

# P-Channel MOSFET

## RC2301B

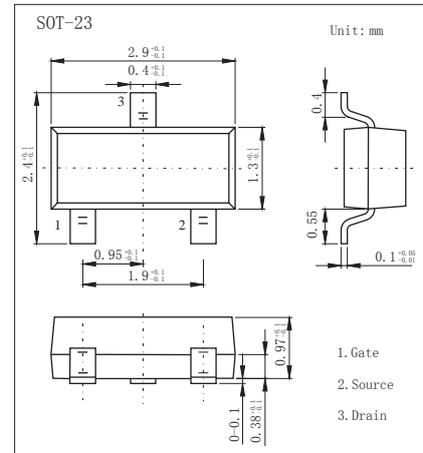
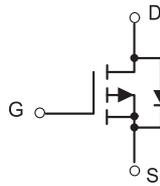
### ■ Features

- $V_{DS} (V) = -20V$
- $I_D = -2.8A$
- $R_{DS(ON)} < 100m\Omega$  ( $V_{GS} = -4.5V$ )
- $R_{DS(ON)} < 130m\Omega$  ( $V_{GS} = -2.5V$ )

### ■ Marking

Marking	A1SHB
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### Equivalent Circuit



### ■ Maximum ratings ( $T_a = 25^\circ C$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	$V_{DS}$	-20	V
Gate-Source Voltage	$V_{GS}$	$\pm 8$	
Continuous Drain Current	$I_D$	-2.8	A
Pulsed Drain Current	$I_{DM}$	-10	
Continuous Source-Drain Diode Current	$I_S$	-0.72	
Maximum Power Dissipation	$P_D$	0.4	W
Thermal Resistance from Junction to Ambient ( $t \leq 5s$ )	$R_{\theta JA}$	312.5	$^\circ C/W$
Junction Temperature	$T_J$	150	$^\circ C$
Storage Temperature	$T_{stg}$	-55 ~ +150	

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## ■ MOSFET ELECTRICAL CHARACTERISTICS

$T_a=25^\circ\text{C}$  unless otherwise specified

Parameter	Symbol	Test Condition	Min	Typ	Max	Units
<b>Static</b>						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = -250\mu A$	-20			V
Gate-source threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\mu A$	-0.4	-0.7	-1	
Gate-source leakage	$I_{GSS}$	$V_{DS} = 0V, V_{GS} = \pm 8V$			$\pm 100$	nA
Zero gate voltage drain current	$I_{DSS}$	$V_{DS} = -20V, V_{GS} = 0V$			-1	$\mu A$
Drain-source on-state resistance <sup>a</sup>	$R_{DS(on)}$	$V_{GS} = -4.5V, I_D = -1.5A$		70	100	m $\Omega$
		$V_{GS} = -2.5V, I_D = -1.0A$		100	130	
Forward transconductance <sup>a</sup>	$g_{fs}$	$V_{DS} = -5V, I_D = -2.8A$		6.5		S
<b>Dynamic<sup>b</sup></b>						
Input capacitance	$C_{iss}$	$V_{DS} = -10V, V_{GS} = 0V, f = 1MHz$		405		pF
Output capacitance	$C_{oss}$			75		
Reverse transfer capacitance	$C_{rss}$			55		
Total gate charge	$Q_g$	$V_{DS} = -10V, V_{GS} = -4.5V, I_D = -3A$		5.5	10	nC
		$V_{DS} = -10V, V_{GS} = -2.5V, I_D = -3A$		3.3	6	
Gate-source charge	$Q_{gs}$			0.7		
Gate-drain charge	$Q_{gd}$		1.3			
Gate resistance	$R_g$	$f = 1MHz$		6.0		$\Omega$
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	20	ns
Rise time	$t_r$			35	60	
Turn-off delay time	$t_{d(off)}$			30	50	
Fall time	$t_f$			10	20	
<b>Drain-source body diode characteristics</b>						
Continuous source-drain diode current	$I_S$	$T_C = 25^\circ\text{C}$			-1.3	A
Pulse diode forward current <sup>a</sup>	$I_{SM}$				-10	
Body diode voltage	$V_{SD}$	$I_S = -0.7A$		-0.8	-1.2	V

**Notes :**

a. Pulse Test : Pulse Width < 300 $\mu s$ , Duty Cycle  $\leq 2\%$ .

b. Guaranteed by design, not subject to production testing.

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## Typical Characteristics

