

P-Channel 20V(D-S) MOSFET

Product summary		
V_{DS}	-20	V
$R_{DS(ON)}$ (at $V_{GS}=-4.5V$) Typ.	30	m Ω
$R_{DS(ON)}$ (at $V_{GS}=-2.5V$) Typ.	36	m Ω
I_D ($T_A=25^{\circ}C$)	-5	A

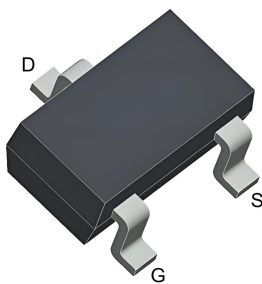
Features

- Trench Power LV MOSFET technology
- Low Gate Charge
- Low $R_{DS(ON)}$

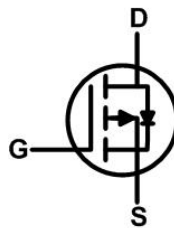
Applications

- Power management
- Video monitor

Pin Configuration



SOT-23



Packing Information

Device	Reel Size	Quantity(Min. Package)
ECDA3415	7"	3000pcs

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

Symbol	Parameter		Rating	Units
V _{DS}	Drain-Source Voltage		-20	V
V _{GS}	Gate-Source Voltage		±12	V
I _D	Continuous Drain Current at V _{GS} =-10V	T _A =25℃	-5	A
		T _A =70℃	-4	A
I _{DM}	Pulse Drain Current Tested ^A		-22	A
P _D	Power Dissipation	T _A =25℃	1.2	W
T _J ,T _{STG}	Junciton and Storage Temperature Range		-55 to +150	℃

Thermal Characteristics

Symbol	Parameter	Typical	Units
$R_{\theta JA}$	Thermal Resistance-Junction to ambient ^B	104	$^{\circ}C/W$

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 =-250uA	-20	--	--	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =-20V,V _{GS} =0V	--	--	-1	uA
I _{GSS}	Gate-Body Leakage Current	V _{DS} =0V,V _{GS} =±8V	--	--	±2	uA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} ,I _D =-250uA	-0.4	--	-1.0	V
R _{DS(ON)}	Drain-Source On-State Resistance	V _{GS} =-4.5V,I _D =-5A	--	30	41	mΩ
		V _{GS} =-2.5V,I _D =-4A	--	36	55	mΩ
		V _{GS} =-1.8V,I _D =-2A	--	55	95	mΩ
V _{SD}	Forward Voltage	I _{SD} =-5A,V _{GS} =0V	--	--	-1.2	V
Dynamic Parameters						
C _{iss}	Input Capacitance	V _{GS} =0V,V _{DS} =-10V f=1MHZ	--	935	--	pF
C _{oss}	Output Capacitance		--	210	--	pF
C _{rss}	Reverse Transfer Capacitance		--	112	--	pF
Switching Parameters						
Q _g	Total Gate Charge	V _{DS} =-10V,I _D =-4A V _{GS} =-4.5V	--	7.5	--	nC
Q _{gs}	Gate-Source Charge		--	1.3	--	nC
Q _{gd}	Gate-Drain Charge		--	1.5	--	nC
t _{D(on)}	Turn-on Delay Time	V _{DD} =-10V R _L =2.5Ω,V _{GS} =-4.5 V,R _{GEN} =3Ω	--	15	--	nS
t _r	Turn-on Rise Time		--	65	--	nS
t _{D(off)}	Turn-off Delay Time		--	23	--	nS
t _f	Turn-off Fall Time		--	14	--	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

