



# PJS6600

## 30V Complementary Enhancement Mode MOSFET – ESD Protected

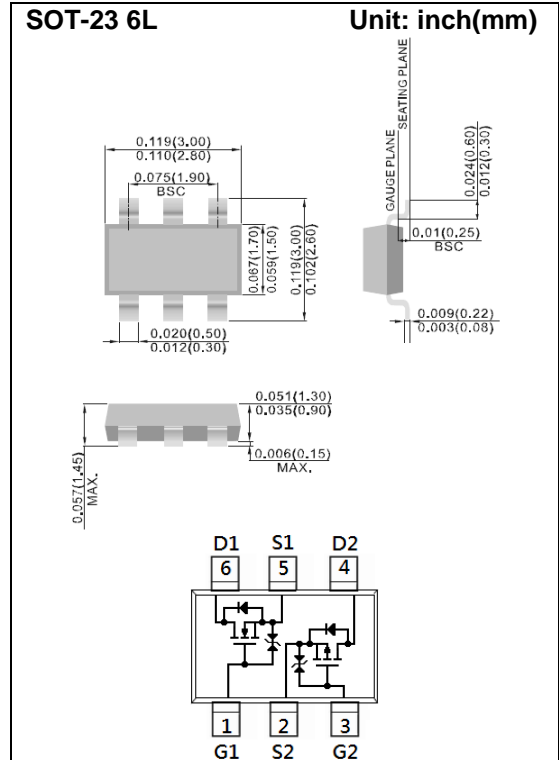
<b>Voltage</b>	<b>30 / -30V</b>	<b>Current</b>	<b>1.6 / -1.1A</b>
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### Features

- Advanced Trench Process Technology
- Specially Designed for Switch Load, PWM Application, etc.
- ESD Protected 2KV HBM
- Lead free in compliance with EU RoHS 2011/65/EU directive
- Green molding compound as per IEC61249 Std. (Halogen Free)

### Mechanical Data

- Case: SOT-23 6L Package
- Terminals: Solderable per MIL-STD-750, Method 2026
- Approx. Weight: 0.0005 ounces, 0.014 grams
- Marking: SC0



