



CCX2301A

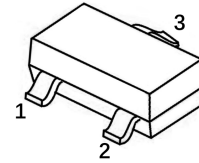
20V P-Channel MOSFETs

Product data sheet

1. General description

P-channel MOS Field Effect Transistor encapsulated in a small SOT-23 Surface- Mounted Device (SMD) plastic package

SOT-23



2. Features

- High dense cell design for extremely low $R_{DS(on)}$
- Exceptional on-resistance and maximum DC current capability

3. Applications

- Load Switch for Portable Devices
- DC/DC Converter

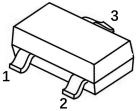
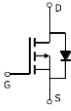
4. Quick reference data

Table 1. Quick reference data

$V_{(BR)DSS}$	$R_{DS(on)}$ MAX	I_D
-20V	59m Ω @-4.5V	-4.2A
	74m Ω @-2.5V	

5. SOT-23 Pinning information

Table 2. Pinning information

Pin	Name	SOT-23 Simplified outline	Graphic symbol
1	Gate		
2	Source		
3	Drain		

6. Ordering information

Table 3. Ordering information

Part number	Package	Material	Packing	Quantity per reel	Flammability rating	Reel size
CCX2301A	SOT-23	halogen free	tape & reel	3,000pcs	UL 94V-0	7 inches

7. Marking

Table 4. Marking codes

Part number	Marking code
CCX2301A	A1SHB

8. Limiting values and electrical Characteristics

Table 5. Limiting values
Ta=25℃

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	±12	V
Continuous Drain Current	I_D	-3	A
Pulsed Drain Current	I_{DM}	-11	A
Power Dissipation	P_D	700	mW
Thermal Resistance from Junction to Ambient (t<5s)	$R_{\theta JA}$	357	℃/W
Operation Junction and Storage Temperature Range	T_J, T_{STG}	-55~+150	℃

