

## P-Channel 20V(D-S) MOSFET

Product summary		
$V_{DS}$	-20	V
$R_{DS(ON)}$ (at $V_{GS}=-4.5V$ ) Typ.	89	m $\Omega$
$R_{DS(ON)}$ (at $V_{GS}=-2.5V$ ) Typ.	108	m $\Omega$
$I_D$ ( $T_A=25^\circ C$ )	-2.0	A

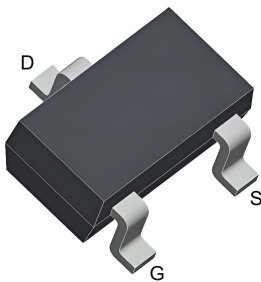
### Features

- Trench Power LV MOSFET technology
- Low Gate Charge

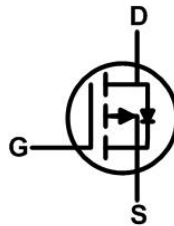
### Applications

- Power management
- Video monitor

### Pin Configuration



SOT-323



### Packing Information

Device	Marking	Reel Size	Quantity(Min. Package)
ECDF2301	2301	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	$\pm 8$	V
$I_D$	Continuous Drain Current at $V_{GS}=-10V$	$T_A=25^\circ C$	-2.0
		$T_A=70^\circ C$	-1.6
$I_{DM}$	Pulse Drain Current Tested <sup>A</sup>	-10	A
$P_D$	Power Dissipation	0.25	W
$T_J, T_{STG}$	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>	500	$^\circ C/W$

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

Symbol	Parameter	Condition	Min.	Typ.	Max.	Units
<b>Static Parameters</b>						
$BV_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=-250\mu A$	-20	--	--	V
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{DS}=-20V, V_{GS}=0V$	--	--	-1	$\mu A$
$I_{GSS}$	Gate-Body Leakage Current	$V_{DS}=0V, V_{GS}=\pm 8V$	--	--	$\pm 100$	nA
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=-250\mu A$	-0.4	-0.62	-1.0	V
$R_{DS(ON)}$	Drain-Source On-State Resistance	$V_{GS}=-4.5V, I_D=-3.8A$	--	89	108	m $\Omega$
		$V_{GS}=-2.5V, I_D=-2.0A$	--	108	149	m $\Omega$
$V_{SD}$	Forward Voltage	$I_{SD}=-1A, V_{GS}=0V$	--	--	-1.3	V
<b>Dynamic Parameters</b>						
$C_{iss}$	Input Capacitance	$V_{GS}=0V, V_{DS}=-15V$ $f=1\text{MHZ}$	--	472	--	pF
$C_{oss}$	Output Capacitance		--	47	--	pF
$C_{rss}$	Reverse Transfer Capacitance		--	10	--	pF
<b>Switching Parameters</b>						
$Q_g$	Total Gate Charge	$V_{DS}=-6V, I_D=-2.8A$ $V_{GS}=-4.5V$	--	7.3	--	nC
$Q_{gs}$	Gate-Source Charge		--	2.1	--	nC
$Q_{gd}$	Gate-Drain Charge		--	1.1	--	nC
$t_{D(on)}$	Turn-on Delay Time	$V_{DD}=-6V$ $I_D=-1A, R_{GEN}=6\Omega,$ $V_{GS}=-4.5V$	--	39	--	nS
$t_r$	Turn-on Rise Time		--	24	--	nS
$t_{D(off)}$	Turn-off Delay Time		--	42	--	nS
$t_f$	Turn-off Fall Time		--	6	--	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

