

PJX8601-AU

Complementary Enhancement Mode MOSFET – ESD Protected

Voltage **20 / -20V** **Current** **0.5A / -0.5A**

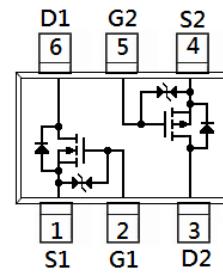
SOT-563

Features

- Low Voltage Drive (1.2V)
- Advanced Trench Process Technology
- Specially Designed for Switch Load, PWM Application, etc.
- ESD Protected
- AEC-Q101 qualified
- Lead free in compliance with EU RoHS 2.0
- Green molding compound as per IEC 61249 Standard

Mechanical Data

- Case : SOT-563 Package
- Terminals : Solderable per MIL-STD-750, Method 2026
- Approx. Weight : 0.0026 grams



Maximum Ratings and Thermal Characteristics ($T_A=25^\circ\text{C}$ unless otherwise noted)

PARAMETER		SYMBOL	N-Ch LIMIT	P-Ch LIMIT	UNITS
Drain-Source Voltage		V_{DS}	20	-20	V
Gate-Source Voltage		V_{GS}	± 10	± 10	V
Continuous Drain Current ^(Note 4)		I_D	0.5	-0.5	A
Pulsed Drain Current ^(Note 1)		I_{DM}	1.0	-1.0	A
Power Dissipation	$T_a=25^\circ\text{C}$	P_D	300		mW
	Derate above 25°C		2.4		$\text{mW}/^\circ\text{C}$
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55~150		$^\circ\text{C}$
Typical Thermal Resistance - Junction to Ambient ^(Note 3)		$R_{\theta JA}$	417		$^\circ\text{C}/\text{W}$

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

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNITS
Static						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{\text{GS}}=0\text{V}, I_{\text{D}}=250\mu\text{A}$	20	-	-	V
Gate Threshold Voltage	$V_{\text{GS(th)}}$	$V_{\text{DS}}=V_{\text{GS}}, I_{\text{D}}=250\mu\text{A}$	0.3	0.64	0.9	V
Drain-Source On-State Resistance	$R_{\text{DS(on)}}$	$V_{\text{GS}}=4.5\text{V}, I_{\text{D}}=500\text{mA}$	-	0.31	0.4	Ω
		$V_{\text{GS}}=2.5\text{V}, I_{\text{D}}=200\text{mA}$	-	0.36	0.65	
		$V_{\text{GS}}=1.8\text{V}, I_{\text{D}}=100\text{mA}$	-	0.43	0.8	
		$V_{\text{GS}}=1.5\text{V}, I_{\text{D}}=50\text{mA}$	-	0.51	1.2	
		$V_{\text{GS}}=1.2\text{V}, I_{\text{D}}=20\text{mA}$	-	0.71	3.0	
Zero Gate Voltage Drain Current	I_{DSS}	$V_{\text{DS}}=16\text{V}, V_{\text{GS}}=0\text{V}$	-	-	1	μA
Gate-Source Leakage Current	I_{GSS}	$V_{\text{GS}}=\pm 8\text{V}, V_{\text{DS}}=0\text{V}$	-	± 0.5	± 10	μA
Dynamic ^(Note 5)						
Total Gate Charge	Q_g	$V_{\text{DS}}=10\text{V}, I_{\text{D}}=500\text{mA}, V_{\text{GS}}=4.5\text{V}^{(\text{Note 2})}$	-	1.4	-	nC
Gate-Source Charge	Q_{gs}		-	0.22	-	
Gate-Drain Charge	Q_{gd}		-	0.21	-	
Input Capacitance	C_{iss}	$V_{\text{DS}}=10\text{V}, V_{\text{GS}}=0\text{V}, f=1.0\text{MHZ}^{(\text{Note 2})}$	-	67	-	pF
Output Capacitance	C_{oss}		-	19	-	
Reverse Transfer Capacitance	C_{rss}		-	6	-	
Turn-On Delay Time	$t_{\text{d(on)}}$	$V_{\text{DD}}=10\text{V}, I_{\text{D}}=150\text{mA}, V_{\text{GS}}=4\text{V}, R_{\text{G}}=10\Omega^{(\text{Note 2})}$	-	2.8	-	ns
Turn-On Rise Time	t_{r}		-	20	-	
Turn-Off Delay Time	$t_{\text{d(off)}}$		-	23	-	
Turn-Off Fall Time	t_{f}		-	23	-	
Drain-Source Diode						
Maximum Continuous Drain-Source Diode Forward Current	I_{s}	---	-	-	500	mA
Diode Forward Voltage	V_{SD}	$I_{\text{s}}=500\text{mA}, V_{\text{GS}}=0\text{V}$	-	0.87	1.3	V

