

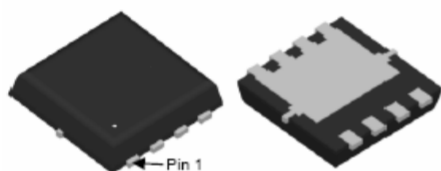
Features

V_{DS}	60V
$R_{DS(on)}$	13m Ω (max)
I_D	38A

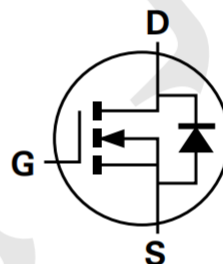
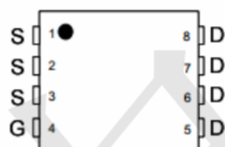
Application

- Load/Power Switching
- Interfacing Switching
- Battery Management for Ultra Small Portable
- Electronics
- Logic Level Shift

Package and Pin Configuration



PDFN3X3-8



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

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current-Continuous	I_D	38	A
Drain Current-Continuous($T_C=100^\circ\text{C}$)	$I_D(100^\circ\text{C})$	27	A
Pulsed Drain Current	I_{DM}	120	A
Maximum Power Dissipation	P_D	41	W
Derating factor		0.33	W/ $^\circ\text{C}$
Single pulse avalanche energy ^(Note 5)	E_{AS}	96	mJ
V_{DS} Spike ^(Note 6)	10 μs	72	V
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 To 150	$^\circ\text{C}$

Thermal Characteristic

Thermal Resistance, Junction-to-Case ^(Note 2)	$R_{\theta JC}$	3.05	$^\circ\text{C/W}$
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Electrical Characteristics ($T_A=25^{\circ}\text{C}$ unless otherwise noted)

PARAMETER	TEST CONDITION	SYMBOL	MIN	TYP	MAX	UNIT
STATIC						
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	BV_{DSS}	60	--	--	V
Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	$V_{GS(th)}$	1.0		2.5	V
Gate-Source Leakage	$V_{DS}=0V, V_{GS}=\pm 20V$	I_{GSS}	--	--	± 100	nA
Zero Gate Voltage Drain Current	$V_{DS}=48V, V_{GS}=0V$	I_{DSS}	--	--	1	μA
Drain-Source On-Resistance	$V_{GS}=10V, I_D=17A$	$R_{DS(ON)}$		10	13	m Ω
	$V_{GS}=4.5V, I_D=15A$			12	15	
DYNAMIC						
Total Gate Charge	$V_{GS}=4.5V, V_{DS}=30V, I_D=17A$	Q_g	--	31.1	--	nC
Gate-Source Charge		Q_{gs}	--	13.7	--	
Gate-Drain Charge		Q_{gd}	--	9.5	--	
Input Capacitance	$V_{GS}=0V, V_{DS}=30V, F=1MHz$	C_{iss}	--	3068.3	--	pF
Output Capacitance		C_{oss}	--	161.9	--	
Reverse Transfer Capacitance		C_{rss}	--	104.7	--	
Turn-On Delay Time	$V_{GS} = 10V, V_{DS} = 30V, R_G = 3\Omega, R_G = 1.75\Omega$	$t_{d(on)}$	--	21.4	--	nS
Turn-On Rise Time		t_r	--	53.8	--	
Turn-Off Delay Time		$t_{d(off)}$	--	68.0	--	
Turn-Off Fall Time		t_f	--	11.0	--	
Source-Drain Diode						
Diode Forward voltage	$I_{SD}=1A, V_{GS}=0V$	V_{SD}	--	0.7	1	V

