

PJS6601

20V Complementary Enhancement Mode MOSFET

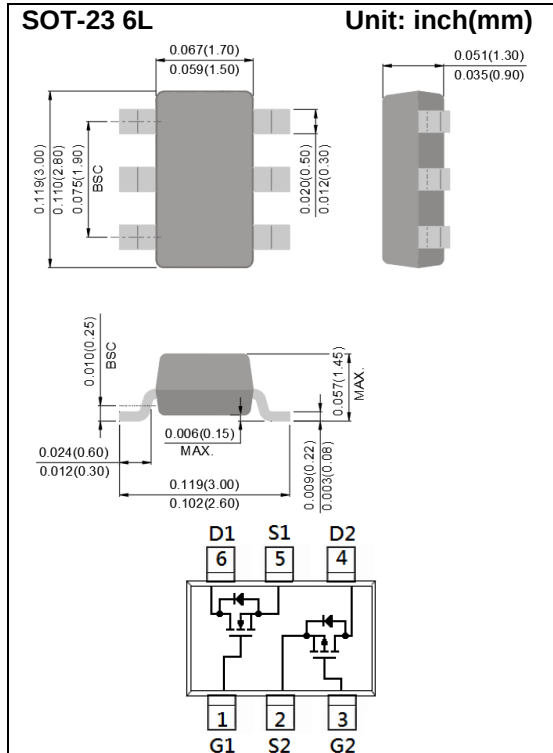
Voltage	20 / -20V	Current	4.1 / -3.1A
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Features

- Advanced Trench Process Technology
- Specially Designed for Switch Load, PWM Application, etc.
- Lead free in compliance with EU RoHS 2.0
- Green molding compound as per IEC 61249 standard

Mechanical Data

- Case: SOT-23 6L Package
- Terminals: Solderable per MIL-STD-750, Method 2026
- Approx. Weight: 0.0005 ounces, 0.014 grams
- Marking: SC1



Maximum Ratings and Thermal Characteristics (T_A=25°C unless otherwise noted)

PARAMETER		SYMBOL	N-Ch LIMIT	P-Ch LIMIT	UNIT
Drain-Source Voltage		V _{DS}	20	-20	V
Gate-Source Voltage		V _{GS}	<u>+12</u>	<u>+12</u>	V
Continuous Drain Current		I _D	4.1	-3.1	A
Pulsed Drain Current ^(Note 4)		I _{DM}	16.4	-12.4	A
Power Dissipation	T _a =25°C	P _D	1.25		W
	Derate above 25°C		10		mW/°C
Operating Junction and Storage Temperature Range		T _J ,T _{STG}	-55~150		°C
Typical Thermal Resistance		R _{θJA}	100		°C/W
- Junction to Ambient ^(Note 3)					

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N-Channel Electrical Characteristics ($T_A=25^{\circ}\text{C}$ unless otherwise noted)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Static						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250uA	20	-	-	V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250uA	0.4	0.66	1.2	V
Drain-Source On-State Resistance	R _{DS(on)}	V _{GS} =4.5V, I _D =4.1A	-	41	56	mΩ
		V _{GS} =2.5V, I _D =2.8A	-	50	68	
		V _{GS} =1.8V, I _D =1.5A	-	66	95	
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =20V, V _{GS} =0V	-	-	1	uA
Gate-Source Leakage Current	I _{GSS}	V _{GS} =±12V, V _{DS} =0V	-	-	±100	nA
Dynamic ^(Note 5)						
Total Gate Charge	Q _g	V _{DS} =10V, I _D =4.1A, V _{GS} =4.5V ^(Note 1,2)	-	4.6	-	nC
Gate-Source Charge	Q _{gs}		-	0.8	-	
Gate-Drain Charge	Q _{gd}		-	1	-	
Input Capacitance	C _{iss}	V _{DS} =10V, V _{GS} =0V, f=1.0MHZ	-	350	-	pF
Output Capacitance	C _{oss}		-	40	-	
Reverse Transfer Capacitance	C _{rss}		-	29	-	
Turn-On Delay Time	td _(on)	V _{DD} =10V, I _D =4.1A, V _{GS} =4.5V, R _G =6Ω ^(Note 1,2)	-	4	-	ns
Turn-On Rise Time	tr		-	47	-	
Turn-Off Delay Time	td _(off)		-	18	-	
Turn-Off Fall Time	tf		-	10	-	
Drain-Source Diode						
Maximum Continuous Drain-Source Diode Forward Current	I _S	---	-	-	1.5	A
Diode Forward Voltage	V _{SD}	I _S =1.0A, V _{GS} =0V	-	0.75	1.2	V

