



PJX8601

Complementary Enhancement Mode MOSFET – ESD Protected

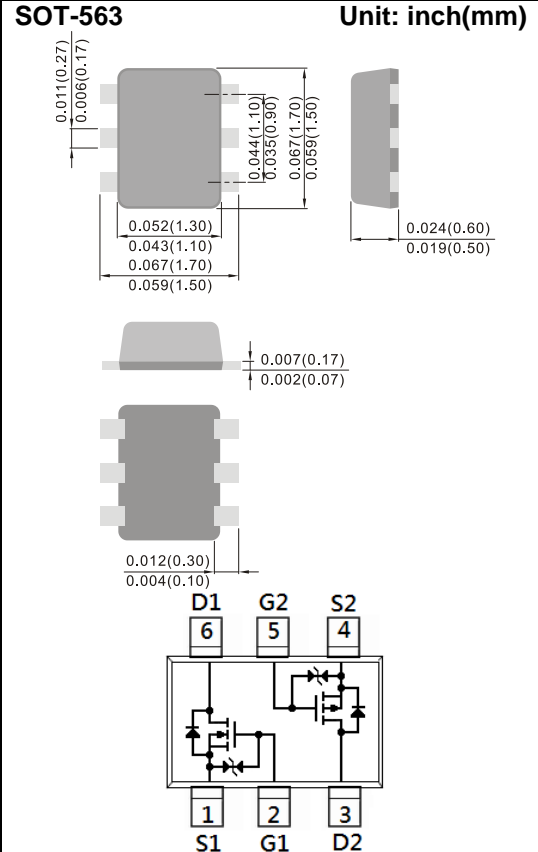
Voltage 20 / -20V **Current** 0.5A / -0.5A

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 RoHS2.0 (2011/65/EU & 2015/865/EU directive)
- Green molding compound as per IEC61249 Std.. (Halogen Free)

Mechanical Data

- Case: SOT-563 Package
- Terminals: Solderable per MIL-STD-750, Method 2026
- Approx. Weight: 0.00009 ounces, 0.026 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 ($T_A=25^{\circ}\text{C}$ 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	0.64	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	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 8V, V_{DS}=0V$	-	± 0.5	± 10	μA
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	-	μF
Output Capacitance	C_{oss}		-	19	-	
Reverse Transfer Capacitance	C_{rss}		-	6	-	
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=10V, I_D=150mA,$ $V_{GS}=4V,$ $R_G=10\Omega$ (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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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	$V_{DS}=-10V, I_D=-500mA,$ $V_{GS}=-4.5V$	-	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	$t_{d(on)}$	$V_{DD}=-10V, I_D=-500mA,$ $V_{GS}=-4.5V,$ $R_G=6\Omega$ (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 $\leq 300\mu s$, 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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N-Channel TYPICAL CHARACTERISTIC CURVES

