

PJT7601

20V Complementary Enhancement Mode MOSFET – ESD Protected

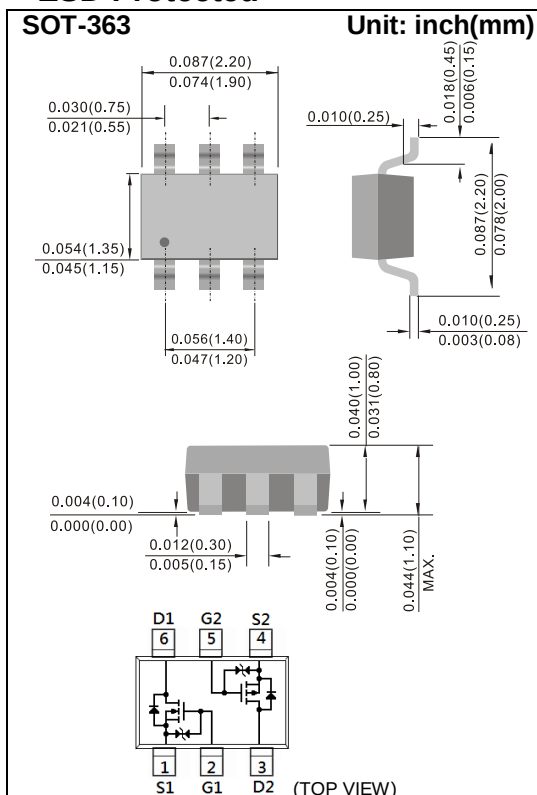
Voltage	20/-20V	Current	0.5/-0.5A
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Features

- 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 2011/65/EU directive
- Green molding compound as per IEC61249 Std. (Halogen Free)

Mechanical Data

- Case: SOT-363 Package
- Terminals: Solderable per MIL-STD-750, Method 2026
- Approx. Weight: 0.0002 ounces, 0.006 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		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	350		mW
	Derate above 25°C		2.8		mW/°C
Operating Junction and Storage Temperature Range		T _J , T _{STG}	-55~150		°C
Typical Thermal resistance		R _{θJA}	357		°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 = 250uA	20	-	-	V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D = 250uA	0.3	0.65	0.9	V
Drain-Source On-State Resistance	R _{DS(on)}	V _{GS} = 4.5V, I _D = 500mA	-	280	400	mΩ
		V _{GS} = 2.5V, I _D = 200mA	-	350	650	
		V _{GS} = 1.8V, I _D = 100mA	-	400	800	
		V _{GS} = 1.5V, I _D = 50mA	-	500	1200	
		V _{GS} = 1.2V, I _D = 20mA	-	700	3000	
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 ^(Note 1,2)	-	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	-	
Switching						
Turn-On Delay Time	td _(on)	V _{DD} =10V, I _D =150mA, V _{GS} =4.0V, R _G =10Ω ^(Note 1,2)	-	2.8	-	ns
Turn-On Rise Time	tr		-	20	-	
Turn-Off Delay Time	td _(off)		-	23	-	
Turn-Off Fall Time	tf		-	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 = -250uA	-20	-	-	V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D = -250uA	-0.3	-0.6	-1	V
Drain-Source On-State Resistance	R _{DS(on)}	V _{GS} = -4.5V, I _D =-500mA	-	850	1200	mΩ
		V _{GS} = -2.5V, I _D =-200mA	-	990	1500	
		V _{GS} = -1.8V, I _D =-100mA	-	1160	2200	
		V _{GS} = -1.5V, I _D = -50mA	-	1330	3600	
		V _{GS} = -1.2V, I _D = -10mA	-	1500	6000	
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 ^(Note 1,2)	-	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	-	38	-	pF
Output Capacitance	C _{oss}		-	15	-	
Reverse Transfer Capacitance	C _{rss}		-	9	-	
Switching						
Turn-On Delay Time	td _(on)	V _{DD} =-10V, I _D =-500mA, V _{GS} =-4.5V, R _G =6Ω ^(Note 1,2)	-	7.2	-	ns
Turn-On Rise Time	tr		-	21	-	
Turn-Off Delay Time	td _(off)		-	85	-	
Turn-Off Fall Time	tf		-	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	-	-0.93	-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

