P-Channel Enhancement Mode Power MOSFET

Features

V_{DS} = -30V,

I_D = -42A

$R_{DS(ON)}$ @V_{GS}= -10V, TYP 8.5mΩ

$R_{DS(ON)}$ @V_{GS}= -4.5V, TYP 12.4mΩ

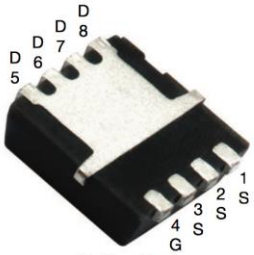
General Description

- DC/DC Converters in Computing, Servers, and POL
- Isolated DC/DC Converters in Telecom and Industrial

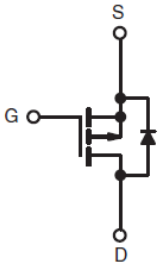
Pin Configurations



Top View



Bottom View



P-Channel MOSFET

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}	±25	V
Drain Current (Continuous) *AC	T_C=25°C	I_D	-42	A
	T_C=70°C		-33.6	
Drain Current (Pulse) *B		I_{DM}	-80	A
Power Dissipation	T_C=25°C	P_D	29	W
Operating Temperature/ Storage Temperature		T_J/T_{STG}	-55~150	℃

Thermal Resistance Ratings

Parameter		Symbol	Maximum	Unit
Maximum Junction-to-Ambient	t ⩽ 10s	R_{thJA}	40	°C/W
Maximum Junction-to-Case (Drain)	Steady State	R_{thJC}	4.2	

- **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	-1.75	-3	V
Gate Leakage Current	I_{GSS}	V_{GS}= ±25V, V_{DS}=0V	--	--	±100	nA
Drain-Source On-state Resistance	$R_{DS(on)}$	V_{GS} = -10V, I_D = -15A	--	8.5	10.5	mΩ
	$R_{DS(on)}$	V_{GS} = -4.5V, I_D = -10A	--	12.4	16	mΩ
Diode Forward Voltage	V_{SD}	I_{SD}= -1A , V_{GS}=0V	--	-0.73	-1.2	V
Diode Forward Current *AC	I_S	T_C =25°C	--	--	-39	A
Switching						
Total Gate Charge	Q_g	V_{GS}=-10V, V_{DS}=-15V, I_D=-9A	--	30	--	nC
Gate-Source Charge	Q_{gs}		--	4.6	--	nC
Gate-Drain Charge	Q_{gd}		--	10	--	nC
Turn-on Delay Time	$t_{d(on)}$	V_{GS}=-10V, V_{DS}=-15V, R_L=1.6Ω, R_{GEN}=3Ω	--	11	--	ns
Turn-on Rise Time	t_r		--	9.4	--	ns
Turn-off Delay Time	$t_{d(off)}$		--	24	--	ns
Turn-Off Fall Time	t_f		--	12	--	ns
Dynamic						
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=-15V, f=1MHz	--	2060	--	pF
Output Capacitance	C_{oss}		--	370	--	pF
Reverse Transfer Capacitance	C_{rss}		--	295	--	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: Pulse width limited by max, 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)）

