



PJX8601

Complementary Enhancement Mode MOSFET – ESD Protected

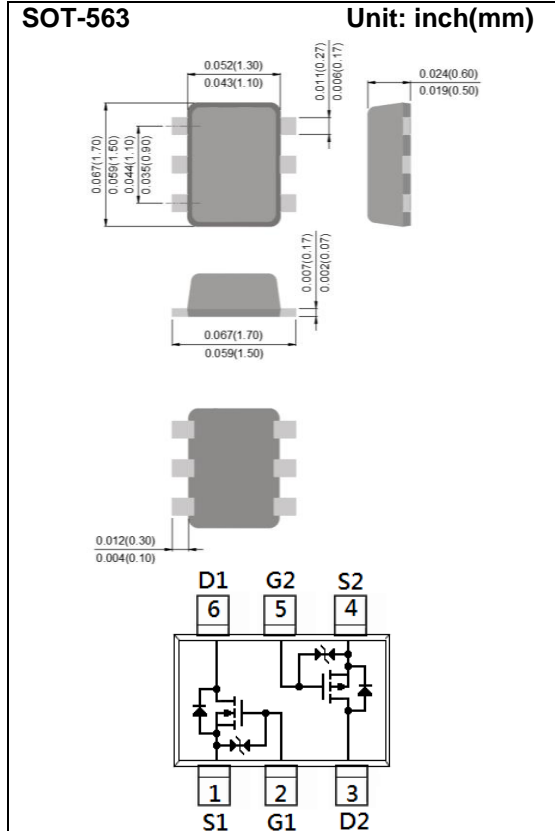
Voltage 20 / -20V **Current** 0.5A / -0.5A

Features

- Low Voltage Drive (1.2V)
- Advanced Trench Process Technology
- Specially Designed for Switch Load, PWM Application, etc.
- ESD Protected
- 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°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		I _D	0.5	-0.5	A
Pulsed Drain Current ^(Note 4)		I _{DM}	1.0	-1.0	A
Power Dissipation	T _a =25°C	P _D	300		mW
	Derate above 25°C		2.4		mW/°C
Operating Junction and Storage Temperature Range		T _J , T _{STG}	-55~150		°C
Typical Thermal Resistance		R _{θJA}	417		°C/W
- Junction to Ambient ^(Note 3)					



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

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNITS
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	0.3	0.64	0.9	V
Drain-Source On-State Resistance	R _{DS(on)}	V _{GS} = 4.5V, I _D = 500mA	-	0.31	0.4	Ω
		V _{GS} = 2.5V, I _D = 200mA	-	0.36	0.65	
		V _{GS} = 1.8V, I _D = 100mA	-	0.43	0.8	
		V _{GS} = 1.5V, I _D = 50mA	-	0.51	1.2	
		V _{GS} = 1.2V, I _D = 20mA	-	0.71	3.0	
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 16V, V _{GS} =0V	-	-	1	uA
Gate-Source Leakage Current	I _{GSS}	V _{GS} =±8V, V _{DS} =0V	-	±0.5	±10	uA
Dynamic (Note 5)						
Total Gate Charge	Q _g	V _{DS} =10V, I _D =500mA, V _{GS} =4.5V	-	1.4	-	nC
Gate-Source Charge	Q _{gs}		-	0.22	-	
Gate-Drain Charge	Q _{gd}		-	0.21	-	
Input Capacitance	C _{iss}	V _{DS} =10V, V _{GS} =0V, f=1.0MHZ	-	67	-	pF
Output Capacitance	C _{oss}		-	19	-	
Reverse Transfer Capacitance	C _{rss}		-	6	-	
Turn-On Delay Time	t _{d(on)}	V _{DD} =10V, I _D =150mA, V _{GS} =4V, R _G =10Ω(Note 1,2)	-	2.8	-	ns
Turn-On Rise Time	t _r		-	20	-	
Turn-Off Delay Time	t _{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 _s = 500mA, V _{GS} =0V	-	0.87	1.3	V



