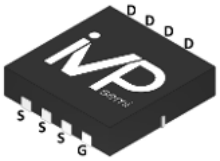
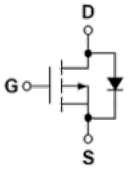
PDFN3.3*3.3



Symbol



Parameter	Value	Unit
V_{DS}	-30	V
$R_{DS(ON)\text{-}Max}$	23	mΩ
I_D	-29	A

Key Features

- Reliable and Rugged
- ROHS Compliant & Halogen-Free
- 100% UIS Tested

Applications

- Portable Equipment
- Battery Powered System

Ordering Information

Ordering part Number	Marking code	Package	Form
VPLMDF7135	7135	PDFN3.3*3.3	Tape & Reel

Absolute Maximum Ratings (T_J = 25°C, unless otherwise specified)

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	-30	V
Gate-Source Voltage		V_{GS}	±25	V
Maximum Junction Temperature		T_J	150	°C
Storage Temperature Range		T_{STG}	-55 to 150	°C
Diode Continuous Forward Current	T_C=25°C	I_S	-21	A
Pulse Drain Current Tested	T_C=25°C	I_{DM}(1)	-71	A
Continuous Drain Current	T_C=25°C	I_D	-29	A
	T_C=100°C		-19	
Maximum Power Dissipation	T_C=25°C	P_D	30	W
	T_C=100°C		12	
Continuous Drain Current	T_A=25°C	I_D	-7.7	A
	T_A=70°C		-6.2	
Maximum Power Dissipation	T_A=25°C	P_D	2.1	W
	T_A=70°C		1.3	
Avalanche Current, Single pulse	L=0.1mH	I_{AS}(2)	-18.5	A
	L=0.5mH		-9	
Avalanche Energy, Single pulse	L=0.1mH	E_{AS}(2)	17	mJ
	L=0.5mH		22	

Thermal Characteristics

Parameter		Symbol	Rating	Unit
Thermal Resistance-Junction to Case	Steady State	$R_{\theta JC}$	4.2	°C/W
Thermal Resistance-Junction to Ambient	Steady State	$R_{\theta JA}$(3)	60	°C/W

- (1) Max. current is limited by bonding wire
- (2) UIS tested and pulse width are limited by maximum junction temperature 150°C
- (3) Surface Mounted on 1in² FR-4 board with 1oz.

Electrical Characteristics (T_J = 25°C, unless otherwise specified)

Static Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	-30	-	-	V	V_{GS}=0V, I_{DS}=-250uA
Zero Gate Voltage Drain Current	I_{DSS}	-	-	-1	uA	V_{DS}=-24V, V_{GS}=0V
Gate Threshold Voltage	$V_{GS(th)}$	-1	-1.7	-2.3	V	V_{DS}=V_{GS}, I_{DS}=-250uA
Gate Leakage Current	I_{GSS}	-	-	±100	nA	V_{GS}=±25V, V_{DS}=0V
Drain-Source On-state Resistance	$R_{DS(ON)}$ (4)	-	19	23	mΩ	V_{GS}=-10V, I_{DS}=-15A
		-	26	34		V_{GS}=-4.5V, I_{DS}=-10A
Forward Transconductance	g_{fs}	-	14	-	S	V_{DS}=-5V, I_{DS}=-7.5A

Dynamic Characteristics(5)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Gate Resistance	R_G	-	15	-	Ω	V_{GS}=0V,V_{DS}=0V, Freq.=1MHz
Input Capacitance	C_{iss}	-	1225	-	pF	V_{GS}=0V, V_{DS}=-15V, Freq.=1MHz
Output Capacitance	C_{oss}	-	135	-		
Reverse Transfer Capacitance	C_{rss}	-	116	-		
Turn-on Delay Time	$t_{d(ON)}$	-	3.2	-	nS	V_{GS}=-10V,V_{DS}=-15V, I_D=-1A,R_{GEN}=6Ω
Turn-on Rise Time	t_r	-	22.8	-		
Turn-off Delay Time	$t_{d(OFF)}$	-	105	-		
Turn-off Fall Time	t_f	-	47.8	-		

Gate Charge Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Total Gate Charge	Q_g	-	13.3	-	nC	V_{GS}=-4.5V,V_{DS}=-15V I_D=-15A
		-	27.3	-		V_{GS}=-10V,V_{DS}=-15V, I_D=-15A
Gate-Source Charge	Q_{gs}	-	5.19	-		
Gate-Drain Charge	Q_{gd}	-	5.32	-		

Source Drain Diode Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Diode Forward Voltage	V_{SD} (4)	-	-0.8	-1.1	V	I_{SD}=-7.5A, V_{GS}=0V
Reverse Recovery Time	t_{rr}	-	12.7	-	nS	I_F=-7.5A, V_R=-15V & dI_F/dt=100A/μs
Reverse Recovery Charge	Q_{rr}	-	5.5	-	nC	

