P-Channel Enhancement Mode Power MOSFET

Features

V_{DS} = -30V,

I_D = -44A

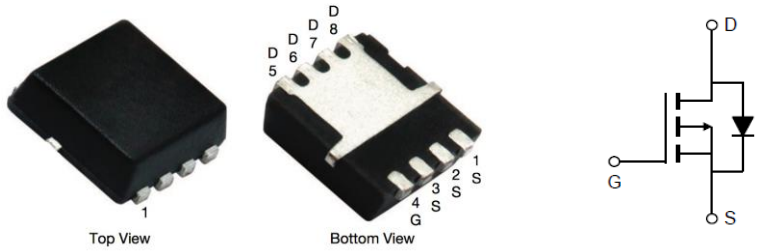
$R_{DS(ON)}$ @V_{GS}= -10V, TYP 9mΩ

$R_{DS(ON)}$ @V_{GS}= -4.5V, TYP 14.7mΩ

General Description

- Backlighting
- Power Management Functions
- DC-DC Converters

Pin Configurations



PDFN3*3-8L

Absolute Maximum Ratings @T_A=25℃ unless otherwise noted

Parameter		Symbol	Ratings	Unit
Drain-Source Voltage		V_{DSS}	30	V
Gate-Source Voltage		V_{GSS}	±20	V
Drain Current (Continuous) *AC	T_C=25°C	I_D	-44	A
	T_C=70°C		-35	
Drain Current (Pulse) *B		I_{DM}	-176	A
Power Dissipation	T_C=25°C	P_D	33.7	W
Operating Temperature/ Storage Temperature		T_J/T_{STG}	-55~150	℃

Thermal Resistance Ratings

Parameter		Symbol	Maximum	Unit
Maximum Junction-to-Ambient	Steady State	R_{thJA}	66	°C/W
Maximum Junction-to-Case (Drain)	Steady State	R_{thJC}	3.7	

- **Electrical Characteristics** @T_A=25℃ unless otherwise noted

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D= -250μA	-30	--	--	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = -30 V, V_{GS} = 0V	--	--	-1	μA
Gate Threshold Voltage	$V_{GS(TH)}$	V_{GS} = V_{DS}, I_{DS}= -250μA	-1	-1.5	-3	V
Gate Leakage Current	I_{GSS}	V_{GS}= ±20V, V_{DS}=0V	--	--	±100	nA
Drain-Source On-state Resistance	$R_{DS(on)}$	V_{GS} = -10V, I_D = -15A	--	9	14	mΩ
	$R_{DS(on)}$	V_{GS} = -4.5V, I_D = -10A	--	14.7	20	mΩ
Diode Forward Voltage	V_{SD}	I_{SD}= -1A , V_{GS}=0V	--	-0.7	--	V
Diode Forward Current	I_S	T_C =25°C	--	--	-44	A
Switching						
Total Gate Charge	Q_g	V_{GS}= -10V, V_{DS}=-15V, I_D= -11.5A	--	51	--	nC
Gate-Source Charge	Q_{gs}		--	6.6	--	nC
Gate-Drain Charge	Q_{gd}		--	15	--	nC
Turn-on Delay Time	$t_{d(on)}$	V_{DD} = -15V, V_{GS} = -10V, RG = 6Ω, ID = -11.5A	--	7.8	--	ns
Turn-on Rise Time	t_r		--	19.9	--	ns
Turn-off Delay Time	$t_{d(off)}$		--	57.5	--	ns
Turn-Off Fall Time	t_f		--	42.8	--	ns
Dynamic						
Input Capacitance	C_{iss}	V_{DS} = -15V, V_{GS} = 0V, f = 1.0MHz	--	2147	--	pF
Output Capacitance	C_{oss}		--	407	--	pF
Reverse Transfer Capacitance	C_{rss}		--	358	--	pF

A: The value of $R_{\theta JA}$ is measured with the device mounted on 1in^2 FR-4 board with 2oz. Copper, in a still air environment with T_A=25°C. The value in any given application depends on the user's specific board design.

