

P-Channel 80V(D-S) MOSFET

Product summary		
V_{DS}	-80	V
$R_{DS(ON)}$ (at $V_{GS}=-10V$) Typ.	14	m Ω
$R_{DS(ON)}$ (at $V_{GS}=-4.5V$) Typ.	17	m Ω
I_D ($T_C=25^\circ C$)	-50	A

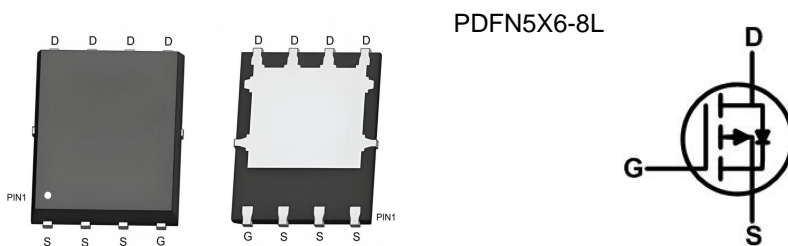
Features

- Split gate trench MOSFET technology
- Low $R_{DS(ON)}$
- Excellent stability and uniformity

Applications

- Portable equipment
- Power Management

Pin Configuration



Packing Information

Device	Package	Reel Size	Quantity(Min. Package)
ECAP50P08A	PDFN5X6-8L	13"	5000pcs

Absolute Maximum Ratings (at $T_A=25^\circ C$ Unless Otherwise Noted)

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	-80	V
V_{GS}	Gate-Source Voltage	± 18	V
I_D	Continuous Drain Current	$T_C=25^\circ C$	-50
		$T_C=100^\circ C$	-31.8
I_{DM}	Pulse Drain Current Tested ^A	-200	A
E_{AS}	Single Pulse Avalanche Energy ^B	600	mJ
P_D	Power Dissipation ^C	$T_C=25^\circ C$	104
T_J, T_{STG}	Junction and Storage Temperature Range	-55 to +150	$^\circ C$

Thermal Characteristics

Symbol	Parameter	Max.	Units
$R_{\theta JC}$	Thermal Resistance-Junction to case max	1.2	$^\circ C/W$

Electrical Characteristics (at $T_J = 25^\circ\text{C}$ Unless Otherwise Noted)

Symbol	Parameter	Condition	Min.	Typ.	Max.	Units
Static Parameters						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=-250\mu A$	-80	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=-80V, V_{GS}=0V$	--	--	-1	μA
I_{GSS}	Gate-Body Leakage Current	$V_{DS}=0V, V_{GS}=\pm 18V$	--	--	± 100	nA
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1.2	-2.1	-3.0	V
$R_{DS(on)}$	Drain-Source On-State Resistance ^D	$V_{GS}=-10V, I_D=-25A$	--	14	18	m Ω
		$V_{GS}=-4.5V, I_D=-20A$	--	17	23	m Ω
V_{SD}	Diode Forward Voltage	$I_S=-25A, V_{GS}=0V$	--	--	-1.2	V
R_G	Gate resistance	$f=1\text{MHz}$	--	8	--	Ω
I_S	Maximum Body-Diode Continuous Current		--	--	-50	A
Dynamic Parameters ^E						
C_{iss}	Input Capacitance	$V_{GS}=0V, V_{DS}=-40V$ $f=1\text{MHz}$	--	5300	--	pF
C_{oss}	Output Capacitance		--	490	--	pF
C_{rss}	Reverse Transfer Capacitance		--	47	--	pF
Q_g	Total Gate Charge	$V_{DS}=-40V, I_D=-25A$ $V_{GS}=-10V$	--	90	--	nC
Q_{gs}	Gate-Source Charge		--	25	--	nC
Q_{gd}	Gate-Drain Charge		--	16	--	nC
$t_{D(on)}$	Turn-on Delay Time	$V_{DD}=-40V$ $V_{GS}=-10V,$ $R_{GEN}=3\Omega,$ $I_D=-25A$	--	14	--	ns
t_r	Turn-on Rise Time		--	81	--	ns
$t_{D(off)}$	Turn-off Delay Time		--	135	--	ns
t_f	Turn-off Fall Time		--	84	--	ns
t_{rr}	Reverse recovery time	$I_F=-25A,$ $di/dt=100\text{ A/uS}$	--	63	--	ns
Q_{rr}	Reverse recovery charge		--	125	--	nC

Note:

- A. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.
- B. EAS condition: $T_J=25^\circ\text{C}$, $R_G=25\Omega$, $V_{DD}=-50V$, $V_G=-10V$, $L=0.3\text{mH}$, $I_{AS}=-20A$.
- C. P_D is based on max. junction temperature, using junction-case and junction-ambient thermal resistance.
- D. Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 0.5\%$.
- E. Guaranteed by design, not subject to production testing.

