

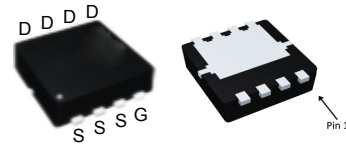
Features

- -40V/-30A,
 $R_{DS(ON)} = 16m\Omega$ (typ.) @ $V_{GS} = -10V$
 $R_{DS(ON)} = 20m\Omega$ (typ.) @ $V_{GS} = -4.5V$
- Reliable and Rugged
- Lead Free and Green Devices Available (RoHS Compliant)

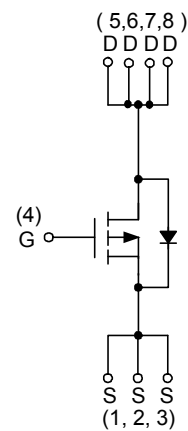
Applications

- 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 ($V_{GS} = -10V$)	$T_A = 25^\circ C$	-30	A
		$T_A = 70^\circ C$	-9	
I_{DM}^a	300 μs 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	$^\circ C$
T_{STG}	Storage Temperature Range		-55 to 150	
P_D^a	Maximum Power Dissipation	$T_A = 25^\circ C$	3.1	W
		$T_A = 70^\circ C$	2.0	
$R_{\theta JA}^a$	Thermal Resistance-Junction to Ambient	$t \leq 10s$	40	$^\circ C/W$
		Steady State	75	
$R_{\theta JL}^c$	Thermal Resistance-Junction to Lead	Steady State	24	

Note a: Surface Mounted on 1in² pad area, $t \leq 10sec$.

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

Note c: The power dissipation P_D is based on $T_{J(MAX)} = 150^\circ C$, and it is useful for reducing junction-to-case thermal resistance ($R_{\theta JC}$) when additional heat sink is used.