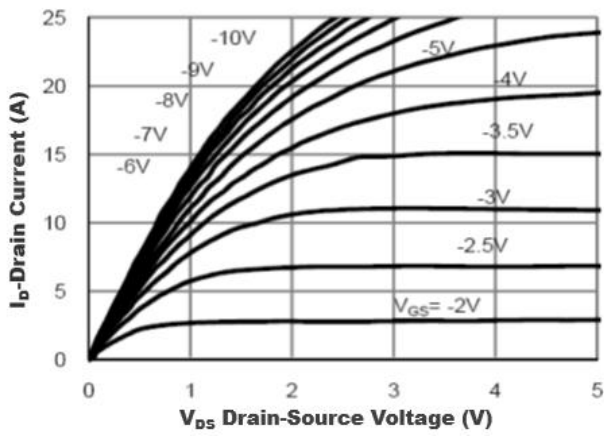


Figure1. Output Characteristics

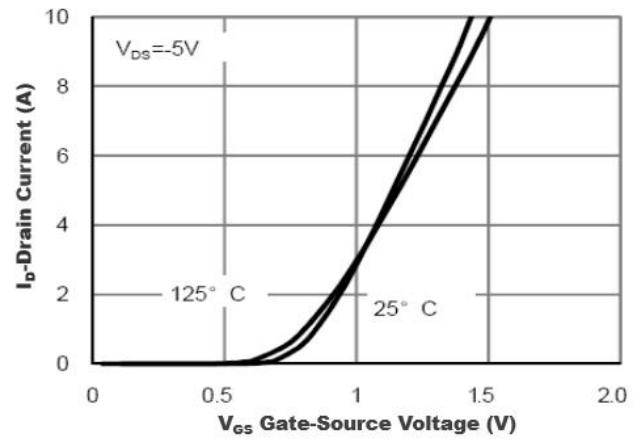


Figure2. Transfer Characteristics

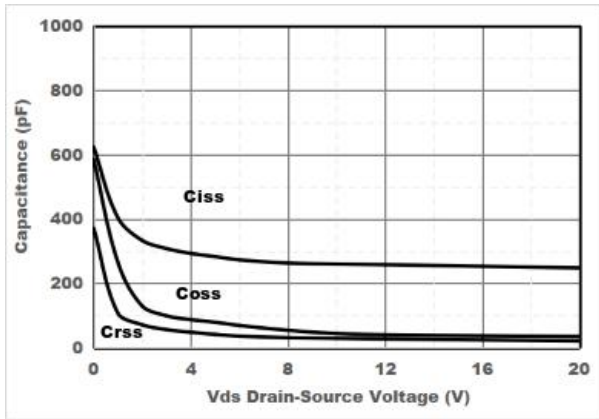


Figure3. Capacitance Characteristics

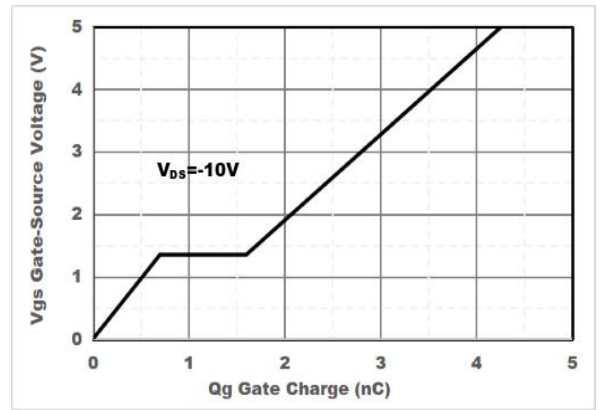


Figure4. Gate Charge

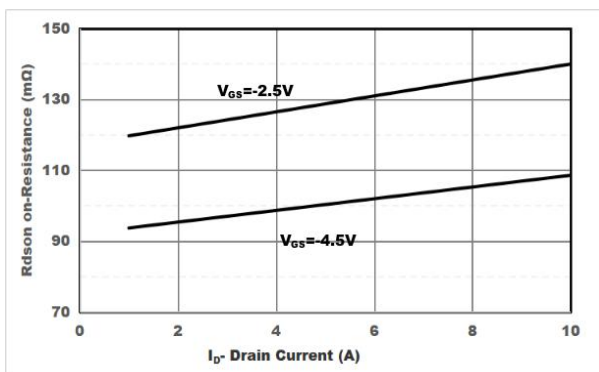


Figure5. Drain-Source on Resistance

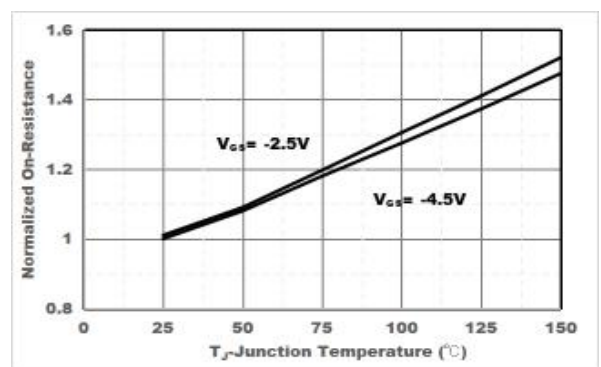


