BORN SEMICONDUCTOR

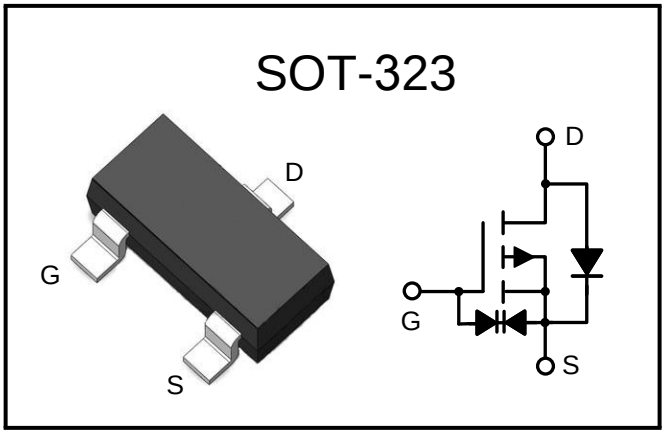
BMSN3139

P-Channel MOSFET

Features

- $V_{DS(V)}$=-20V
- I_D=-0.5A
- $R_{DS(ON)}$@$V_{GS(V)}$=-4.5V,TYP=580mΩ
- $R_{DS(ON)}$@$V_{GS(V)}$=-2.5V,TYP=830mΩ

Package



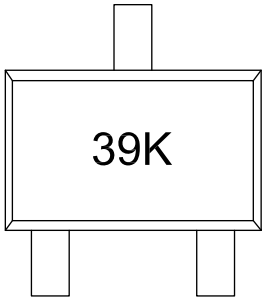
General Description

- Advanced trench process technology
- High Density Cell Design For Ultra Low On-Resistance
- SOT-323 for Surface Mount Package.

Application

- PWM applications
- Load Switch
- Power Management

Marking



Ordering information

Order code	Package	Marking	Base qty	Delivery mode
BMSN3139	SOT-323	39K	3K	Tape and reel

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Revision: 2022-Jan-1-A

BMSN3139

P-Channel MOSFET

Absolute Maximum Ratings (@T_A=25°C unless otherwise noted)

Symbol	Parameter	Value	Unit
V_{DS}	Drain-Source Voltage	-20	V
V_{GS}	Gate-Source Voltage	±12	V
I_D	Continuous Drain Current	-0.5	A
I_{DM}	Pulsed drain current(1)	-2	A
P_D	Power dissipation	0.3	W
$R_{\theta JA}$	Thermal Resistance from Junction to Ambient(2)	417	°C/W
T_J	Operating Junction Temperature	150	°C
T_{stg}	Storage Temperature Range	-55 to +150	°C

Electrical Characteristics @T_A=25°C unless otherwise noted

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS} = 0V, I_D = -250uA	-20	–	–	V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} =V_{GS}, I_D = -250uA	-0.4	-0.6	-1.2	V
I_{GSS}	Gate Body Leakage Current	V_{GS} = ±10V, V_{DS} = 0V	–	–	±10	uA
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = -20V, V_{GS} = 0V	–	–	-1	uA
$R_{DS(on)}$	Drain-Source On-State Resistance(1)	V_{GS} = -4.5V, I_D = -0.5A	–	580	850	mΩ
		V_{GS}=-2.5V, I_D =-0.3A	–	830	1100	
g_{fS}	Forward tranconductance(1)	V_{GS}=-5V, I_D =-0.5A	5	–	–	S
V_{SD}	Diode forward voltage(1)	V_{GS}=0V, I_{sd} = -0.5A	–	–	-1.2	V
Dynamic Characteristics(2)						
C_{iss}	Input Capacitance	V_{GS}=0V,V_{DS}=-10V,f=1MHz	–	71	–	pF
C_{oss}	Output Capacitance		–	20	–	
C_{rss}	Reverse Transfer Capacitance		–	15	–	
Switching Characteristics(2)						
$t_{d(on)}$	Turn-On Delay Time	V_{DD}=-10V,V_{GEN}=-4.5V, I_{DS}=-0.5A,R_L=10Ω,	–	9	–	nS
t_r	Turn-On Rise Time		–	19	–	
$t_{d(off)}$	Turn-Off Delay Time		–	16	–	
t_f	Turn-Off Fall Time		–	25	–	

