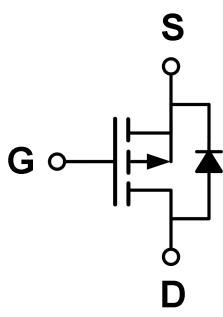
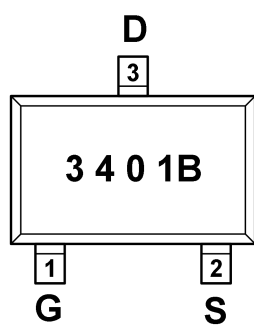


30V P-Channel Enhancement Mode MOSFET

<p>SCHEMATIC DIAGRAM</p>  <p>PIN ASSIGNMENT</p> <p>SOT-23 (TOP VIEW)</p> 	<p>DESCRIPTION</p> <p>The 3401BVRG uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and high density cell Design for ultra low on-resistance. This device is suitable for use as a load switch or in PWM applications.</p> <p>GENERAL FEATURES</p> <ul style="list-style-type: none"> ◇ $V_{DS} = -30V$, $I_D = -4A$ <li style="padding-left: 20px;">$R_{DS(ON)}(Typ.) = 75m\Omega$ @ $V_{GS} = -2.5V$ <li style="padding-left: 20px;">$R_{DS(ON)}(Typ.) = 55m\Omega$ @ $V_{GS} = -4.5V$ ◇ High power and current handling capability ◇ Lead free product is acquired ◇ Surface mount package <p>APPLICATION</p> <ul style="list-style-type: none"> ◇ PWM applications ◇ Load switch <p>PACKAGE</p> <ul style="list-style-type: none"> ◇ SOT-23
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ORDERING INFORMATION

Part Number	Storage Temperature	Package	Marking	Devices Per Reel
3401BVRG	-55°C to +150°C	SOT-23	3401B	3000

ABSOLUTE MAXIMUM RATINGS

($T_A = 25^\circ C$ unless otherwise noted)

parameter	symbol	limit	unit
Drain-source voltage	V_{DS}	-30	V
Gate-source voltage	V_{GS}	± 12	V
Continuous drain current ($T_J = 150^\circ C$) ^a	$T_A = 25^\circ C$	-4.0	A
	$T_A = 70^\circ C$	-3.2	
Pulsed drain current ^b	I_{DM}	-16	
Continuous source current (diode conduction) ^a	I_S	-0.6	
Power dissipation ^a	$T_A = 25^\circ C$	0.72	W
	$T_A = 70^\circ C$	0.46	
Operating junction and storage temperature range	T_J, T_{stg}	-55—150	°C

THERMAL CHARACTERISTICS

Parameter	Symbol	Typ	Max	Unit	
Maximum junction-to-ambient ^a	≤ 5 s	R _{θJA}	120	145	°C/W
	Steady-State		140	175	
Maximum junction-to-foot	Steady-State	R _{θJC}	62	78	

Notes

- a. Surface mounted on 1" x 1" FR4 board
- b. Pulse width limited by maximum junction temperature

ELECTRICAL CHARACTERISTICS (T_A=25°C unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
OFF Characteristics						
Drain-source breakdown voltage	BV _{DSS}	V _{GS} =0V, I _D =-250μA	-30	-	-	V
Zero gate voltage drain current	I _{DSS}	V _{DS} =-30V, V _{GS} =0V	-	-	-1	μA
Gate-body leakage	I _{GSS}	V _{DS} =0V, V _{GS} =±12V	-	-	±100	nA
ON Characteristics						
Gate threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =-250μA	-0.5	-0.85	-1.3	V
Drain-source on-state resistance ^a	R _{D(S)ON}	V _{GS} =-4.5V, I _D =-4A	-	55	70	mΩ
		V _{GS} =-2.5V, I _D =-2A	-	75	90	
Forward transconductance ^a	g _{fs}	V _{DS} =-5V, I _D =-4A	-	9	-	S
Dynamic Characteristics ^b						
Input capacitance	C _{ISS}	V _{DS} =-15V, V _{GS} =0V f=1.0MHz	-	676	-	pF
Output capacitance	C _{OSS}		-	60	-	
Reverse transfer capacitance	C _{RSS}		-	51	-	
Switching Characteristics						
Turn-on delay time	t _{D(ON)}	V _{DD} =-15V I _D =-3A V _{GEN} =-10V R _L =3.6ohm R _{GEN} =6ohm	-	8	-	ns
Rise time	t _r		-	5	-	
Turn-off delay time	t _{D(OFF)}		-	26	-	
Fall time	t _f		-	11	-	
Total gate charge	Q _g	V _{DS} =-8V, I _D =-3A V _{GS} =-4.5V	-	8.2	-	nC
Gate-source charge	Q _{gs}		-	1.8	-	
Gate-drain charge	Q _{gd}		-	2.0	-	
DRAIN-SOURCE DIODE CHARACTERISTICS						
Diode forward voltage	V _{SD}	V _{GS} =0V, I _S =-1A	-	-0.75	-1.2	V