B: Repetitive rating, pulse width limited by junction temperature.

C: The current rating is based on the t≤ 10s junction to ambient thermal resistance rating

- **Typical Performance Characteristics（(TJ = 25 °C, unless otherwise noted)）**

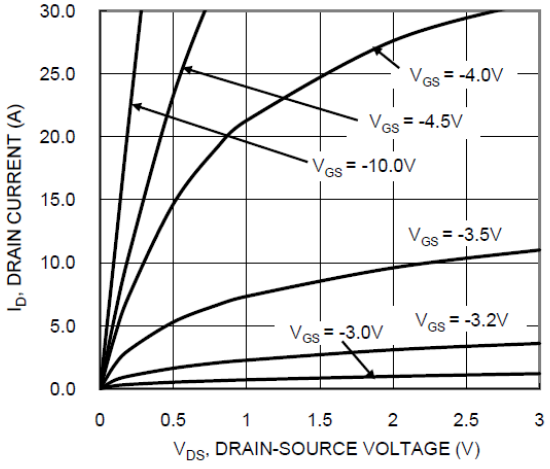


Figure 1. Typical Output Characteristic

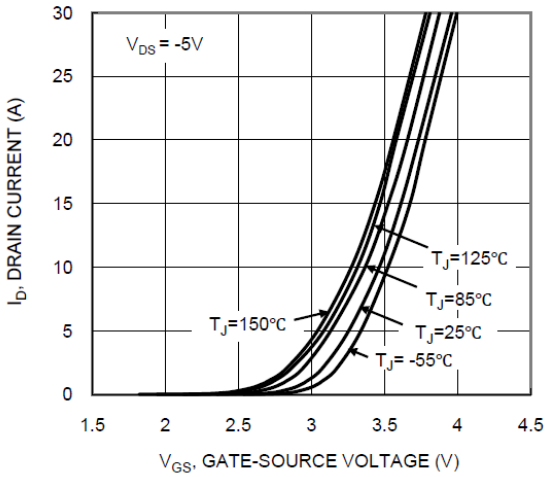