Typical Characteristics

FIG.1- On-Region Characteristics

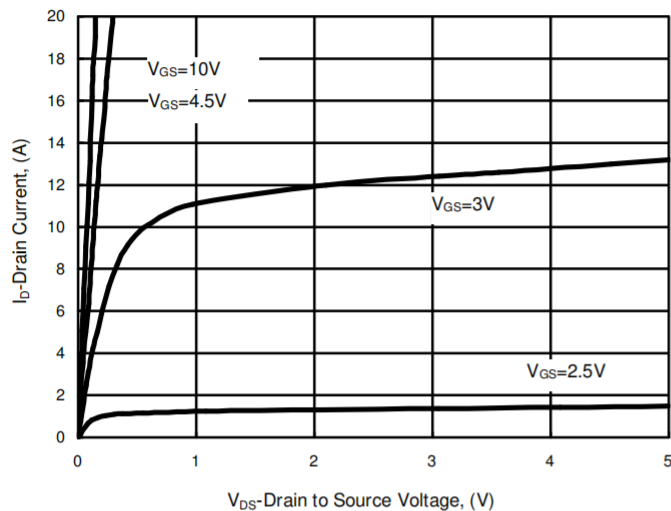


FIG.2- Transfer Characteristics

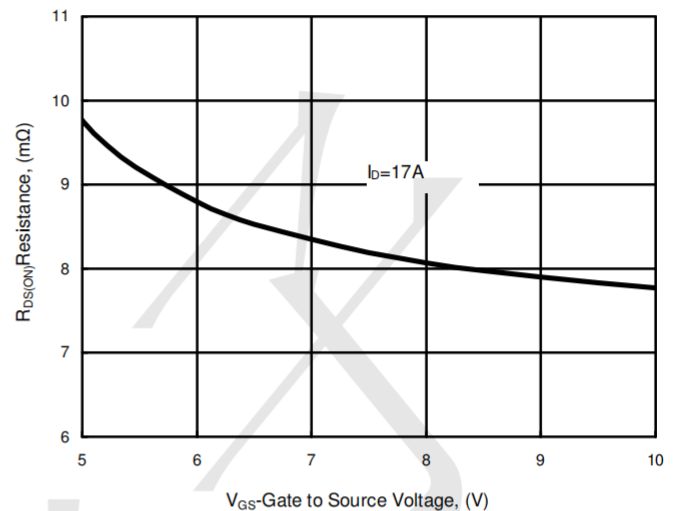


FIG.3- On-Resistance Characteristics

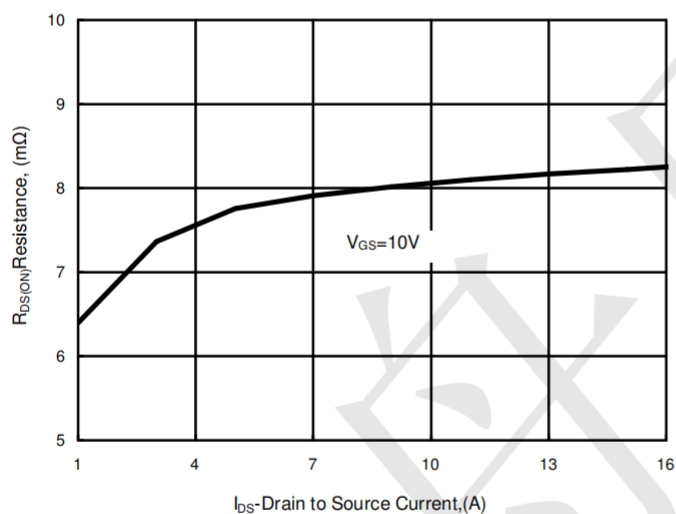


FIG.4- Source - Drain Diode Forward

