

## PW2101

### 20V P-Channel MOSFET

-1.4A -20V;  $R_{DS(ON)typ}=90m\Omega@-4.5V$ ,  $R_{DS(ON)typ}=115m\Omega@-2.5V$ ,  
 $R_{DS(ON)typ}=145m\Omega@-1.8V$ .

#### FEATURE

- Leading Trench Technology for Low  $R_{DS(on)}$
- Extending Battery Life

#### Application

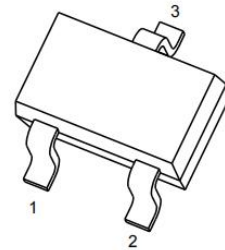
- High Side Load Switch
- Charging Circuit
- Single Cell Battery Applications such as Cell Phones, Digital Cameras ,PDAs, etc

#### MARKING:

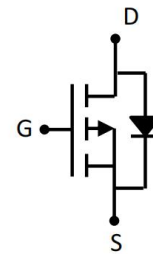


SOT-323

1. GATE
2. SOURCE
3. DRAIN



Schematic diagram



#### ABSOLUTE MAXIMUM RATINGS ( $T_a=25^{\circ}C$ unless otherwise noted)

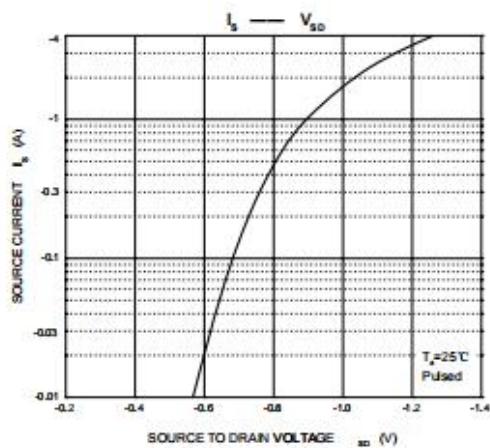
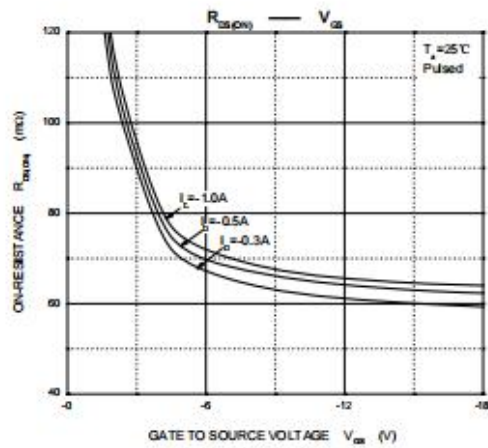
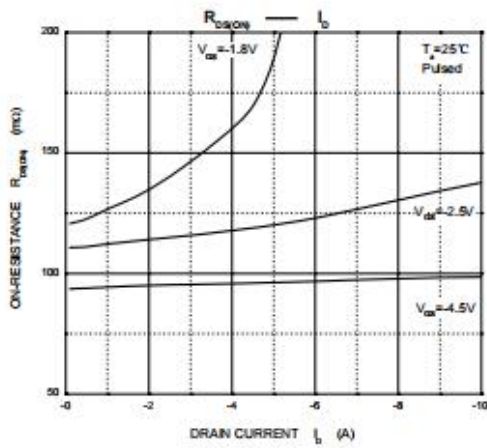
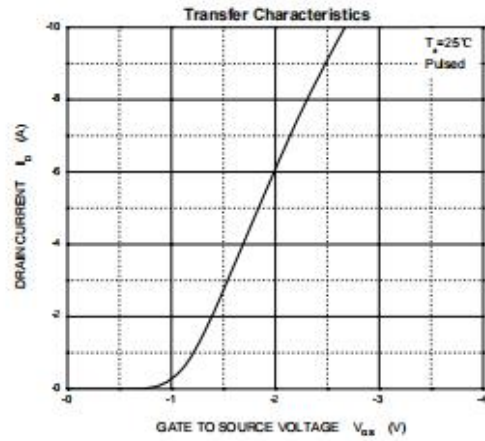
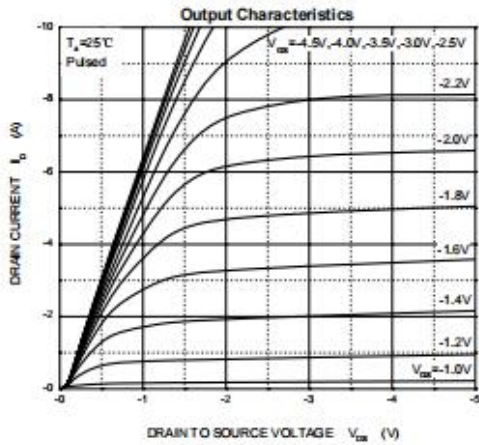
Parameter	Symbol	Value	Unit
Drain-Source Voltage	$V_{DS}$	-20	V
Gate-Source Voltage	$V_{GS}$	$\pm 8.0$	V
Continuous Drain Current	$I_D$	-1.4	A
Pulsed Drain Current( $t_p=10\mu s$ )	$I_{DM}$	-3.0	A
Power Dissipation	$P_D$	0.29	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	431	$^{\circ}C/W$
Junction Temperature	$T_J$	150	$^{\circ}C$
Storage Temperature	$T_{STG}$	-55~ +150	$^{\circ}C$