Figure 2.Typical Transfer Characteristic

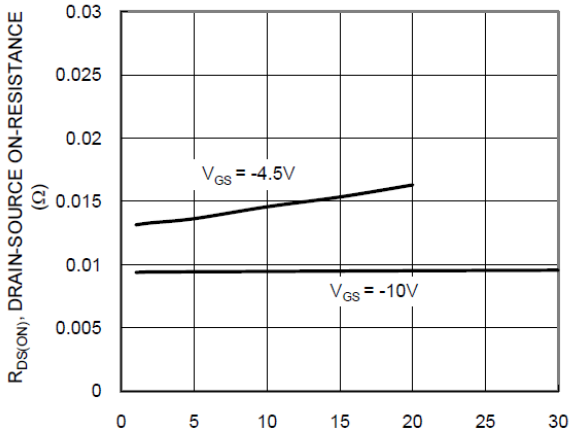


Figure 3. Typical On-Resistance vs. Drain Current and Gate Voltage

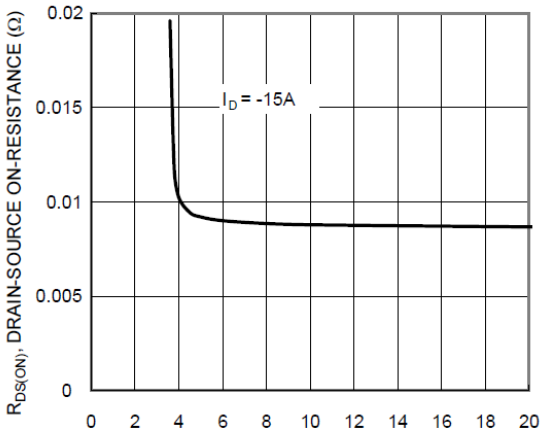


Figure 4. Typical Transfer Characteristic

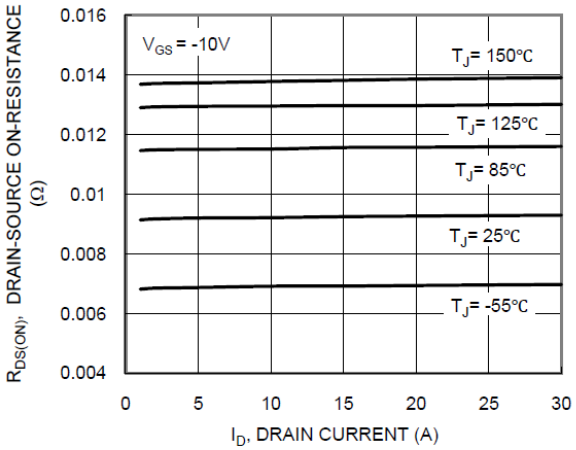


Figure 5. Typical On-Resistance vs. Drain Current and Junction Temperature