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

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNITS
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	-0.3	-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	uA
Gate-Source Leakage Current	I _{GSS}	V _{GS} =±8V, V _{DS} =0V	-	±2	±10	uA
Dynamic (Note 5)						
Total Gate Charge	Q _g	V _{DS} =-10V, I _D =-500mA, V _{GS} =-4.5V	-	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	-	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 =6Ω (Note 1,2)	-	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 ≤ 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.
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

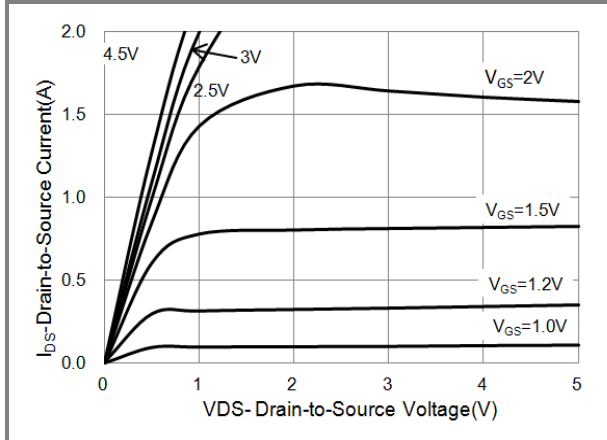


Fig.1 On-Region Characteristics

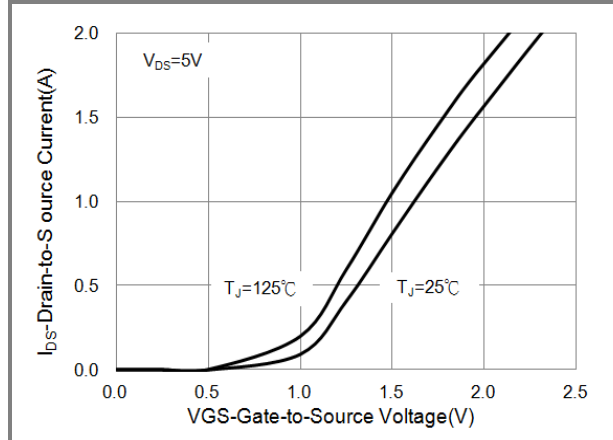


Fig.2 Transfer Characteristics

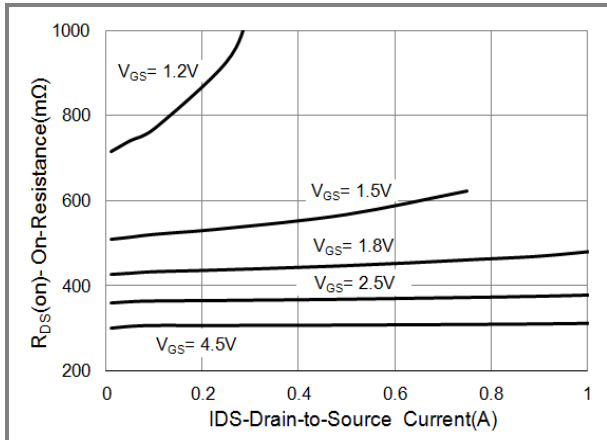


Fig.3 On-Resistance vs. Drain Current

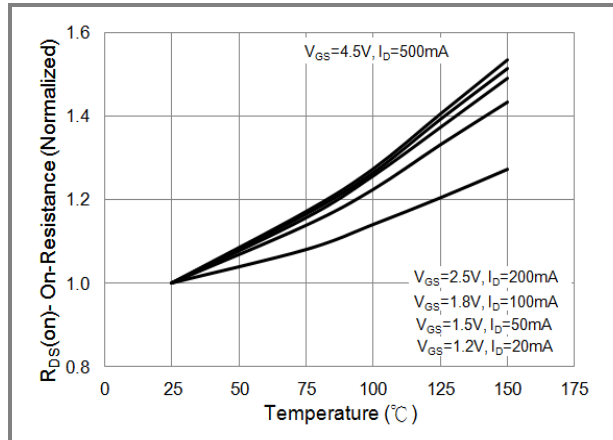


Fig.4 On-Resistance vs. Junction temperature

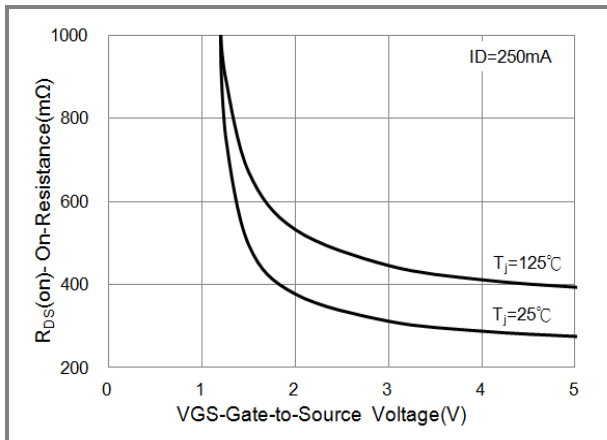


Fig.5 On-Resistance Variation with VGS.

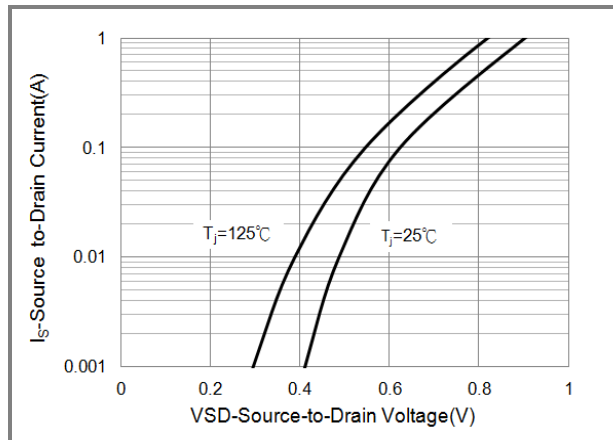


Fig.6 Body Diode Characteristics



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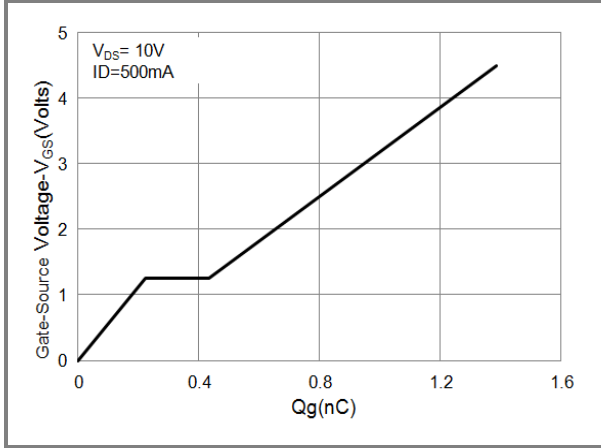


Fig.7 Gate-Charge Characteristics

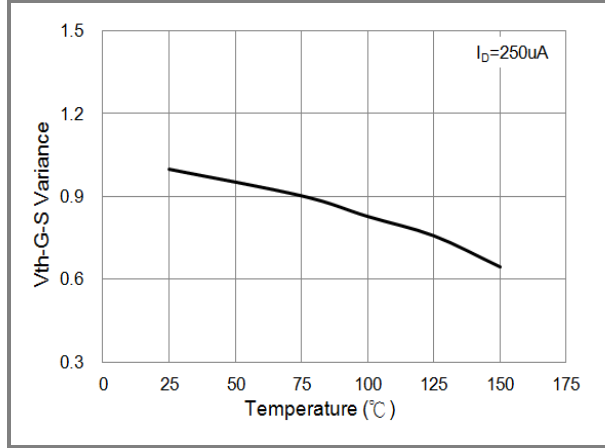


Fig.8 Threshold Voltage Variation with Temperature.