## Maximum Ratings and Thermal Characteristics (T<sub>A</sub>=25 °C unless otherwise noted)

PARAMETER		SYMBOL	N-Ch LIMIT	P-Ch LIMIT	UNITS
Drain-Source Voltage		V <sub>DS</sub>	30	-30	V
Gate-Source Voltage		V <sub>GS</sub>	±8	±8	V
Continuous Drain Current		I <sub>D</sub>	1.6	-1.1	A
Pulsed Drain Current (Note 4)		I <sub>DM</sub>	6.4	-4.4	A
Power Dissipation	T <sub>a</sub> =25°C	P <sub>D</sub>	1.25		W
	Derate above 25°C		10		mW/°C
Operating Junction and Storage Temperature Range		T <sub>J</sub> , T <sub>STG</sub>	-55~150		°C
Typical Thermal resistance - Junction to Ambient (Note 3)		R <sub>θJA</sub>	100		°C/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
<b>Static</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V, I_D=250\mu A$	30	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	0.5	0.78	1.3	V
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS}=4.5V, I_D=1.6A$	-	145	200	m $\Omega$
		$V_{GS}=2.5V, I_D=1.1A$	-	185	270	
		$V_{GS}=1.8V, I_D=0.2A$	-	330	570	
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=30V, V_{GS}=0V$	-	0.01	1	$\mu A$
Gate-Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 8V, V_{DS}=0V$	-	1.4	$\pm 10$	$\mu A$
<b>Dynamic</b> (Note 5)						
Total Gate Charge	$Q_g$	$V_{DS}=15V, I_D=1.6A,$ $V_{GS}=4.5V$ (Note 1,2)	-	1.5	-	nC
Gate-Source Charge	$Q_{gs}$		-	0.3	-	
Gate-Drain Charge	$Q_{gd}$		-	0.3	-	
Input Capacitance	$C_{iss}$	$V_{DS}=15V, V_{GS}=0V,$ $f=1.0\text{MHz}$	-	93	-	pF
Output Capacitance	$C_{oss}$		-	19	-	
Reverse Transfer Capacitance	$C_{rss}$		-	6	-	
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=15V, I_D=1.6A,$ $V_{GS}=4.5V,$ $R_G=6\Omega$ (Note 1,2)	-	6.4	-	ns
Turn-On Rise Time	$t_r$		-	33	-	
Turn-Off Delay Time	$t_{d(off)}$		-	37	-	
Turn-Off Fall Time	$t_f$		-	32	-	
<b>Drain-Source Diode</b>						
Maximum Continuous Drain-Source Diode Forward Current	$I_S$	---	-	-	1.0	A
Diode Forward Voltage	$V_{SD}$	$I_S=1.0A, V_{GS}=0V$	-	0.81	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 ( $T_A=25^{\circ}\text{C}$ unless otherwise noted)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNITS
<b>Static</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-30	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-0.5	-0.98	-1.3	V
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS}=-4.5V, I_D=-1.1A$	-	293	370	m $\Omega$
		$V_{GS}=-2.5V, I_D=-0.5A$	-	387	540	
		$V_{GS}=-1.8V, I_D=-0.1A$	-	750	970	
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=-30V, V_{GS}=0V$	-	-0.01	-1	$\mu A$
Gate-Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 8V, V_{DS}=0V$	-	$\pm 3.4$	$\pm 10$	$\mu A$
<b>Dynamic</b> (Note 5)						
Total Gate Charge	$Q_g$	$V_{DS}=-15V, I_D=-1.1A,$ $V_{GS}=-4.5V$ (Note 1,2)	-	1.6	-	nC
Gate-Source Charge	$Q_{gs}$		-	0.5	-	
Gate-Drain Charge	$Q_{gd}$		-	0.3	-	
Input Capacitance	$C_{iss}$	$V_{DS}=-15V, V_{GS}=0V,$ $f=1.0\text{MHZ}$	-	125	-	pF
Output Capacitance	$C_{oss}$		-	22	-	
Reverse Transfer Capacitance	$C_{rss}$		-	6	-	
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=-15V, I_D=-1.1A,$ $V_{GS}=-4.5V,$ $R_G=6\Omega$ (Note 1,2)	-	11	-	ns
Turn-On Rise Time	$t_r$		-	51	-	
Turn-Off Delay Time	$t_{d(off)}$		-	65	-	
Turn-Off Fall Time	$t_f$		-	46	-	
<b>Drain-Source Diode</b>						
Maximum Continuous Drain-Source Diode Forward Current	$I_S$	---	-	-	-1.0	A
Diode Forward Voltage	$V_{SD}$	$I_S=-1.0A, V_{GS}=0V$	-	-0.9	-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.
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## N-Channel TYPICAL CHARACTERISTIC CURVES