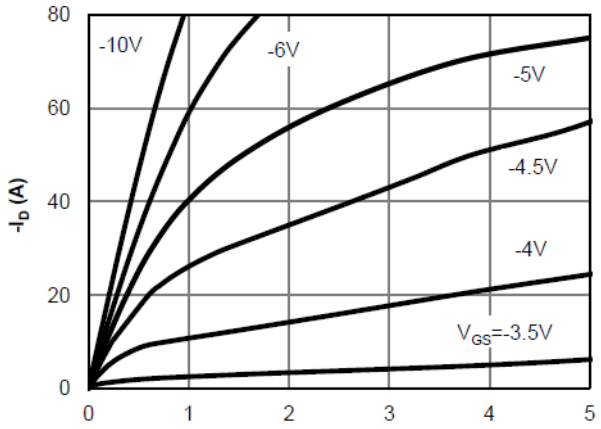


Fig 1: On-Region Characteristics

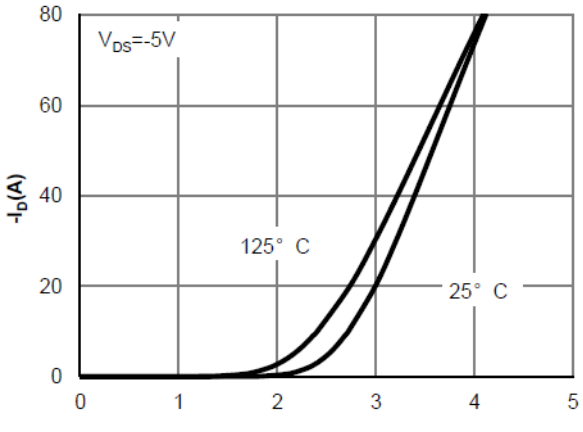


Figure 2: Transfer Characteristics

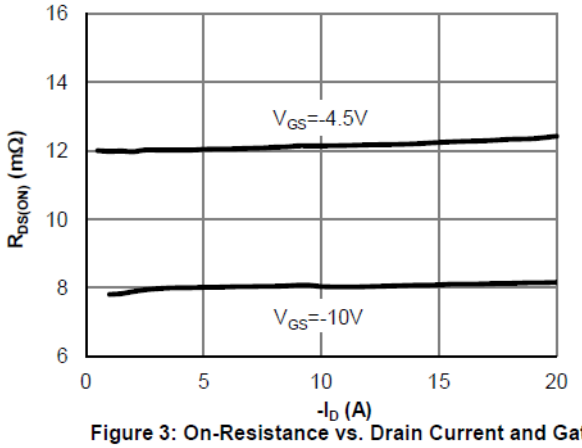


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

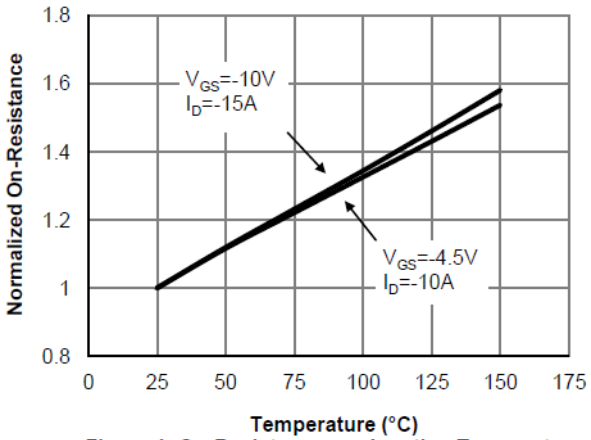


Figure 4: On-Resistance vs. Junction Temperature

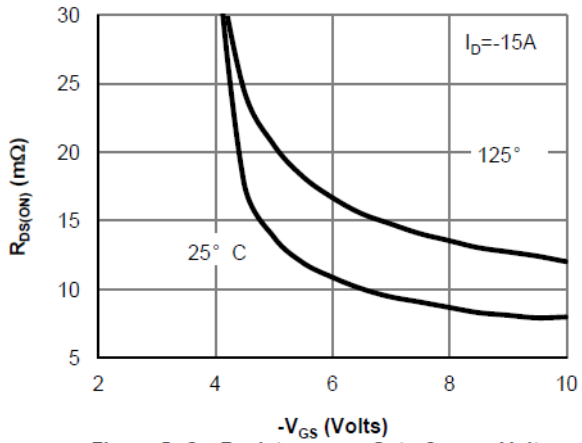


Figure 5: On-Resistance vs. Gate-Source Voltage