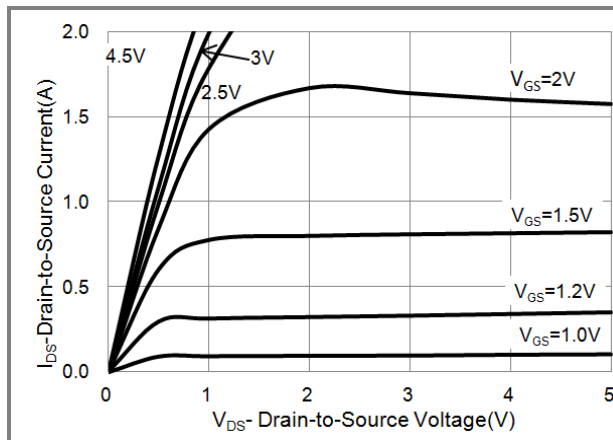


Fig.1 On-Region Characteristics

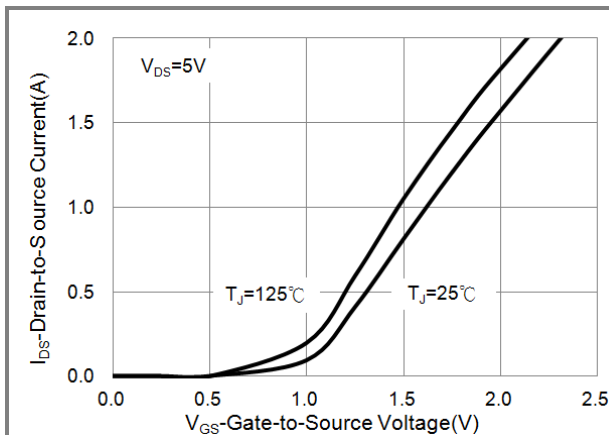


Fig.2 Transfer Characteristics

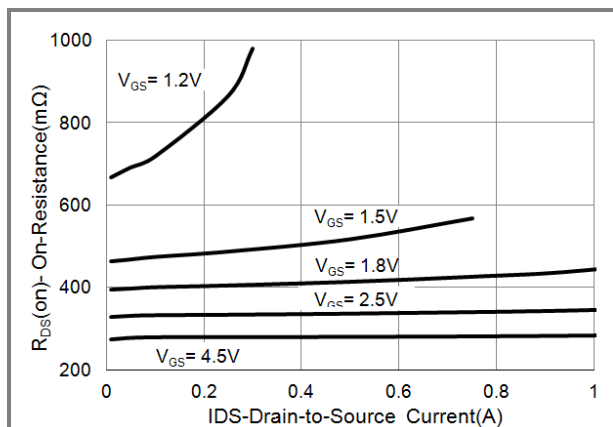


Fig.3 On-Resistance vs. Drain Current

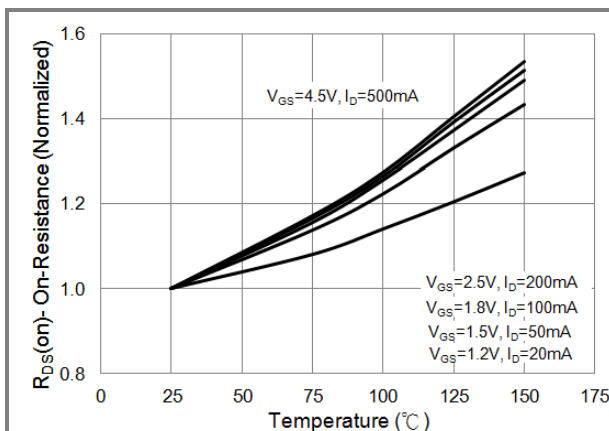


Fig.4 On-Resistance vs. Junction temperature

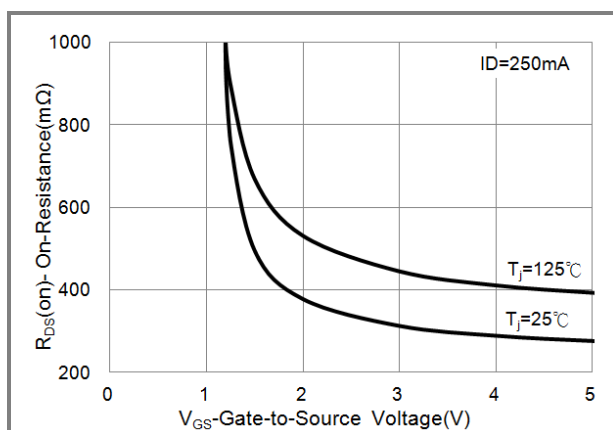


Fig.5 On-Resistance Variation with V_GS.