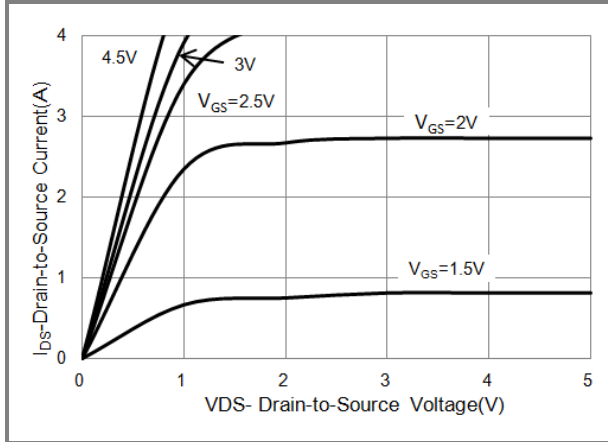


Fig.1 On-Region Characteristics

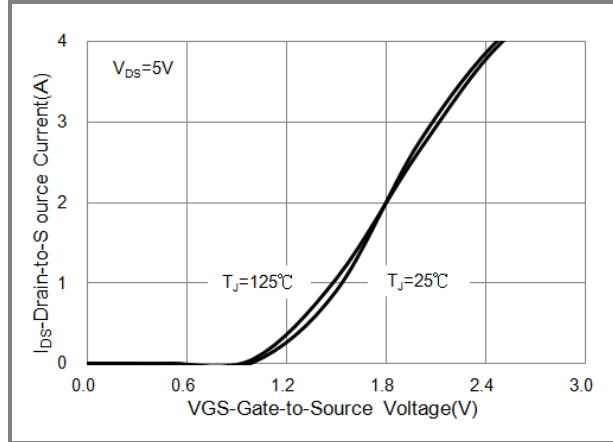


Fig.2 Transfer Characteristics

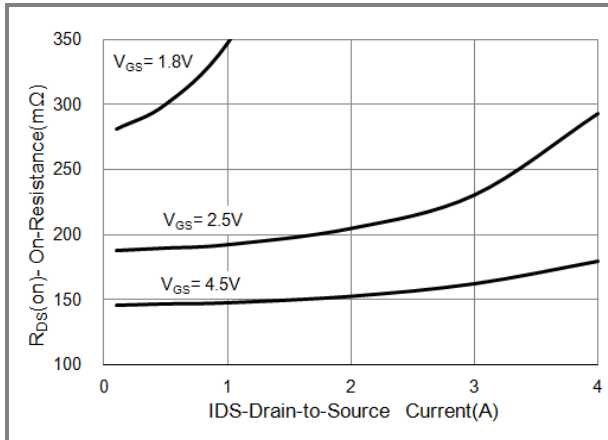


Fig.3 On-Resistance vs. Drain Current

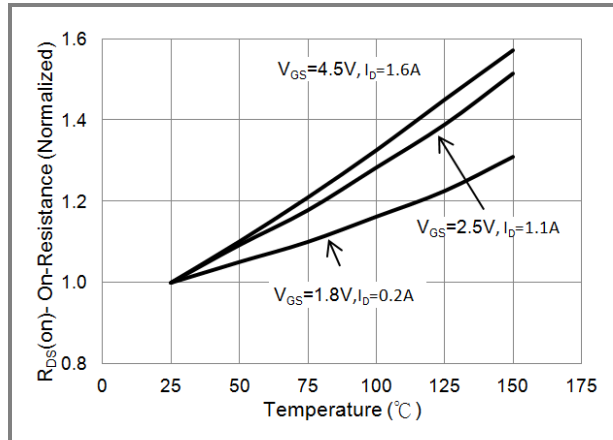


Fig.4 On-Resistance vs. Junction temperature

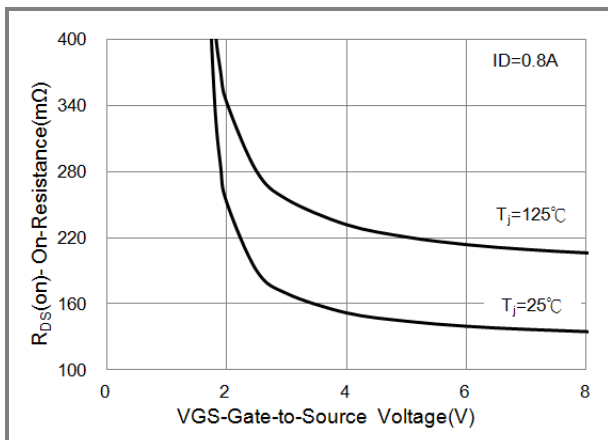


Fig.5 On-Resistance Variation with VGS.

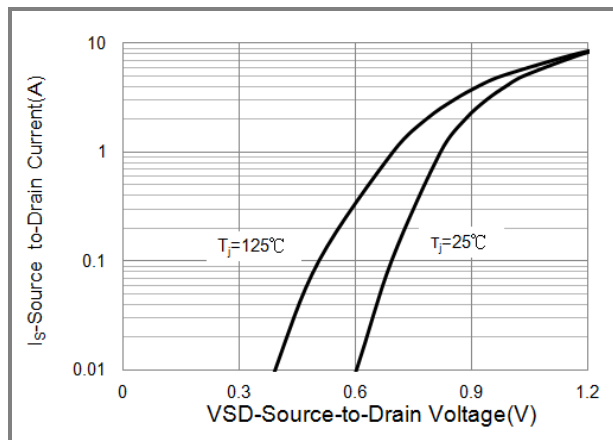


Fig.6 Body Diode Characteristics



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## N-Channel TYPICAL CHARACTERISTIC CURVES