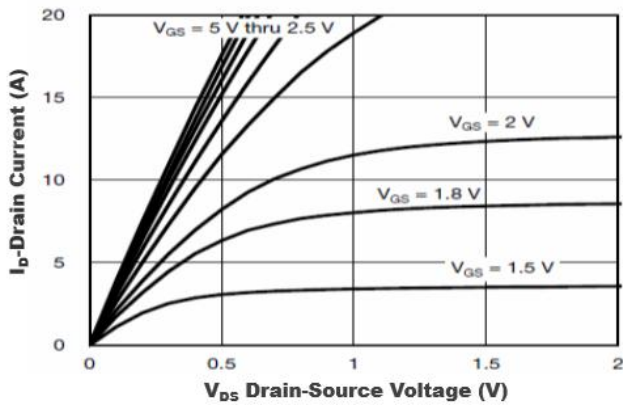


Figure1. Output Characteristics

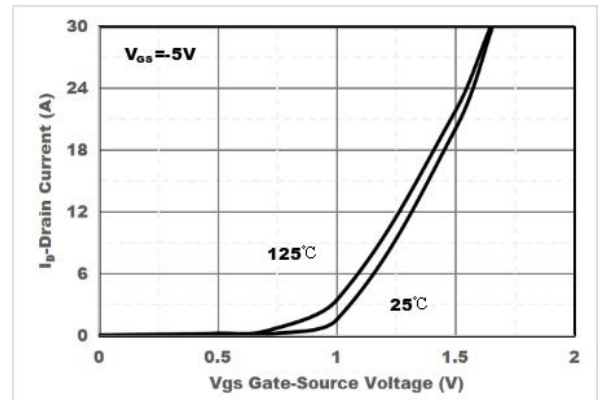


Figure2. Transfer Characteristics

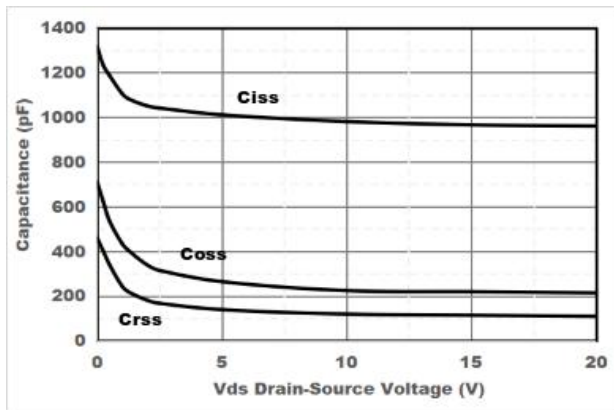


Figure3. Capacitance Characteristics

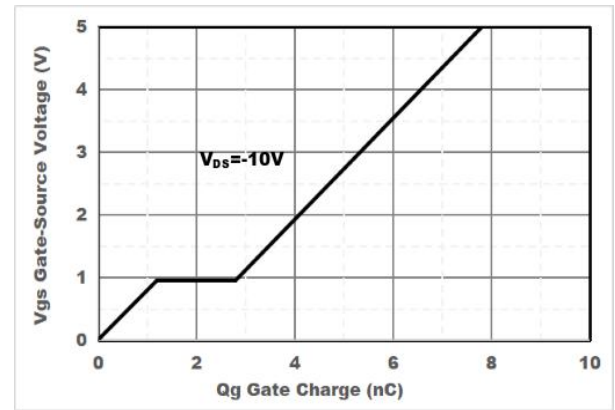


Figure4. Gate Charge

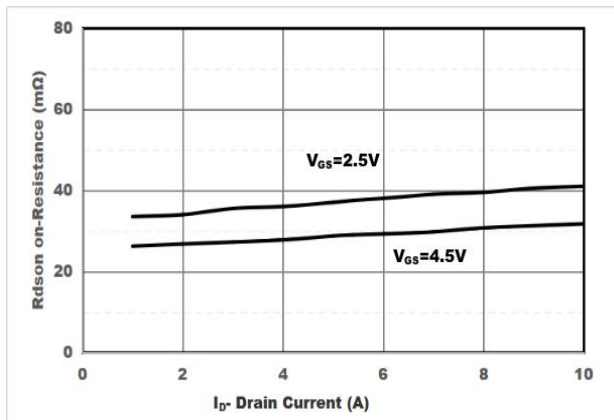


