

Product Summary

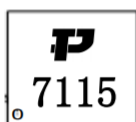
- V_{DS} -150 V
- I_{DS} -9.0A
- $R_{DS(ON)}$ (at $V_{GS}=-10V$) <296m Ω

Package and Pin Configuration



PDFN3X3-8

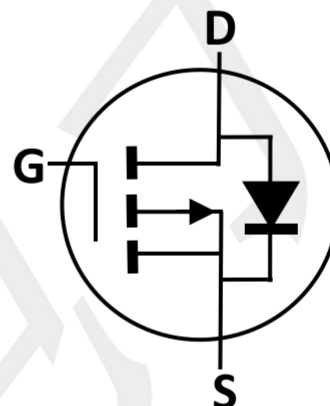
Marking



Application

- Load switch
- Portable equipment and battery Powered systems
- Active Clamp in Intermediate DC/DC Power Supplies

Circuit diagram



Equivalent Circuit

Absolute Maximum Ratings ($T_A=25^{\circ}\text{C}$ unless otherwise noted)

PARAMETER	SYMBOL	LIMIT	UNIT
Drain-Source Voltage	V_{DS}	-150	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	I_D	-9	A
		-4	
Pulsed Drain Current	I_{DM}	-15	A
Total Power Dissipation	P_{DTOT}	52	W
Operating Junction Temperature	T_J	150	$^{\circ}\text{C}$
Storage Temperature Range	T_{stg}	-55 to +150	$^{\circ}\text{C}$

Thermal Characteristic

PARAMETER	Symbol	Value	Unit
Junction-to-Ambient Thermal Resistance	R_{thJA}	81	$^{\circ}\text{C}/\text{W}$

Note : When mounted on 1" square PCB (FR4 material).

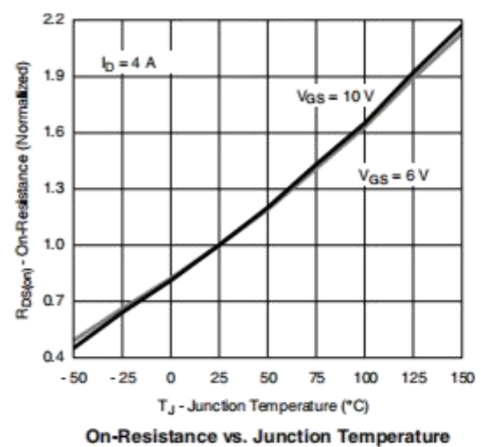
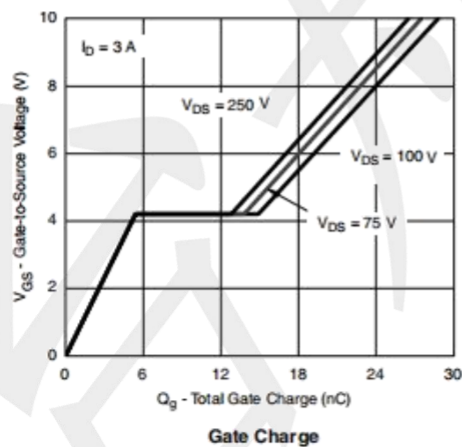
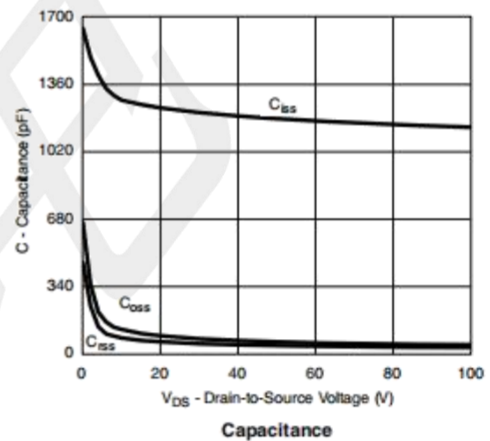
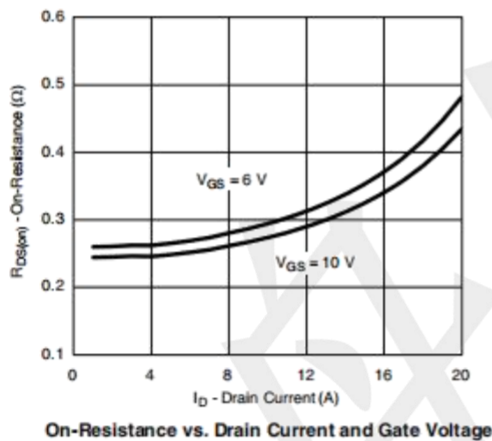
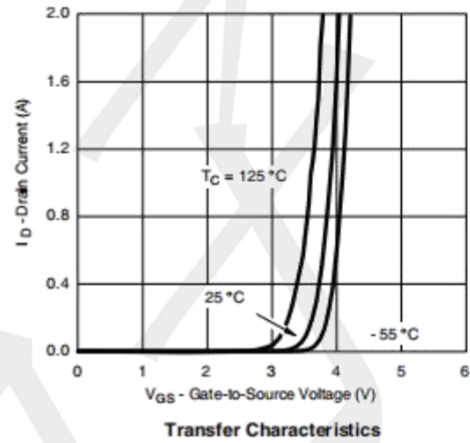
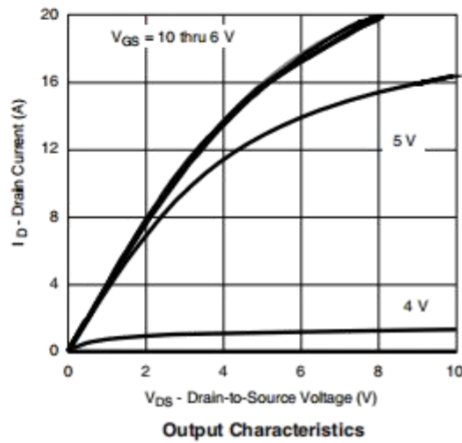
Electrical Characteristics ($T_A=25^\circ\text{C}$ unless otherwise noted)