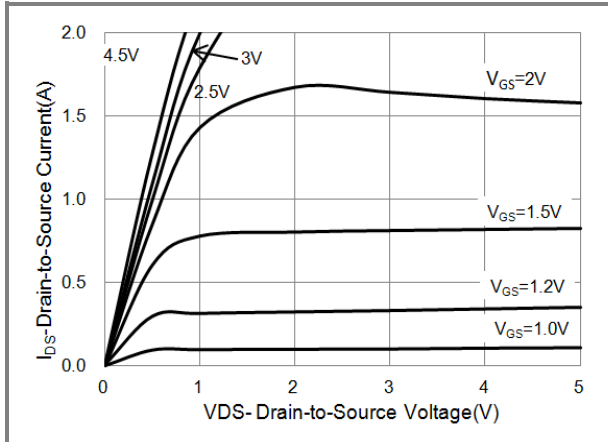


Fig.1 On-Region Characteristics

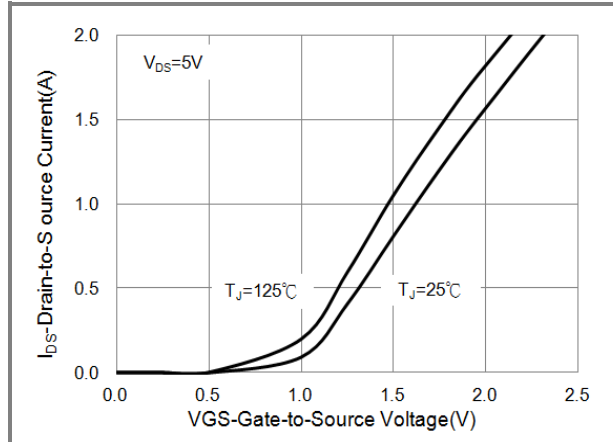


Fig.2 Transfer Characteristics

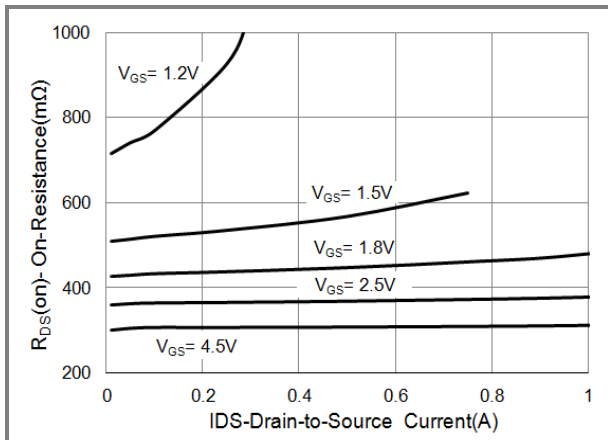


Fig.3 On-Resistance vs. Drain Current

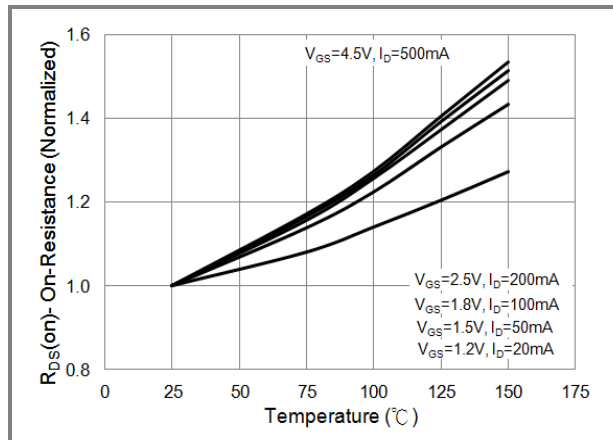


Fig.4 On-Resistance vs. Junction temperature

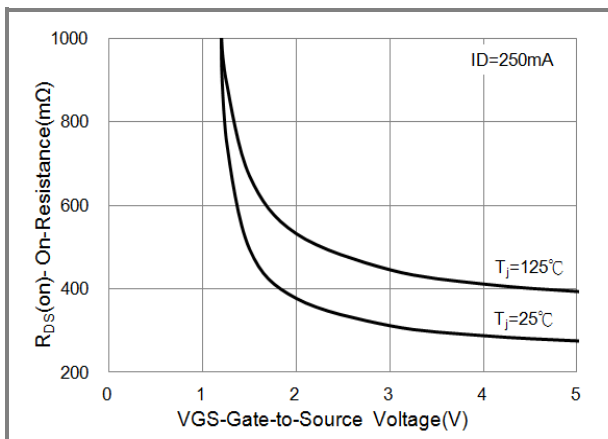


Fig.5 On-Resistance Variation with VGS.