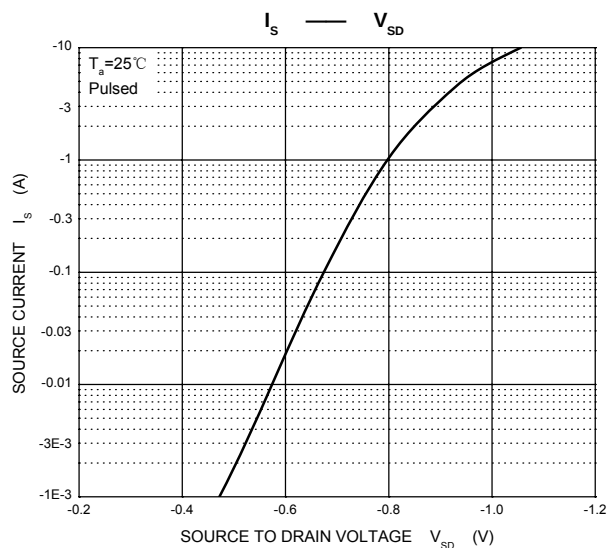
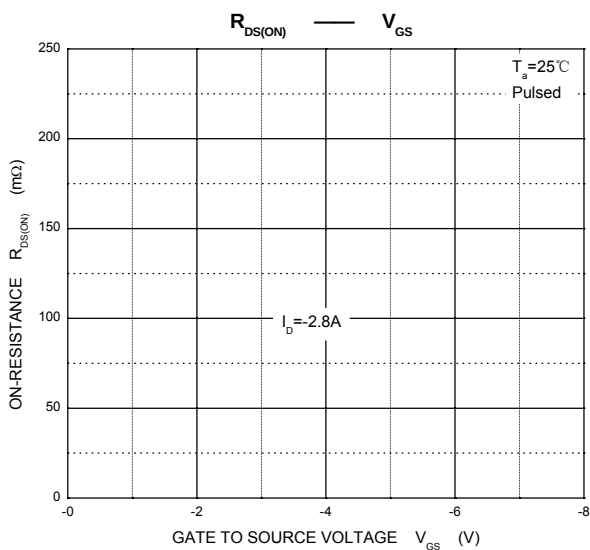
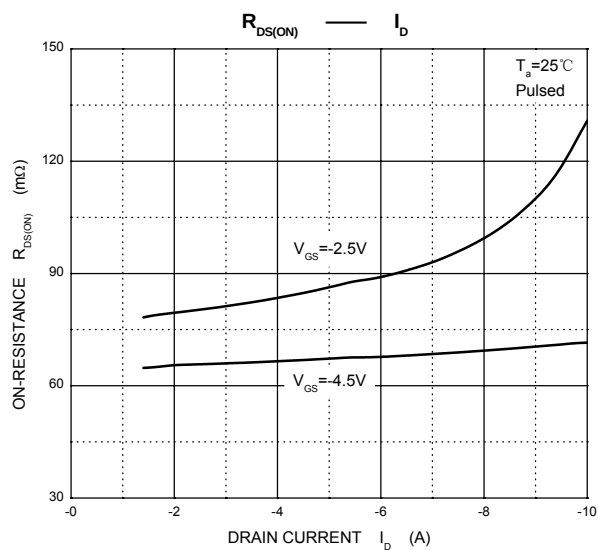
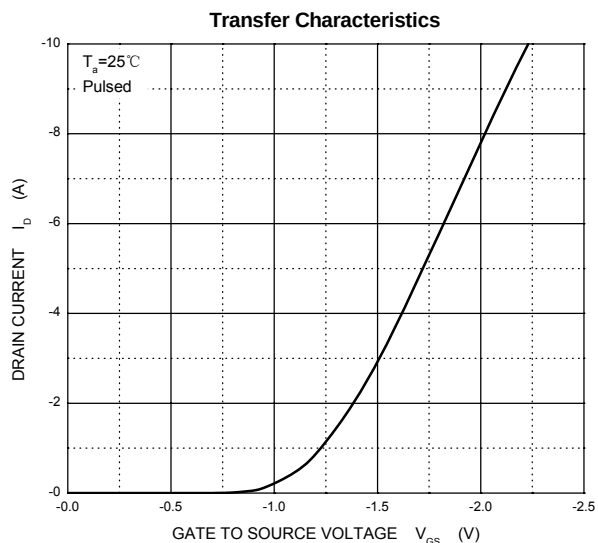
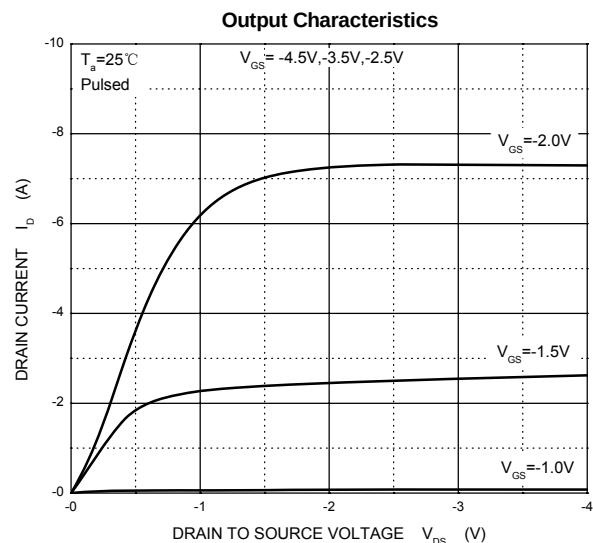
Table 6. Electrical characteristics
Ta=25℃