Notes:

(1)Pulse test: Pulse width ≤300 μs, duty cycle ≤2 %

(2)Guaranteed by design, not subject to production testing

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BMSN3139

-20V P-Channel MOSFET

Typical Performance Characteristics(T_J = 25 °C, unless otherwise noted)

Figure 1 :Typical Output Characteristics

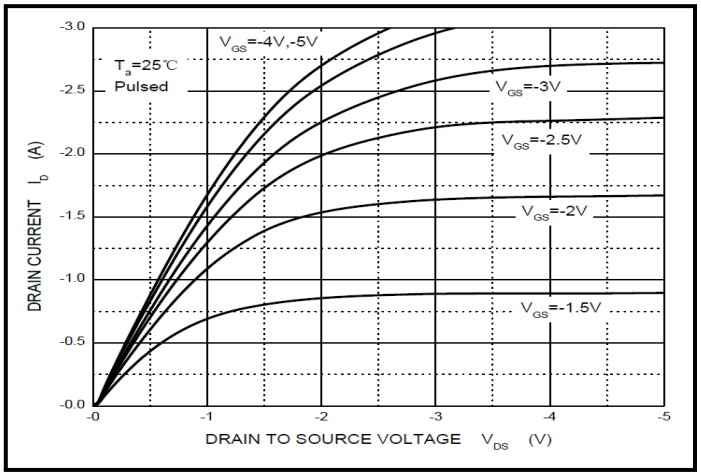