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P-Channel Electrical Characteristics ($T_A=25^\circ C$ unless otherwise noted)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNITS
Static						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=-250\mu A$	-20	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-0.3	-0.6	-1.0	V
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS}=-4.5V, I_D=-500mA$	-	0.9	1.2	Ω
		$V_{GS}=-2.5V, I_D=-200mA$	-	1.07	1.5	
		$V_{GS}=-1.8V, I_D=-100mA$	-	1.25	2.2	
		$V_{GS}=-1.5V, I_D=-40mA$	-	1.42	3.6	
		$V_{GS}=-1.2V, I_D=-10mA$	-	1.7	6.0	
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=-16V, V_{GS}=0V$	-	-	-1	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 8V, V_{DS}=0V$	-	± 2	± 10	μA
Dynamic ^(Note 5)						
Total Gate Charge	Q_g	$V_{DS}=-10V, I_D=-500mA,$ $V_{GS}=-4.5V$ ^(Note 2)	-	1.4	-	nC
Gate-Source Charge	Q_{gs}		-	0.19	-	
Gate-Drain Charge	Q_{gd}		-	0.2	-	
Input Capacitance	C_{iss}	$V_{DS}=-10V, V_{GS}=0V,$ $f=1.0MHz$ ^(Note 2)	-	38	-	pF
Output Capacitance	C_{oss}		-	15	-	
Reverse Transfer Capacitance	C_{rss}		-	9	-	
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=-10V, I_D=-500mA,$ $V_{GS}=-4.5V,$ $R_G=6\Omega$ ^(Note 2)	-	7.2	-	ns
Turn-On Rise Time	t_r		-	21	-	
Turn-Off Delay Time	$t_{d(off)}$		-	85	-	
Turn-Off Fall Time	t_f		-	116	-	
Drain-Source Diode						
Maximum Continuous Drain-Source Diode Forward Current	I_s	---	-	-	-500	mA
Diode Forward Voltage	V_{SD}	$I_s=500mA, V_{GS}=0V$	-	-0.9	-1.3	V

NOTES :

1. Pulse width $\leq 300\mu s$, Duty cycle $\leq 2\%$
2. Essentially independent of operating temperature typical characteristics.
3. R_{eJA} 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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N-Channel TYPICAL CHARACTERISTIC CURVES

