

## P-Channel 30V(D-S) MOSFET

Product summary		
$V_{DS}$	-30	V
$R_{DS(ON)}$ (at $V_{GS}=-10V$ ) Typ.	45	m $\Omega$
$R_{DS(ON)}$ (at $V_{GS}=-4.5V$ ) Typ.	53	m $\Omega$
$I_D$ ( $T_A=25^{\circ}C$ )	-4.4	A

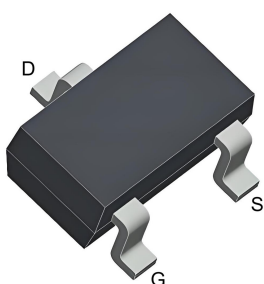
### Features

- Trench Power LV MOSFET technology
- High Speed switching
- High density cell design for Low  $R_{DS(ON)}$

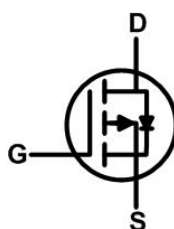
### Applications

- Power management
- Load switch

### Pin Configuration



SOT-23



### Packing Information

Device	Reel Size	Quantity(Min. Package)
ECDA3401	7"	3000pcs

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

Symbol	Parameter	Rating	Units
$V_{DS}$	Drain-Source Voltage	-30	V
$V_{GS}$	Gate-Source Voltage	$\pm 12$	V
$I_D$	Continuous Drain Current at $V_{GS}=-10V$	$T_A=25^{\circ}C$	-4.4
		$T_A=70^{\circ}C$	-3.5
$I_{DM}$	Pulse Drain Current Tested <sup>A</sup>	-27	A
$P_D$	Power Dissipation	$T_A=25^{\circ}C$	1.2
$T_J, T_{STG}$	Junction and Storage Temperature Range	-55 to +150	$^{\circ}C$

### Thermal Characteristics

Symbol	Parameter	Typical	Units
$R_{\theta JA}$	Thermal Resistance-Junction to ambient <sup>B</sup>	105	$^{\circ}C/W$

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

Symbol	Parameter	Condition	Min.	Typ.	Max.	Units
Static Parameters						
BV <sub>DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V,I <sub>D</sub> =-250uA	-30	--	--	V
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>DS</sub> =-30V,V <sub>GS</sub> =0V	--	--	-1	uA
I <sub>GSS</sub>	Gate-Body Leakage Current	V <sub>DS</sub> =0V,V <sub>GS</sub> =±12V	--	--	±100	nA
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> ,I <sub>D</sub> =-250uA	-0.6	-0.9	-1.4	V
R <sub>DS(on)</sub>	Drain-Source On-State Resistance	V <sub>GS</sub> =-10V,I <sub>D</sub> =-4.4A	--	45	55	mΩ
		V <sub>GS</sub> =-4.5V,I <sub>D</sub> =-4A	--	53	68	mΩ
		V <sub>GS</sub> =-2.5V,I <sub>D</sub> =-2A	--	64	96	mΩ
V <sub>SD</sub>	Forward Voltage	I <sub>S</sub> =-4.4A,V <sub>GS</sub> =0V	--	--	-1.2	V
I <sub>S</sub>	Maximum Body-Diode Continuous Current		--	--	-4.4	A
Dynamic Parameters						
C <sub>iss</sub>	Input Capacitance	V <sub>GS</sub> =0V,V <sub>DS</sub> =-15V f=1MHZ	--	680	--	pF
C <sub>oss</sub>	Output Capacitance		--	105	--	pF
C <sub>rss</sub>	Reverse Transfer Capacitance		--	68	--	pF
Switching Parameters						
Q <sub>g</sub>	Total Gate Charge	V <sub>DS</sub> =-15V,I <sub>D</sub> =-4.4A V <sub>GS</sub> =-10V	--	7.2	--	nC
Q <sub>gs</sub>	Gate-Source Charge		--	1.2	--	nC
Q <sub>gd</sub>	Gate-Drain Charge		--	1.6	--	nC
t <sub>D(on)</sub>	Turn-on Delay Time	V <sub>DD</sub> =-15V R <sub>L</sub> =15Ω,I <sub>D</sub> =-1A, R <sub>GEN</sub> =2.5Ω, V <sub>GS</sub> =-10V	--	15	--	nS
t <sub>r</sub>	Turn-on Rise Time		--	63	--	nS
t <sub>D(off)</sub>	Turn-off Delay Time		--	21	--	nS
t <sub>f</sub>	Turn-off Fall Time		--	12	--	nS