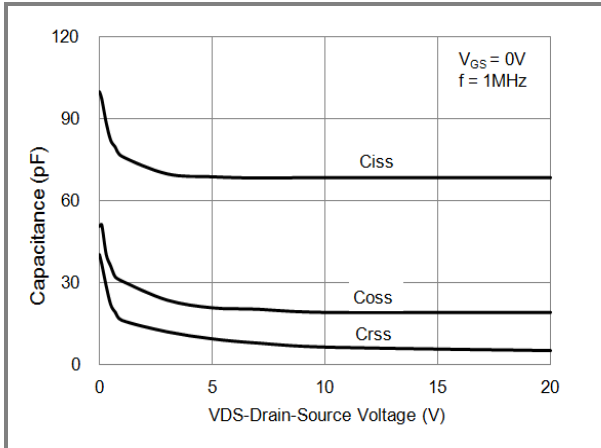


Fig.9 Capacitance vs. Drain-Source Voltage.



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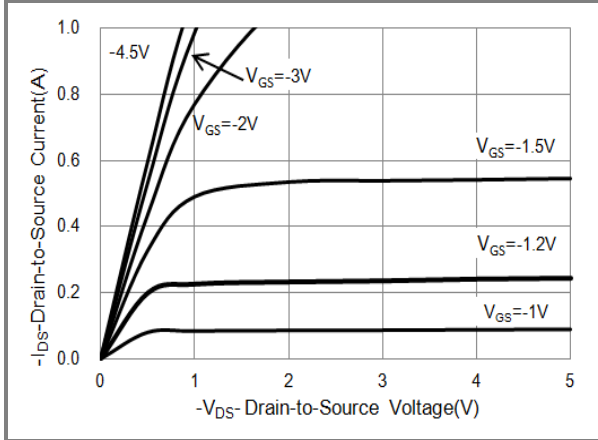