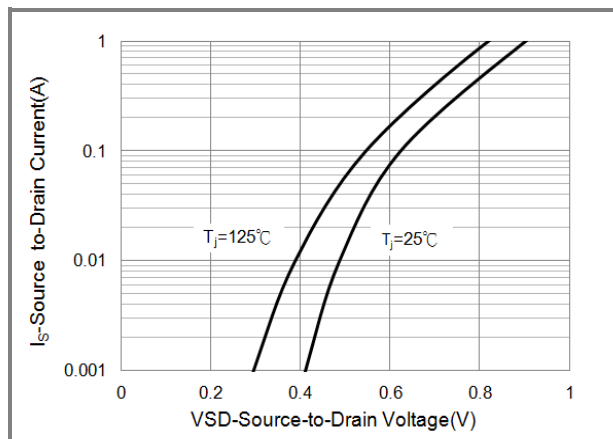


Fig.6 Body Diode Characteristics



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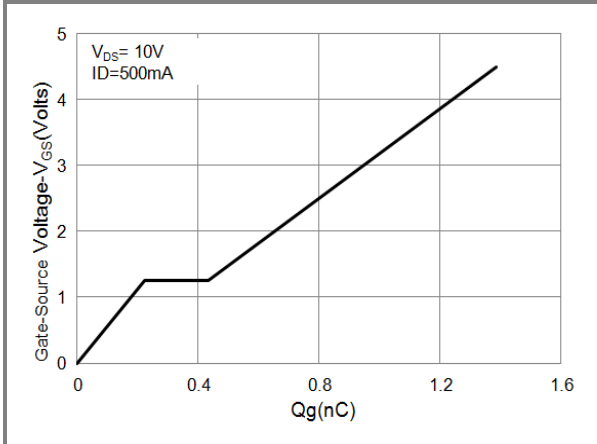


Fig.7 Gate-Charge Characteristics

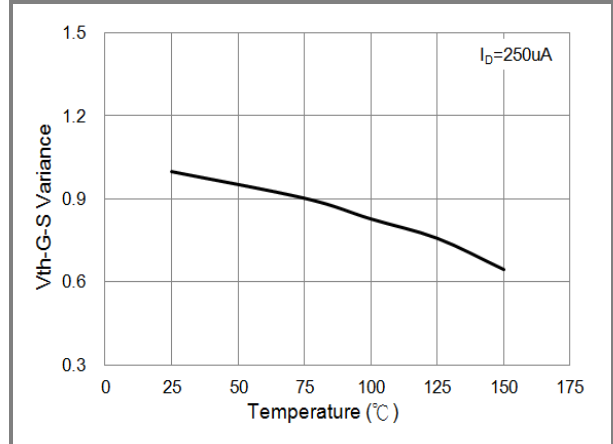


Fig.8 Threshold Voltage Variation with Temperature.

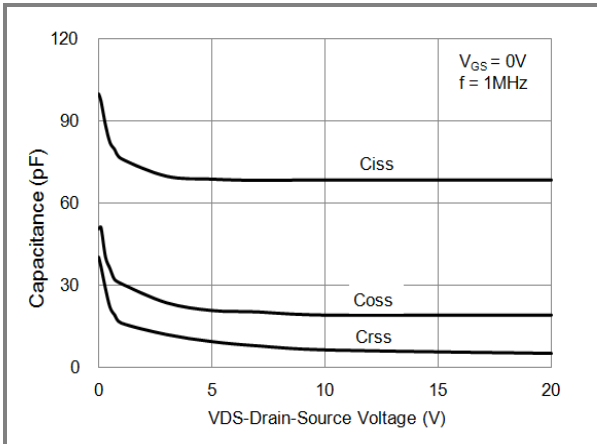


Fig.9 Capacitance vs. Drain-Source Voltage.



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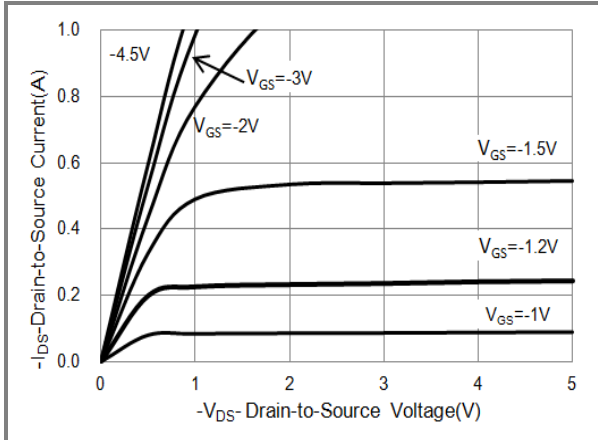