A. Pulse Test: Pulse Width  $\leq 300\mu s$ , Duty cycle  $\leq 2\%$ .

B. Device mounted on FR-4 PCB, 1 inch x 1 inch x 0.062 inch.

## Typical Characteristics

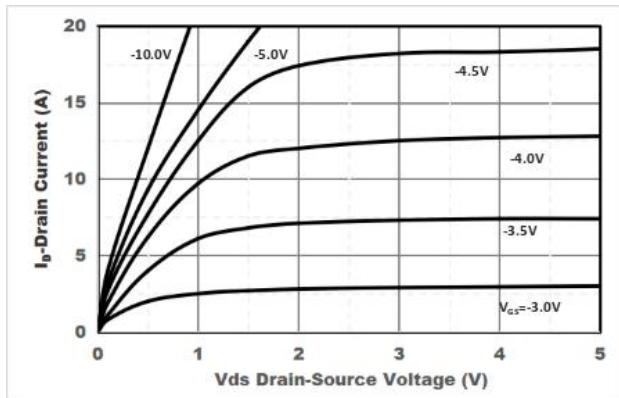


Figure1. Output Characteristics

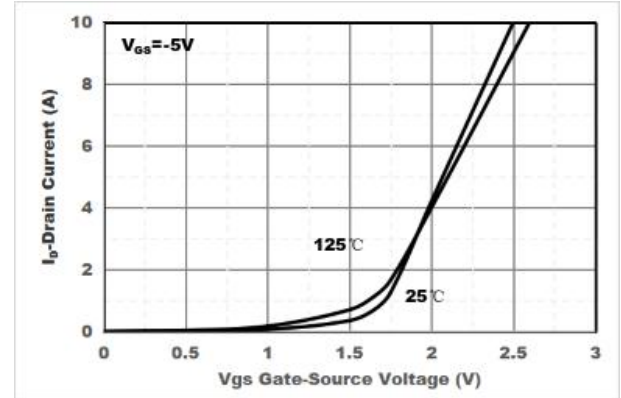


Figure2. Transfer Characteristics

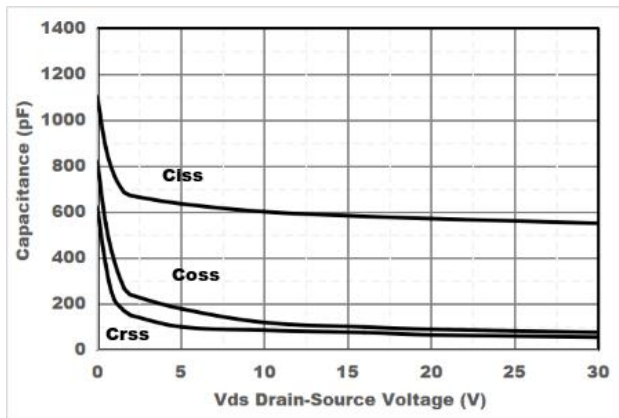


Figure3. Capacitance Characteristics

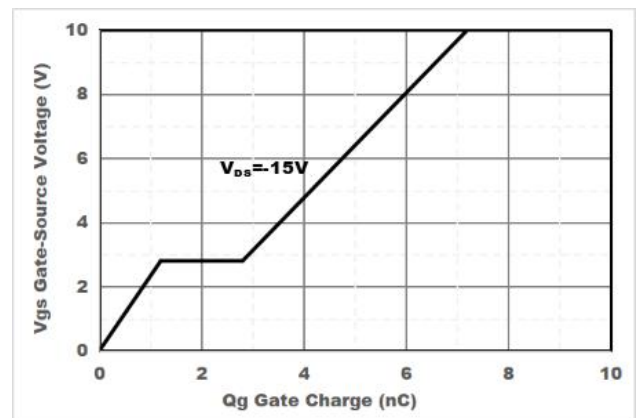


Figure4. Gate Charge

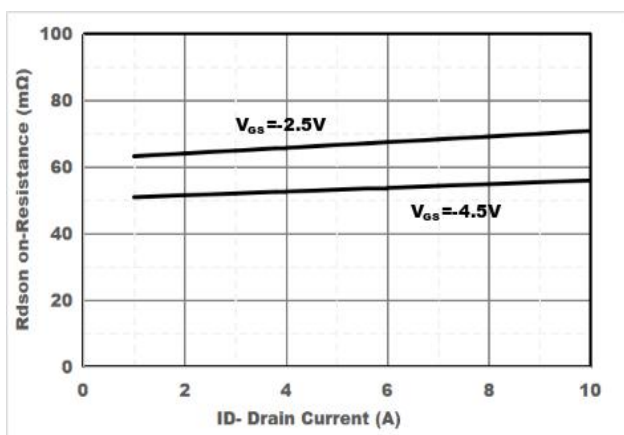