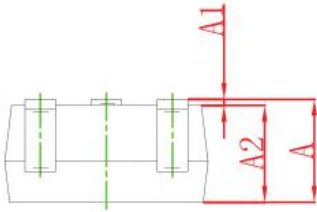
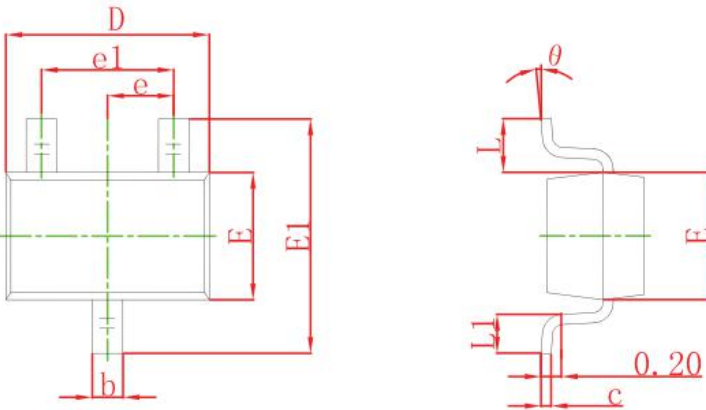
**MOSFET ELECTRICAL CHARACTERISTICS(T<sub>a</sub>=25°C unless otherwise noted)**

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
<b>OFF CHARACTERISTICS</b>						
Drain-source breakdown voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> = -250μA	-20			V
Zero gate voltage drain current	I <sub>DSS</sub>	V <sub>DS</sub> = -20V, V <sub>GS</sub> = 0V			-1	μA
Gate-body leakage current	I <sub>GSS</sub>	V <sub>GS</sub> = ±8V, V <sub>DS</sub> = 0V			±100	nA
<b>ON CHARACTERISTICS<sup>(1)</sup></b>						
Gate threshold voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = -250μA	-0.45	-0.65	-1.0	V
Drain-source on-resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> = -4.5V, I <sub>D</sub> = -1.0A		90	110	mΩ
		V <sub>GS</sub> = -2.5V, I <sub>D</sub> = -0.5A		115	140	
		V <sub>GS</sub> = -1.8V, I <sub>D</sub> = -0.3A		145	210	
Forward transconductance	g <sub>FS</sub>	V <sub>DS</sub> = -10V, I <sub>D</sub> = -0.8A		2		S
<b>DYNAMIC CHARACTERISTICS<sup>(3)</sup></b>						
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> = -8V, V <sub>GS</sub> = 0V, f = 1MHz		640		pF
Output Capacitance	C <sub>oss</sub>			120		
Reverse Transfer Capacitance	C <sub>rss</sub>			82		
<b>SWITCHING CHARACTERISTICS<sup>(2,3)</sup></b>						
Turn-on delay time	t <sub>d(on)</sub>	V <sub>GS</sub> = -4.5V, V <sub>DD</sub> = -4.0V, I <sub>D</sub> = -1.0A, R <sub>G</sub> = 6.2Ω		6.2		nS
Turn-on rise time	t <sub>r</sub>			15		
Turn-off delay time	t <sub>d(off)</sub>			26		
Turn-off fall time	t <sub>f</sub>			18		
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> = -10V, V <sub>GS</sub> = -4.5V, I <sub>D</sub> = -3.0A		5.5	10	nC
				3.3	6	
Gate-Source Charge	Q <sub>gs</sub>	V <sub>DS</sub> = -10V, V <sub>GS</sub> = -2.5V, I <sub>D</sub> = -3.0A		0.7		
Gate-Drain Charge	Q <sub>gd</sub>			1.3		
<b>SOURCE-DRAIN DIODE CHARACTERISTICS</b>						
Diode Forward voltage	V <sub>DS</sub>	V <sub>GS</sub> = 0V, I <sub>S</sub> = -0.3A			-1.2	V

**Notes :**

1. Pulse Test : pulse width ≤ 300 μs, duty cycle ≤ 2%.
2. Switching characteristics are independent of operating junction temperatures.
3. These parameters have no way to verify.

