

P-Channel 30-V (D-S) MOSFET

Key Features:

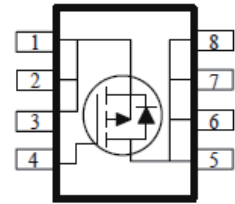
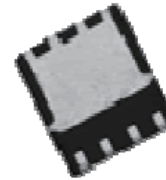
- Low $r_{DS(on)}$ trench technology
- Low thermal impedance
- Fast switching speed

Typical Applications:

- White LED boost converters
- Automotive Systems
- Industrial DC/DC Conversion Circuits



DFN3x3-8L



PRODUCT SUMMARY		
V_{DS} (V)	$r_{DS(on)}$ (m Ω)	I_D (A)
-30	13 @ $V_{GS} = -10V$	-13.4
	19 @ $V_{GS} = -4.5V$	-11.1

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)

Parameter	Symbol	Limit	Units
Drain-Source Voltage	V_{DS}	-30	V
Gate-Source Voltage	V_{GS}	± 20	
Continuous Drain Current ^a	I_D	-13.4	A
		-10.2	
Pulsed Drain Current ^b	I_{DM}	-50	
Continuous Source Current (Diode Conduction) ^a	I_S	-4.6	A
Power Dissipation ^a	P_D	3.5	W
		2	
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55 to 150	$^\circ\text{C}$

THERMAL RESISTANCE RATINGS

Parameter	Symbol	Maximum	Units
Maximum Junction-to-Ambient ^a	$R_{\theta JA}$	35	$^\circ\text{C/W}$
		81	

Notes

- Surface Mounted on 1" x 1" FR4 Board.
- Pulse width limited by maximum junction temperature