Figure5. Drain-Source on Resistance

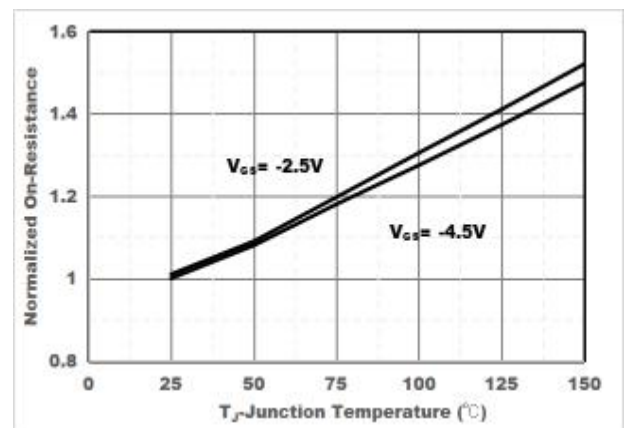


Figure6. Drain-Source on Resistance

Typical Characteristics

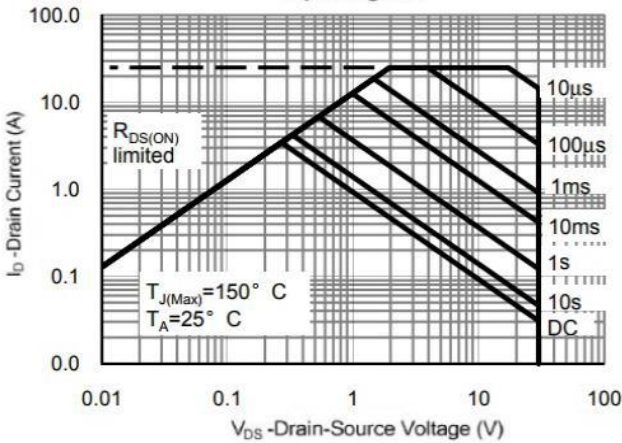


Figure7. Safe Operation Area

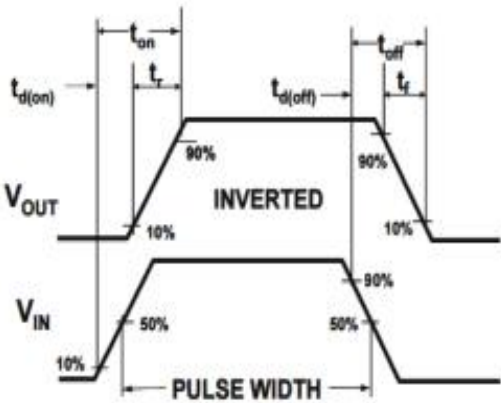
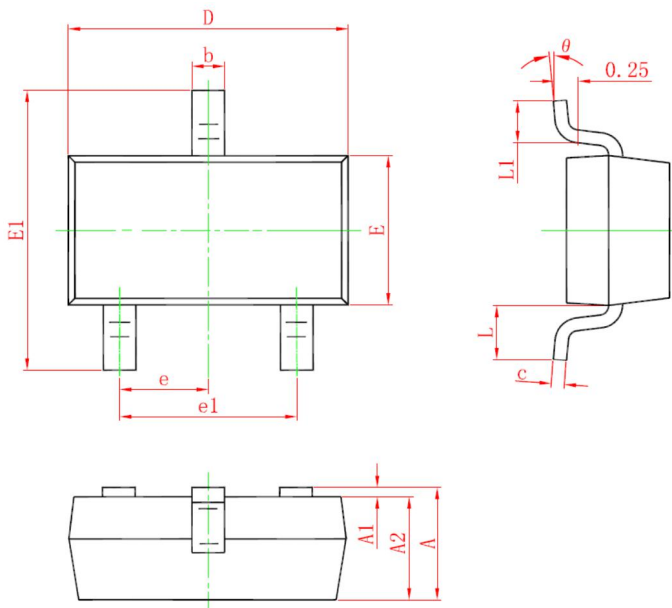


Figure8. Switching wave

SOT-23 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP.		0.037 TYP.	
e1	1.800	2.000	0.071	0.079
L	0.550 REF.		0.022 REF.	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°