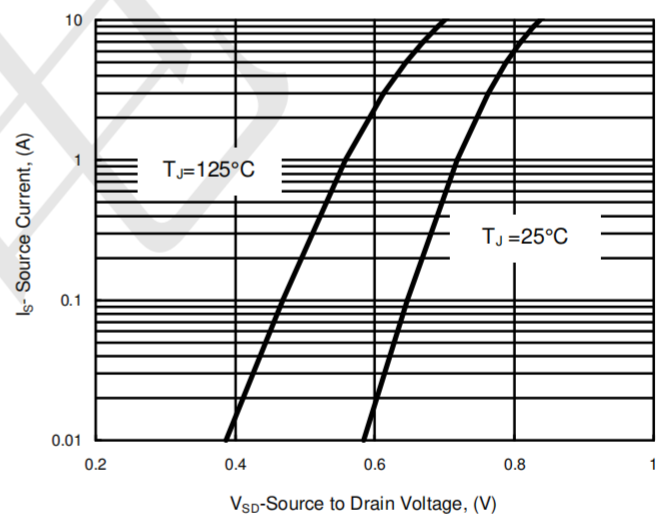


FIG.5- On-Resistance VS Junction Temp

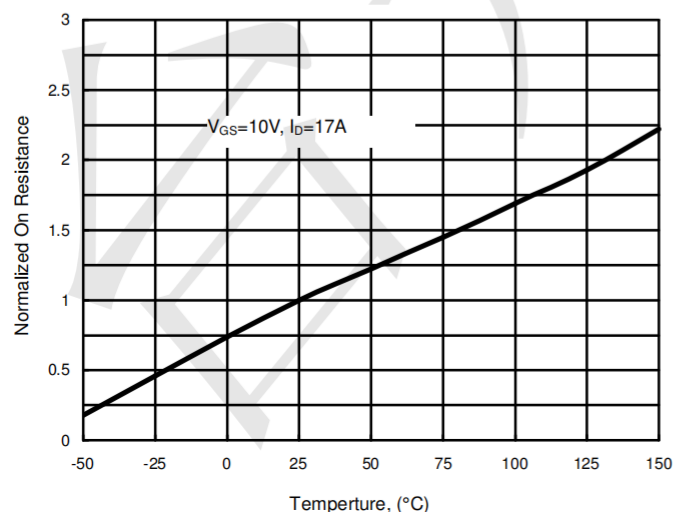


FIG.6- Threshold VS Junction Temp

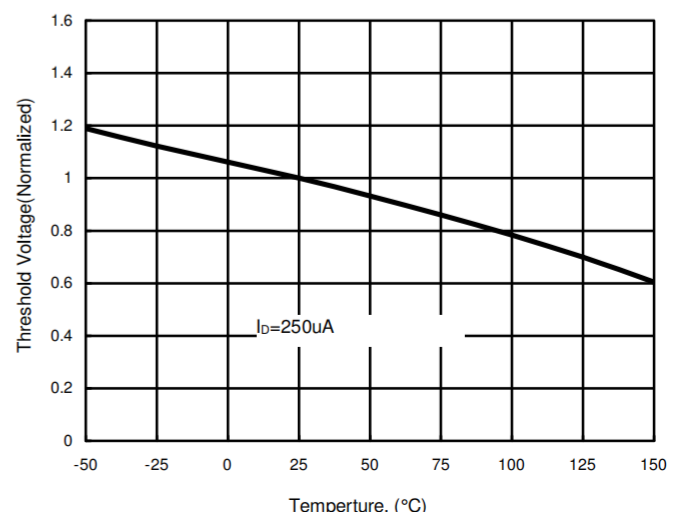


FIG.7- Drain Current

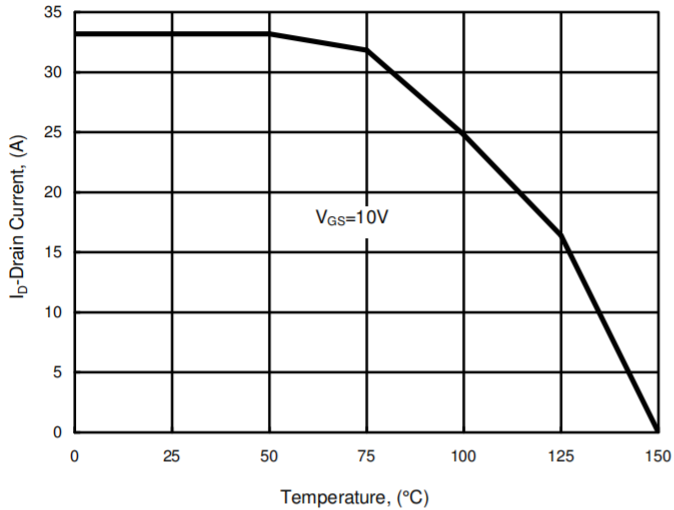


FIG.8- Power Dissipation