Typical Characteristics

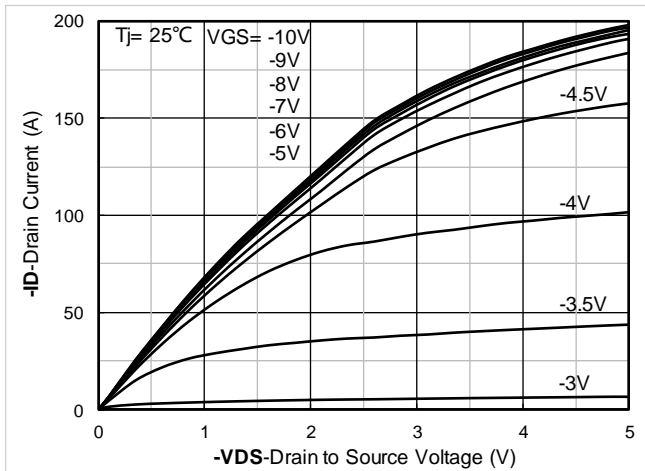


Figure 1. Output Characteristics

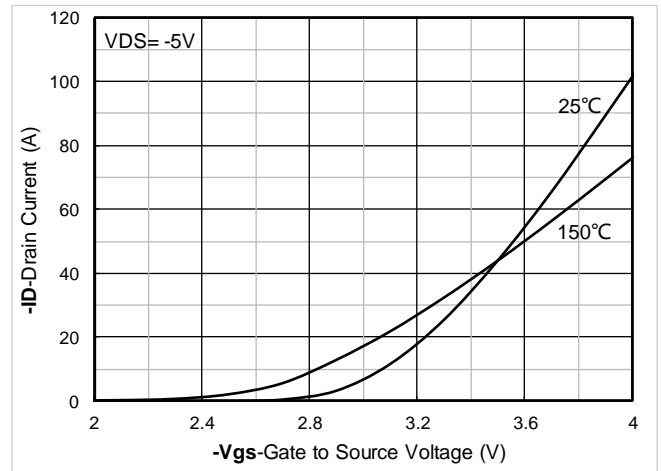


Figure 2. Transfer Characteristics

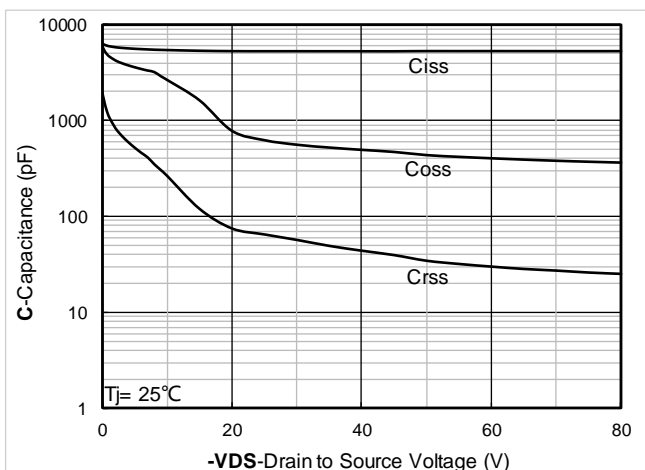


Figure 3. Capacitance Characteristics

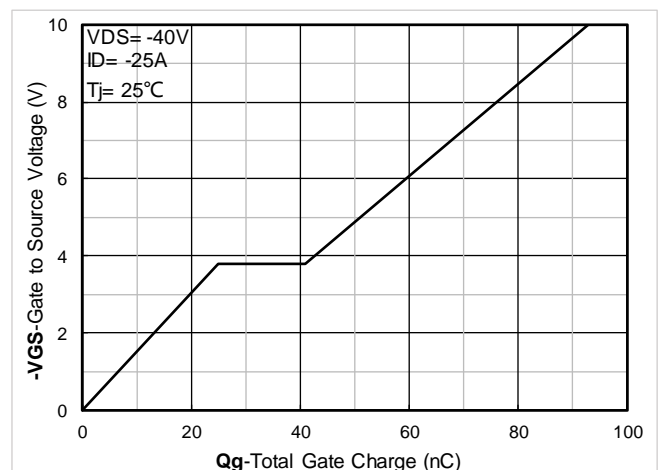


Figure 4. Gate Charge

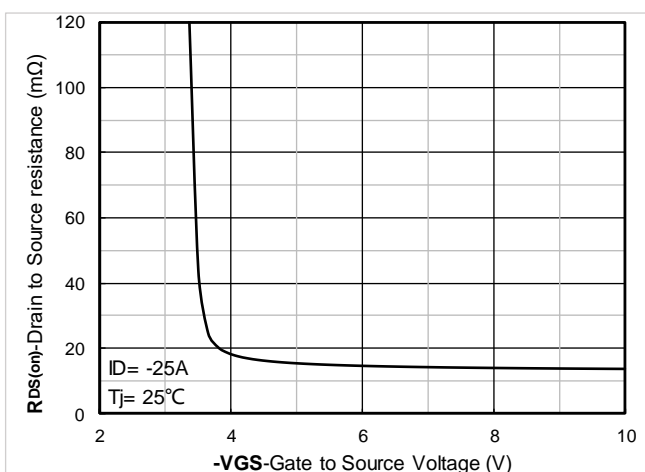


Figure 5. On-Resistance vs Gate to Source Voltage

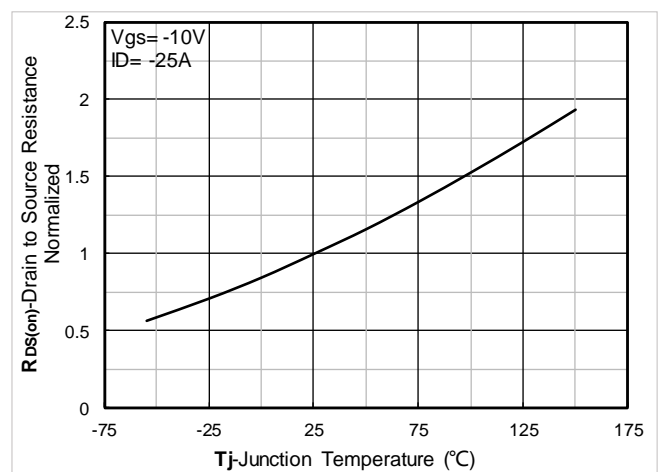