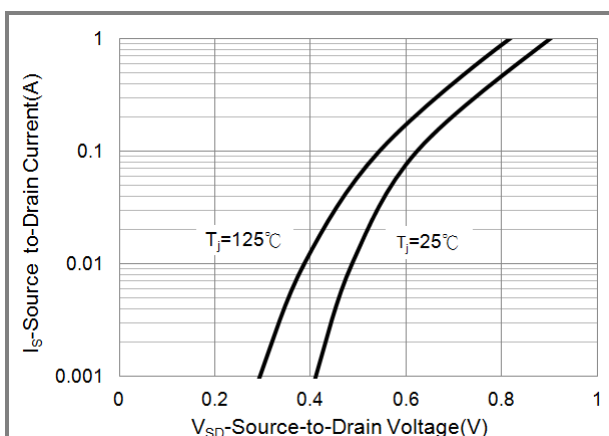


Fig.6 Body Diode Characteristics



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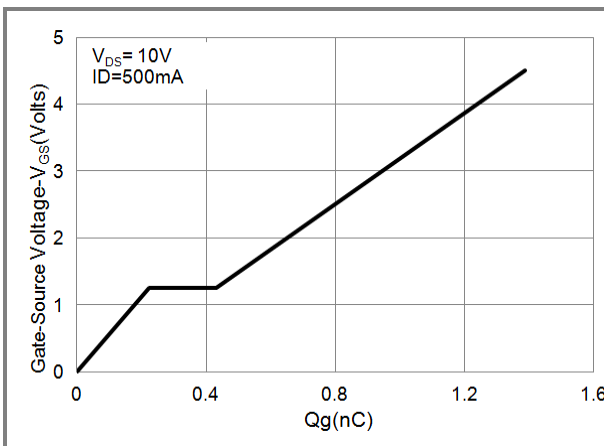


Fig.7 Gate-Charge Characteristics

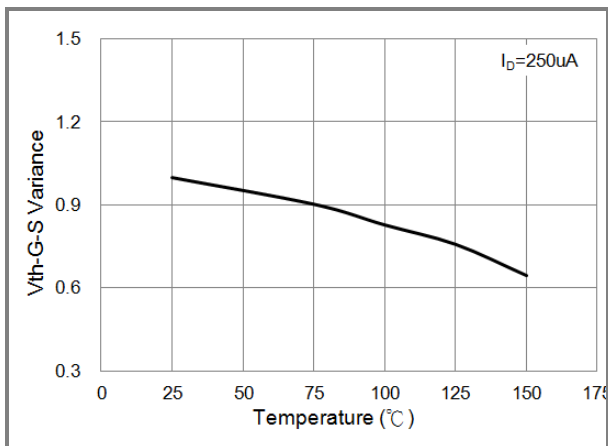


Fig.8 Threshold Voltage Variation with Temperature.

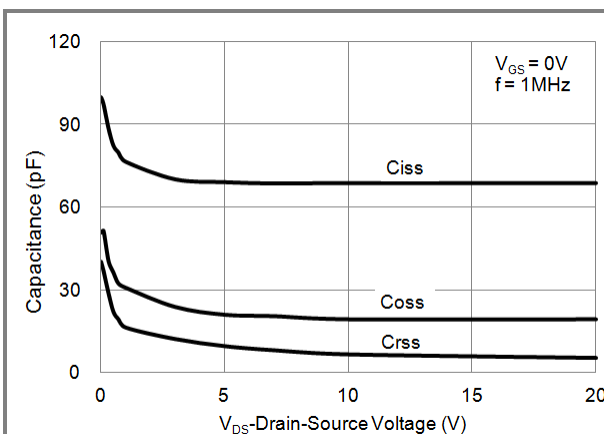


Fig.9 Capacitance vs. Drain-Source Voltage.

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P-Channel TYPICAL CHARACTERISTIC CURVES

