N-Channel 30V(D-S) MOSFET

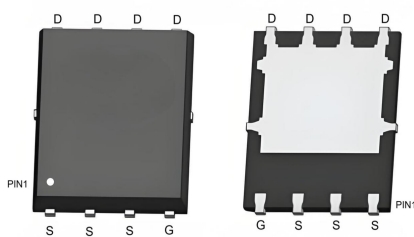| Product summary		
V_{DS}	30	V
$R_{DS(ON)}$(at V_{GS}=10V) Typ.	3.9	mΩ
I_D(Tc=25℃)	50	A

Features

● High density cell design for low $R_{DS(ON)}$
● Trench Power LV MOSFET technology

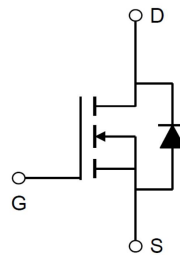## Applications

● Load switching
● High current load applications

Pin Configuration

PDFN5X6-8L

Packing Information

Device	Package	Reel Size	Quantity(Min. Package)
ECAP50N03A	PDFN5X6-8L	13″	3000pcs

Absolute Maximum Ratings (at T_A=25℃ Unless Otherwise Noted)

Symbol	Parameter		Rating	Units
V_{DS}	Drain-Source Voltage		30	V
V_{GS}	Gate-Source Voltage		±20	V
I_D	Continuous Drain Current at V_{GS}=10V	T_C=25℃	50	A
		T_C=100℃	35	A
I_{DM}	Pulse Drain Current Tested [A]		190	A
E_{AS}	Single Pulse Avalanche Energy [B]		80	mJ
P_D	Power Dissipation @T_C=25℃		30	W
T_J,T_{STG}	Junciton and Storage Temperature Range		-55 to +175	℃

Thermal Characteristics

Symbol	Parameter	Typical	Units
$R_{θJA}$	Thermal Resistance-Junction to ambient [C]	50	℃/W
$R_{θJC}$	Thermal Resistance-Junction to case max [C]	5	℃/W

Electrical Characteristics (at T_J =25℃ Unless Otherwise Noted)

Symbol	Parameter	Condition	Min.	Typ.	Max.	Units
Static Parameters						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V,I_D=250uA	30	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=30V,V_{GS}=0V	--	--	1	uA
I_{GSS}	Gate-Body Leakage Current	V_{DS}=0V,V_{GS}=±20V	--	--	±100	nA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS},I_D=250uA	1.0	1.5	2.5	V
$R_{DS(ON)}$	Drain-Source On-State Resistance	V_{GS}=10V,I_D=15A	--	3.9	4.7	mΩ
		V_{GS}=4.5V,I_D=15A	--	5.0	6.0	mΩ
V_{SD}	Forward Voltage	I_S=15A,V_{GS}=0V	--	--	1.2	V
I_S	Continuous Diode Forward Current		--	--	50	A
Dynamic Parameters						
C_{iss}	Input Capacitance	V_{GS}=0V,V_{DS}=15V f=1MHZ	--	1620	--	pF
C_{oss}	Output Capacitance		--	336	--	pF
C_{rss}	Reverse Transfer Capacitance		--	195	--	pF
Switching Parameters						
Q_g	Total Gate Charge	V_{DS}=15V,I_D=20A V_{GS}=10V	--	55.7	--	nC
Q_{gs}	Gate-Source Charge		--	13	--	nC
Q_{gd}	Gate-Drain Charge		--	11.3	--	nC
$t_{D(on)}$	Turn-on Delay Time	V_{DD}=20V I_D=2A,R_G=3Ω, R_L=1Ω, V_{GS}=10V	--	6	--	nS
t_r	Turn-on Rise Time		--	36	--	nS
$t_{D(off)}$	Turn-off Delay Time		--	29	--	nS
t_f	Turn-off Fall Time		--	7	--	nS
t_{rr}	Reverse recovery time	I_F=25A, di/dt=100 A/uS	--	29	--	ns
Q_{rr}	Reverse recovery charge		--	27	--	nC

A. Pulse Test: Pulse Width≤300us,Duty cycle≤2%.

B. T_j=25℃, V_{DD}=20V, V_G=10V, L=0.5mH, R_g=25Ω.

C.$R_{\theta JA}$ is the sum of the junction-to-case and case-to-ambient thermal resistance, where the case thermal reference is defined as the solder mounting surface of the drain pins. $R_{\theta JC}$ is guaranteed by design, while $R_{\theta JA}$ is determined by the board design. The maximum rating presented here is based on mounting on a 1in^2 pad of 2oz copper.