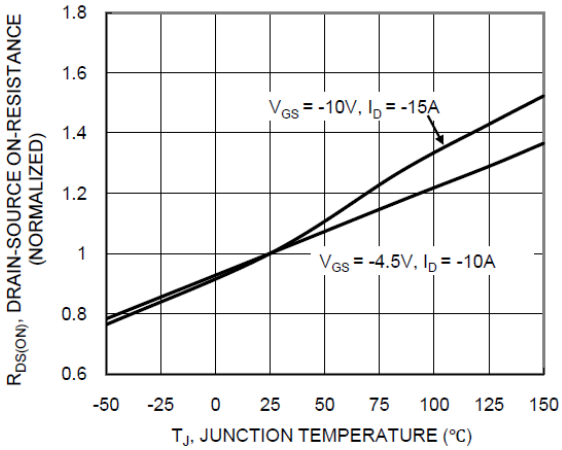


Figure 6. On-Resistance Variation with Junction Temperature

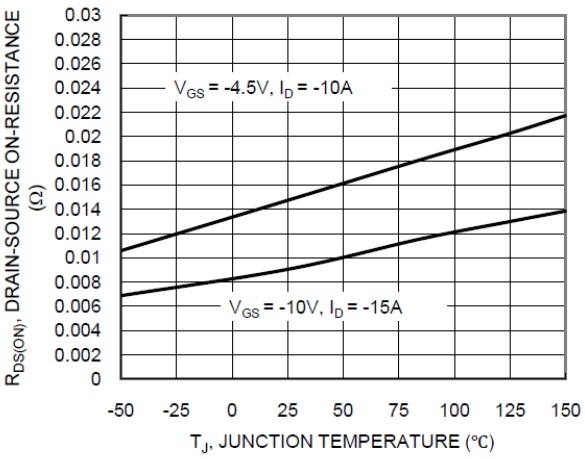


Figure 7. On-Resistance Variation with Junction Temperature

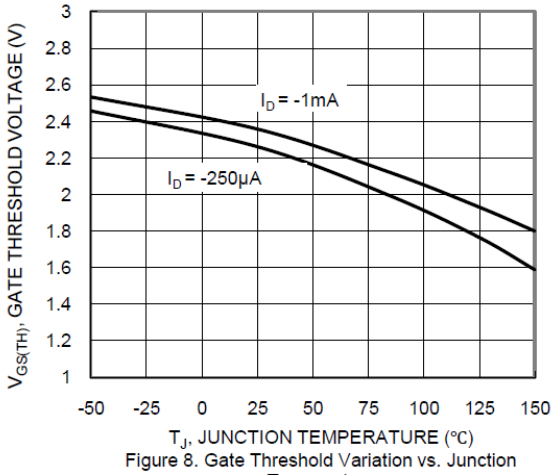


Figure 8. Gate Threshold Variation vs. Junction Temperature

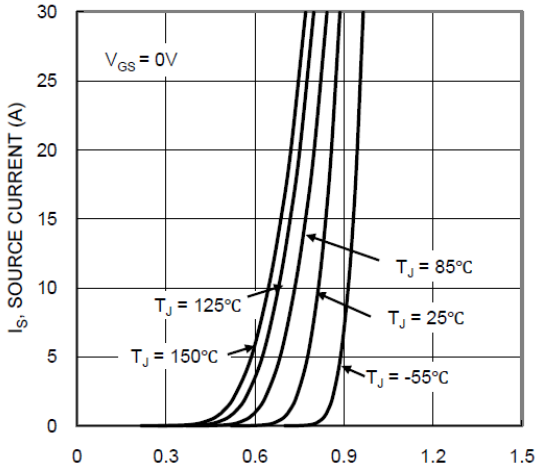


Figure 9. Diode Forward Voltage vs. Current