Figure6. Drain-Source on Resistance

Typical Characteristics

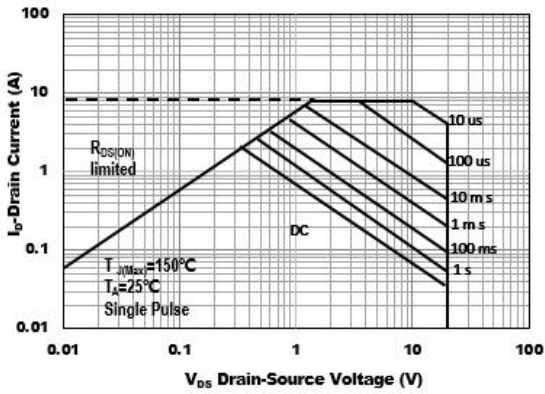


Figure7. Safe Operation Area

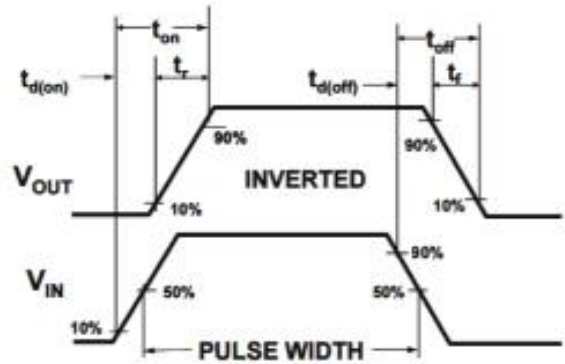
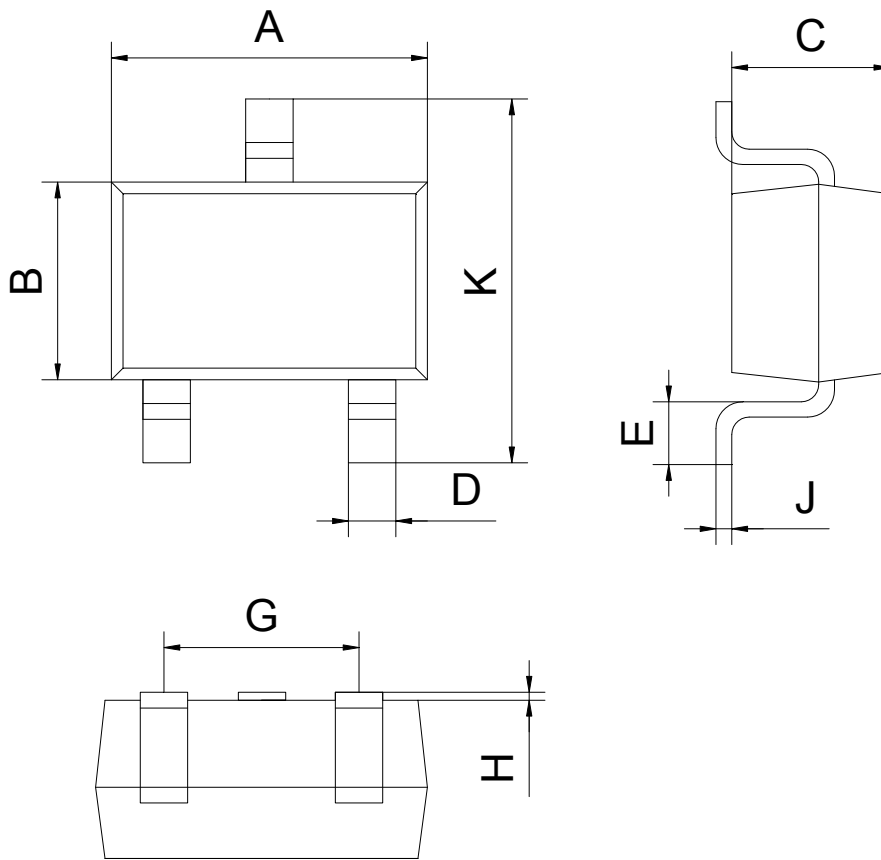


Figure8. Switching wave

## SOT-323 Package Information



SOT-323		
Dim	Min	Max
A	2.00	2.20
B	1.15	1.35
C	0.90	1.10
D	0.15	0.35
E	0.25	0.40
G	1.20	1.40
H	0.02	0.10
J	0.05	0.15
K	2.20	2.40
All Dimensions in mm		