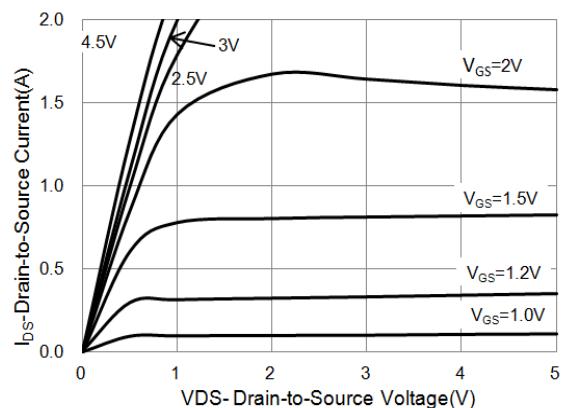


Fig.1 On-Region Characteristics

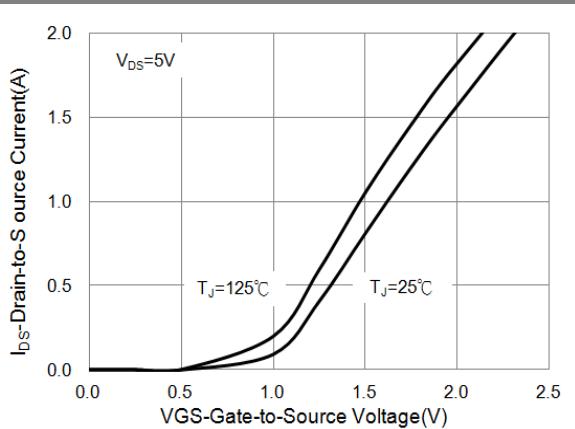


Fig.2 Transfer Characteristics

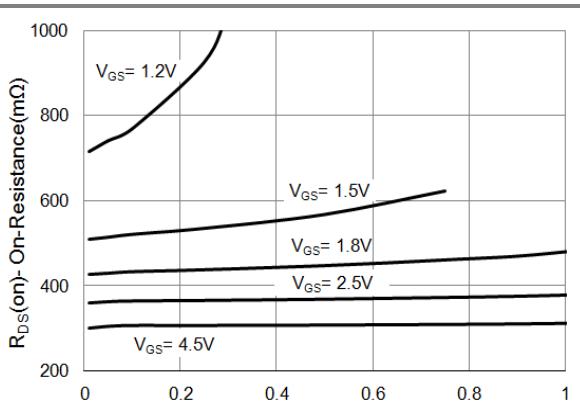


Fig.3 On-Resistance vs. Drain Current

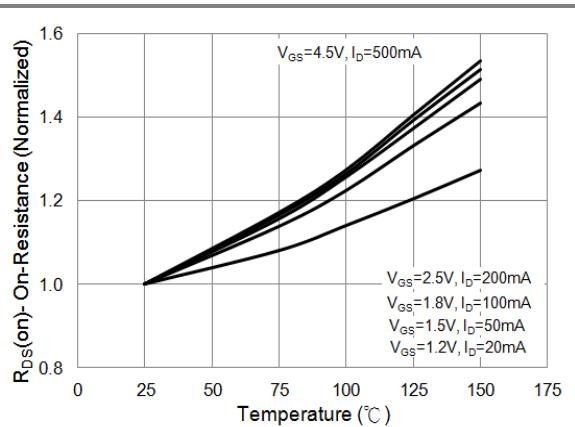