PARAMETER	CONDITIONS	SYMBOL	MIN	TYP	MAX	UNIT
Static						
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=-250\mu A$	BV_{DSS}	-150	--	--	V
Gate-Source Threshold Voltage	$V_{DS}=V_{GS}, I_D=-250\mu A$	$V_{GS(th)}$	-2	-3	-4	V
Gate-Source Leakage	$V_{DS}=0V, V_{GS}= \pm 20V$	I_{GSS}	--	--	± 100	nA
Zero Gate Voltage Drain Current	$V_{DS}= -120V, V_{GS}=0V$	I_{DSS}	--	--	-1	μA
	$V_{DS}= -120V, T_J=55^{\circ}C$		--	--	-10	μA
Drain-Source On-State Resistance (Note 1)	$V_{GS}= -10V, I_D= -1A$	$R_{DS(on)}$	--	242	296	m Ω
	$V_{GS}= -10V, T_J= 125^{\circ}C$		--	420	--	
	$V_{GS}= -6V, I_D= -3A$		--	261	316	
Forward Transconductance (Note 2)	$V_{DS}= -15V, I_D= -4A$	g_{fs}	--	12	--	S
Dynamic (Note 2)						
Total Gate Charge (Note 3)	$V_{DS}= -75V, I_D= -3A,$ $V_{GS}= -6V$	Q_g	--	23.2	35	nC
Gate-Source Charge (Note 3)		Q_{gs}	--	5.4	--	
Gate-Drain Charge (Note 3)		Q_{gd}	--	8.4	--	
Input Capacitance	$V_{DS}= -50V, V_{GS}= 0V,$ $F= 1.0MHz$	C_{iss}	--	1190	--	pF
Output Capacitance		C_{oss}	--	61	--	
Reverse Transfer Capacitance		C_{rss}	--	42	--	
Switching						
Turn-On Delay Time (Note 3)	$V_{DD}= -75V, I_D= -3A,$ $V_{GS}= -10V,$ $R_{GEN}= 1\Omega$	$t_{d(on)}$	--	11	18	nS
Rise Time (Note 3)		t_r	--	28	42	
Turn-Off Delay Time (Note 3)		$t_{d(off)}$	--	52	78	
Fall Time (Note 3)		t_f	--	35	53	
Source-Drain Diode Ratings and Characteristics (Note 2)						
Forward Voltage	$V_{GS}= 0V, I_F= -3A$	V_{SD}	--	-0.8	-1.2	V
Continuous Source Current	Integral reverse diode in the MOSFET	I_S	--	--	-9	A
Pulsed Current (Note 1)		I_{SM}	--	--	-15	A

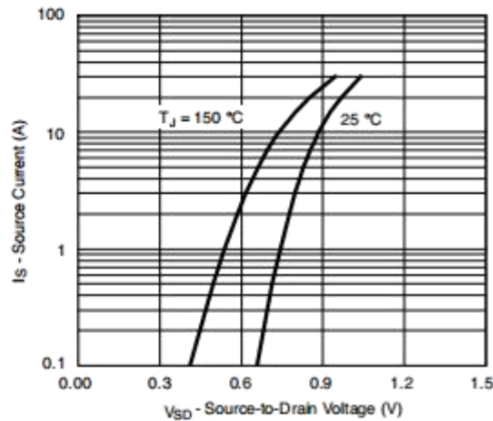
Notes:

1. Pulse test; pulse width $\leq 300 \mu\text{s}$, duty cycle $\leq 2\%$.
2. Guaranteed by design, not subject to production testing.
3. Independent of operating temperature