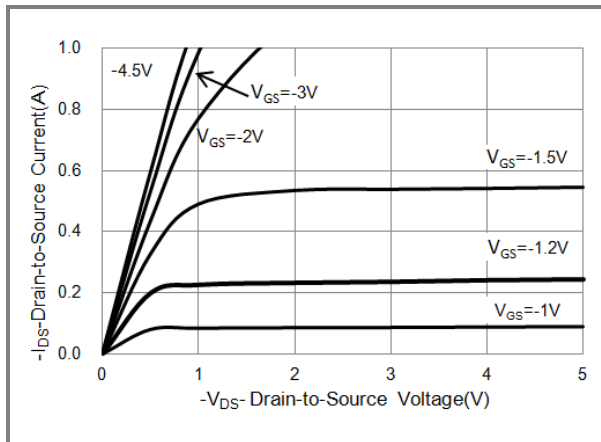


Fig.1 On-Region Characteristics

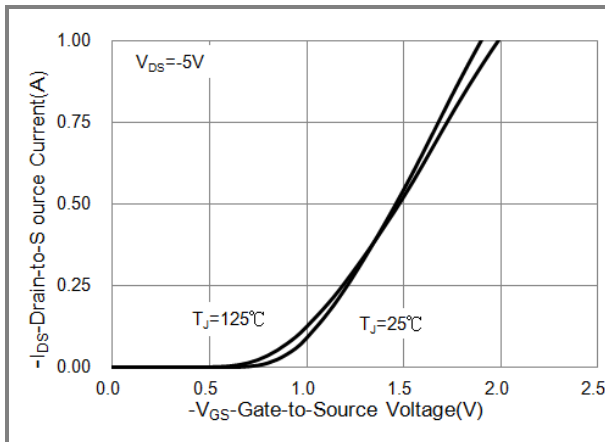


Fig.2 Transfer Characteristics

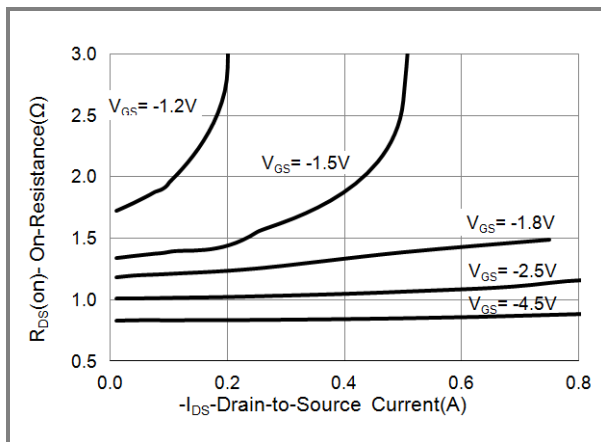


Fig.3 On-Resistance vs. Drain Current

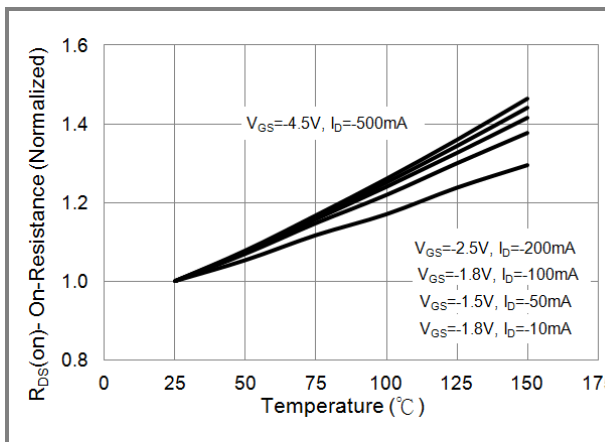


Fig.4 On-Resistance vs. Junction temperature

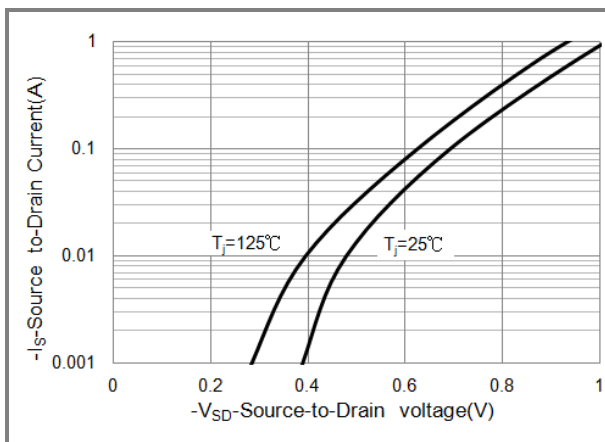
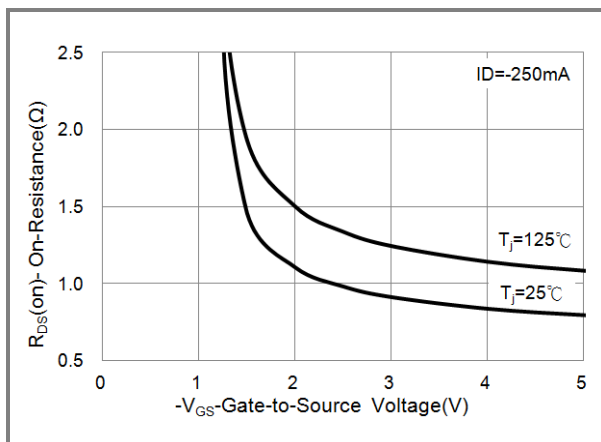