Notes

- a. Pulse test: Pulse width ≤ 300 μs, duty cycle ≤ 2 %
- b. Guaranteed by design, not subject to production testing

TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)

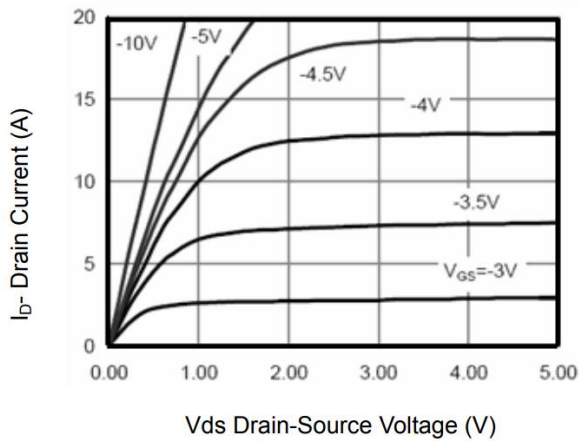


Fig.1 Output Characteristic

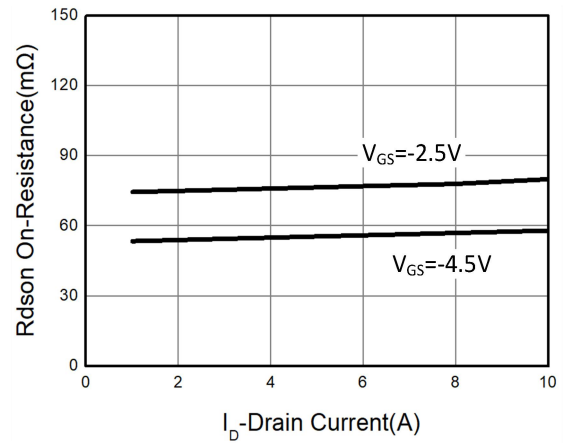


Fig.2 On-Resistance vs. Drain Current

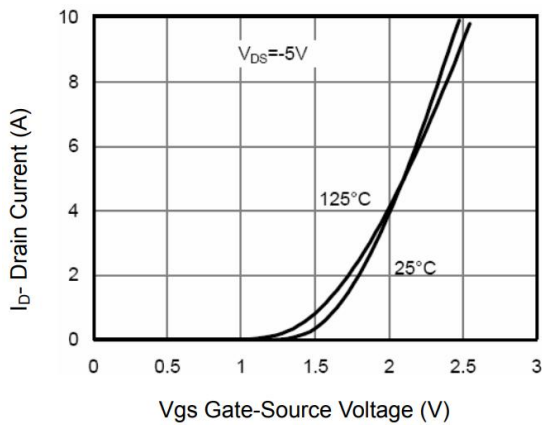