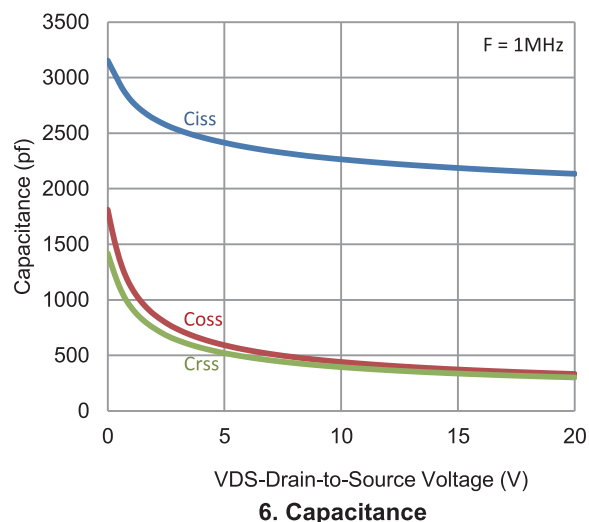
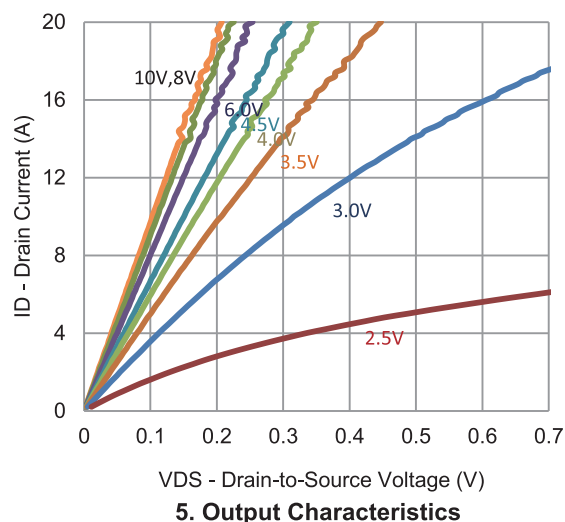
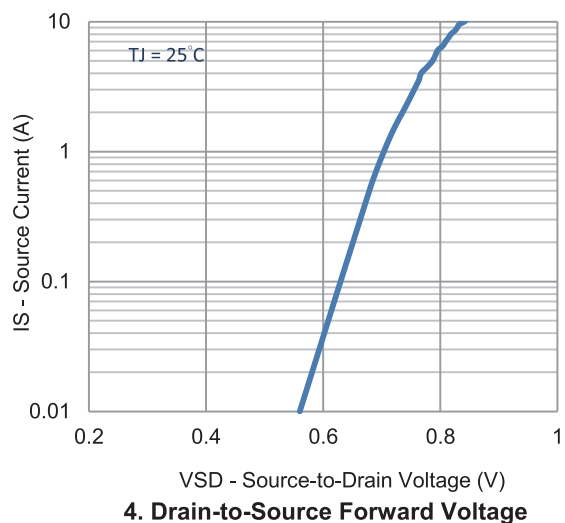
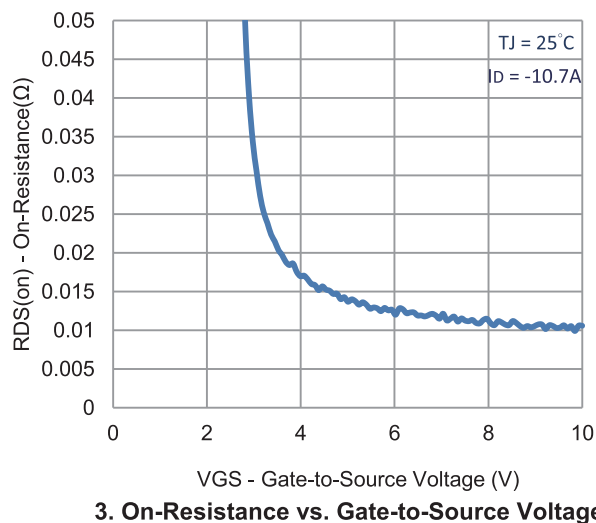
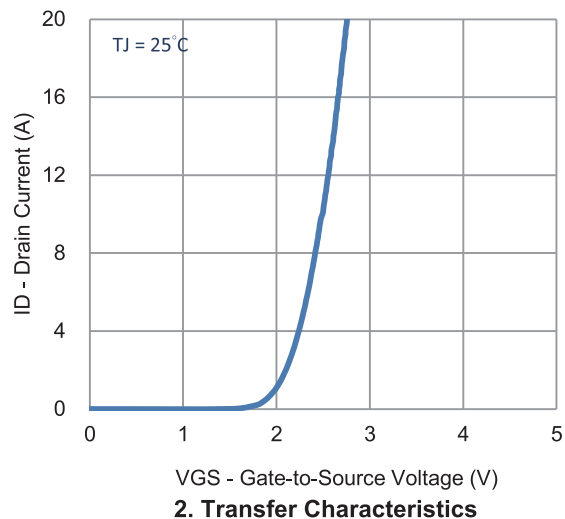
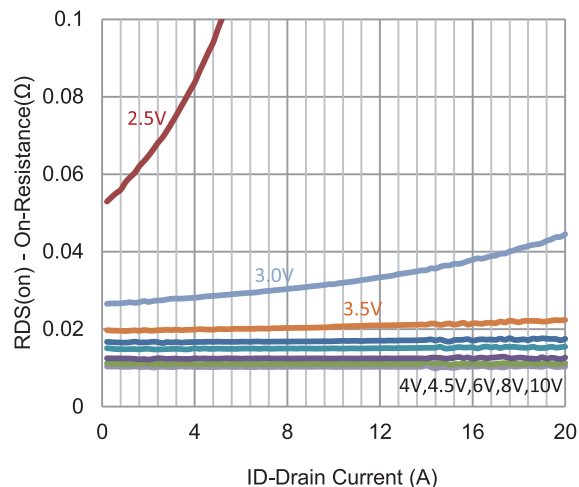
Electrical Characteristics

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static						
Gate-Source Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250 \mu A$	-1			V
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0 V, V_{GS} = \pm 25 V$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = -24 V, V_{GS} = 0 V$			-1	μA
		$V_{DS} = -24 V, V_{GS} = 0 V, T_J = 55^\circ C$			-25	
On-State Drain Current	$I_{D(on)}$	$V_{DS} = 5 V, V_{GS} = 10 V$	-6.7			A
Drain-Source On-Resistance	$r_{DS(on)}$	$V_{GS} = -10 V, I_D = -10.7 A$			13	m Ω
		$V_{GS} = -4.5 V, I_D = -8.9 A$			19	
Forward Transconductance	g_{fs}	$V_{DS} = -15 V, I_D = -10.7 A$		25		S
Diode Forward Voltage	V_{SD}	$I_S = -2.3 A, V_{GS} = 0 V$		-0.75		V
Dynamic						
Total Gate Charge	Q_g	$V_{DS} = -15 V, V_{GS} = -4.5 V,$ $I_D = -10.7 A$		34		nC
Gate-Source Charge	Q_{gs}			7.8		
Gate-Drain Charge	Q_{gd}			16		
Turn-On Delay Time	$t_{d(on)}$	$V_{DS} = -15 V, R_L = 1.5 \Omega,$ $I_D = -10.7 A,$ $V_{GEN} = -10 V, R_{GEN} = 6 \Omega$		8		ns
Rise Time	t_r			50		
Turn-Off Delay Time	$t_{d(off)}$			96		
Fall Time	t_f			59		
Input Capacitance	C_{iss}	$V_{DS} = -15 V, V_{GS} = 0 V, f = 1 MHz$		2186		pF
Output Capacitance	C_{oss}			373		
Reverse Transfer Capacitance	C_{rss}			336		