NOTES :

1. Pulse width $\leq 300\mu s$, Duty cycle $\leq 2\%$
2. Essentially independent of operating temperature typical characteristics.
3. $R_{\theta JA}$ is the sum of the junction-to-case and case-to-ambient thermal resistance where the case thermal reference is defined as the solder mounting surface of the drain pins mounted on a 1 inch FR-4 with 2oz. square pad of copper.
4. The maximum current rating is package limited.
5. Guaranteed by design, not subject to production testing

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P-Channel Electrical Characteristics (T_A=25°C unless otherwise noted)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Static						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =-250uA	-20	-	-	V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =-250uA	-0.4	-0.71	-1.2	V
Drain-Source On-State Resistance	R _{DS(on)}	V _{GS} =-4.5V, I _D =-3.1A	-	84	100	mΩ
		V _{GS} =-2.5V, I _D =-2.0A	-	104	135	
		V _{GS} =-1.8V, I _D =-1.1A	-	134	190	
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-20V, V _{GS} =0V	-	-	-1	uA
Gate-Source Leakage Current	I _{GSS}	V _{GS} =±12V, V _{DS} =0V	-	-	±100	nA
Dynamic ^(Note 5)						
Total Gate Charge	Q _g	V _{DS} =-10V, I _D =-3.1A, V _{GS} =-4.5V ^(Note 1,2)	-	5.4	-	nC
Gate-Source Charge	Q _{gs}		-	0.7	-	
Gate-Drain Charge	Q _{gd}		-	1.3	-	
Input Capacitance	C _{iss}	V _{DS} =-10V, V _{GS} =0V, f=1.0MHZ	-	416	-	pF
Output Capacitance	C _{oss}		-	43	-	
Reverse Transfer Capacitance	C _{rss}		-	32	-	
Turn-On Delay Time	td _(on)	V _{DD} =-10V, I _D =-3.1A, V _{GS} =-4.5V, R _G =6Ω ^(Note 1,2)	-	4	-	ns
Turn-On Rise Time	tr		-	27	-	
Turn-Off Delay Time	td _(off)		-	78	-	
Turn-Off Fall Time	tf		-	45	-	
Drain-Source Diode						
Maximum Continuous Drain-Source Diode Forward Current	I _S	---	-	-	-1.5	A
Diode Forward Voltage	V _{SD}	I _S =-1.0A, V _{GS} =0V	-	-0.8	-1.2	V

NOTES :

1. Pulse width≤300us, Duty cycle≤2%
2. Essentially independent of operating temperature typical characteristics.
3. R_{θJA} is the sum of the junction-to-case and case-to-ambient thermal resistance where the case thermal reference is defined as the solder mounting surface of the drain pins mounted on a 1 inch FR-4 with 2oz. square pad of copper.
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N-Channel TYPICAL CHARACTERISTIC CURVES