Fig.3 Transfer Characteristic

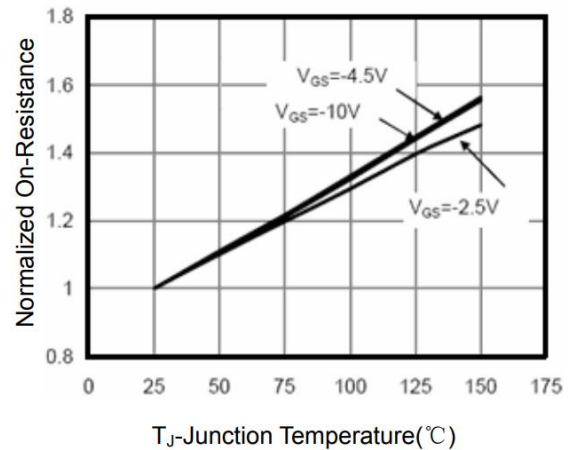


Fig.4 On-Resistance vs. Junction Temperature

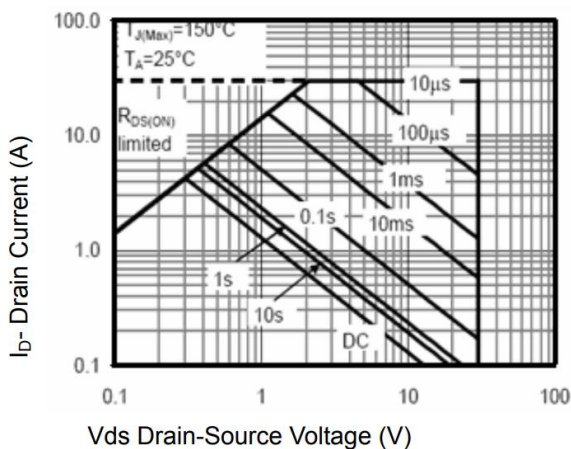


Fig.5 Safe Operation Area

Fig.6 Capacitance Characteristic

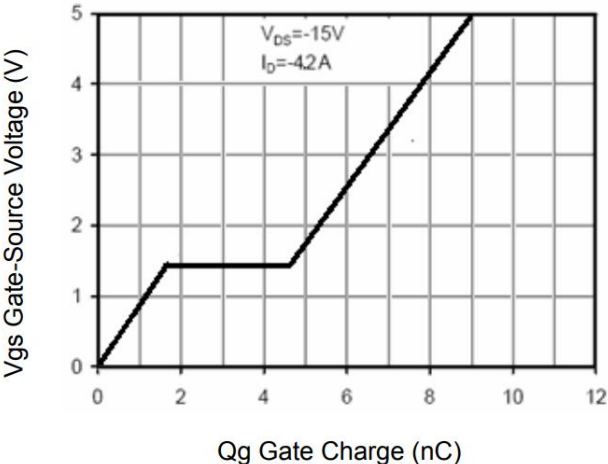


Fig.7 Gate-Charge Characteristic

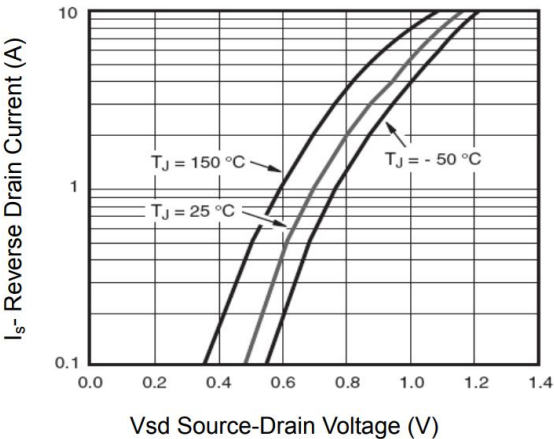
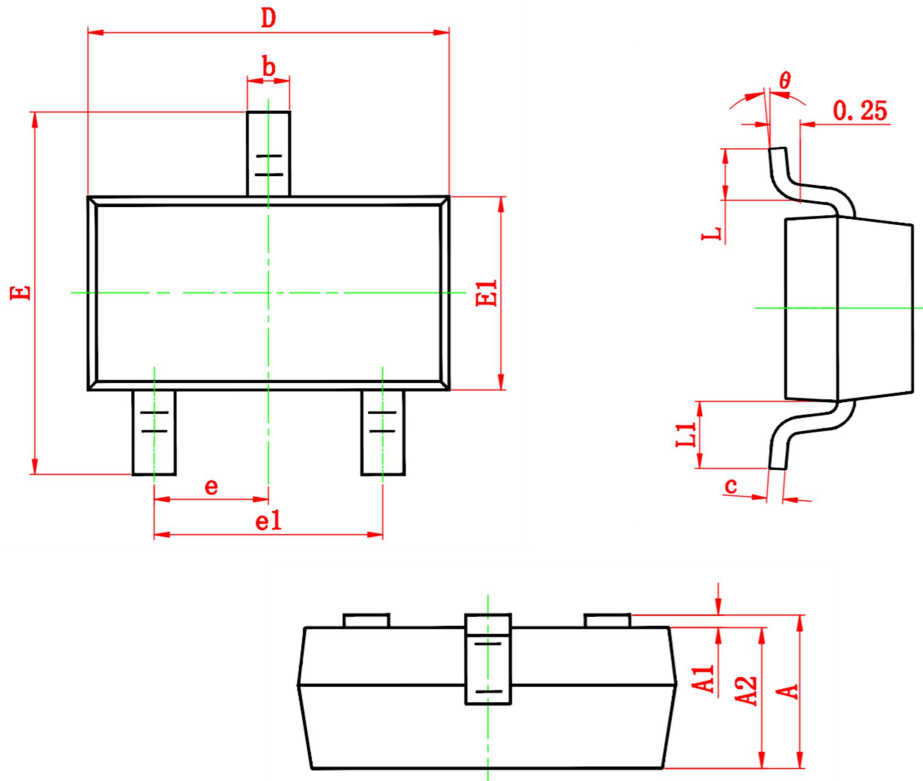