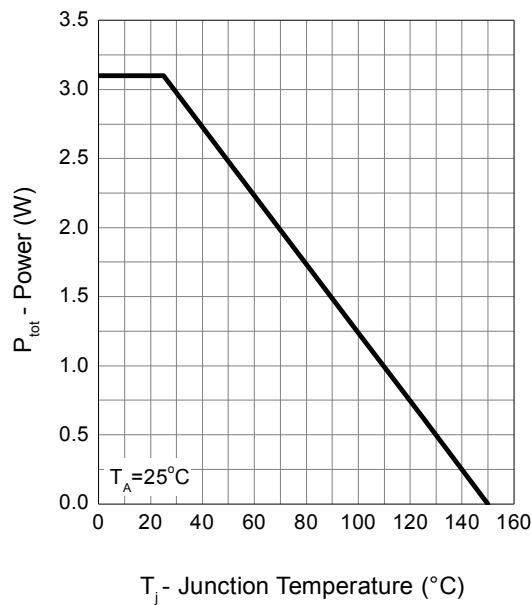
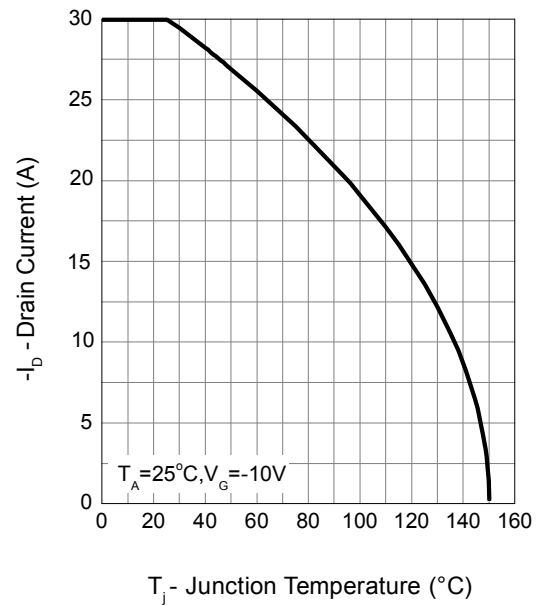
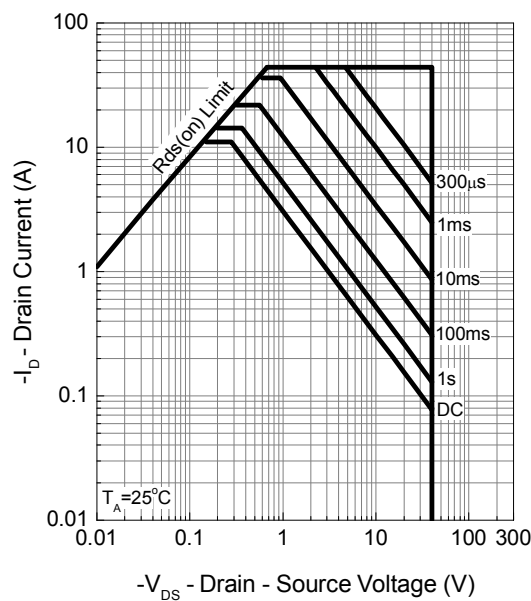
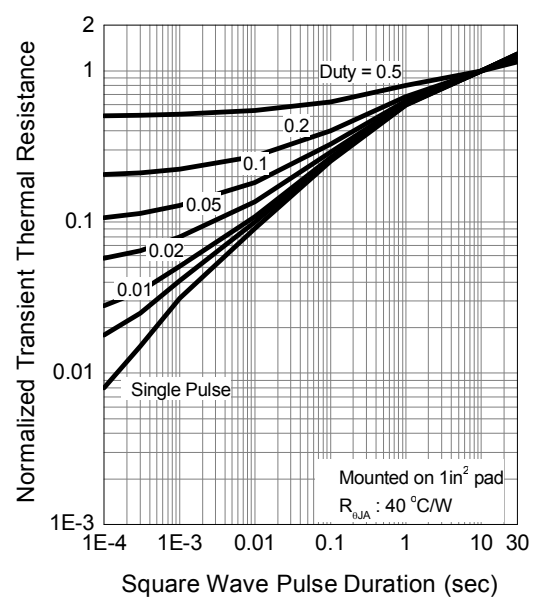
Electrical Characteristics ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} =-250μA	-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	-1.4	-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} =-30A V _{GS} =-4.5V, I _{DS} =-25A	- -	16 20	19 27	mΩ
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} =-30A, 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} =-30A	-	32	-	nC
Q _{gs}	Gate-Source Charge		-	5.2	-	
Q _{gd}	Gate-Drain Charge		-	8	-	