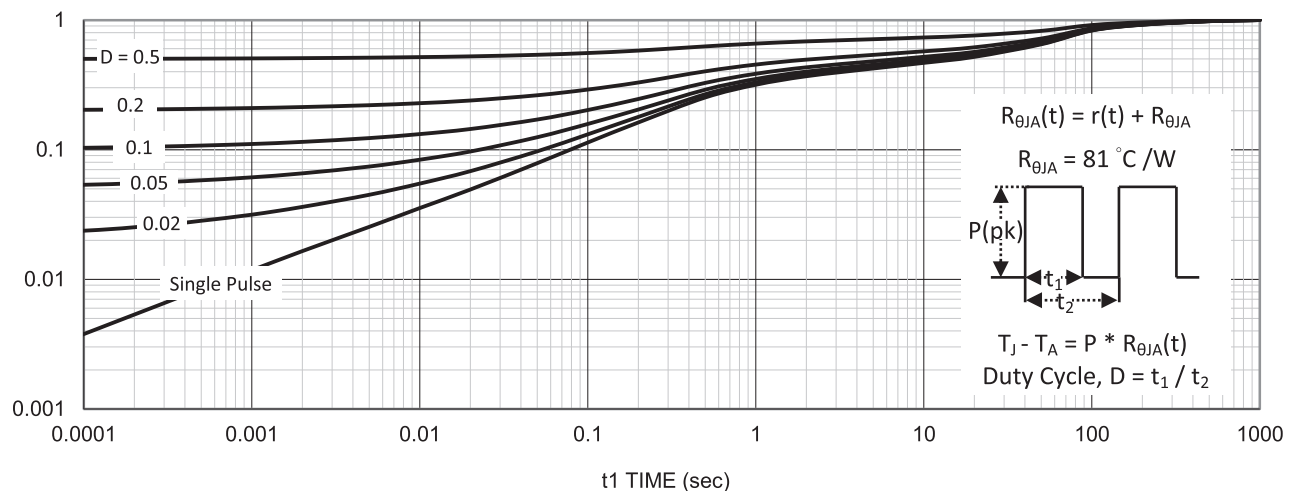
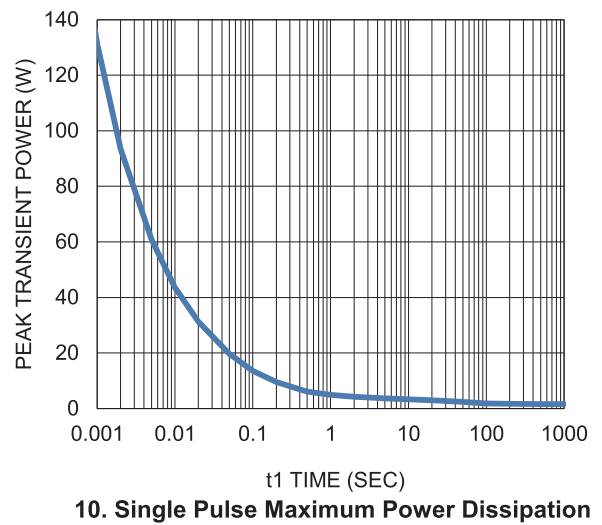
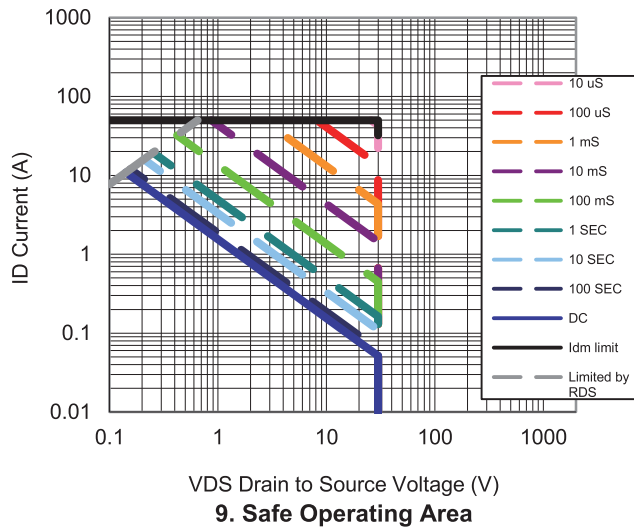
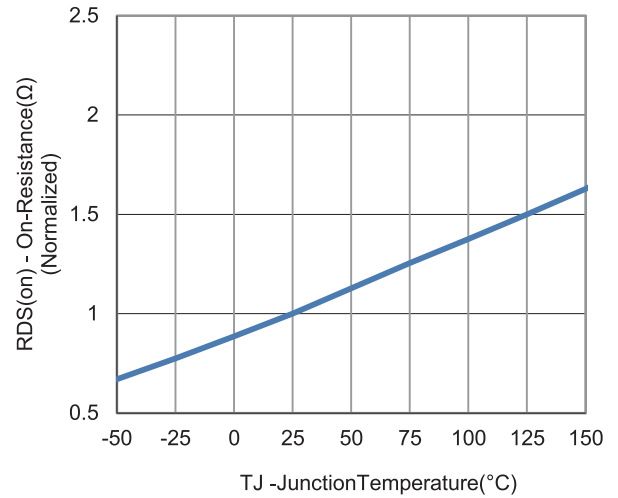
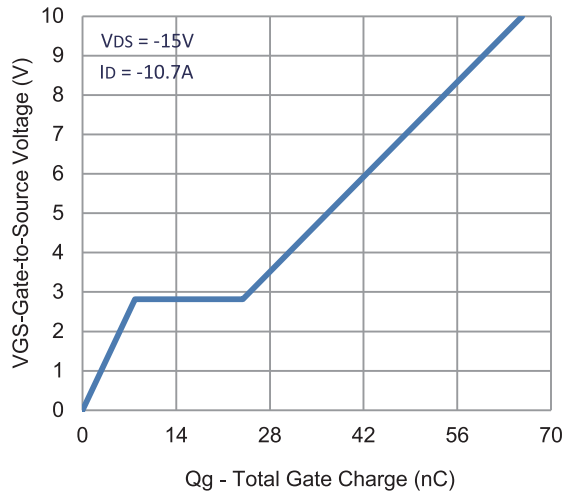
Notes