- (4) Pulse test (pulse width ≤ 300us, duty cycle ≤ 2%).
- (5) Guaranteed by design, not subject to production test

Electrical characteristics diagrams

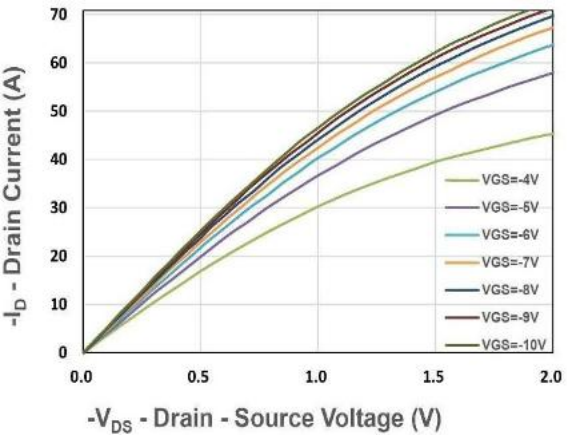


Figure 1. Output Characteristics

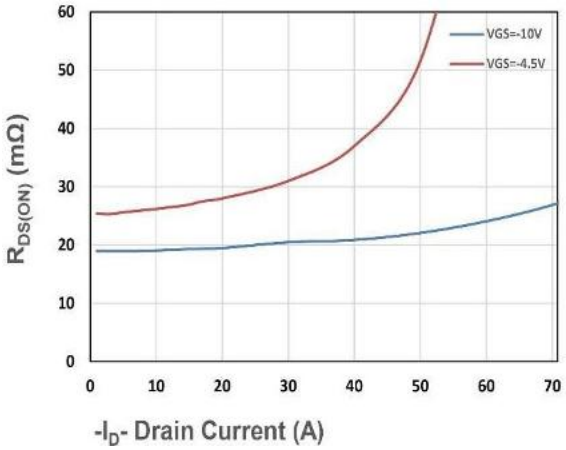


Figure 2. On-Resistance vs. ID

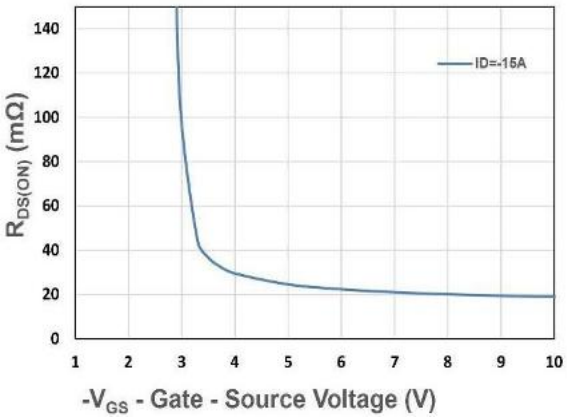


Figure 3. On-Resistance vs. VGS

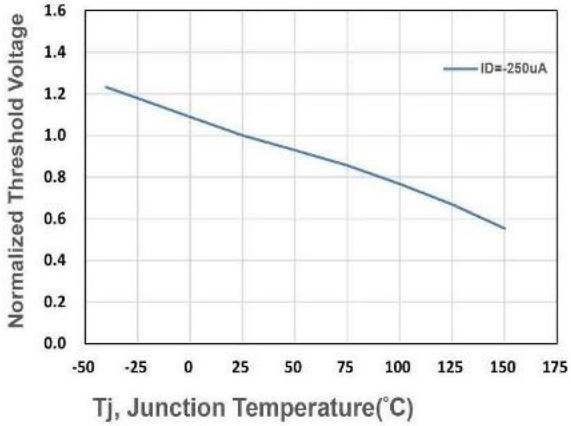


Figure 4. Gate Threshold Voltage

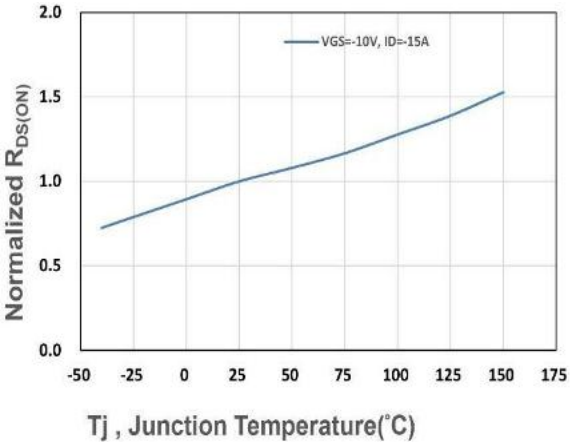


Figure 5. Drain-Source On Resistance