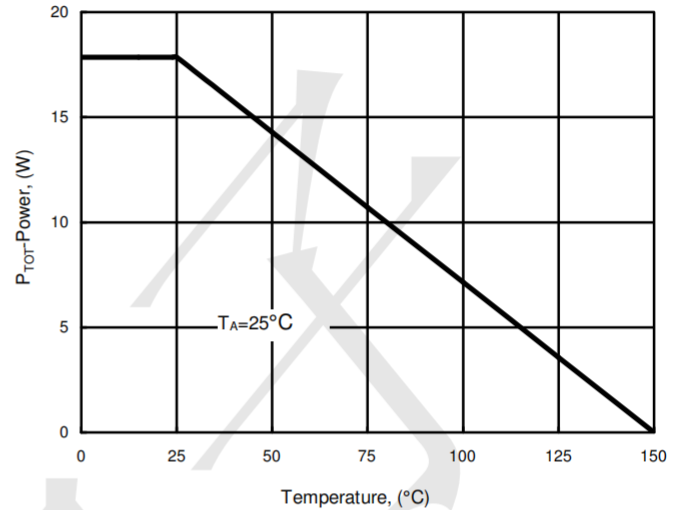


FIG.9- Gate Charge

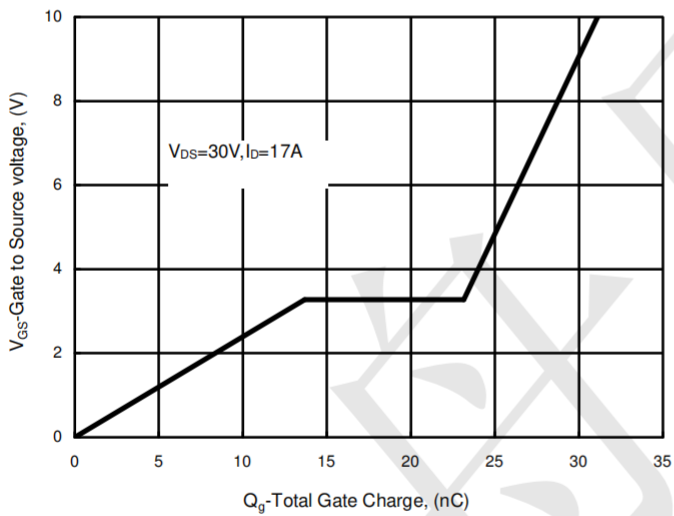
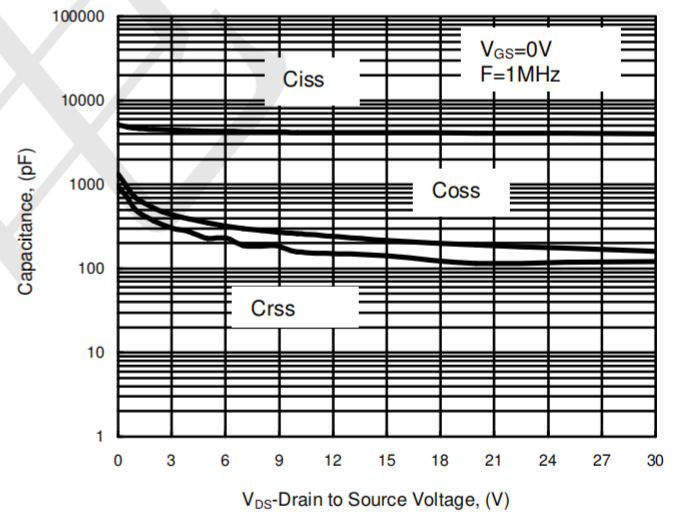
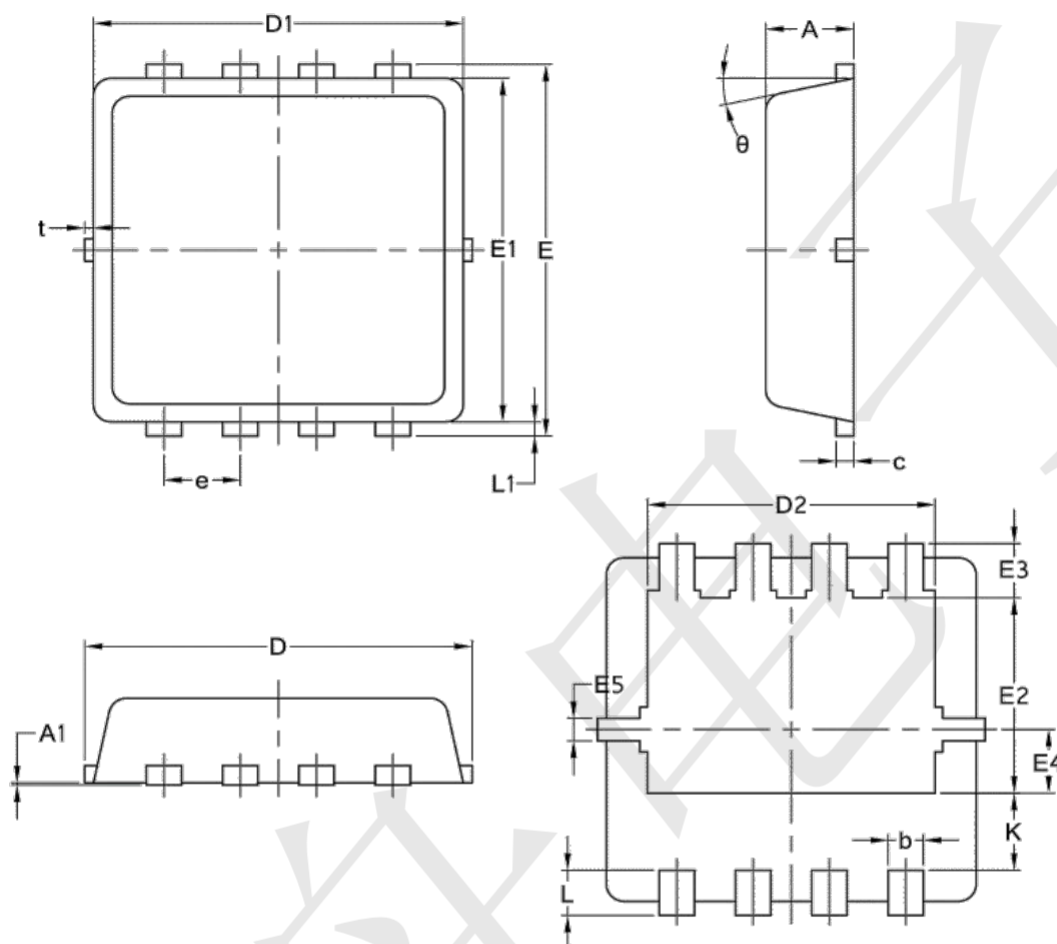


FIG.10- Capacitance



PDFN3X3-8 Package Information



Symbol	Common		
	Mim	mm	Max
A	0.70	0.75	0.85
A1	/	/	0.05
b	0.20	0.30	0.40
c	0.10	0.152	0.25
D	3.15	3.30	3.45
D1	3.00	3.15	3.25
D2	2.29	2.45	2.65
E	3.15	3.30	3.45
E1	2.90	3.05	3.20
E2	1.54	1.74	1.94
E3	0.28	0.48	0.65
E4	0.37	0.57	0.77
E5	0.10	0.20	0.30
e	0.60	0.65	0.70
K	0.59	0.69	0.89
L	0.30	0.40	0.50
L1	0.06	0.125	0.20
t	0	0.075	0.13
Φ	10	12	14