

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

Key Features:

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

Typical Applications:

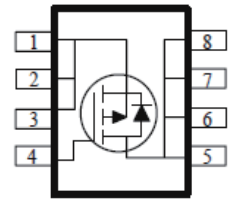
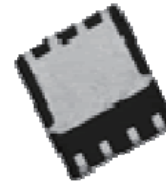
- White LED boost converters
- Automotive Systems
- Industrial DC/DC Conversion Circuits

PRODUCT SUMMARY		
V_{DS} (V)	$r_{DS(on)}$ (m Ω)	I_D (A)
-30	20 @ $V_{GS} = -10V$	-10.9
	36 @ $V_{GS} = -4.5V$	-8.1



RoHS
COMPLIANT
HALOGEN
FREE

DFN3x3-8L



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	-10.9	A
		-8.2	
Pulsed Drain Current ^b	I_{DM}	-50	
Continuous Source Current (Diode Conduction) ^a	I_S	-3.6	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

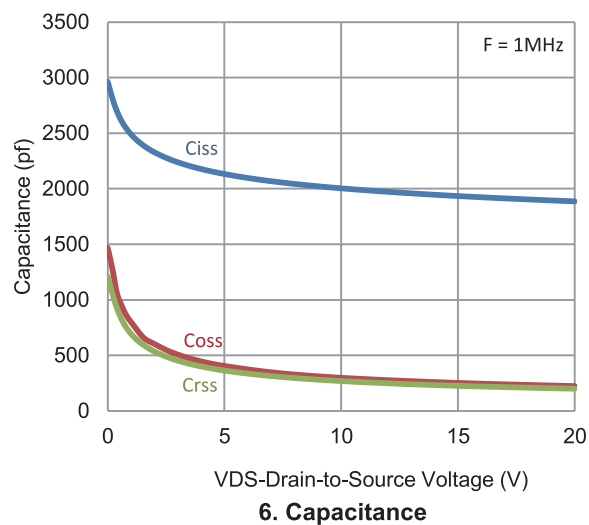
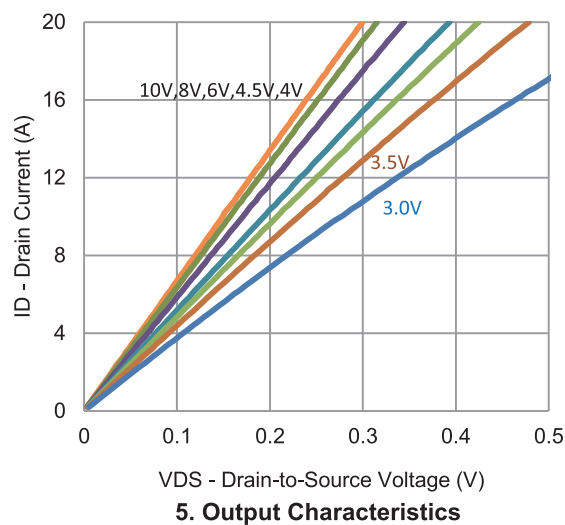
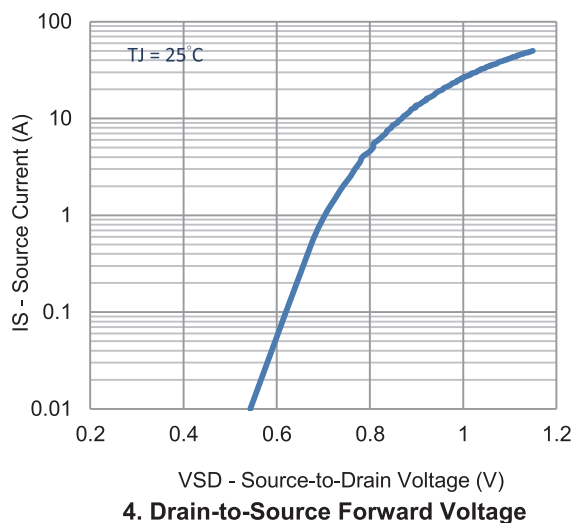
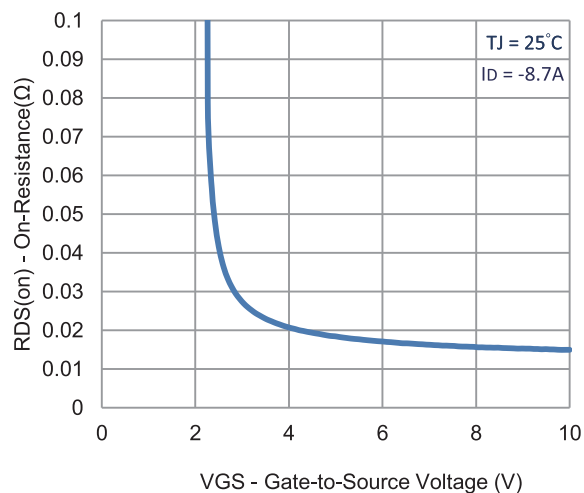
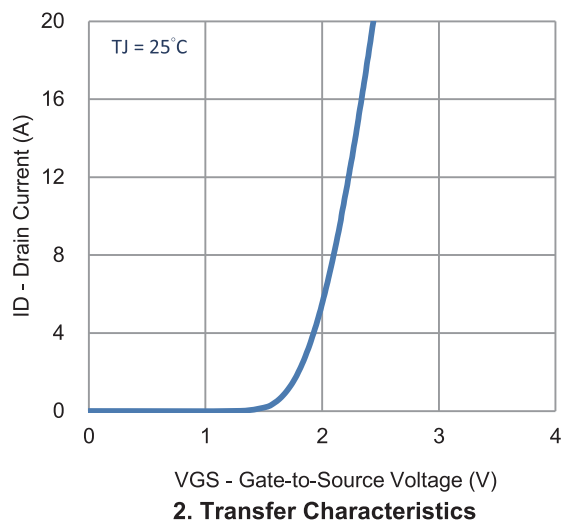
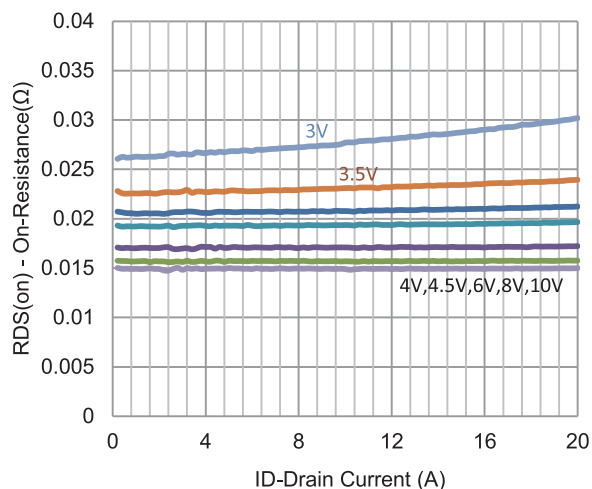
Electrical Characteristics