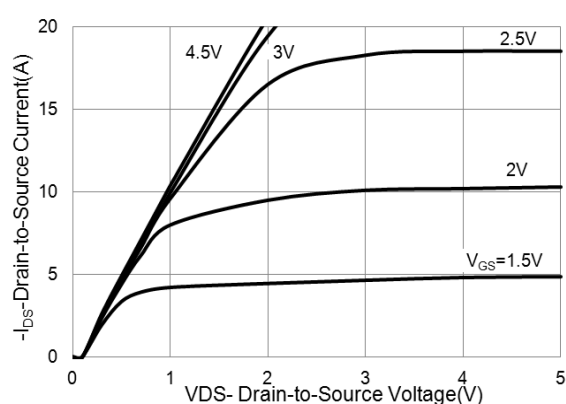


Fig.1 On-Region Characteristics

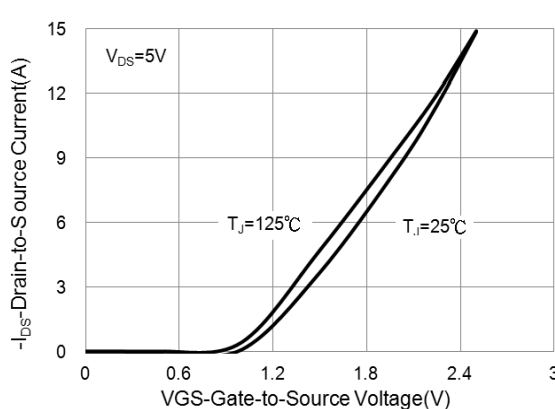


Fig.2 Transfer Characteristics

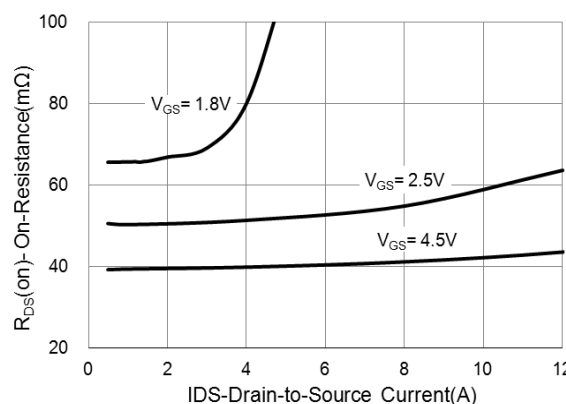


Fig.3 On-Resistance vs. Drain Current

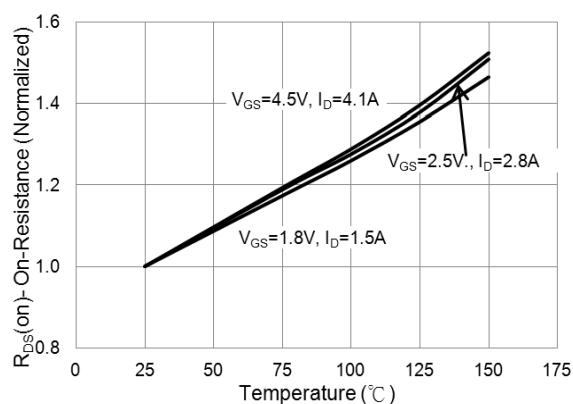


Fig.4 On-Resistance vs. Junction temperature

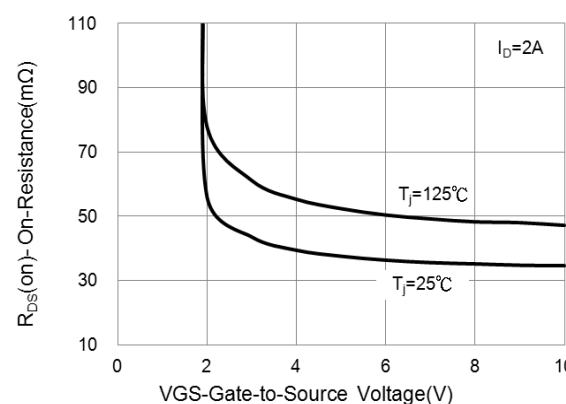


Fig.5 On-Resistance Variation with VGS.

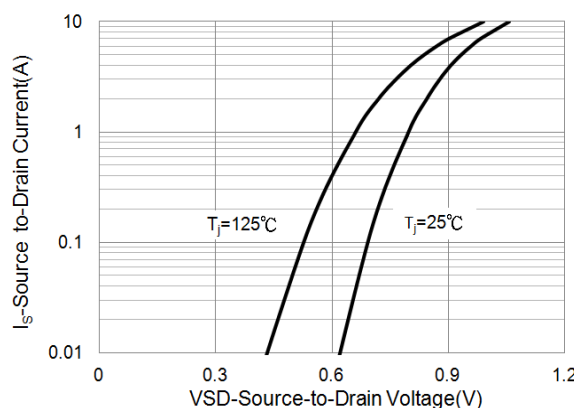


Fig.6 Body Diode Characteristics

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N-Channel TYPICAL CHARACTERISTIC CURVES