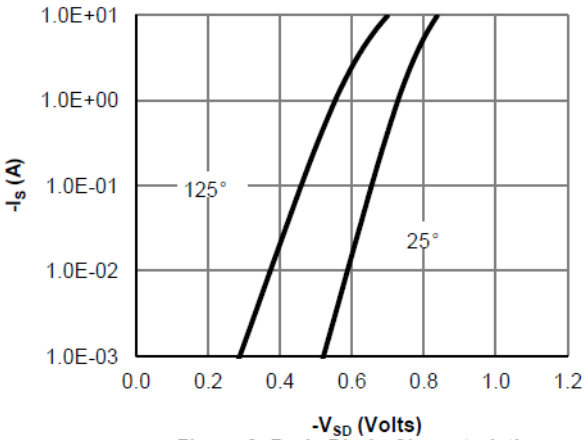


Figure 6: Body-Diode Characteristics

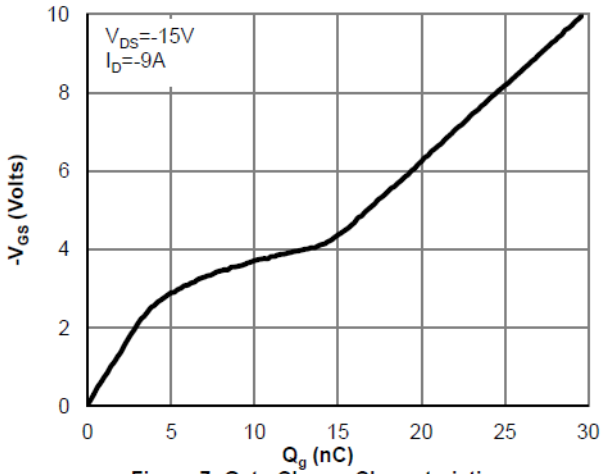


Figure 7: Gate-Charge Characteristics

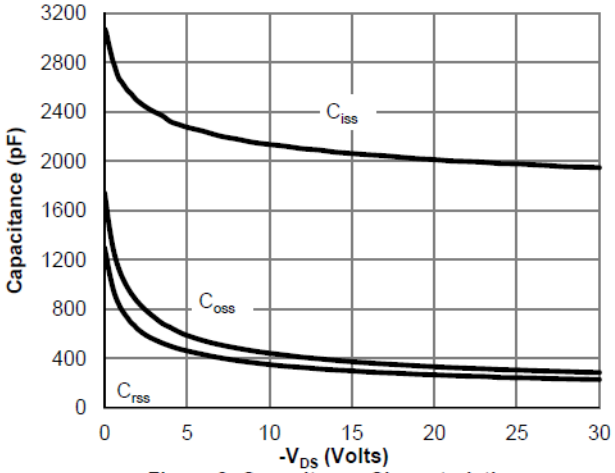


Figure 8: Capacitance Characteristics

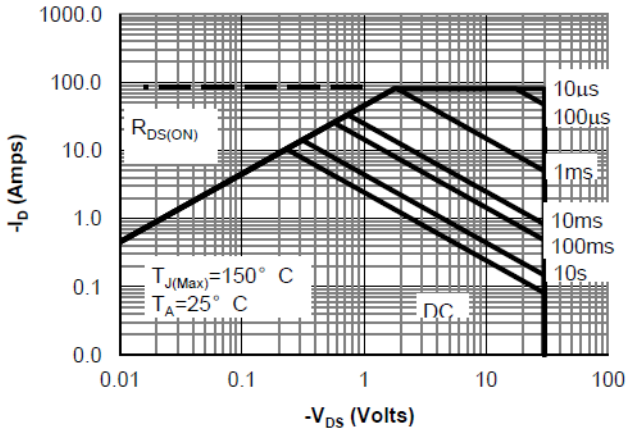


Figure 9: Maximum Forward Biased Safe Operating Area

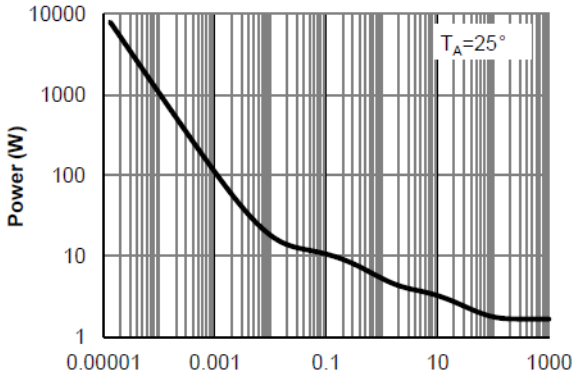


Figure 10: Single Pulse Power Rating Junction-to-Ambient