Typical Characteristics
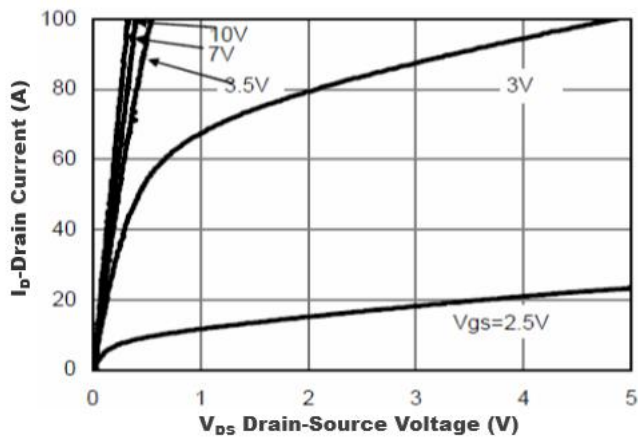

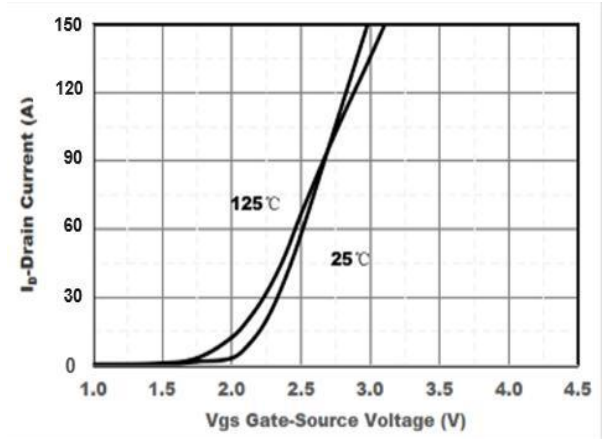Figure1. Output Characteristics

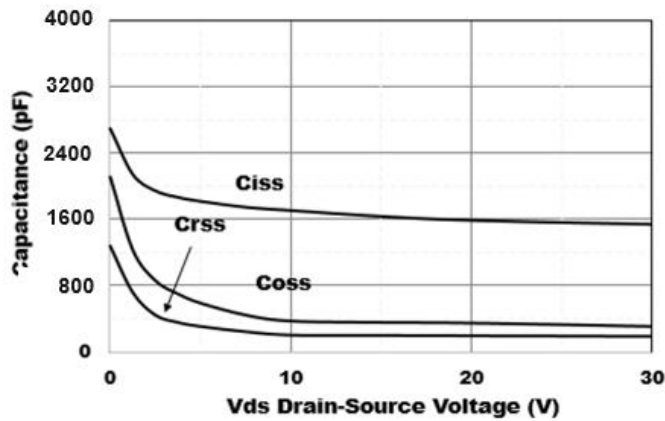Figure2. Transfer Characteristics
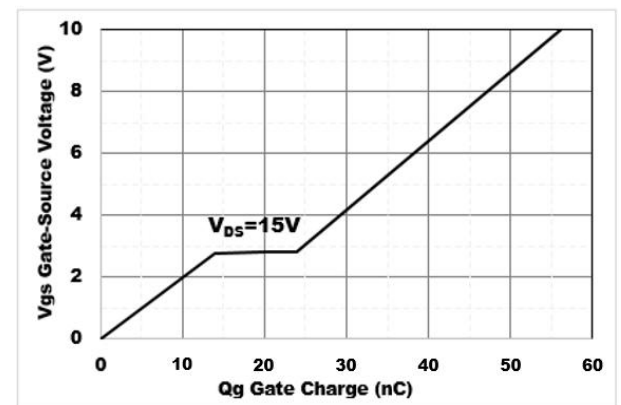