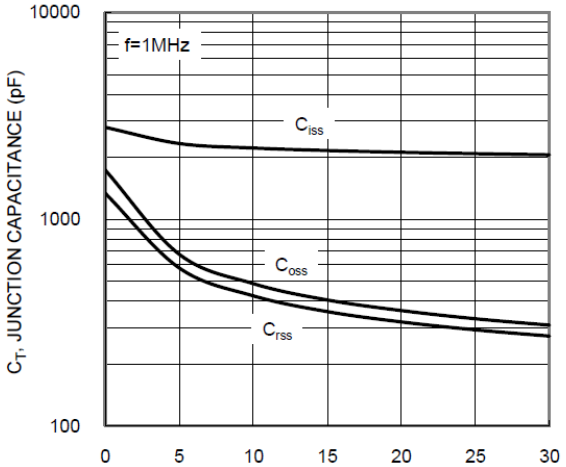


Figure 10. Typical Junction Capacitance

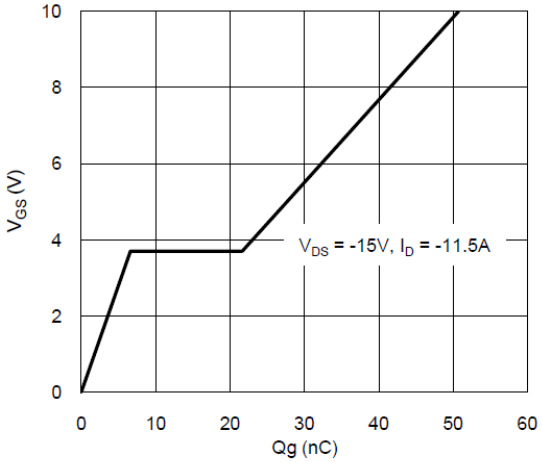


Figure 11.Gate Charge

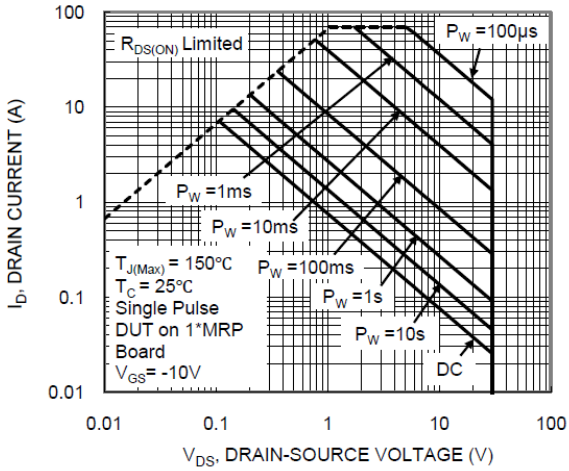


Figure 12. SOA, Safe Operation Area

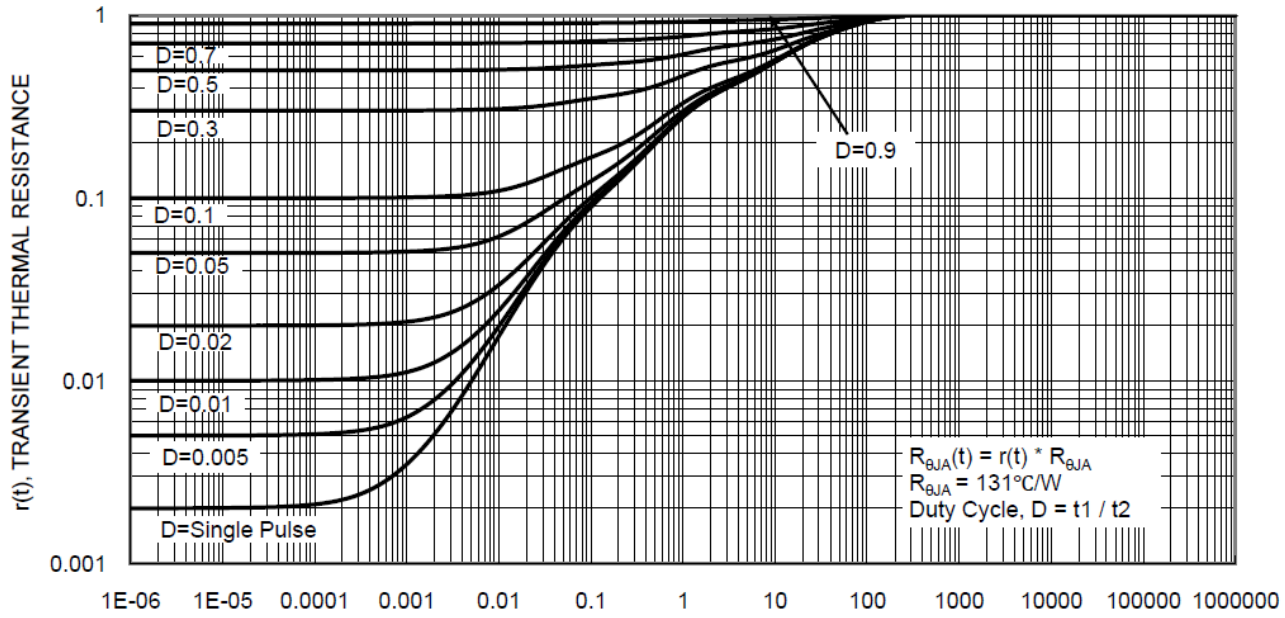
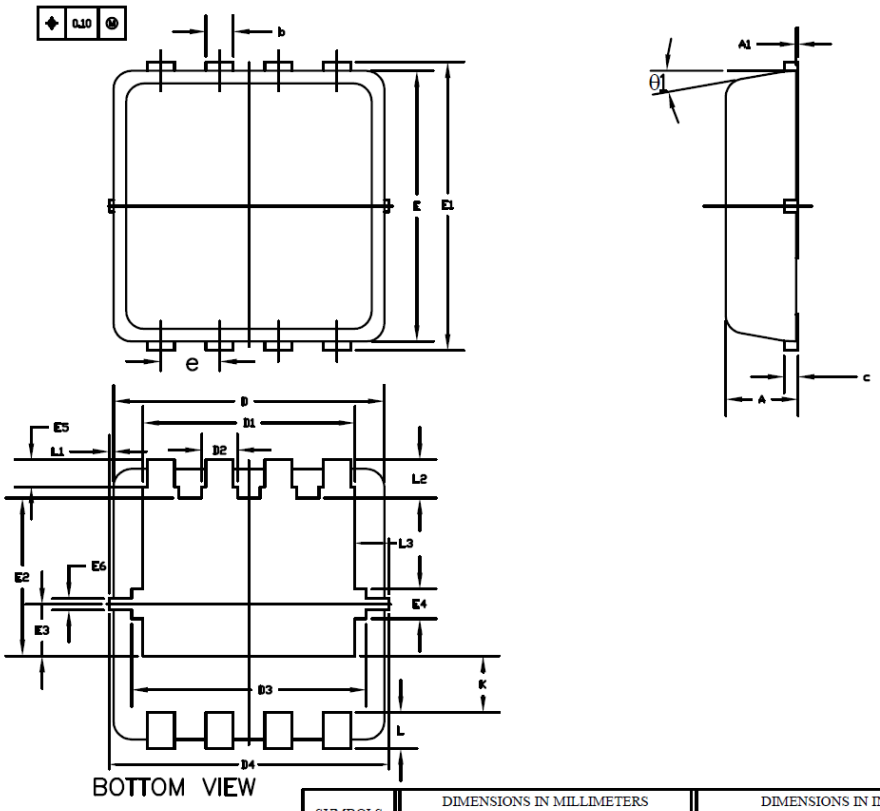
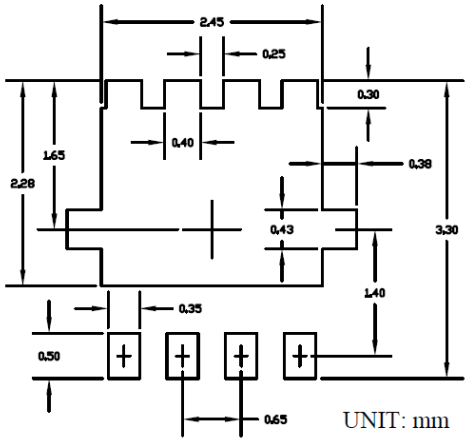