Fig.1 On-Region Characteristics

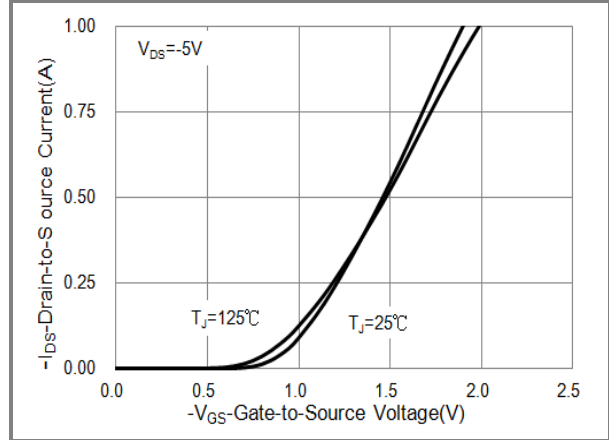


Fig.2 Transfer Characteristics

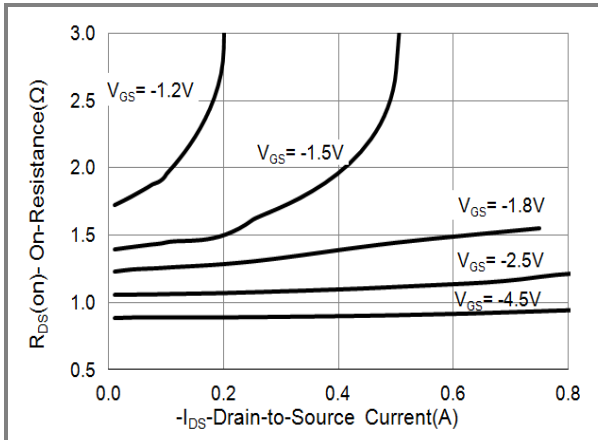


Fig.3 On-Resistance vs. Drain Current

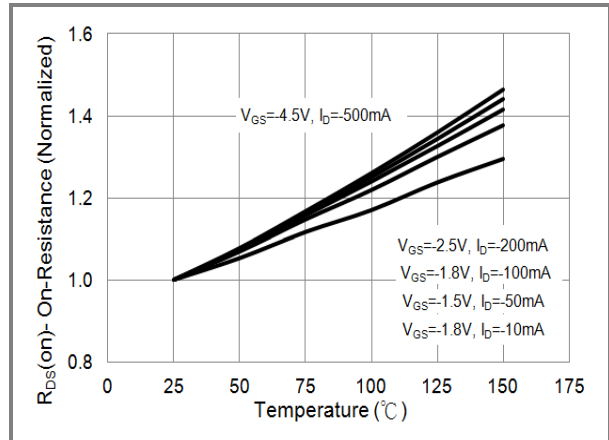


Fig.4 On-Resistance vs. Junction temperature

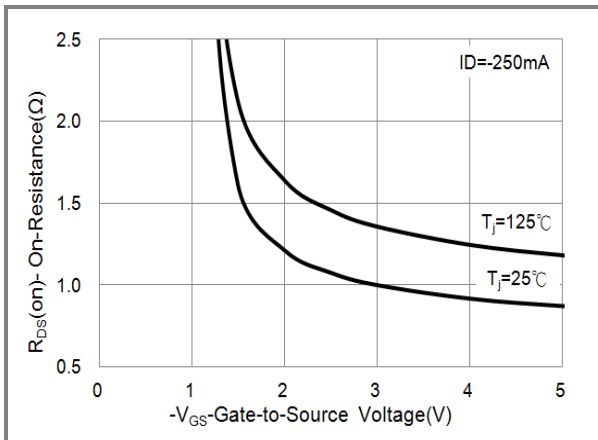


Fig.5 On-Resistance Variation with VGS.

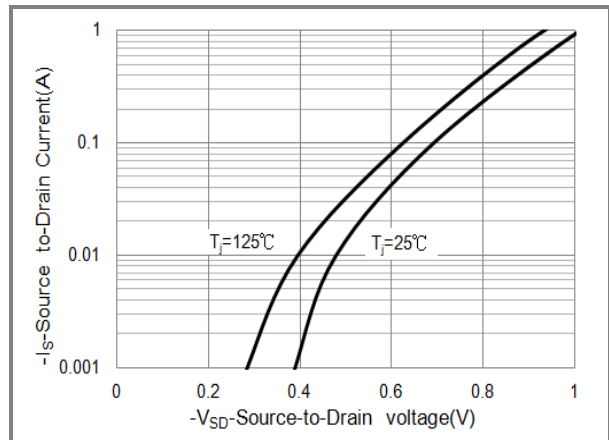


Fig.6 Body Diode Characteristics



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P-Channel TYPICAL CHARACTERISTIC CURVES