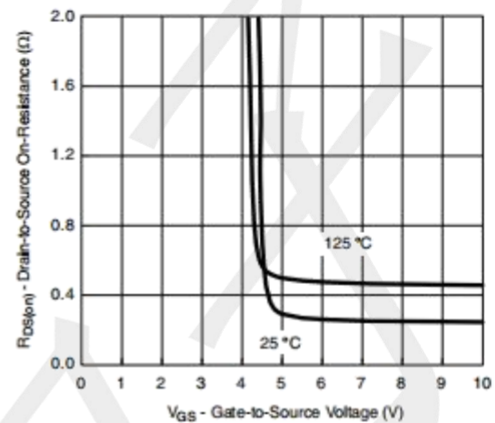
TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



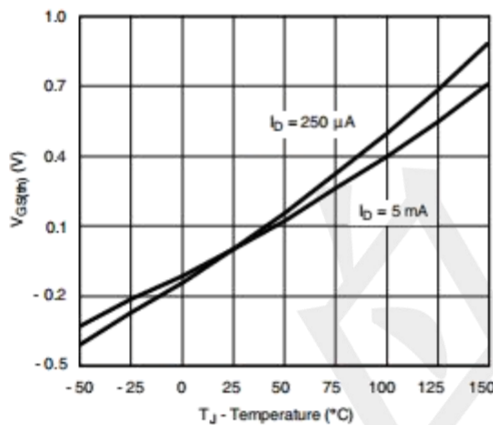
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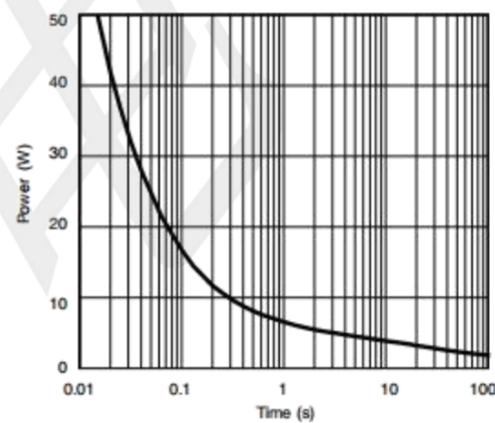
Source-Drain Diode Forward Voltage



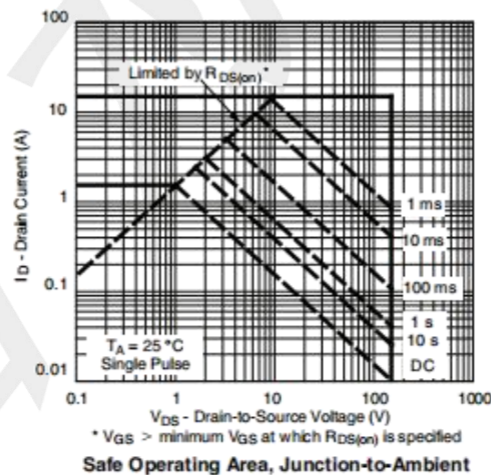
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage



Single Pulse Power, Junction-to-Ambient

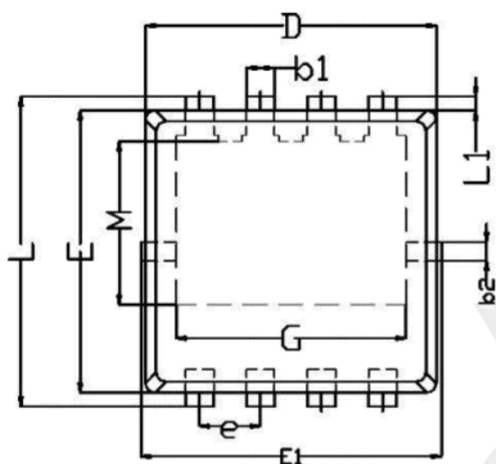


* $V_{GS} >$ minimum V_{GS} at which $R_{DS(on)}$ is specified

Safe Operating Area, Junction-to-Ambient

* The power dissipation PD is based on $T_J(\text{max}) = 150^\circ\text{C}$, using junction-to-case thermal resistance, and is more useful in settling the upper dissipation limit for cases where additional heatsinking is used. It is used to determine the current rating, when this rating falls below the package limit.

PDFN3X3-8 Package Information



Syabol	Din in mi		
	Min	Nom	Max
A	0.75	0.80	0.85
L1	0.10	0.15	0.20
b1	0.25	0.30	0.35
b2	0.15	0.20	0.25
C	0.10	0.15	0.20
D	3.050	3.100	3.150
e	0.650±0.050		
E	2.950	3.000	3.050
E1	3.150	3.200	3.250
L	3.250	3.300	3.350
M	1.685	1.735	1.785
G	2.400	2.450	2.500
0	0"	5,	w