Fig.4 On-Resistance vs. Junction temperature

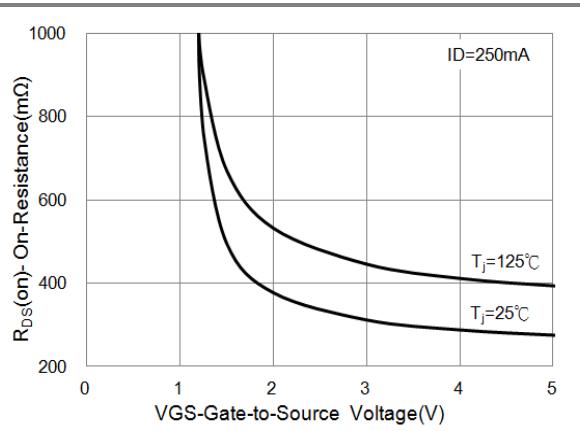


Fig.5 On-Resistance Variation with VGS.

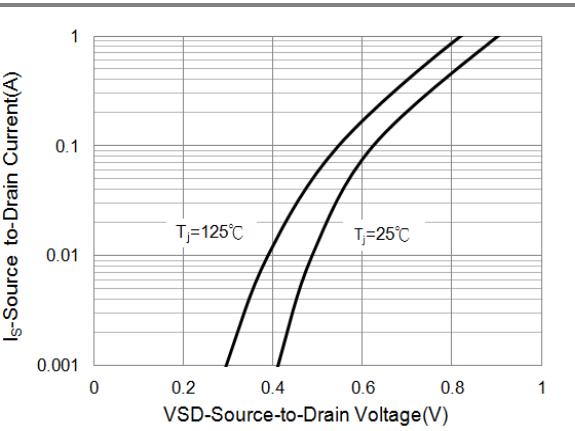
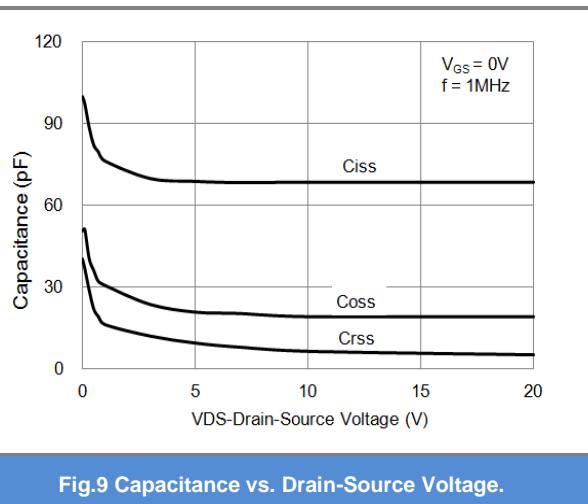
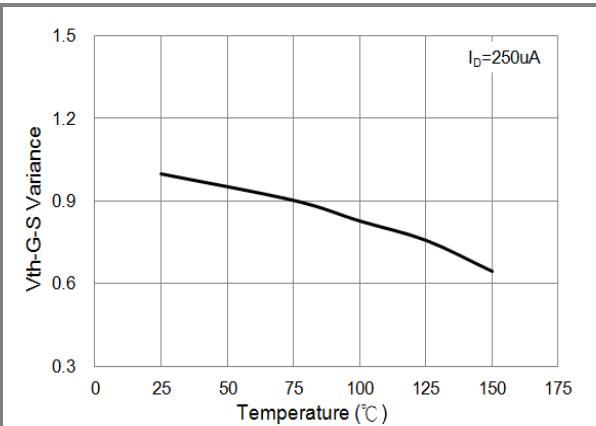
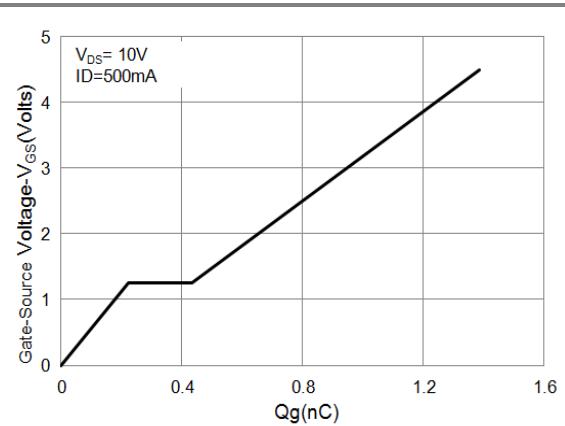