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = -250\mu A$	-20			V
Zero gate voltage drain current	I_{DSS}	$V_{DS} = -20V, V_{GS} = 0V$			-1	μA
Gate-source leakage current	I_{GSS}	$V_{GS} = \pm 12V, V_{DS} = 0V$			± 100	nA
On characteristics						
Drain-source on-resistance (note 1)	$R_{DS(on)}$	$V_{GS} = -4.5V, I_D = -3A$		58.6	75	m Ω
		$V_{GS} = -2.5V, I_D = -2A$		74	105	m Ω
Gate threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\mu A$	-0.4	-0.7	-1.0	V
Dynamic characteristics (note2)						
Input capacitance	C_{iss}	$V_{DS} = -10V, V_{GS} = 0V, f = 1MHz$		325		pF
Output capacitance	C_{oss}			63		pF
Reverse transfer capacitance	C_{rss}			37		pF
Switching characteristics (note2)						
Turn-on delay time	$t_{d(on)}$	$V_{DD} = -10V, R_L = 10\Omega, I_D = -1A,$ $V_{GEN} = -4.5V, R_g = 1\Omega$			11	ns
Turn-on rise time	t_r				5.5	ns
Turn-off delay time	$t_{d(off)}$				22	ns
Turn-off fall Time	t_f				8	ns
Drain-source diode characteristics and maximum ratings						
Diode forward voltage (note 1)	V_{SD}	$I_S = -3A, V_{GS} = 0V$			-1.2	V

Note :

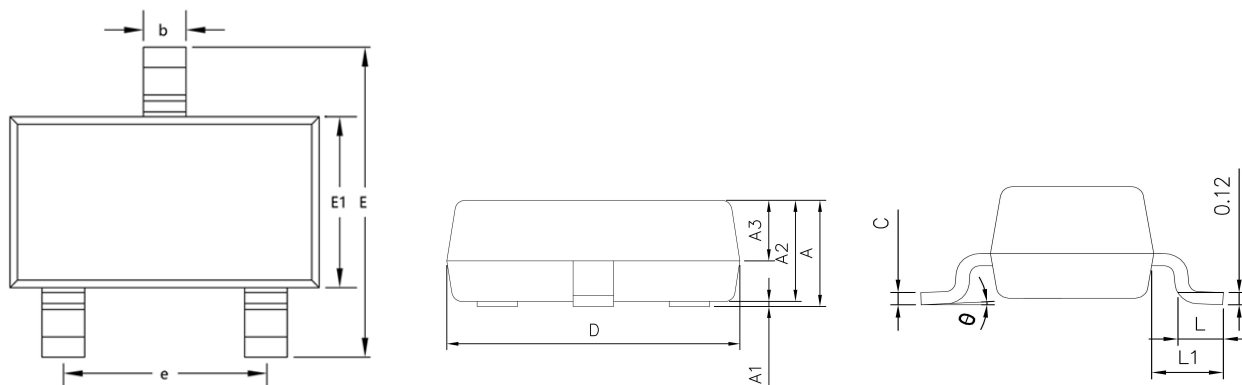
1. Pulse Test : Pulse width≤300μs, duty cycle≤2%.
2. These parameters have no way to verify.

9. Typical characteristics



10. Package outline

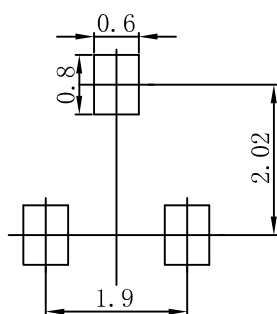
Table 7. SOT-23 Package outline



Symbol	Dimension in millimeter		
	Min	Nom	Max
A	0.9	1.05	1.2
A1	0.0	0.05	0.1
A2	0.9	1.00	1.10
A3	0.55	0.60	0.65
b	0.30	0.40	0.50
c	0.10	0.11	0.12
D	2.80	2.90	3.0
E	2.25	2.40	2.55
E1	1.20	1.30	1.40
e	1.8	1.9	2.0
L	0.30	0.40	0.50
L1	0.475	0.55	0.625
θ	0°	3°	6°

11. Suggested pad layout

Table 8. Suggested pad layout



Note:

1. Controlling dimension: in millimeters
2. General tolerance: $\pm 0.05\text{mm}$
3. The pad layout is for reference purposes only

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