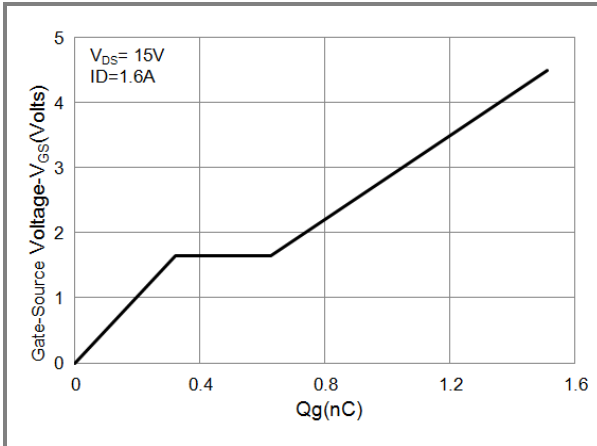


Fig.7 Gate-Charge Characteristics

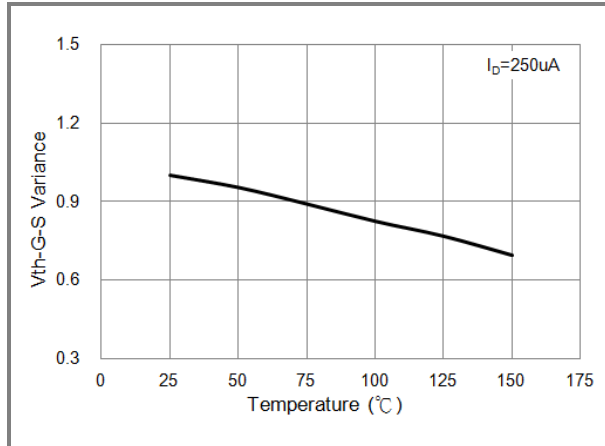


Fig.8 Threshold Voltage Variation with Temperature.

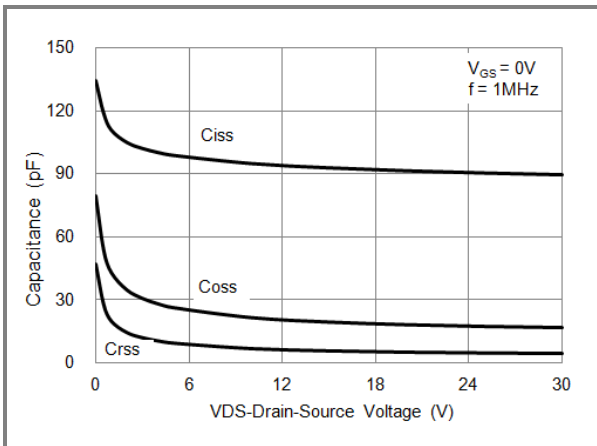


Fig.9 Capacitance vs. Drain-Source Voltage.



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## P-Channel TYPICAL CHARACTERISTIC CURVES