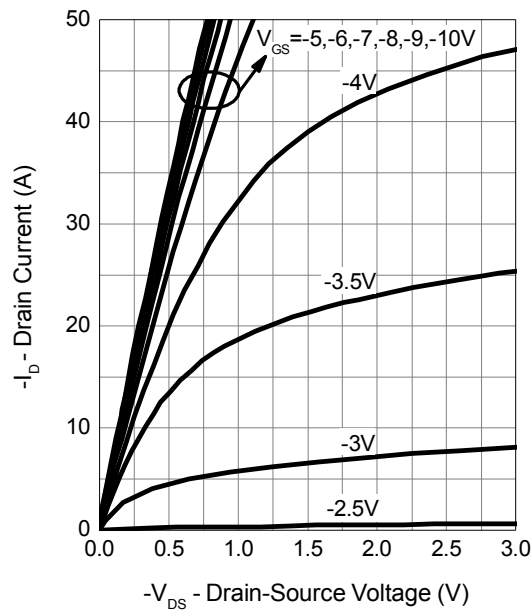
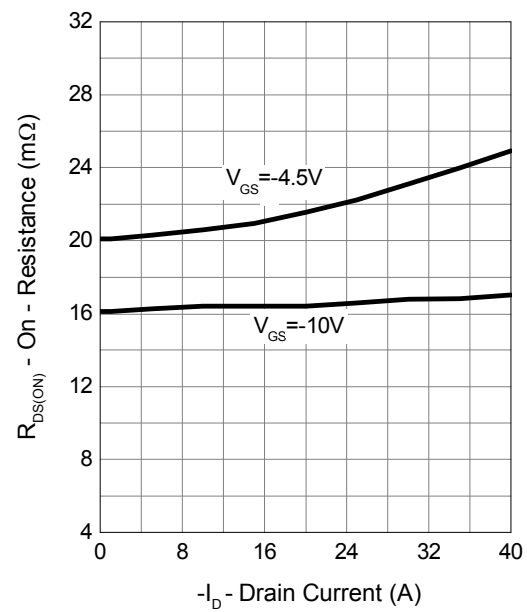
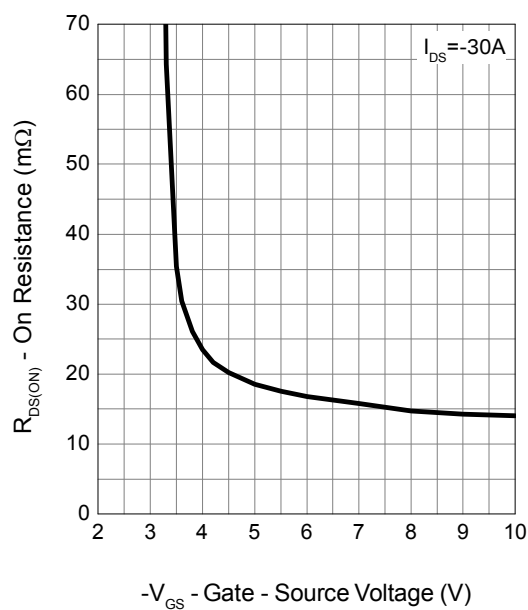
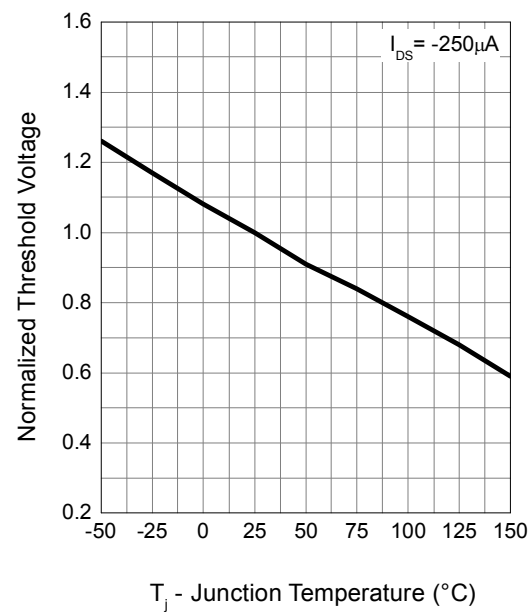
Note a: Pulse test; pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.