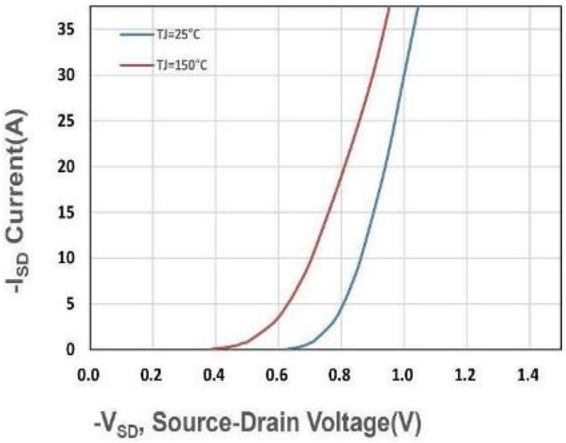


Figure 6. Source-Drain Diode Forward

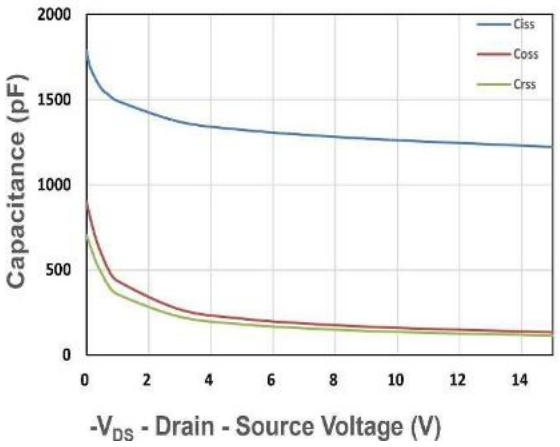


Figure 7. Capacitance

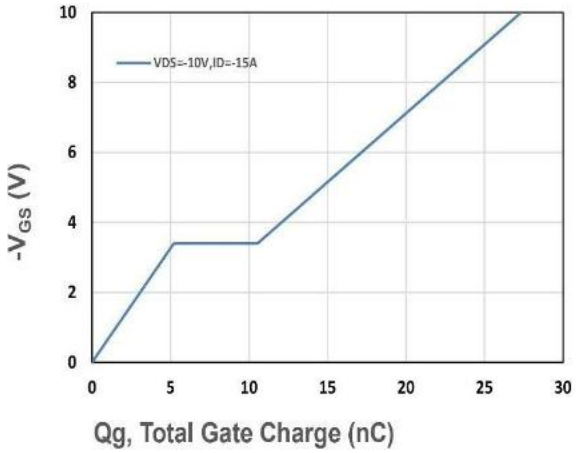


Figure 8. Gate Charge Characteristics

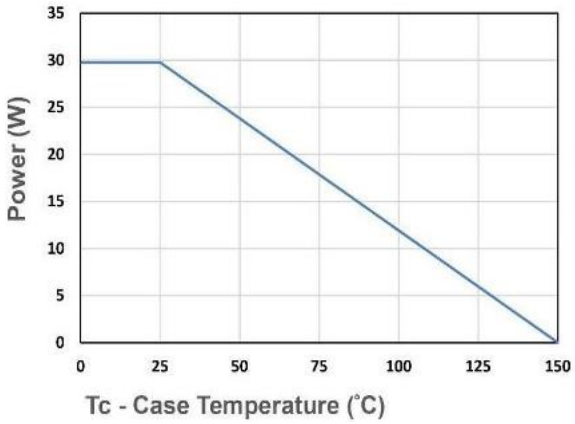


Figure 9. Power Dissipation

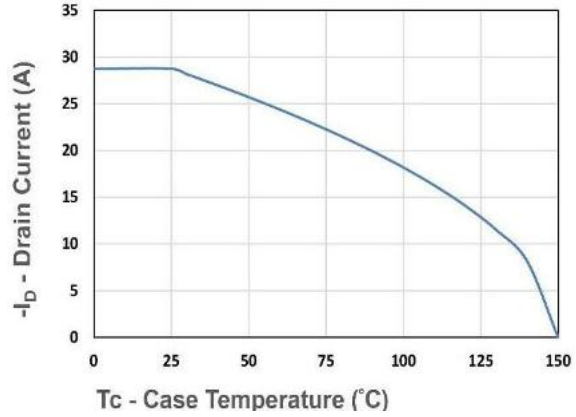


Figure 10. Drain Current

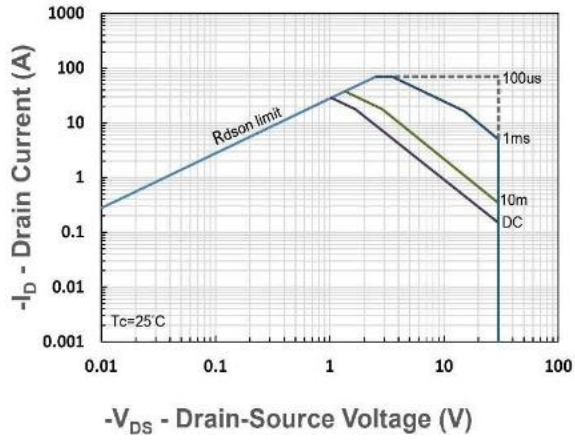


Figure 11. Safe Operating Area

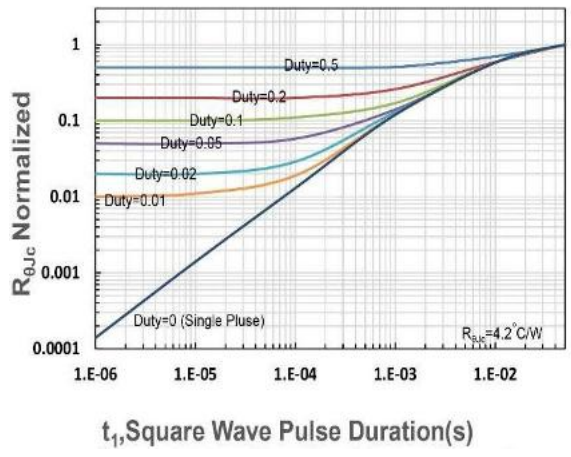
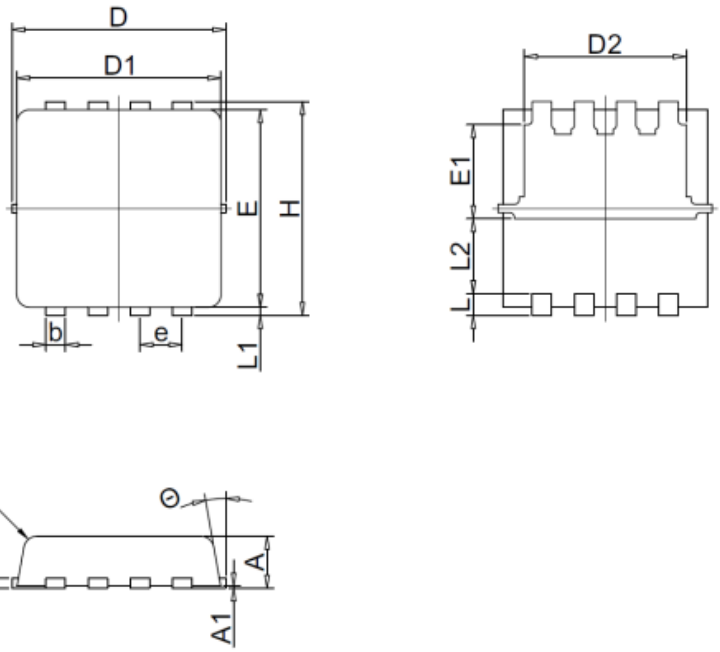