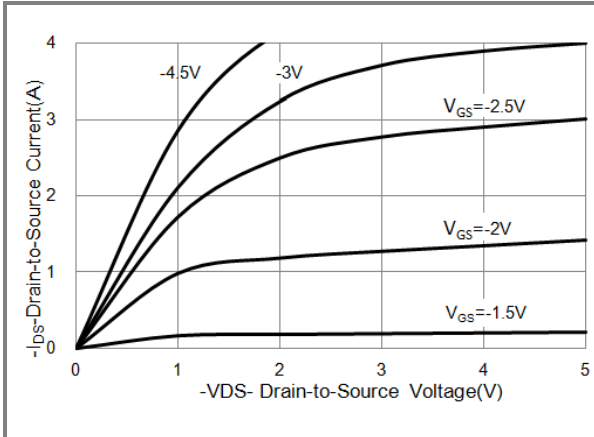


Fig.1 On-Region Characteristics

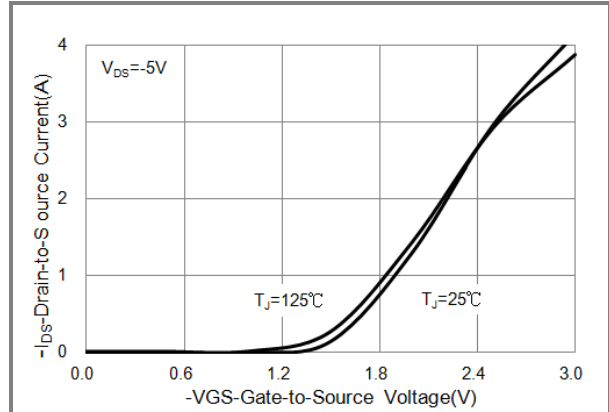


Fig.2 Transfer Characteristics

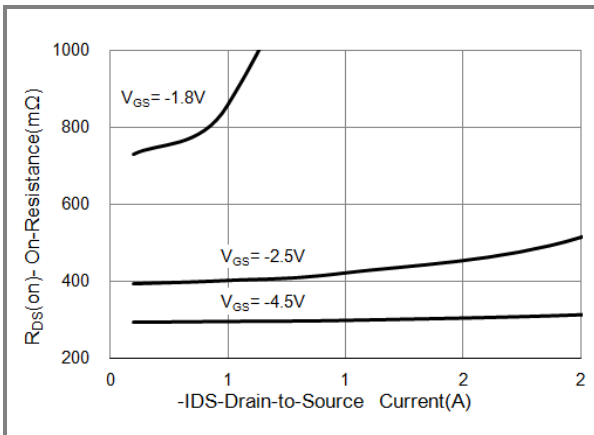


Fig.3 On-Resistance vs. Drain Current

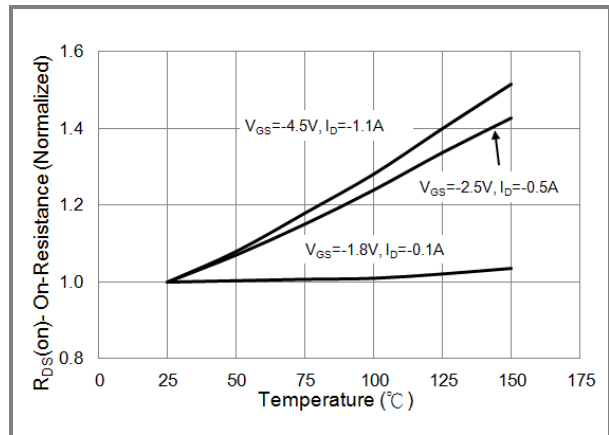


Fig.4 On-Resistance vs. Junction temperature

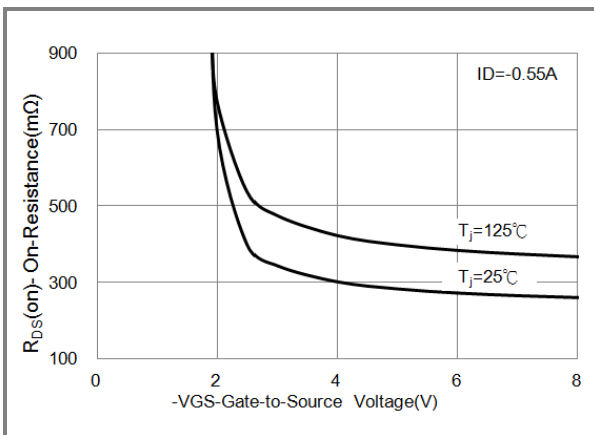


Fig.5 On-Resistance Variation with VGS.

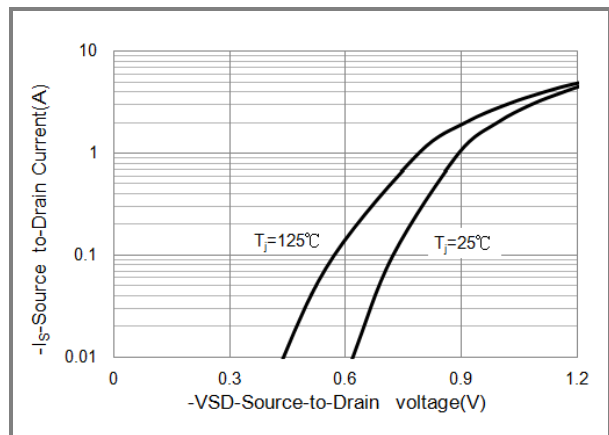


Fig.6 Body Diode Characteristics



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## P-Channel TYPICAL CHARACTERISTIC CURVES