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

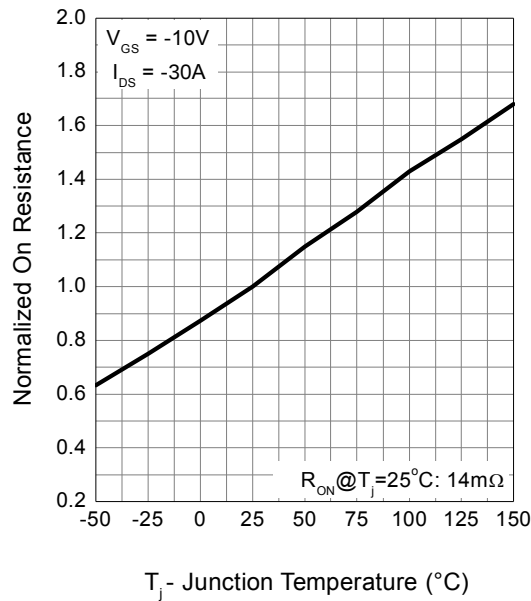
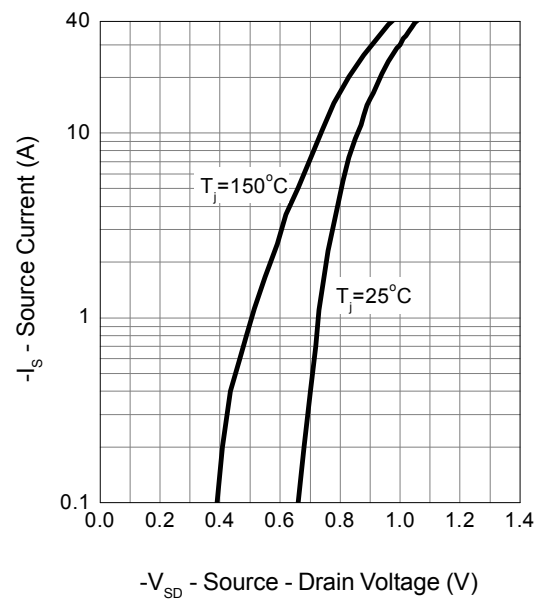
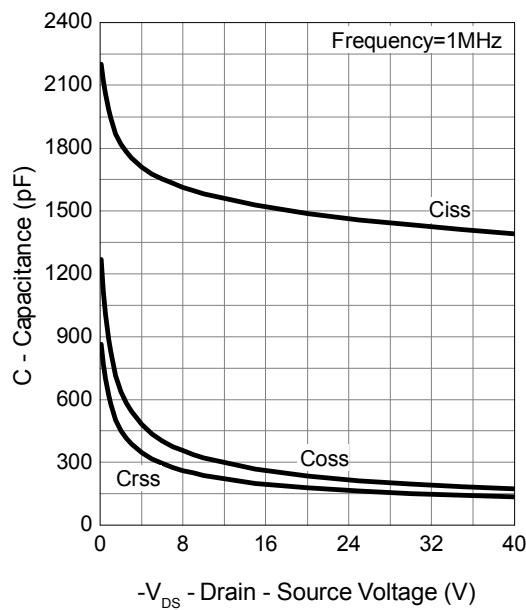
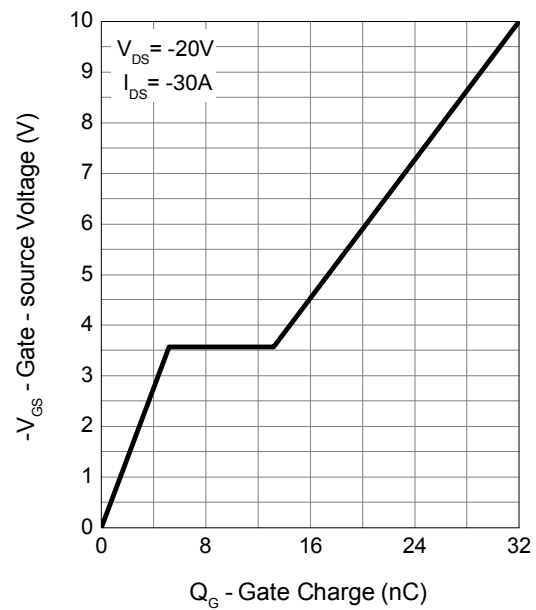
Typical Operating Characteristics

Power Dissipation

Drain Current

Safe Operation Area

Thermal Transient Impedance


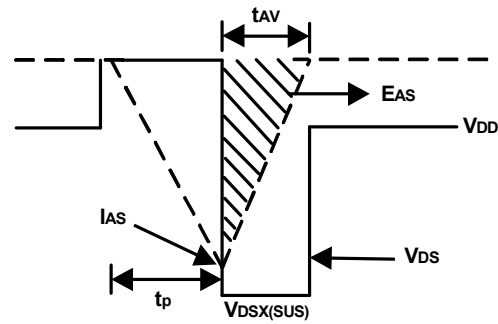
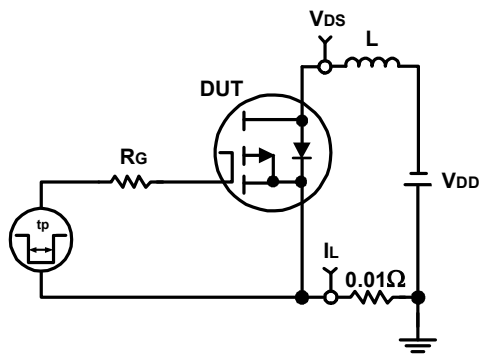
Typical Operating Characteristics (Cont.)