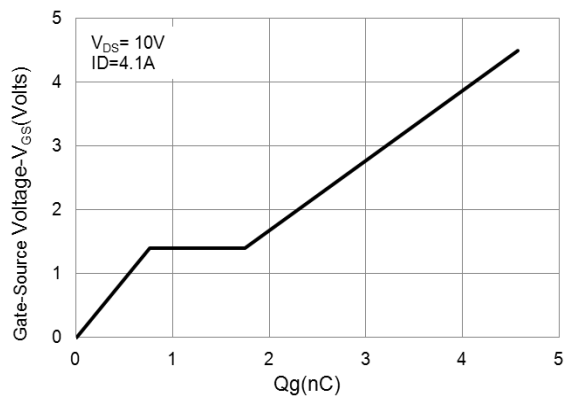


Fig.7 Gate-Charge Characteristics

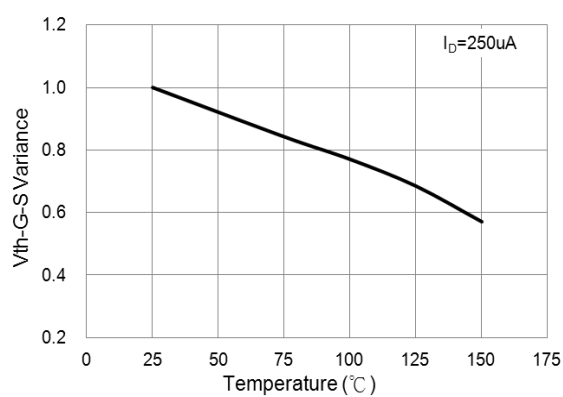


Fig.8 Threshold Voltage Variation with Temperature.

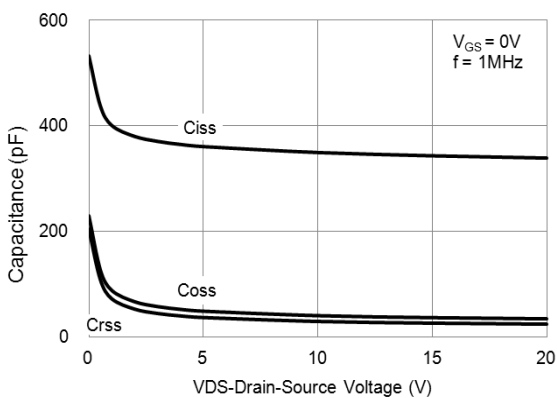


Fig.9 Capacitance vs. Drain-Source Voltage.

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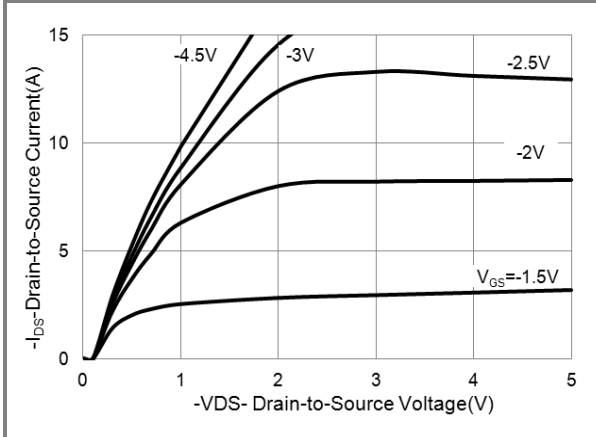