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}	$V_{DS} = 0 V, V_{GS} = \pm 20 V$			± 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	$I_{D(on)}$	$V_{DS} = -5 V, V_{GS} = -10 V$	-20			A
Drain-Source On-Resistance	$r_{DS(on)}$	$V_{GS} = -10 V, I_D = -8.7 A$			20	m Ω
		$V_{GS} = -4.5 V, I_D = -6.5 A$			36	
Forward Transconductance	g_{fs}	$V_{DS} = -15 V, I_D = -8.7 A$		15		S
Diode Forward Voltage	V_{SD}	$I_S = -1.8 A, V_{GS} = 0 V$		-0.72		V
Dynamic						
Total Gate Charge	Q_g	$V_{DS} = -15 V, V_{GS} = -4.5 V,$ $I_D = -8.7 A$		32		nC
Gate-Source Charge	Q_{gs}			7.8		
Gate-Drain Charge	Q_{gd}			13		
Turn-On Delay Time	$t_{d(on)}$	$V_{DS} = -15 V, R_L = 1.8 \Omega,$ $I_D = -8.7 A,$ $V_{GEN} = -10 V, R_{GEN} = 6 \Omega$		8		ns
Rise Time	t_r			39		
Turn-Off Delay Time	$t_{d(off)}$			93		
Fall Time	t_f			53		
Input Capacitance	C_{iss}	$V_{DS} = -15 V, V_{GS} = 0 V, f = 1 MHz$		1934		pF
Output Capacitance	C_{oss}			252		
Reverse Transfer Capacitance	C_{rss}			226		