Fig.1 On-Region Characteristics

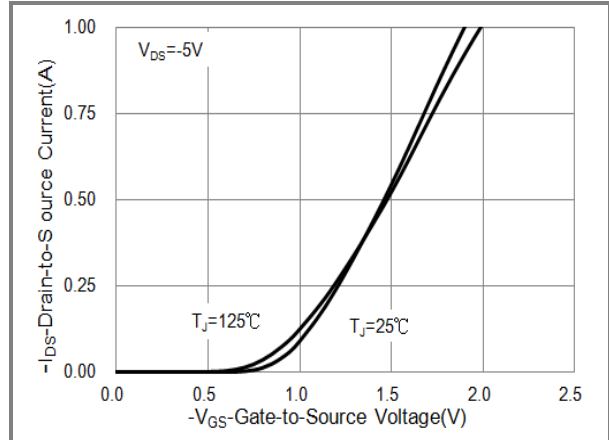


Fig.2 Transfer Characteristics

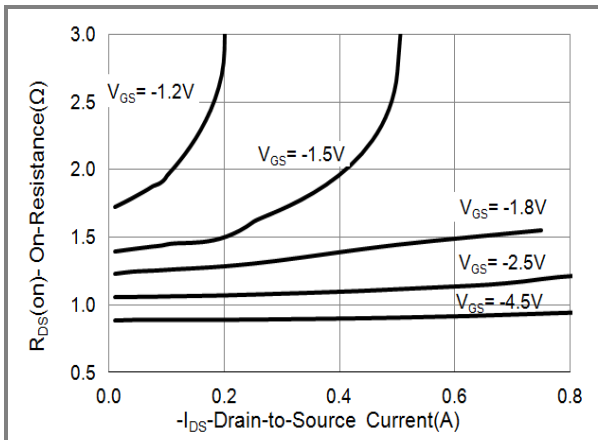


Fig.3 On-Resistance vs. Drain Current

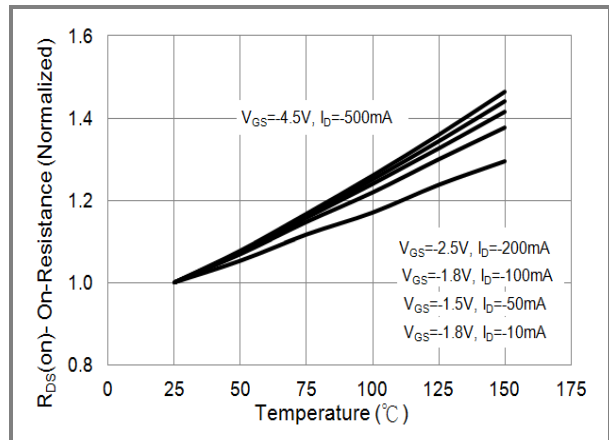


Fig.4 On-Resistance vs. Junction temperature

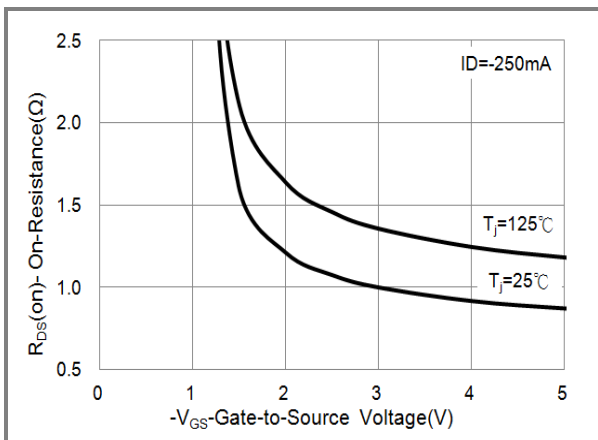


Fig.5 On-Resistance Variation with V_{GS} .

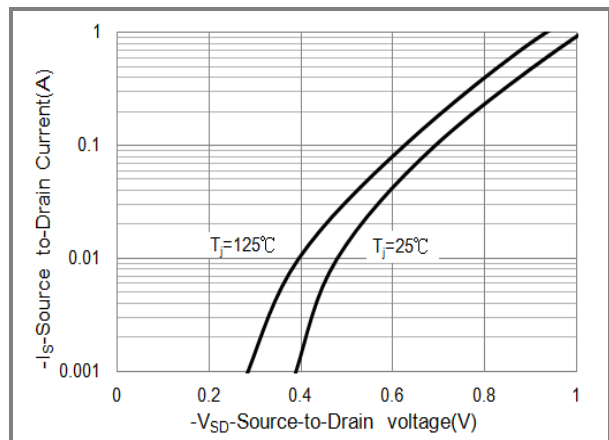


Fig.6 Body Diode Characteristics



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P-Channel TYPICAL CHARACTERISTIC CURVES