Fig.1 On-Region Characteristics

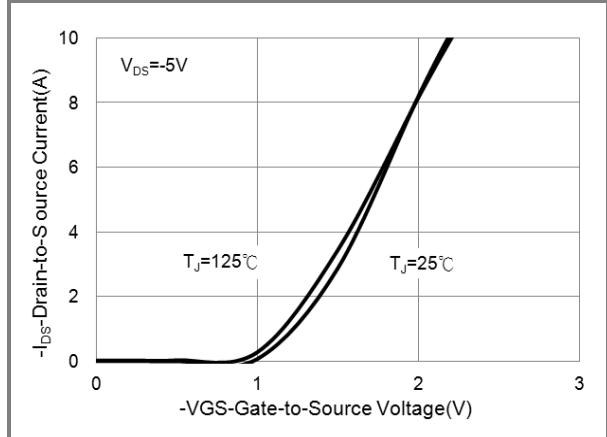


Fig.2 Transfer Characteristics

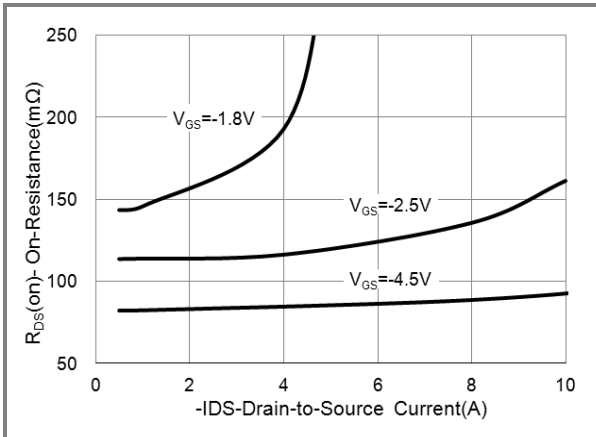


Fig.3 On-Resistance vs. Drain Current

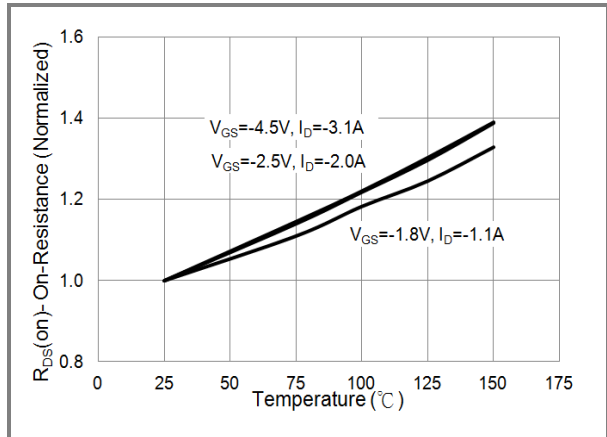


Fig.4 On-Resistance vs. Junction temperature

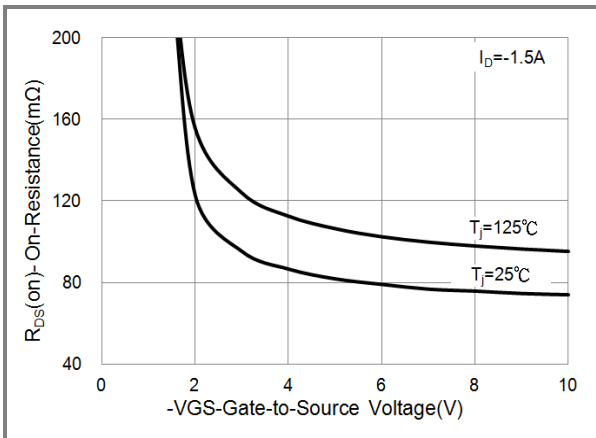


Fig.5 On-Resistance Variation with V_GS.

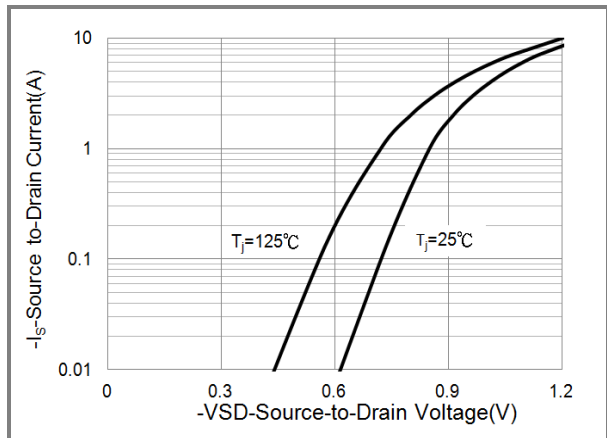


Fig.6 Body Diode Characteristics

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P-Channel TYPICAL CHARACTERISTIC CURVES