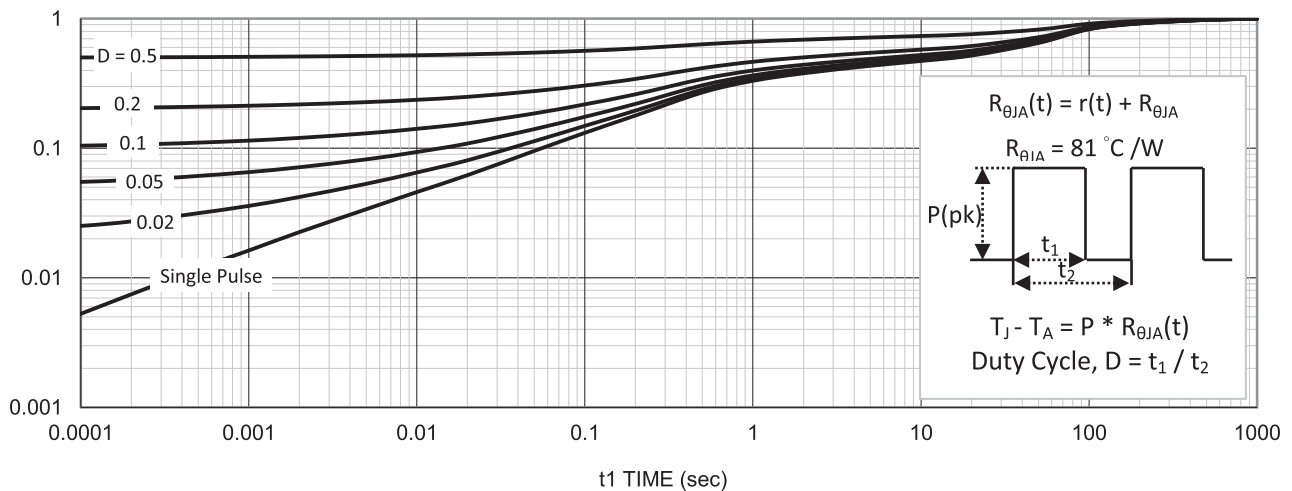
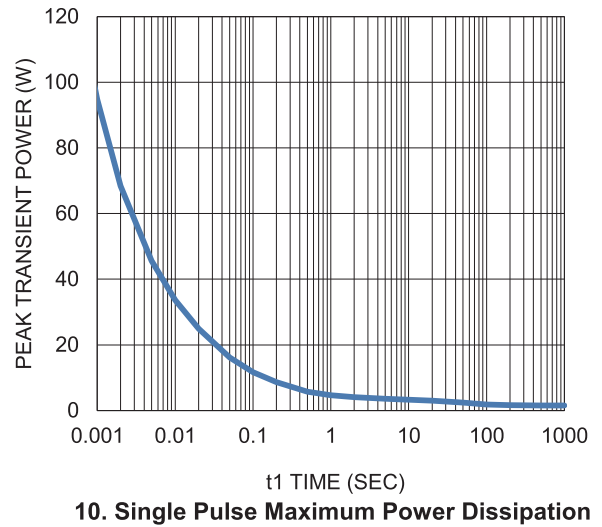
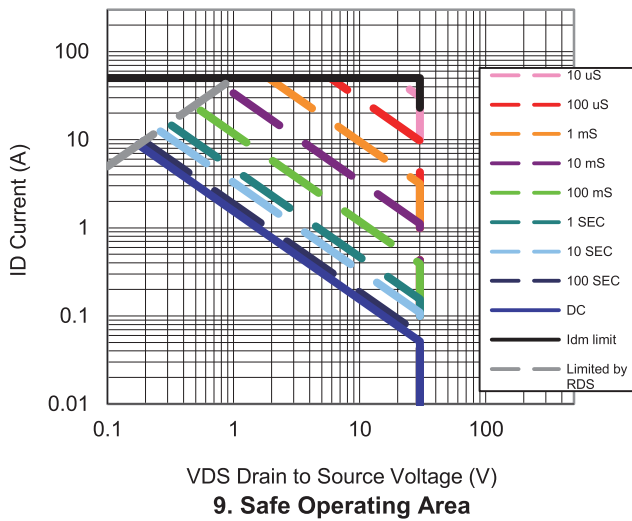
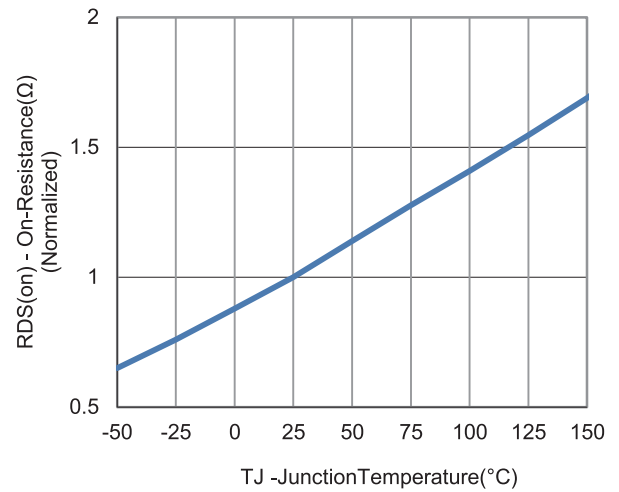
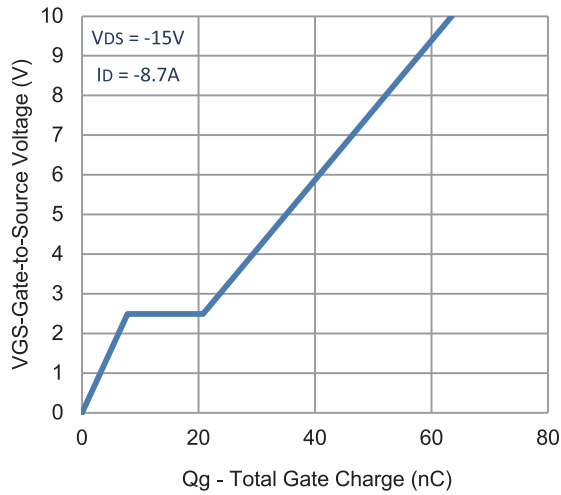
Notes