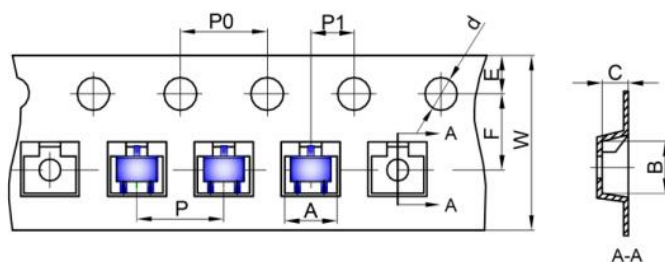




Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.100	0.035	0.043
A1	0.000	0.100	0.000	0.004
A2	0.900	1.000	0.035	0.039
b	0.200	0.400	0.008	0.016
c	0.080	0.150	0.003	0.006
D	2.000	2.200	0.079	0.087
E	1.150	1.350	0.045	0.053
E1	2.150	2.450	0.085	0.096
e	0.650 TYP		0.026 TYP	
e1	1.200	1.400	0.047	0.055
L	0.525 REF		0.021 REF	
L1	0.260	0.460	0.010	0.018
$\theta$	0°	8°	0°	8°

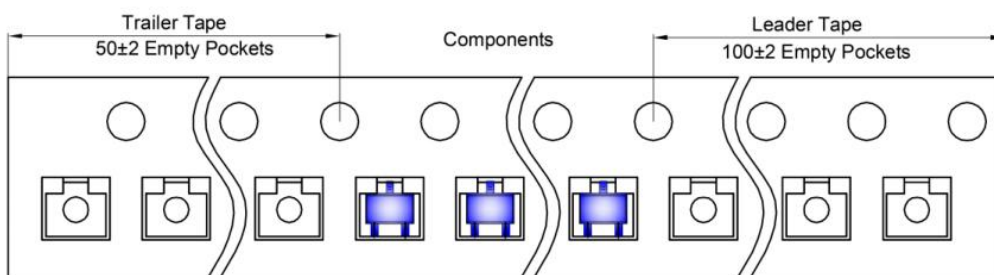
SOT-323 Tape and Reel

SOT-323 Embossed Carrier Tape

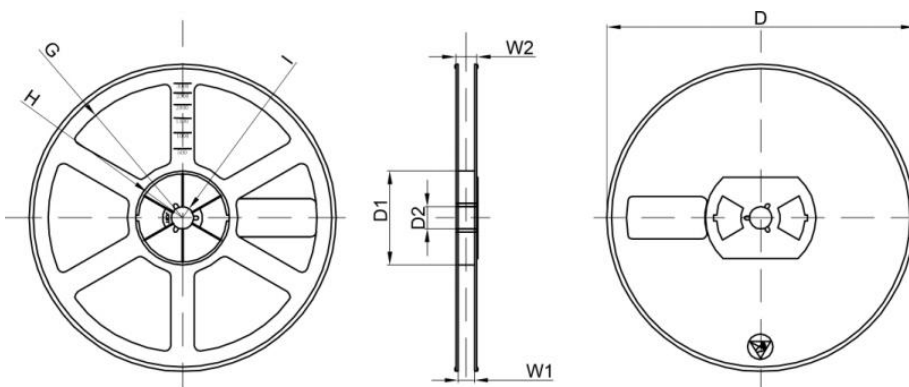


Dimensions are in millimeter										
Pkg type	a	B	C	d	E	F	P0	P	P1	W
SOT-323	2.25	2.55	1.19	Ø1.55	1.75	3.50	4.00	4.00	2.00	8.00

SOT-323 Tape Leader and Trailer



SOT-323 Reel



Dimensions are in millimeter							
Reel Option	D	D1	D2	G	H	I	W1
7" Dia	Ø178.00	54.40	13.00	R78.00	R25.60	R6.50	9.50

REEL	Reel Size	Box	Box Size(mm)	Carton	Carton Size(mm)	G.W.(kg)
3000 pcs	7 inch	30,000 pcs	203×203×195	120,000 pcs	438×438×220	