Figure 2 :Transfer Characteristics

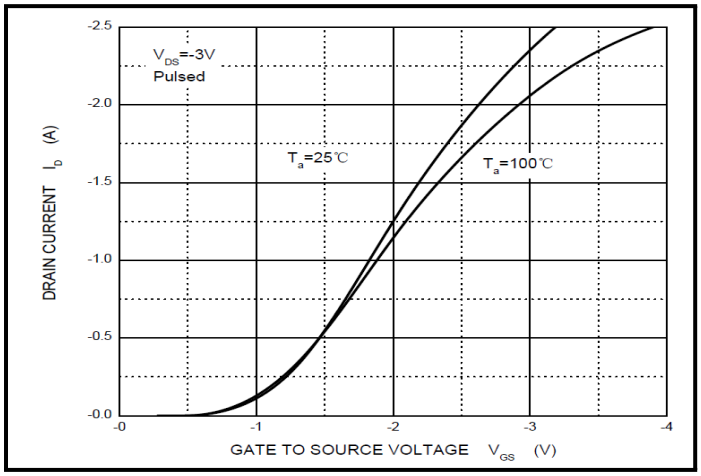


Figure 3 : $R_{DS(ON)}$ vs. I_D

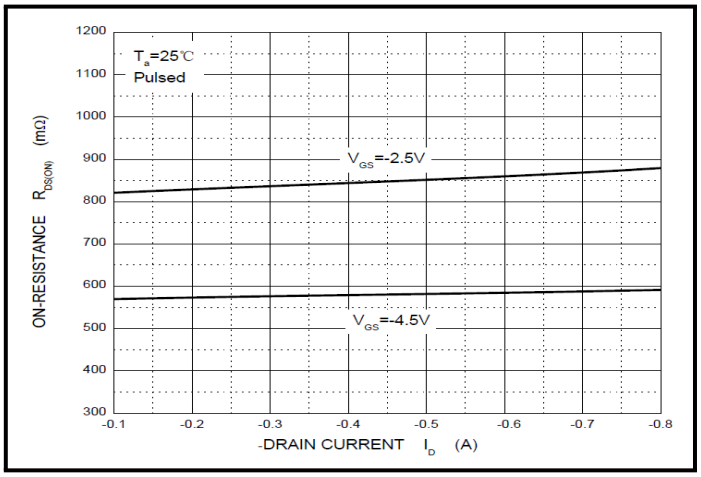


Figure 4 :$R_{DS(ON)}$ vs. V_{GS}

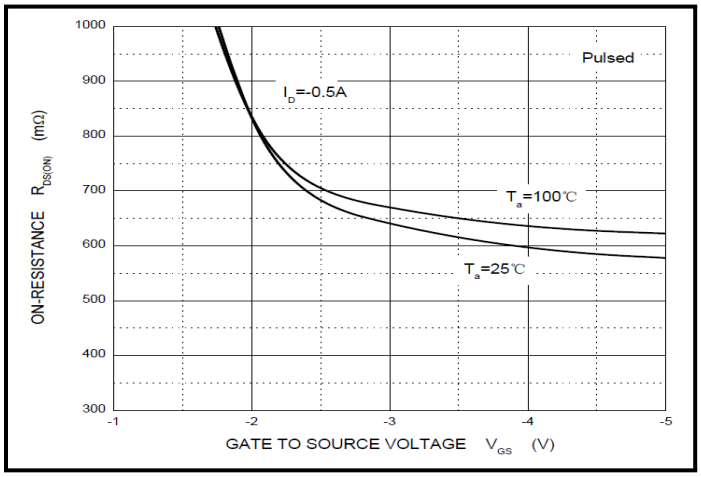


Figure 5 : I_S vs. V_{SD}

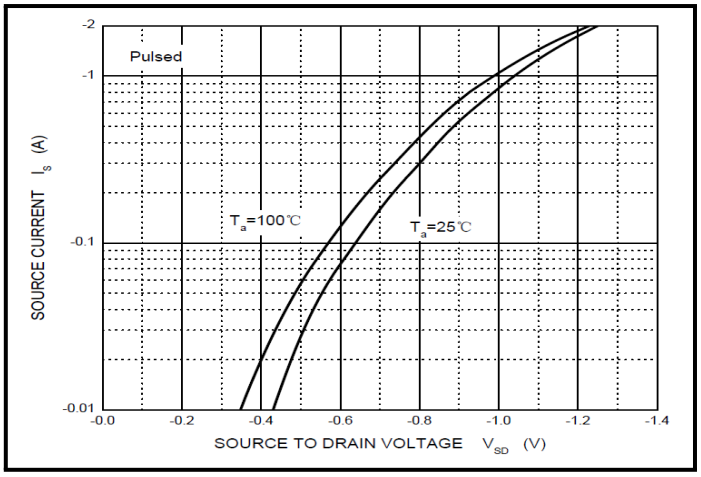
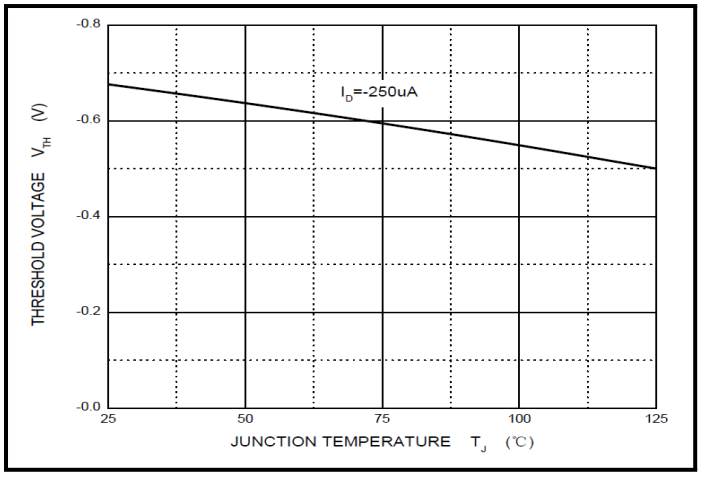