Output Characteristics

Drain-Source On Resistance

Gate-Source On Resistance

Gate Threshold Voltage


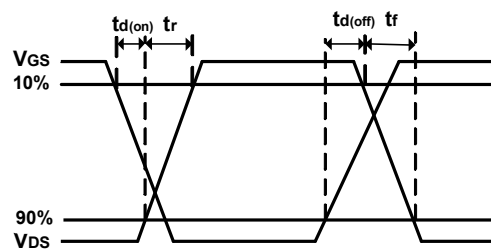
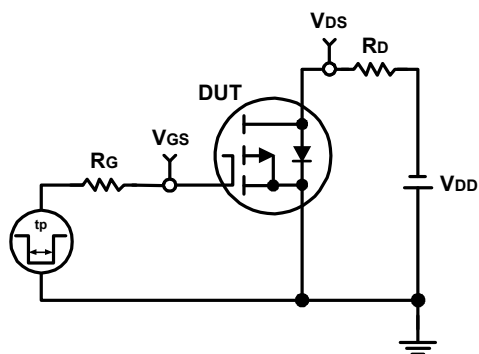
Typical Operating Characteristics (Cont.)

Drain-Source On Resistance

Source-Drain Diode Forward

Capacitance

Gate Charge


Avalanche Test Circuit and Waveforms

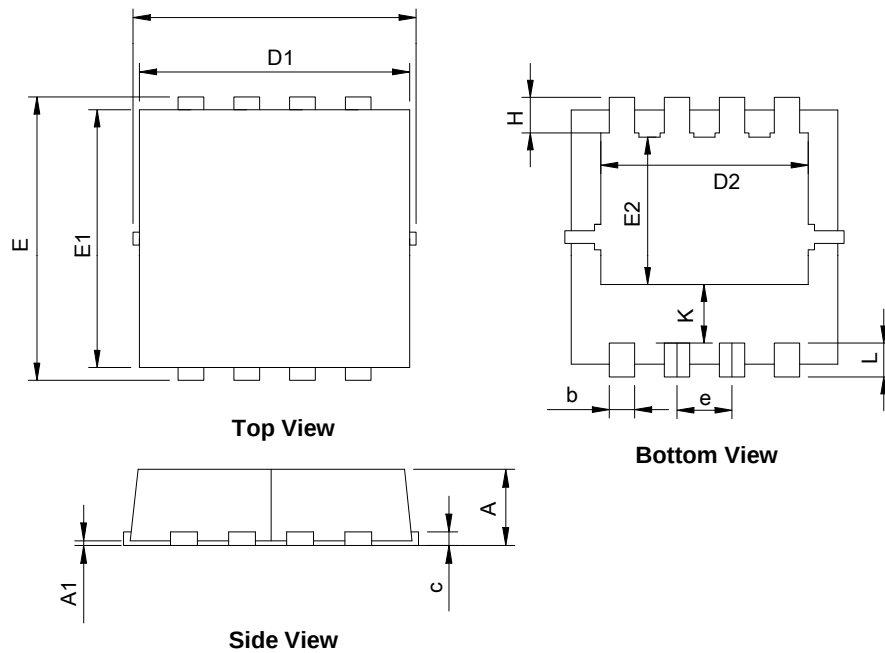


Switching Time Test Circuit and Waveforms



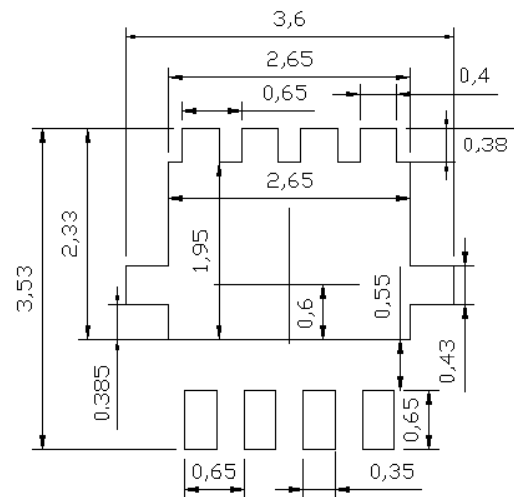
Package Information

DFN3.3x3.3A-8_EP



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