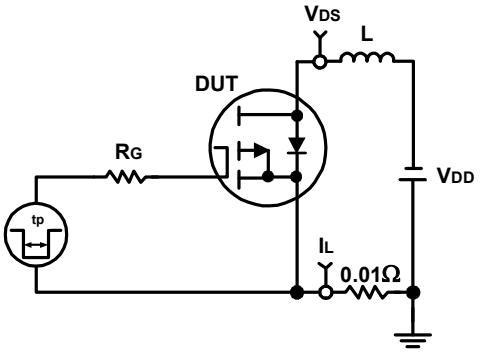
Capacitance

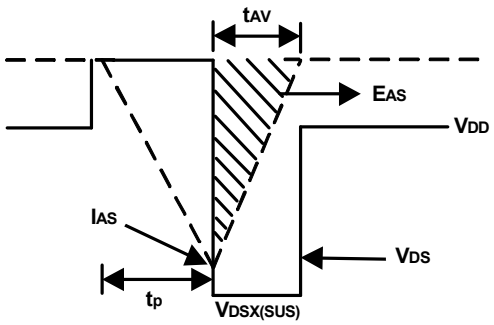


Gate Charge

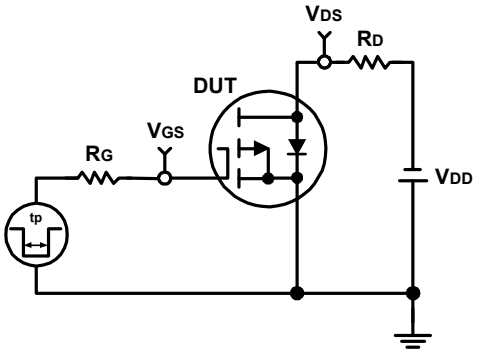


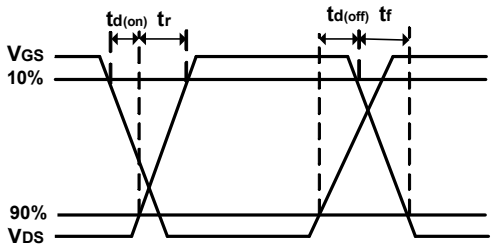
Avalanche Test Circuit and Waveforms





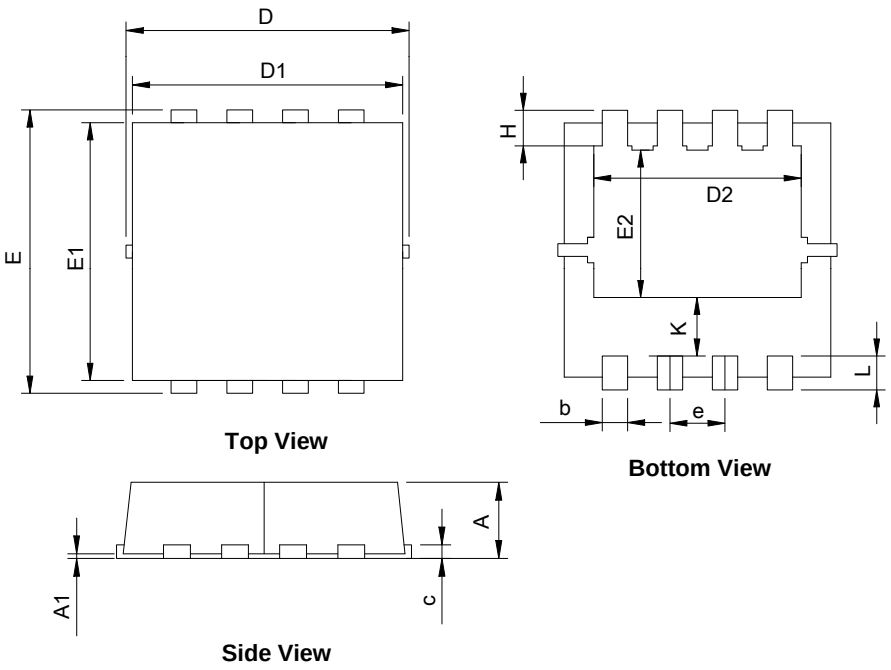
Switching Time Test Circuit and Waveforms





Package Information

DFN3x3-8



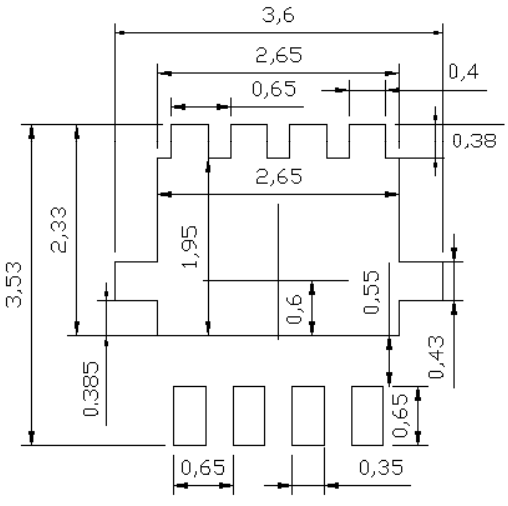
Top View

Bottom View

Side View

SYMBOL	DFN3.3x3.3A-8_EP1_P			
	MILLIMETERS		INCHES	
	MIN.	MAX.	MIN.	MAX.
A	0.70	1.00	0.028	0.039
A1	0.00	0.05	0.000	0.002
b	0.25	0.35	0.010	0.014
c	0.10	0.25	0.004	0.010
D	3.10	3.50	0.122	0.138
D1	3.05	3.25	0.120	0.128
D2	2.35	2.59	0.093	0.102
E	3.10	3.50	0.122	0.138
E1	2.90	3.10	0.114	0.122
E2	1.64	1.98	0.065	0.078
e	0.65 BSC		0.026 BSC	
H	0.32	0.52	0.013	0.020
K	0.59	0.79	0.023	0.031
L	0.25	0.55	0.010	0.022

RECOMMENDED LAND PATTERN



UNIT: mm