Figure 6. Normalized On-Resistance

Typical Characteristics

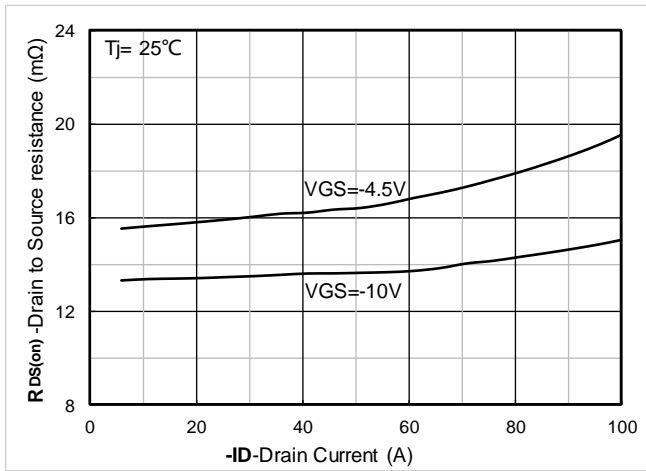


Figure 7. $R_{DS(on)}$ VS Drain Current

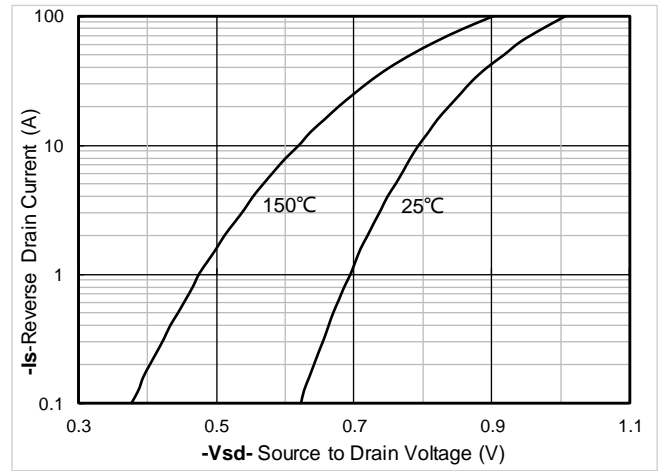


Figure 8. Forward characteristics of reverse diode

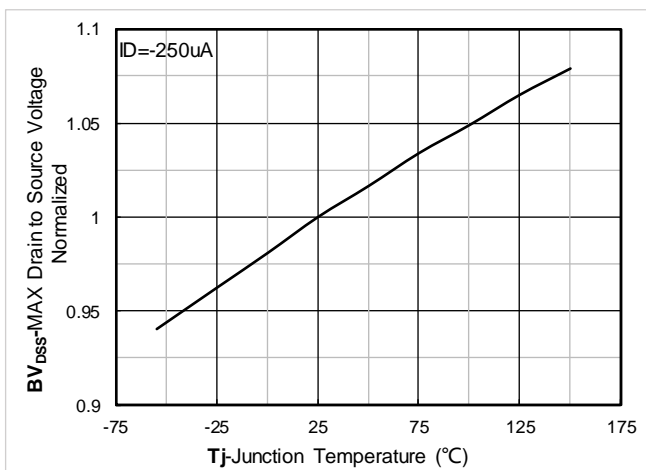


Figure 9. Normalized breakdown voltage

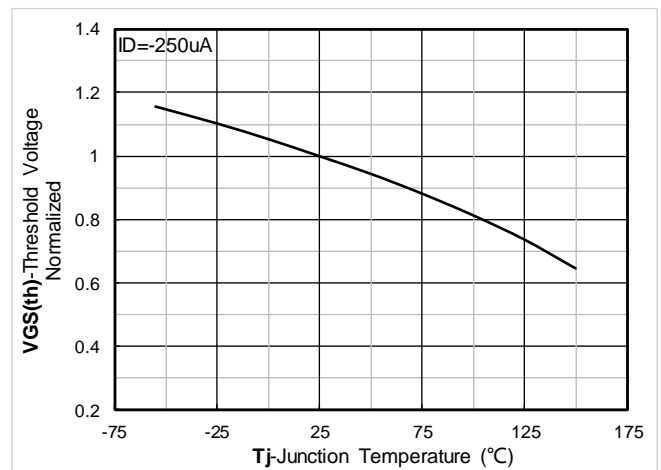


Figure 10. Normalized Threshold voltage

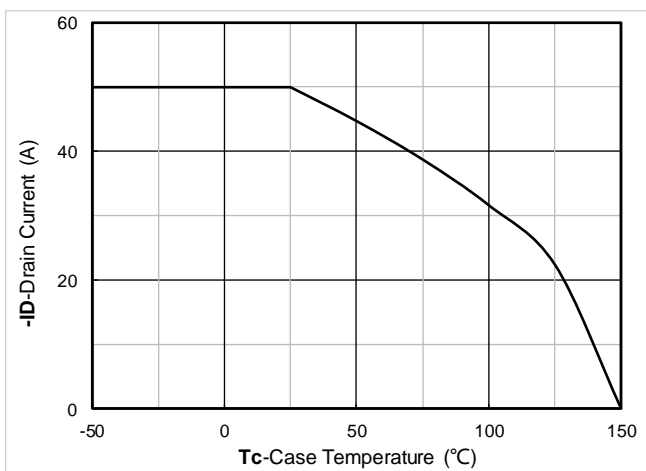