Fig.6 Body Diode Characteristics

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N-Channel TYPICAL CHARACTERISTIC CURVES



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P-Channel TYPICAL CHARACTERISTIC CURVES

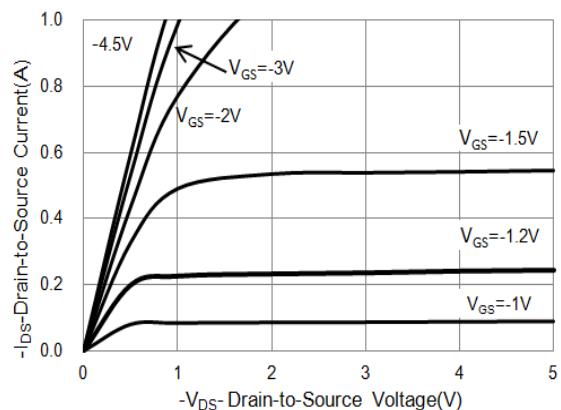


Fig.1 On-Region Characteristics

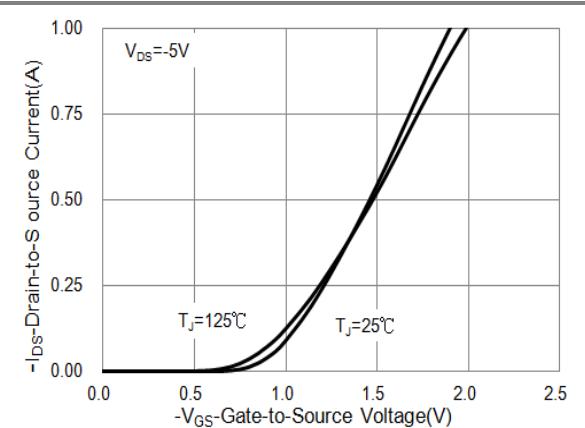


Fig.2 Transfer Characteristics

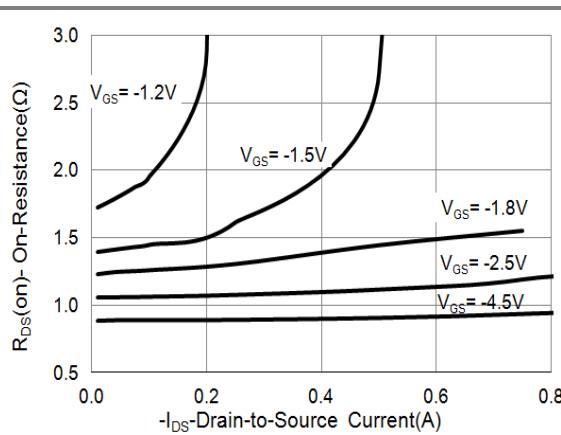


Fig.3 On-Resistance vs. Drain Current

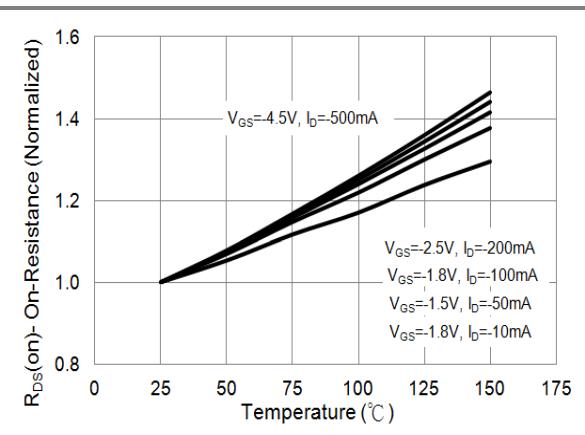


Fig.4 On-Resistance vs. Junction temperature

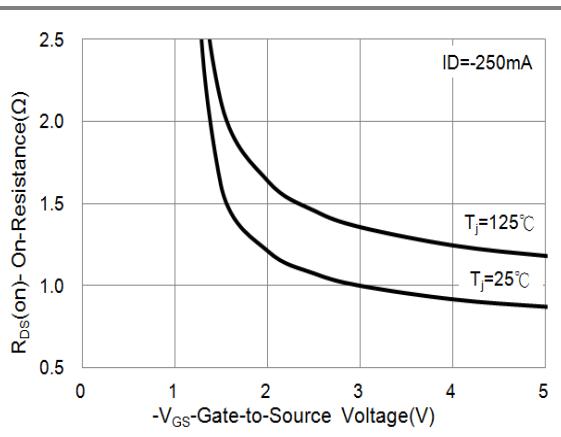


Fig.5 On-Resistance Variation with VGS.

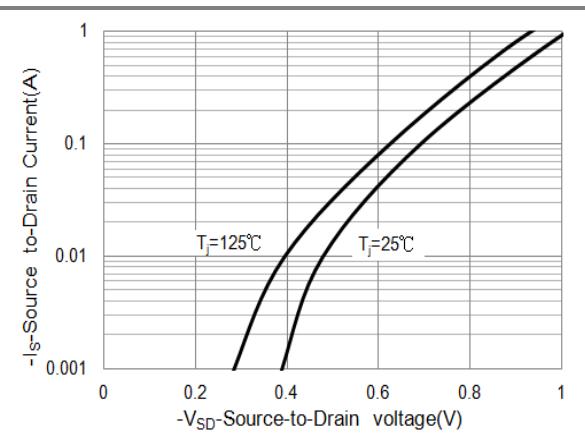


Fig.6 Body Diode Characteristics

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P-Channel TYPICAL CHARACTERISTIC CURVES

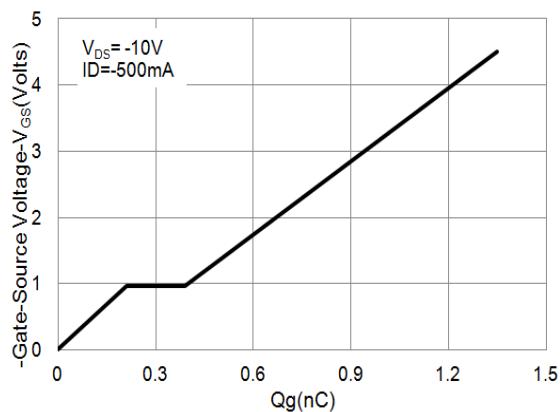


Fig.7 Gate-Charge Characteristics

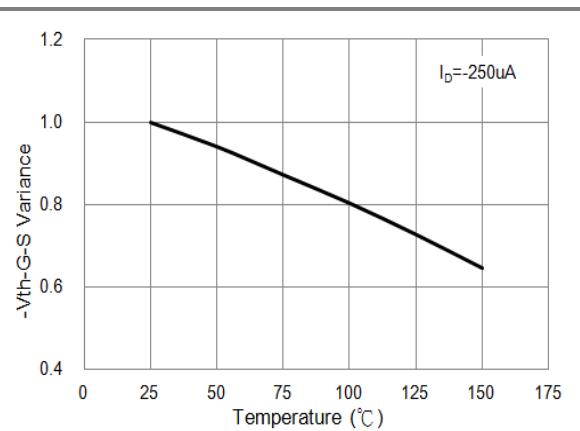


Fig.8 Threshold Voltage Variation with Temperature.