Figure5. Drain-Source on Resistance

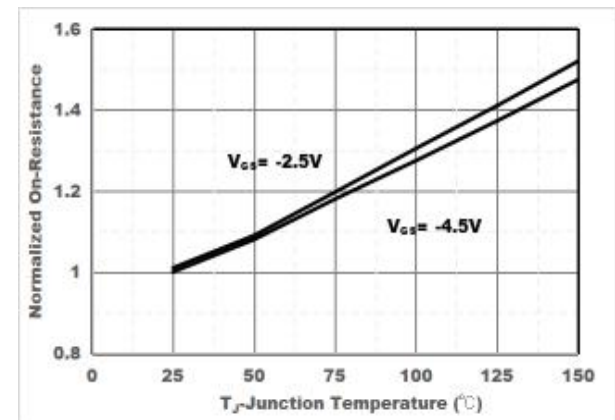


Figure6. Drain-Source on Resistance

Typical Characteristics

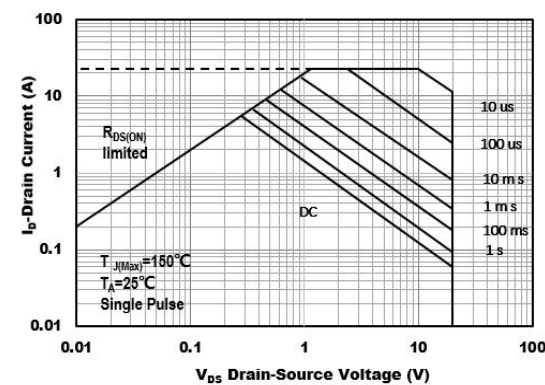


Figure7. Safe Operation Area

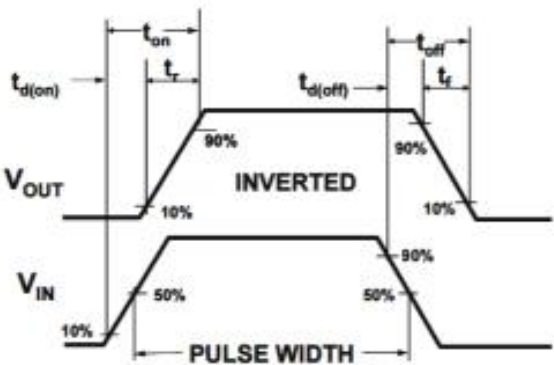
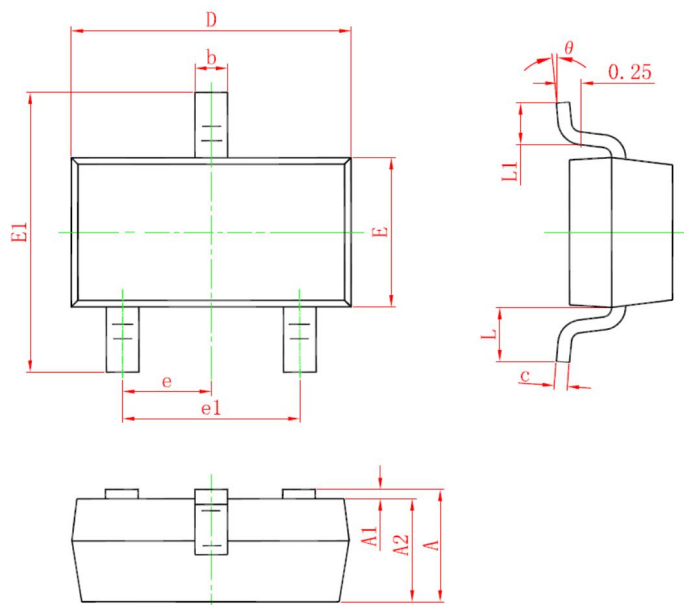


Figure8. Switching wave

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°