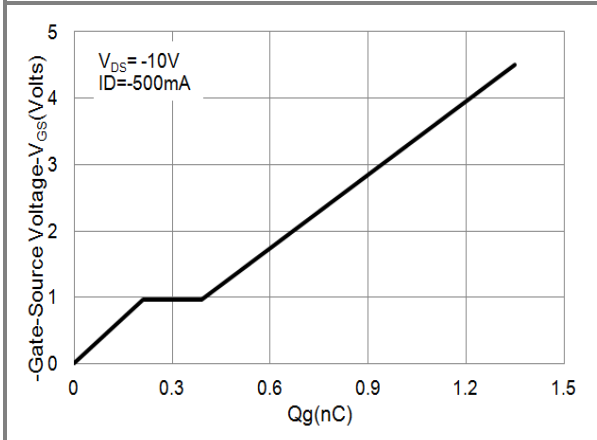


Fig.7 Gate-Charge Characteristics

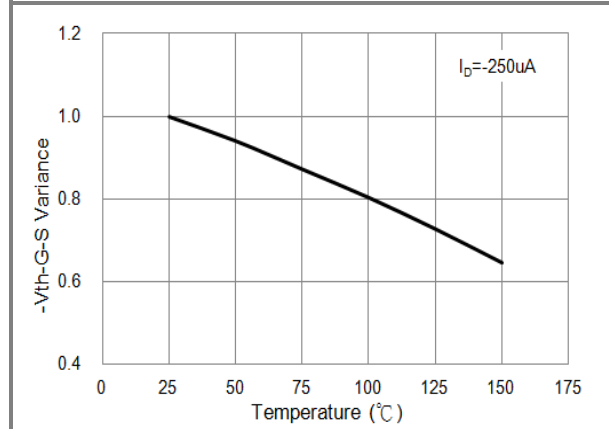


Fig.8 Threshold Voltage Variation with Temperature.

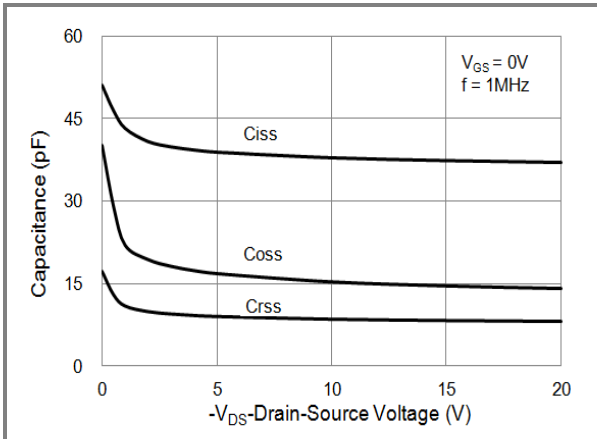


Fig.9 Threshold Voltage Variation with Temperature.

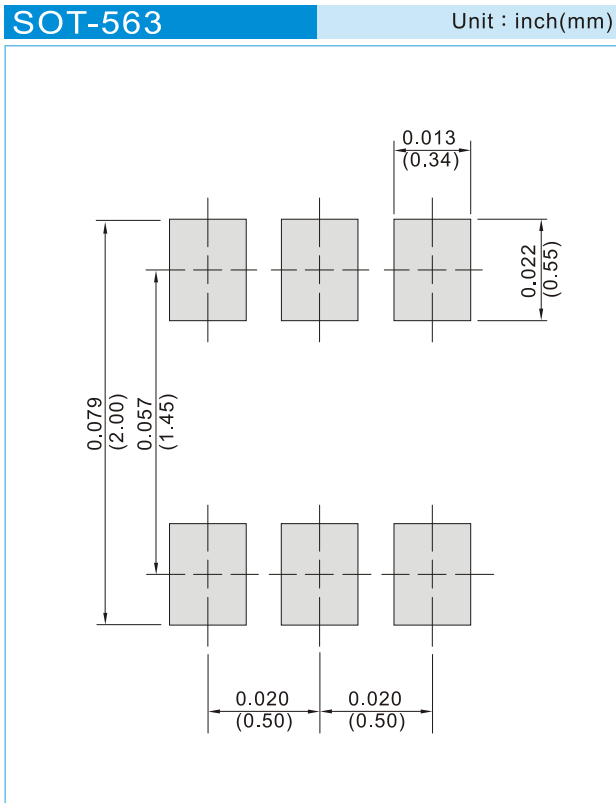


PJX8601

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

MOUNTING PAD LAYOUT





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