Figure 11. Current dissipation

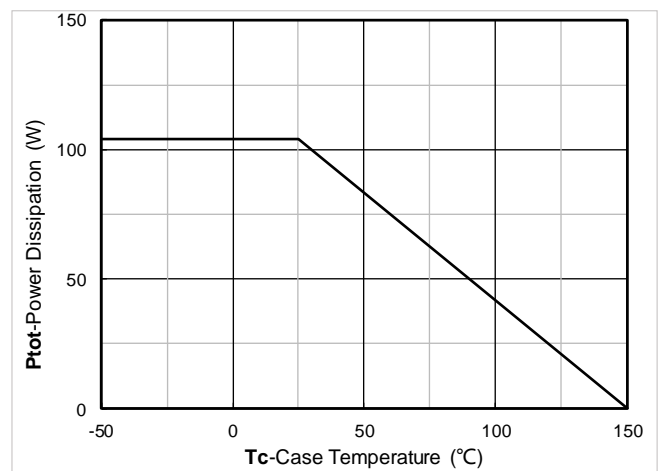


Figure 12. Power dissipation

Typical Characteristics

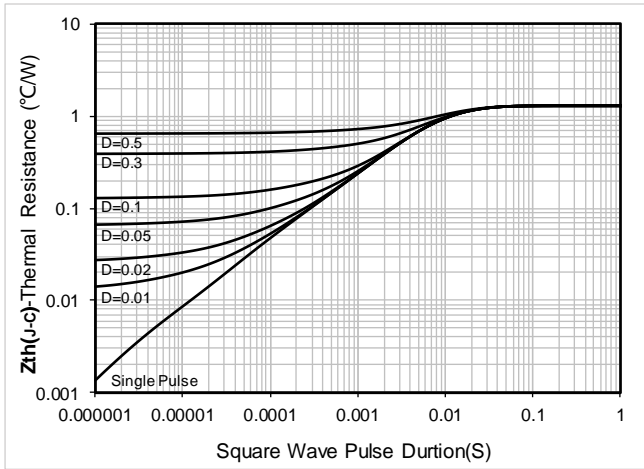


Figure 13. Maximum Transient Thermal Impedance

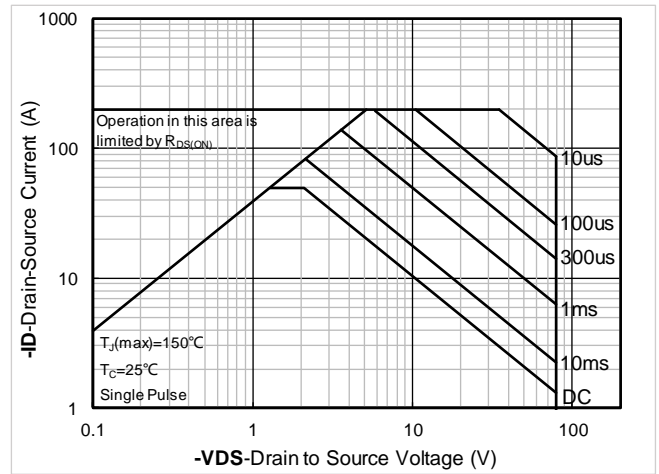
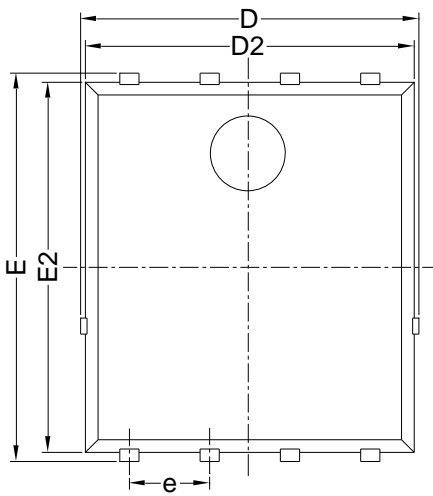
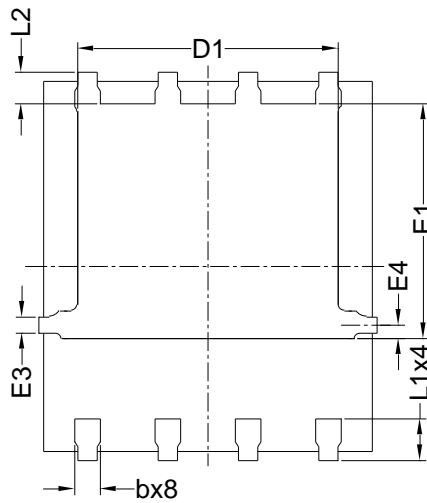
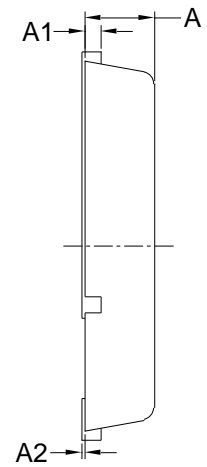


Figure 14. Safe Operation Area

PDFN5X6-8L Package Information (unit:mm)


 Top View
正面视图

 Bottom View
背面视图

 Side View
侧面视图

SYMBOL	MILLIMETER		
	MIN	NOM	MAX
D	5.15	5.35	5.55
E	5.95	6.15	6.35
A	1.00	1.10	1.20
A1	0.254 BSC		
A2			0.10
D1	3.92	4.12	4.32
E1	3.52	3.72	3.92
D2	5.00	5.20	5.40
E2	5.66	5.86	6.06
E3	0.254 REF		
E4	0.21 REF		
L1	0.56	0.66	0.76
L2	0.50 BSC		
b	0.31	0.41	0.51
e	1.27 BSC		

Note:

1. Controlling dimension: in millimeters.
2. General tolerance: ± 0.10 mm.
3. The pad layout is for reference purposes only.