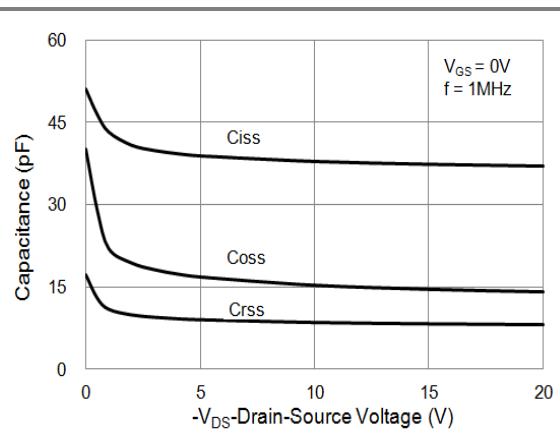


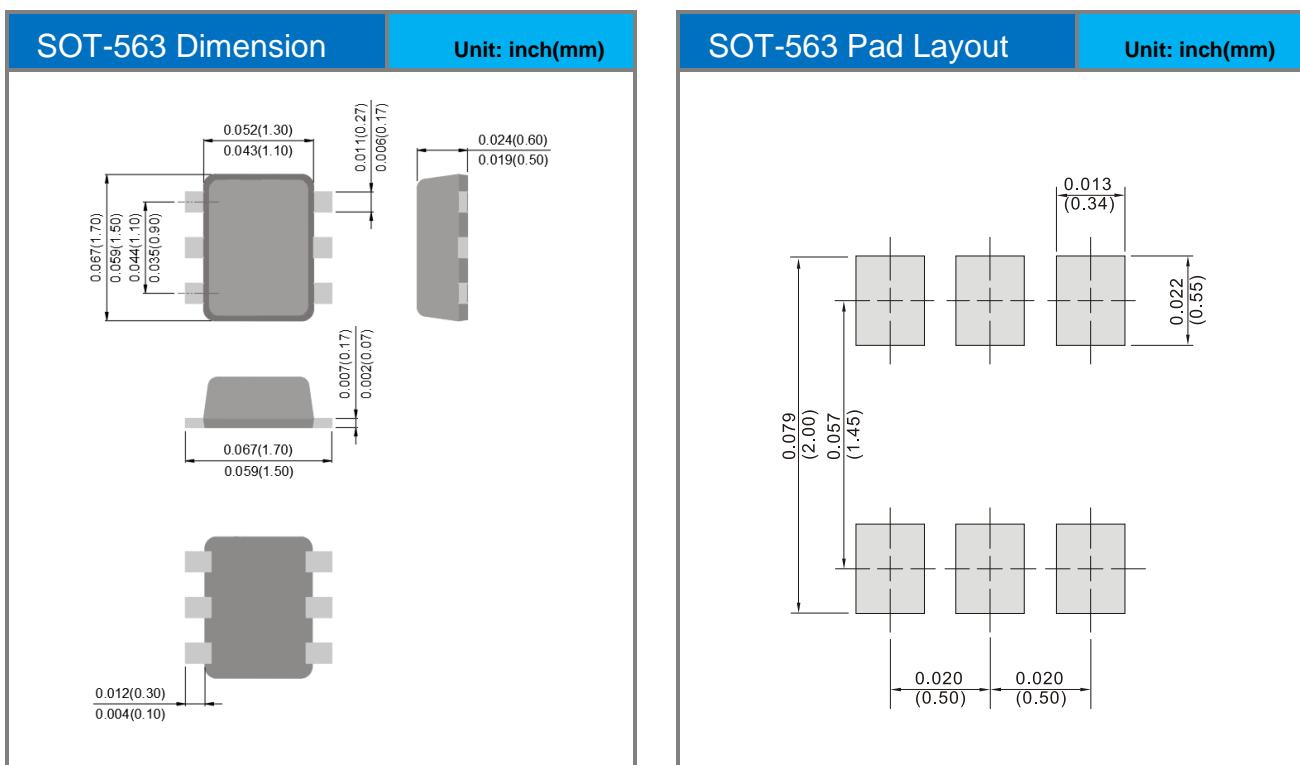
Fig.9 Threshold Voltage Variation with Temperature.

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Product and Packing Information

Part No.	Package Type	Packing Type	Marking
PJX8601-AU	SOT-563	4K pcs / 7" reel	X61

Packaging Information & Mounting Pad Layout



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