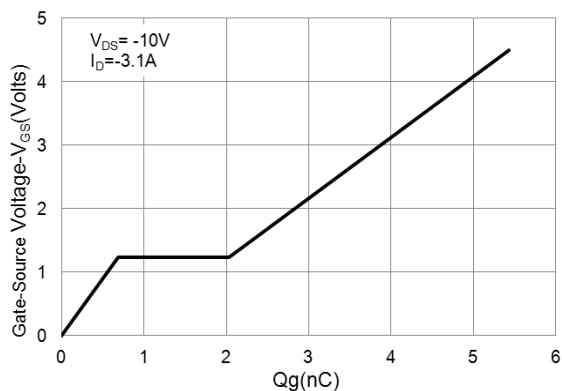


Fig.7 Gate-Charge Characteristics

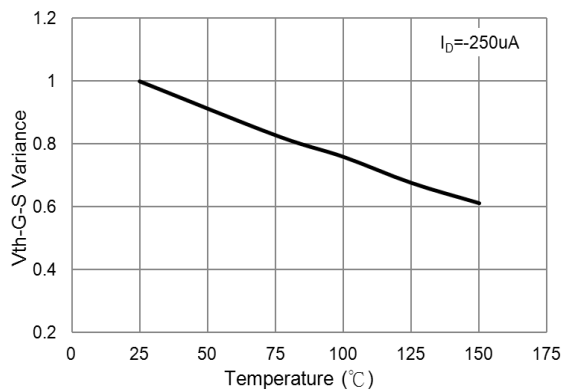


Fig.8 Threshold Voltage Variation with Temperature.

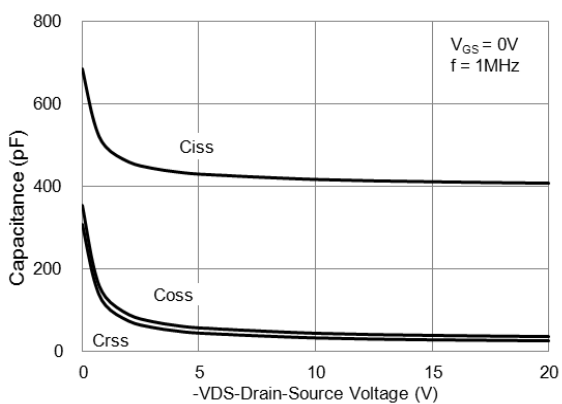


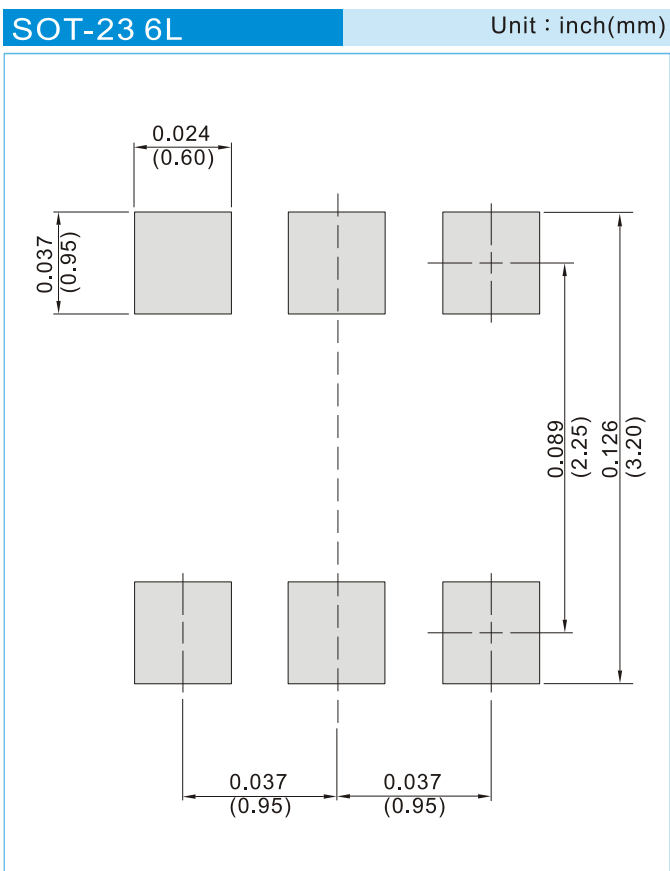
Fig.9 Threshold Voltage Variation with Temperature.

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Product and Packing Information

Part No.	Package Type	Packing Type	Marking
PJS6601	SOT-23 6L	3K pcs / 7" reel	SC1
PJS6601	SOT-23 6L	10K pcs / 13" reel	SC1

Mounting Pad Layout



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