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

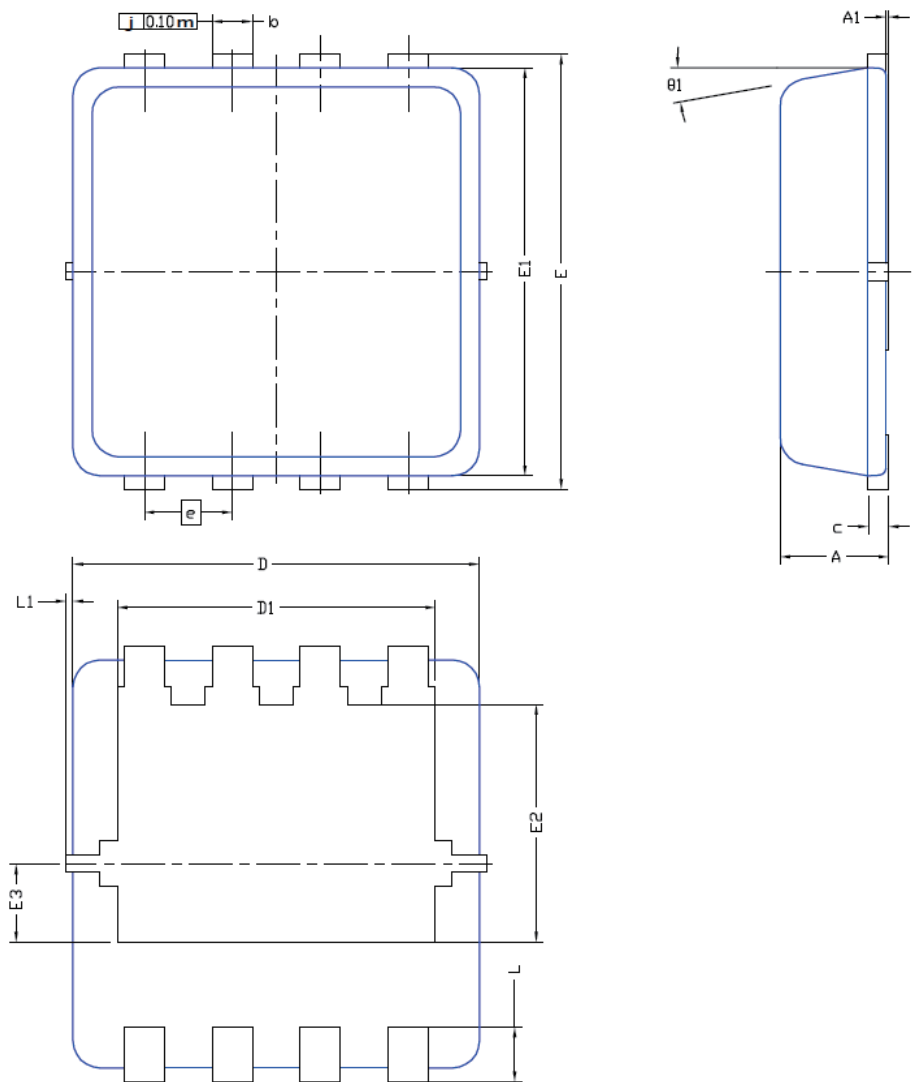
Typical Electrical Characteristics



Typical Electrical Characteristics



Package Information



DIM.	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.700	0.80	0.900	0.0276	0.0315	0.0354
A1	0.00	---	0.05	0.000	---	0.002
b	0.24	0.30	0.35	0.009	0.012	0.014
c	0.10	0.152	0.25	0.004	0.006	0.010
D	3.00 BSC			0.118 BSC		
D1	2.35 BSC			0.093 BSC		
E	3.20 BSC			0.126 BSC		
E1	3.00 BSC			0.118 BSC		
E2	1.75 BSC			0.069 BSC		
E3	0.575 BSC			0.023 BSC		
e	0.65 BSC			0.026 BSC		
L	0.30	0.40	0.50	0.0118	0.0157	0.0197
L1	0	---	0.100	0	---	0.004
θ1	0°	10°	12°	0°	10°	12°