- Pulse test: PW $\leq 300 \mu s$ duty cycle $\leq 2\%$.
- Guaranteed by design, not subject to production testing.

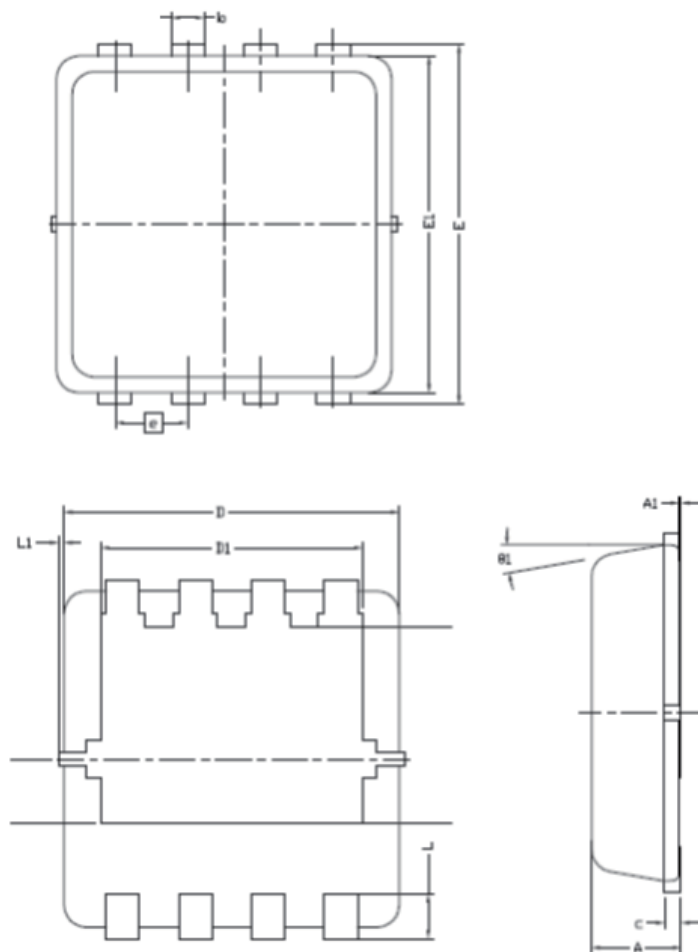
Typical Electrical Characteristics



Typical Electrical Characteristics



Package Information



DIM.	MILLIMETERS	
	MIN	MAX
A	0.7	0.9
A1	0	0.05
b	0.24	0.35
c	0.1	0.25
D	2.9	3.4
D1	2.25	2.59
E	3.1	3.45
E1	2.9	3.2
e	0.65 BSC	
L	0.3	0.5
θ1	0°	12°

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