

## PW3139

### 20V P-Channel MOSFET

-0.66A -20V;  $R_{DS(ON)typ}=450m\Omega@-4.5V$ ,  $R_{DS(ON)typ}=650m\Omega@-2.5V$ ,  
 $R_{DS(ON)typ}=950m\Omega@-1.8V$ .

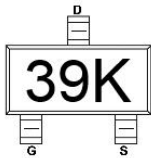
#### FEATURE

- Surface Mount Package
- P-Channel Switch with Low  $R_{DS(on)}$
- Operated at Low Logic Level Gate Drive
- ESD Protected

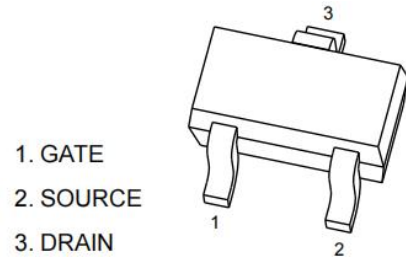
#### Application

- Load/Power Switching
- Interfacing, Logic Switching
- Battery Management for Ultra Small Portable Electronics

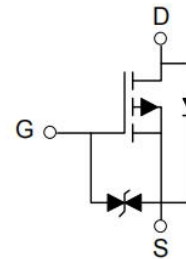
#### MARKING:



SOT-523



Schematic diagram



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

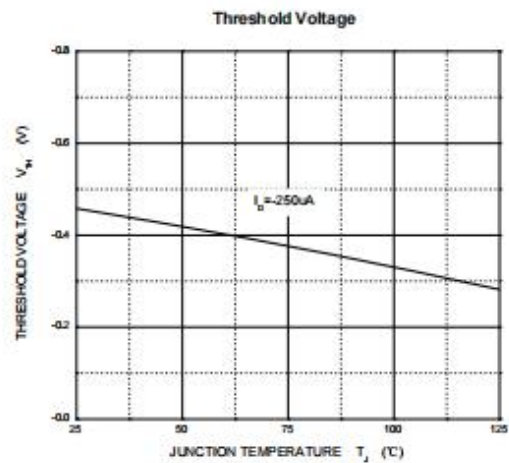
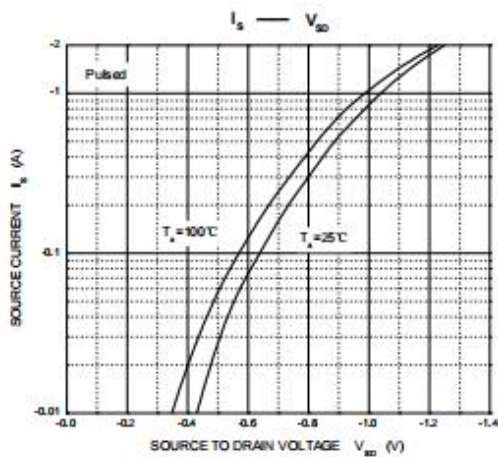
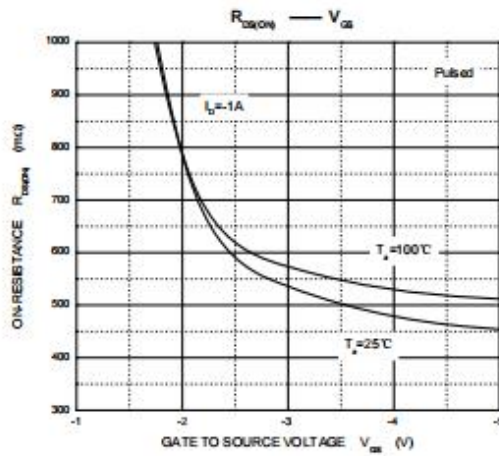
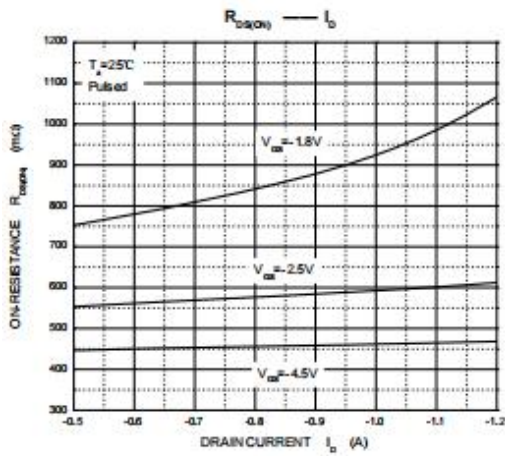
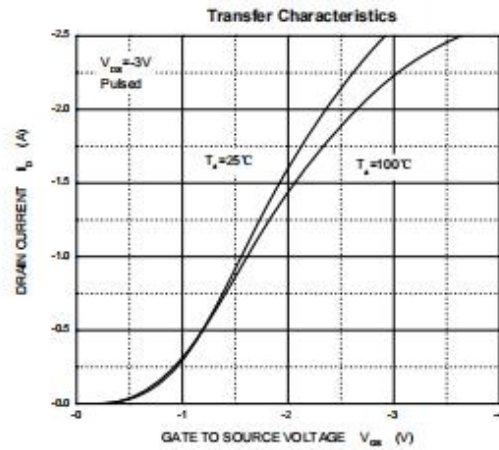
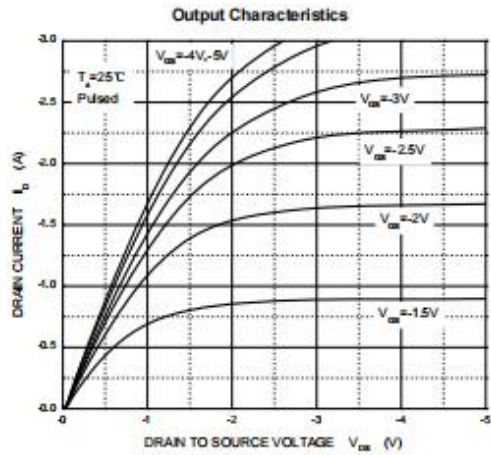
Parameter	Symbol	Value	Unit
Drain-Source Voltage	$V_{DS}$	-20	V
Gate-Source Voltage	$V_{GS}$	$\pm 12$	V
Continuous Drain Current <sup>(1)</sup>	$I_D$	-0.66	A
Plused Drain Current( $t_p < 10\mu\text{s}$ )	$I_{DM}$	-1.2	A
Power Dissipation <sup>(1)</sup>	$P_D$	150	mW
Thermal Resistance from Junction to Ambient <sup>(1)</sup>	$R_{\theta JA}$	833	$^\circ\text{C}/\text{W}$
Junction Temperature	$T_J$	150	$^\circ\text{C}$
Storage Temperature	$T_{STG}$	-55~ +150	$^\circ\text{C}$
Lead Temperature for Soldering Purposes(1/8" from case for 10s)	$T_L$	260	$^\circ\text{C}$