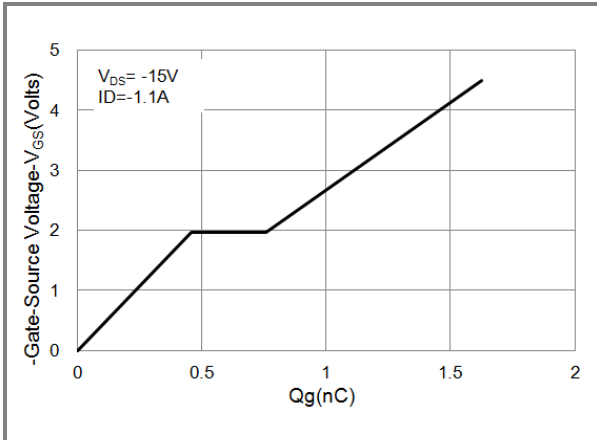


Fig.7 Gate-Charge Characteristics

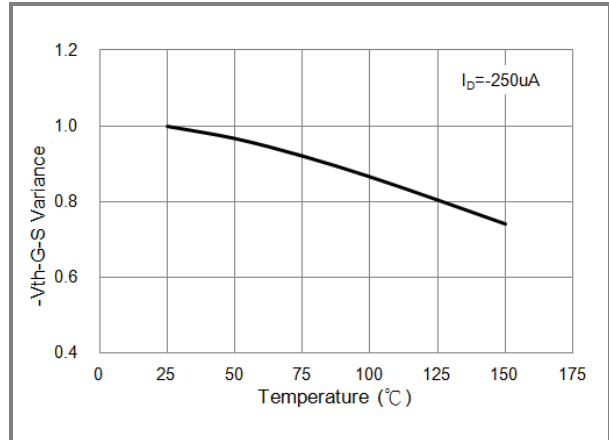


Fig.8 Threshold Voltage Variation with Temperature.

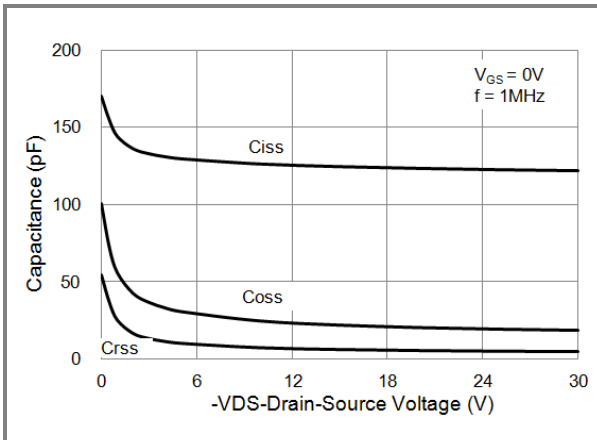


Fig.9 Threshold Voltage Variation with Temperature.

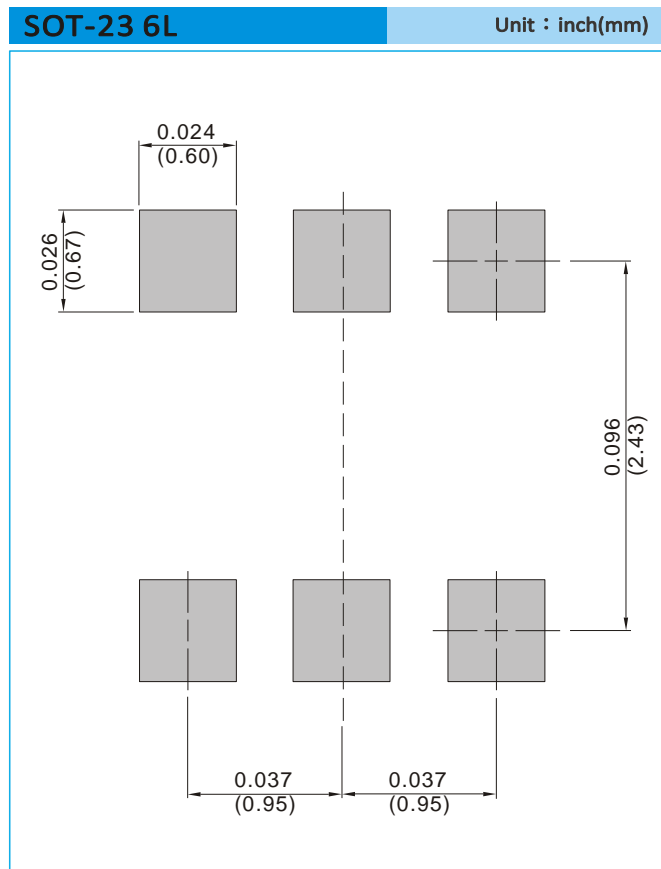


# PJS6600

## PART NO PACKING CODE VERSION

Part No Packing Code	Package Type	Packing type	Marking	Version
PJS6600_S1_00001	SOT-23 6L	3K pcs / 7" reel	SC0	Halogen free
PJS6600_S2_00001	SOT-23 6L	10K pcs / 13" reel	SC0	Halogen free

## MOUNTING PAD LAYOUT







## PJS6600

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