Figure 6 : Threshold Voltage



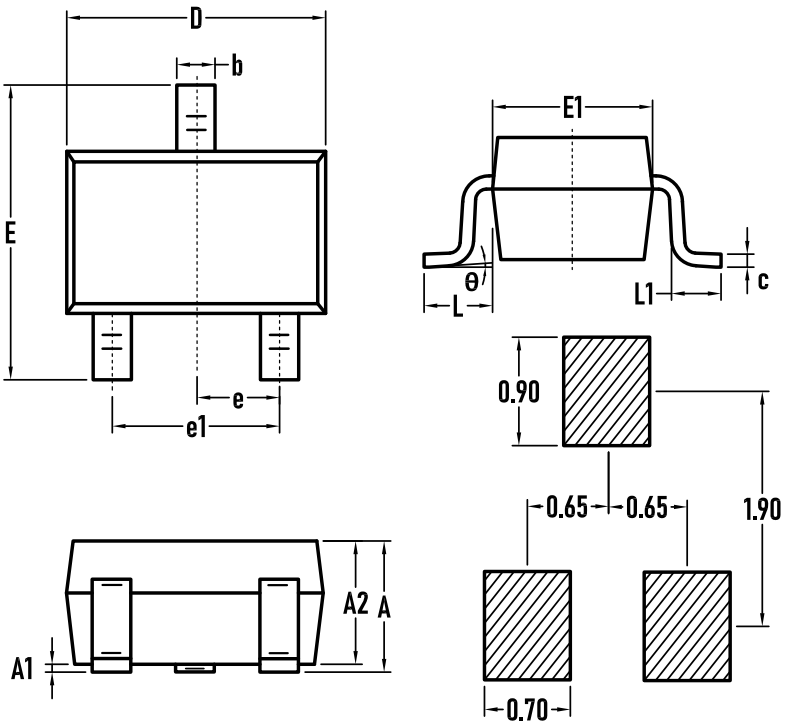
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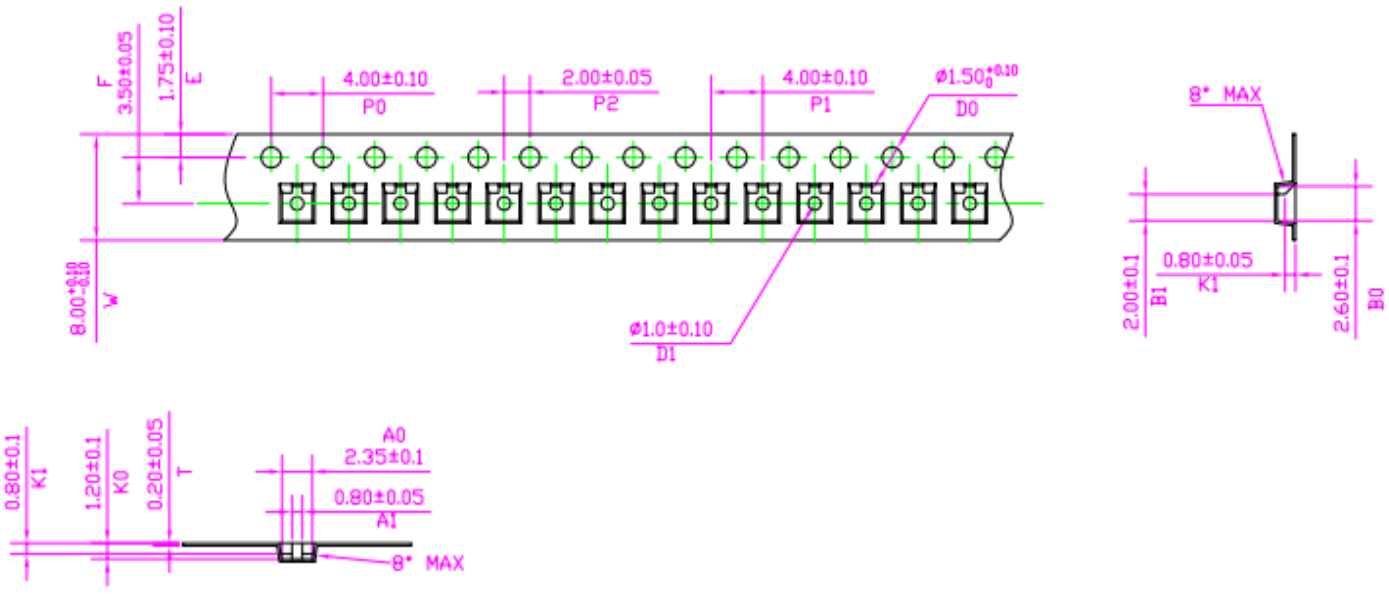
P-Channel MOSFET

Outline Drawing - SOT-323



SYMBOL	MILLIMETER		
	MIN.	Typ.	MAX.
A	0.90	1.00	1.10
A1	0.00	0.05	0.10
A2	0.90	0.95	1.00
b	0.20	0.30	0.40
c	0.08	0.12	0.15
D	2.00	2.10	2.20
E	2.15	2.30	2.45
E1	1.15	1.25	1.35
e	0.650Typ.		
e1	1.20	1.30	1.40
L1	0.26	0.36	0.46
L	0.525REF		
θ	0°	4°	8°

Packaging Reel - SOT-323



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