Fig.8 Body Diode Characteristic

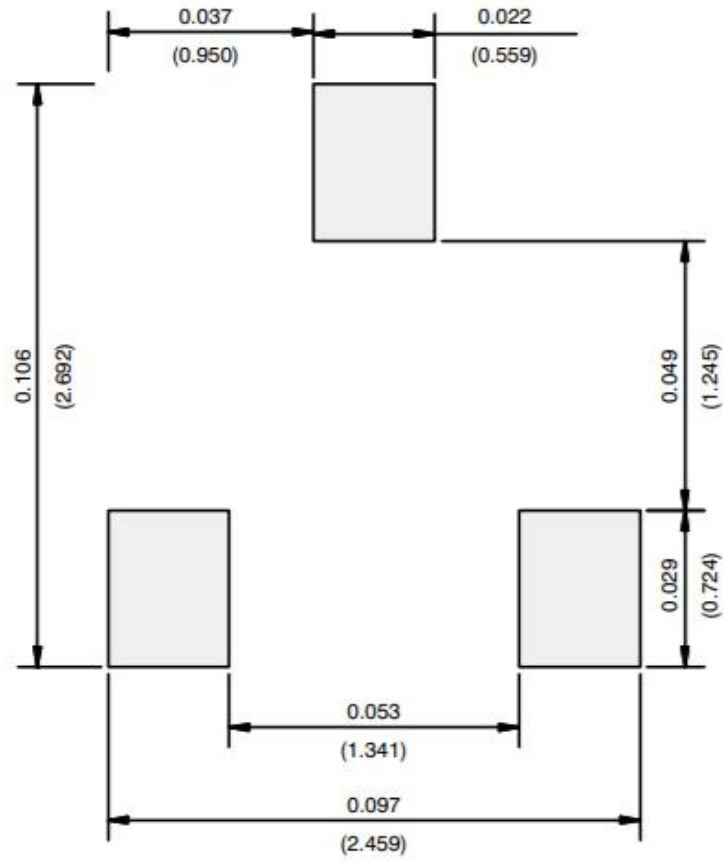
PACKAGE INFORMATION

- SOT-23



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	2.250	2.550	0.089	0.100
E1	1.200	1.400	0.047	0.055
e	0.950 TYP.		0.037 TYP.	
e1	1.800	2.000	0.071	0.079
L	0.300	0.500	0.012	0.020
L1	0.550 REF.		0.022 REF.	
θ	0°	8°	0°	8°

RECOMMENDED MINIMUM PADS FOR SOT-23



Recommended Minimum Pads
Dimensions in Inches/(mm)