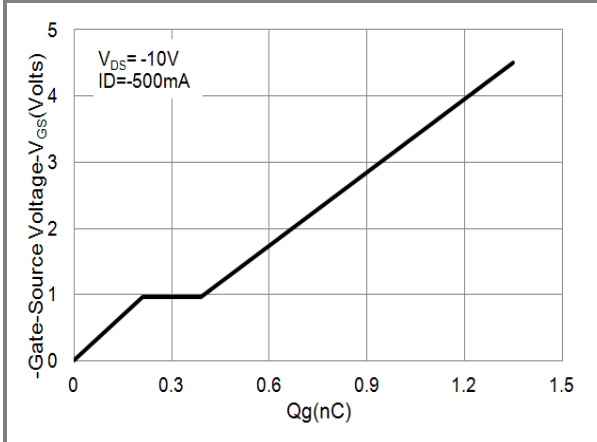


Fig.7 Gate-Charge Characteristics

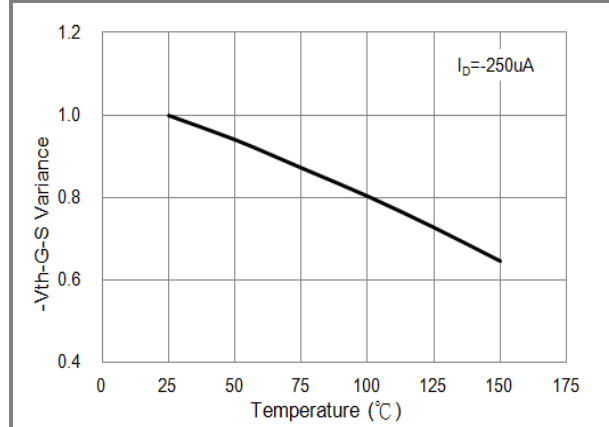


Fig.8 Threshold Voltage Variation with Temperature.

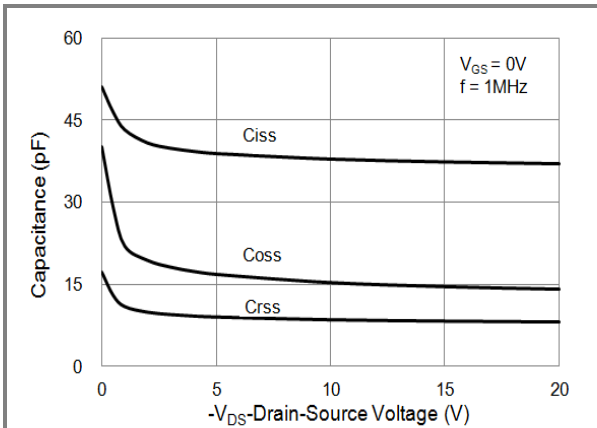


Fig.9 Threshold Voltage Variation with Temperature.

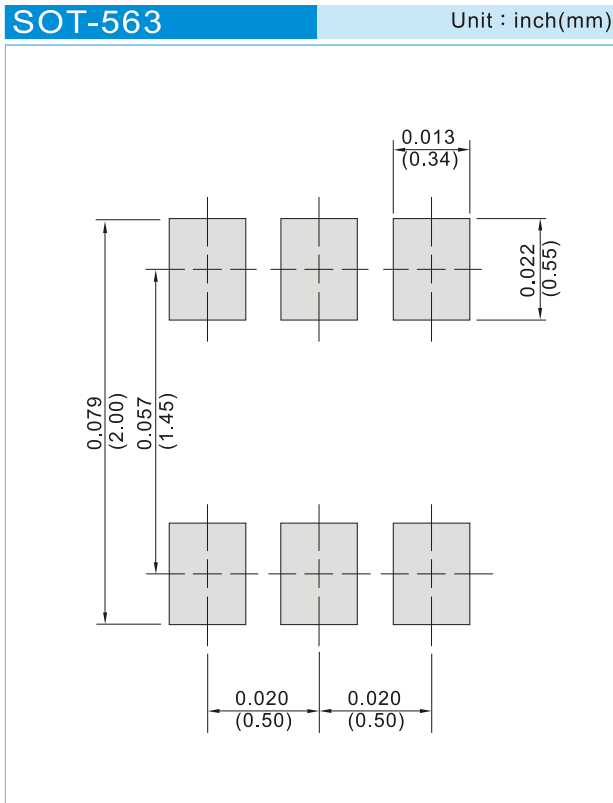


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PART NO. PACKING CODE VERSION

Part No. Packing Code	Package Type	Packing Type	Marking	Version
PJX8601_R1_00001	SOT-563	4K pcs / 7" reel	X61	Halogen free RoHS compliant

MOUNTING PAD LAYOUT





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