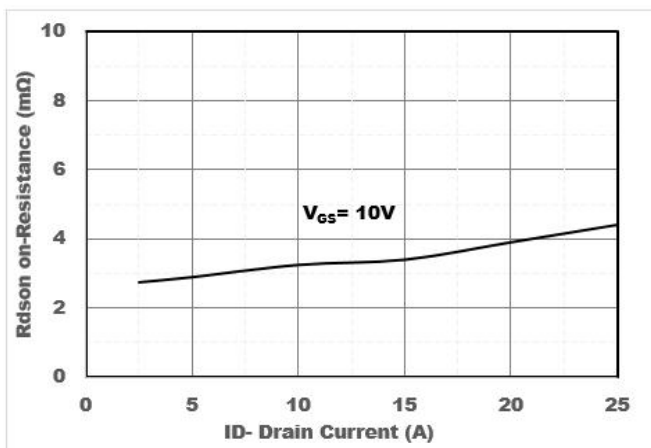Figure3. Capacitance Characteristics

Figure4. Gate Charge
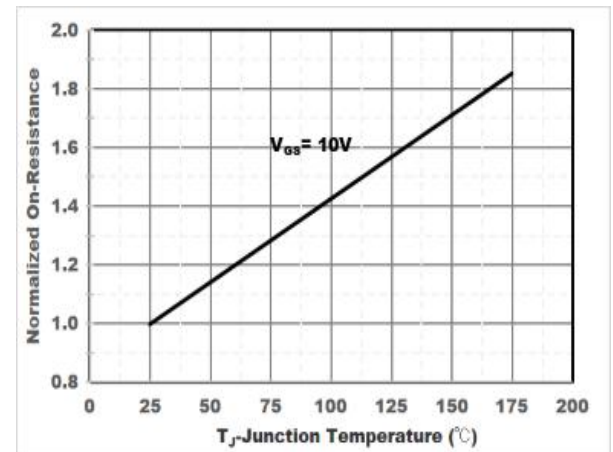

Figure5. Drain-Source on Resistance

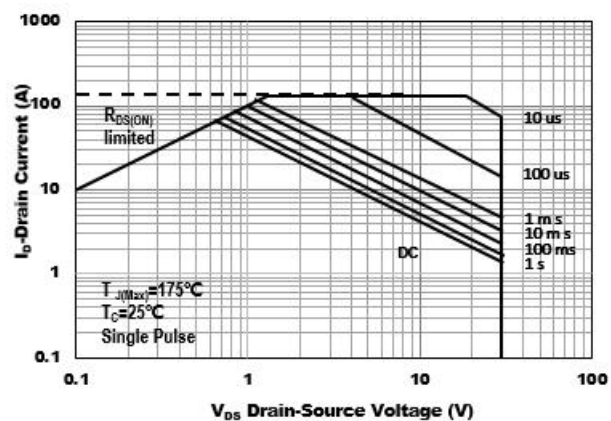Figure6. Drain-Source on Resistance
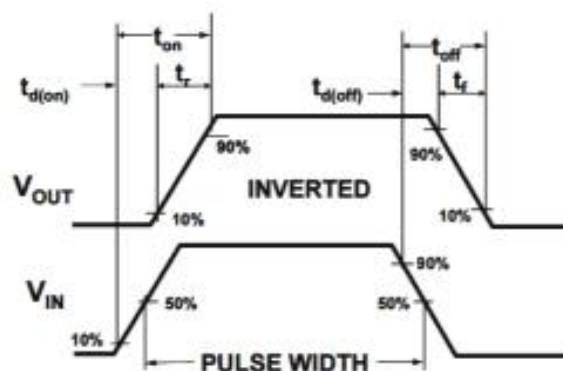
Typical Characteristics
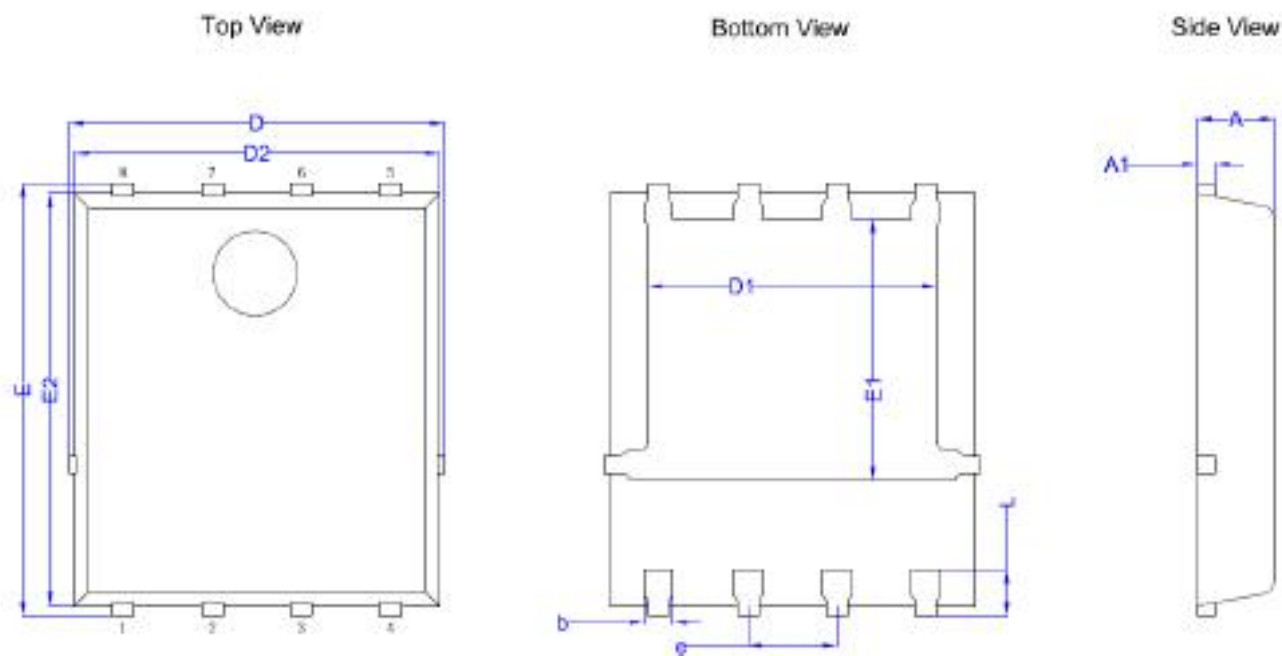

Figure7. Safe Operation Area

Figure8. Switching wave

PDFN5X6-8L Package Information

Top View

Bottom View

Side View

SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	1.00	1.10	1.20
A1	0.254 BSC		
D	5.15	5.35	5.55
E	5.95	6.15	6.35
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
e	1.27BSC		
b	0.31	0.41	0.51
L	0.56	0.66	0.76