Fig.6 Body Diode Characteristics



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P-Channel TYPICAL CHARACTERISTIC CURVES

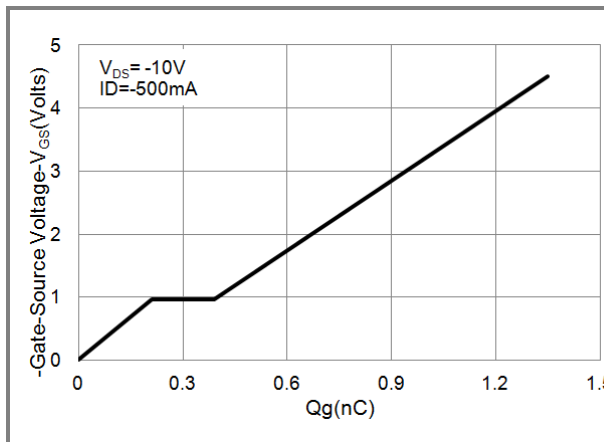


Fig.7 Gate-Charge Characteristics

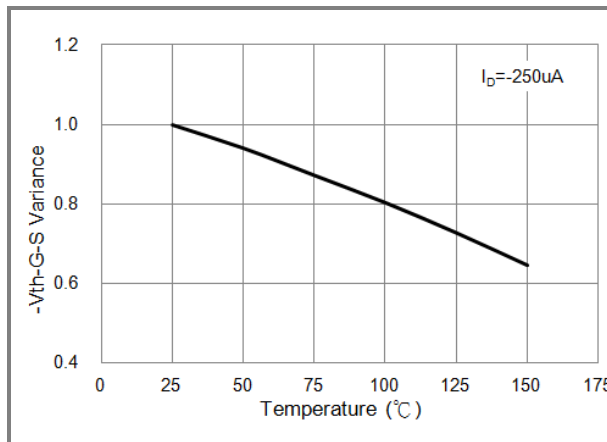


Fig.8 Threshold Voltage Variation with Temperature.

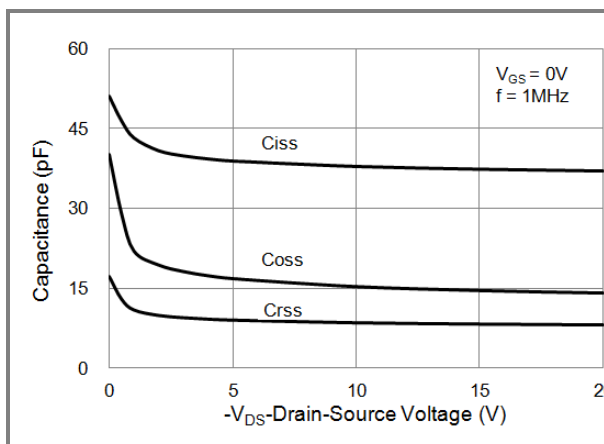


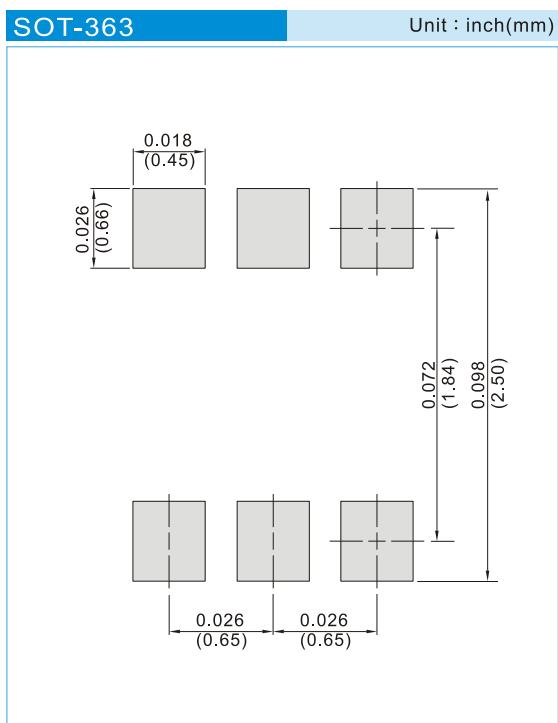
Fig.9 Threshold Voltage Variation with Temperature.

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PART NO PACKING CODE VERSION

Part No Packing Code	Package Type	Packing Type	Marking	Version
PJT7601_R1_00001	SOT-363	3K pcs / 7" reel	T61	Halogen free
PJT7601_R2_00001	SOT-363	10K pcs / 13" reel	T61	Halogen free

MOUNTING PAD LAYOUT





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