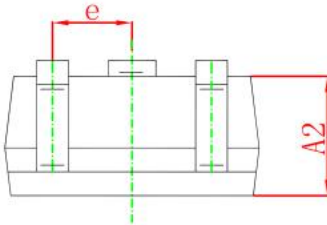
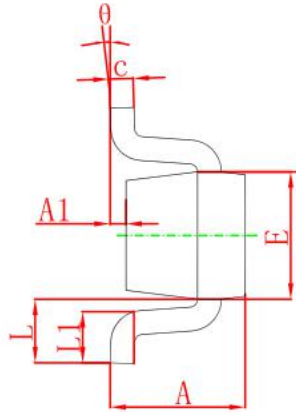
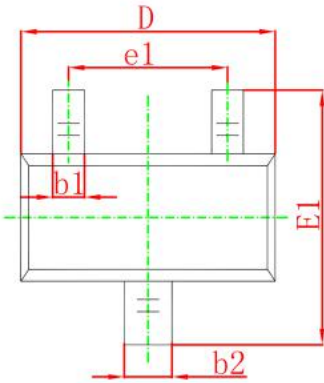
**MOSFET ELECTRICAL CHARACTERISTICS(T<sub>a</sub>=25°C unless otherwise noted)**

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
<b>STATIC 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	uA
Gate-body leakage current	I <sub>GSS</sub>	V <sub>GS</sub> = ±10V, V <sub>DS</sub> = 0V			±20	uA
Gate threshold voltage <sup>(2)</sup>	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = -250μA	-0.35		-1.1	V
Drain-source on-resistance <sup>(2)</sup>	R <sub>DSON</sub>	V <sub>GS</sub> = -4.5V, I <sub>D</sub> = -1A		450	520	mΩ
		V <sub>GS</sub> = -2.5V, I <sub>D</sub> = -0.8A		650	780	
		V <sub>GS</sub> = -1.8V, I <sub>D</sub> = -0.5A		950		
Forward transconductance <sup>(2)</sup>	g <sub>FS</sub>	V <sub>DS</sub> = -10V, I <sub>D</sub> = -0.54A		1.2		S
<b>DYNAMIC CHARACTERISTICS<sup>(4)</sup></b>						
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> = -16V, V <sub>GS</sub> = 0V, f = 1MHz		113		pF
Output Capacitance	C <sub>oss</sub>			15		
Reverse Transfer Capacitance	C <sub>rss</sub>			9		
<b>SWITCHING CHARACTERISTICS<sup>(4)</sup></b>						
Turn-on delay time <sup>(3)</sup>	t <sub>d(on)</sub>	V <sub>DS</sub> = -10V, I <sub>D</sub> = -200mA, V <sub>GS</sub> = -4.5V, R <sub>G</sub> = 10Ω		9		nS
Turn-on rise time <sup>(3)</sup>	t <sub>r</sub>			5.7		
Turn-off delay time <sup>(3)</sup>	t <sub>d(off)</sub>			32.6		
Turn-off fall time <sup>(3)</sup>	t <sub>f</sub>			20.3		
<b>SOURCE-DRAIN DIODE CHARACTERISTICS</b>						
Diode Forward voltage <sup>(1)</sup>	V <sub>DS</sub>	I <sub>S</sub> = -0.5A, V <sub>GS</sub> = 0V			-1.2	V