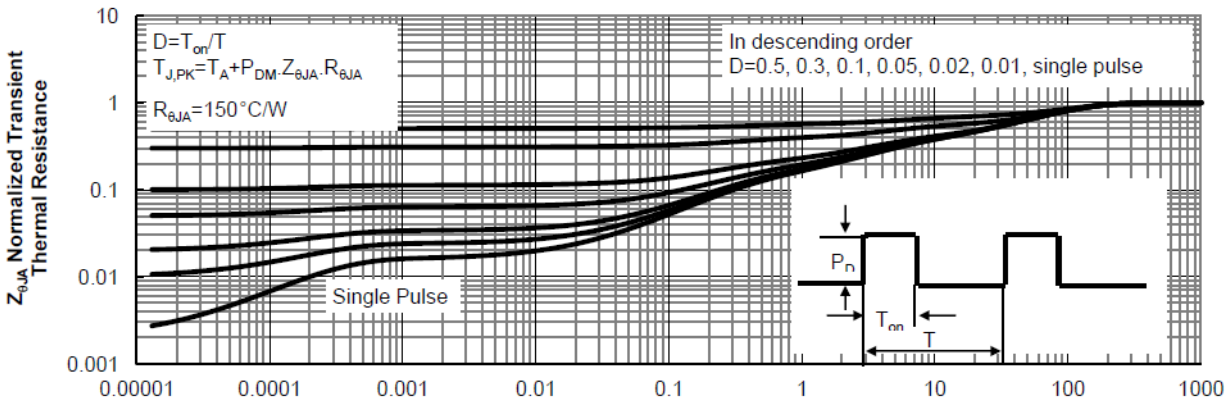
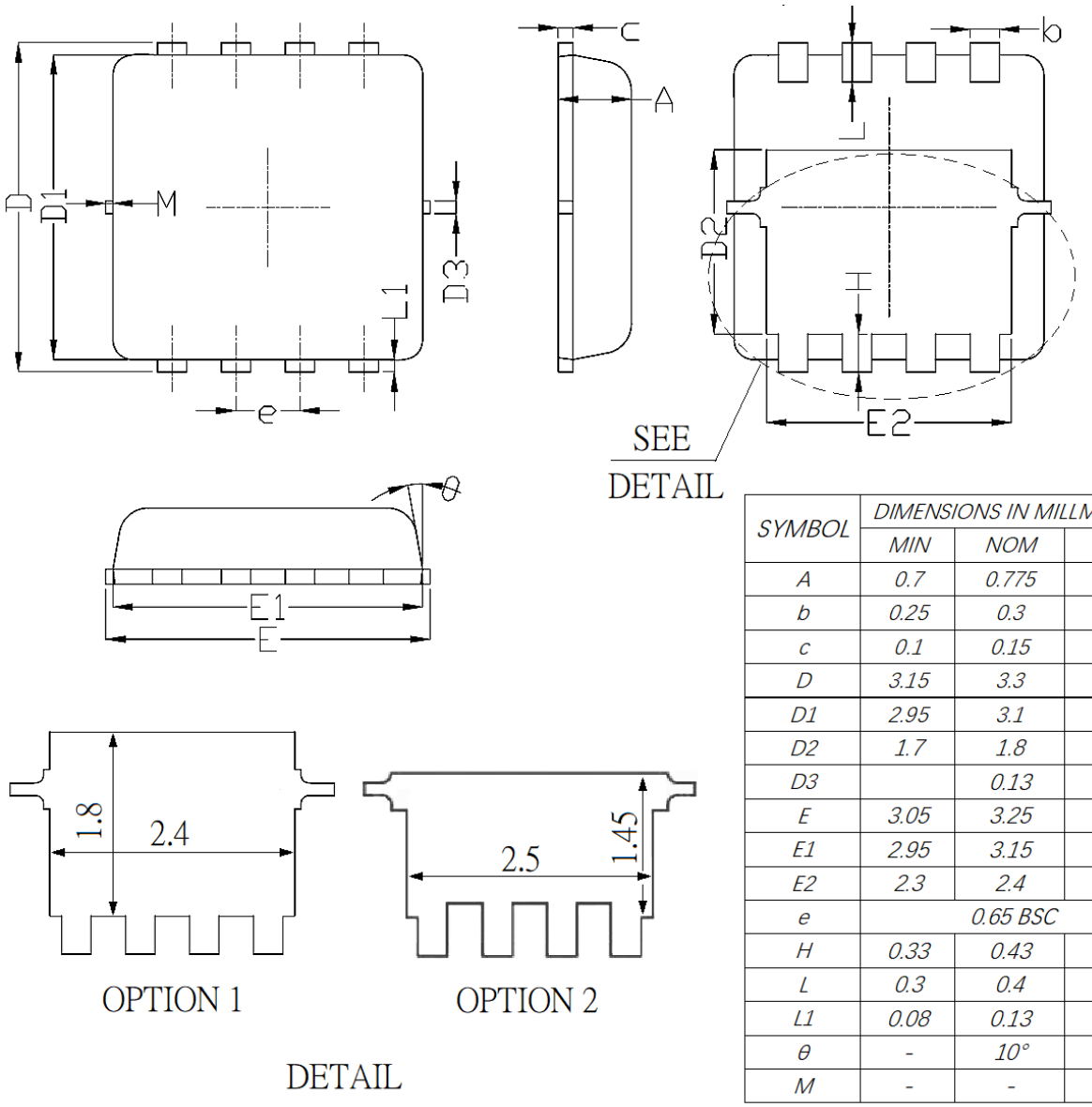


Figure 11: Normalized Maximum Transient Thermal Impedance

- **Package Information**



SYMBOL	DIMENSIONS IN MILLMETERS		
	MIN	NOM	MAX
A	0.7	0.775	0.85
b	0.25	0.3	0.35
c	0.1	0.15	0.25
D	3.15	3.3	3.4
D1	2.95	3.1	3.2
D2	1.7	1.8	1.93
D3		0.13	
E	3.05	3.25	3.35
E1	2.95	3.15	3.2
E2	2.3	2.4	2.55
e	0.65 BSC		
H	0.33	0.43	0.53
L	0.3	0.4	0.5
L1	0.08	0.13	0.18
θ	-	10°	12°
M	-	-	0.15