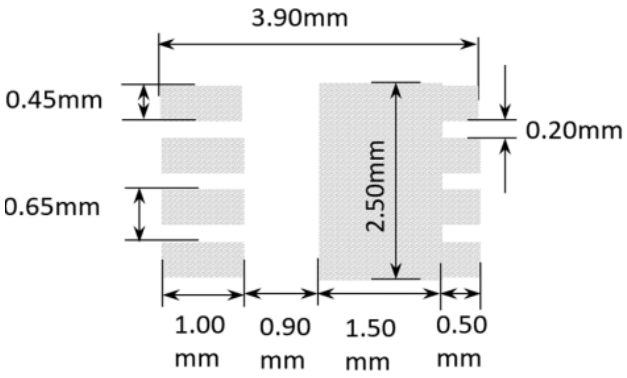
Figure 12. $R_{\theta JC}$ Transient Thermal Impedance

Package Information (PDFN3.3*3.3)



Outline Dimensions in mm

Unit:mm	Min	Typ	Max
A	0.700	0.800	0.900
A1	0.000	0.030	0.050
b	0.240	0.300	0.350
C		0.152 REF.	
D	3.250	3.320	3.400
D1	3.050	3.150	3.250
D2	2.400	2.500	2.600
E	3.000	3.100	3.200
E1	1.350	1.450	1.550
e		0.65 BSC	
H	3.200	3.300	3.400
L	0.300	0.400	0.500
L1	0.100	0.150	0.200
L2		1.13 REF.	
R		0.2 REF.	
θ	6°	10°	14°



Suggested Pad Layout (Unit:mm)

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