**Notes :**

1. Surface mounted on FR4 board using the minimum recommended pad size.
2. Pulse Test : Pulse Width = 300 μs, Duty Cycle = 2%.
3. Switching characteristics are independent of operating junction temperatures.
4. Guaranteed by design, not subject to producing.

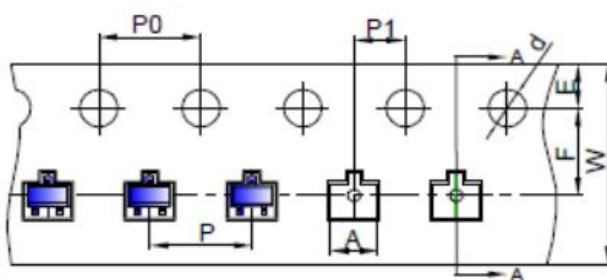




Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.700	0.900	0.028	0.035
A1	0.000	0.100	0.000	0.004
A2	0.700	0.800	0.028	0.031
b1	0.150	0.250	0.006	0.010
b2	0.250	0.350	0.010	0.014
c	0.100	0.200	0.004	0.008
D	1.500	1.700	0.059	0.067
E	0.700	0.900	0.028	0.035
E1	1.450	1.750	0.057	0.069
e	0.500 TYP.		0.020 TYP.	
e1	0.900	1.100	0.035	0.043
L	0.400 REF.		0.016 REF.	
L1	0.260	0.460	0.010	0.018
$\theta$	0°	8°	0°	8°

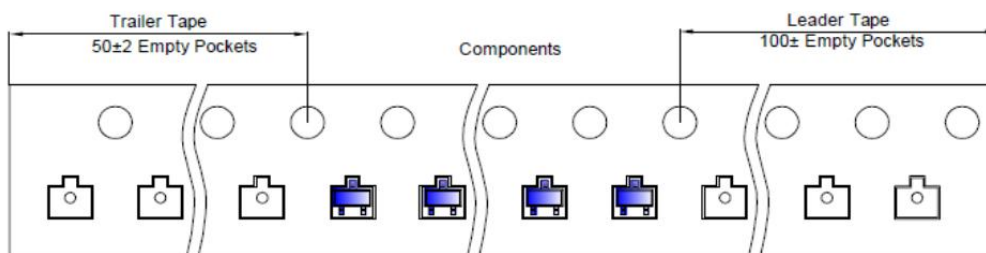
SOT-523 Tape and Reel

SOT-523 Embossed Carrier Tape

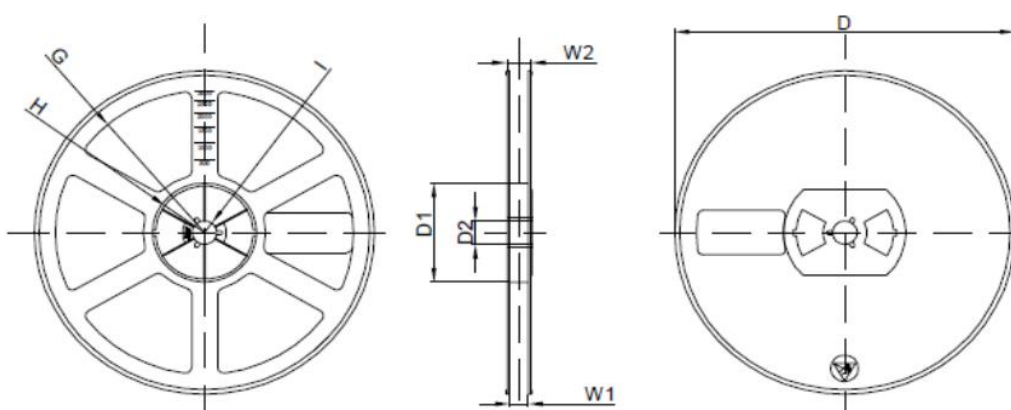


Dimensions are in millimeter										
Pkg type	A	B	C	d	E	F	P0	P	P1	W
SOT-523	1.85	1.85	0.875	Ø1.50	1.75	3.50	4.00	4.00	2.00	8.00

SOT-523 Tape Leader and Trailer



SOT-523 Reel



Dimensions are in millimeter								
Reel Option	D	D1	D2	G	H	I	W1	W2
7" Dia	Ø178.00	54.40	13.00	R78.00	R25.60	R6.50	9.50	12.30

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	