Figure 13. Transient Thermal Resistance

- **Package Information**



RECOMMENDED LAND PATTERN



SYMBOLS	DIMENSIONS IN MILLIMETERS			DIMENSIONS IN INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.70	0.80	0.90	0.028	0.031	0.035
A1	0.00	0.025	0.05	0.000	0.001	0.002
b	0.24	0.30	0.35	0.009	0.012	0.014
c	0.10	0.15	0.25	0.004	0.006	0.010
D	2.90	3.00	3.10	0.114	0.118	0.122
D1	2.25	2.35	2.45	0.089	0.093	0.097
D2	0.30	0.40	0.50	0.012	0.016	0.020
D3	2.50	2.60	2.70	0.098	0.102	0.106
D4	3.00	3.10	3.20	0.118	0.122	0.126
E	2.90	3.00	3.10	0.114	0.118	0.122
E1	3.10	3.20	3.30	0.122	0.126	0.130
E2	1.65	1.75	1.85	0.065	0.069	0.073
E3	0.48	0.58	0.68	0.019	0.023	0.027
E4	0.23	0.33	0.43	0.009	0.013	0.017
E5	0.20	0.30	0.40	0.008	0.012	0.016
E6	0.075	0.125	0.175	0.003	0.005	0.007
e	0.60	0.65	0.70	0.024	0.026	0.028
K	0.52	0.62	0.72	0.020	0.024	0.028
L	0.30	0.40	0.50	0.012	0.016	0.020
L1	0	0.05	0.10	0	0.002	0.004
L2	0.33	0.43	0.53	0.013	0.017	0.021
L3	0.275	0.375	0.475	0.011	0.015	0.019
θ1	0°	10°	12°	0°	10°	12°

NOTE
1. PACKAGE DIMENSION IS EXCLUSIVE OF MOLD GATE BURR
2. PACKAGE DIMENSION IS EXCLUSIVE OF MOLD FLASH AND CUTTING BURR
3. CONTROLLING DIMENSION IS MILLIMETER.
   CONVERTED INCH DIMENSIONS ARE NOT NECESSARILY EXACT.

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