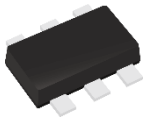
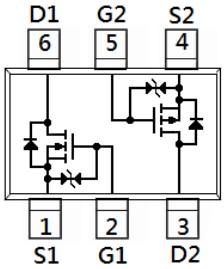
PJX8601-AU

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°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°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 - Junction to Ambient(Note 3)		$R_{\theta JA}$	417		°C/W

PJX8601-AU

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(Note 2)	-	1.4	-	nC
Gate-Source Charge	Q_{gs}		-	0.22	-	
Gate-Drain Charge	Q_{gd}		-	0.21	-	
Input Capacitance	Ciss	V_{DS}=10V, V_{GS}=0V, f=1.0MHZ(Note 2)	-	67	-	pF
Output Capacitance	Coss		-	19	-	
Reverse Transfer Capacitance	Crss		-	6	-	
Turn-On Delay Time	$td_{(on)}$	V_{DD}=10V, I_D=150mA, V_{GS}=4V, R_G=10Ω(Note 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

PJX8601-AU

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(Note 2)	-	1.4	-	nC
Gate-Source Charge	Q_{gs}		-	0.19	-	
Gate-Drain Charge	Q_{gd}		-	0.2	-	
Input Capacitance	Ciss	V_{DS}=-10V, V_{GS}=0V, f=1.0MHZ(Note 2)	-	38	-	pF
Output Capacitance	Coss		-	15	-	
Reverse Transfer Capacitance	Crss		-	9	-	
Turn-On Delay Time	$td_{(on)}$	V_{DD}=-10V, I_D=-500mA, V_{GS}=-4.5V, R_G=6Ω(Note 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	-	-0.9	-1.3	V

NOTES :

1. Pulse width≤300us, Duty cycle≤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.

PJX8601-AU

N-Channel TYPICAL CHARACTERISTIC CURVES

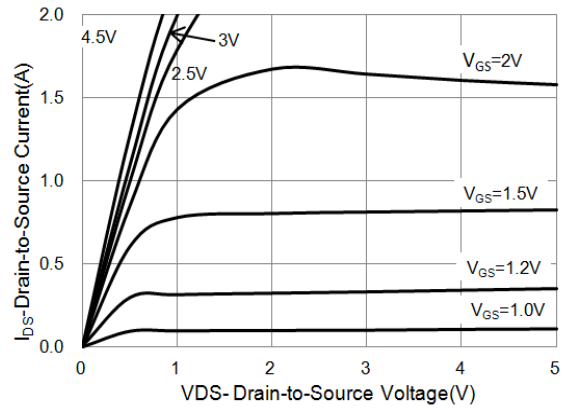


Fig.1 On-Region Characteristics

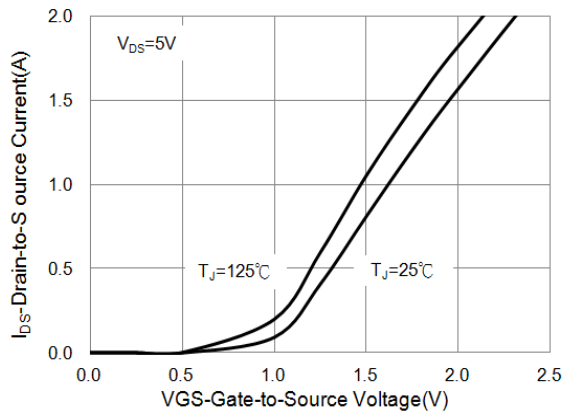


Fig.2 Transfer Characteristics

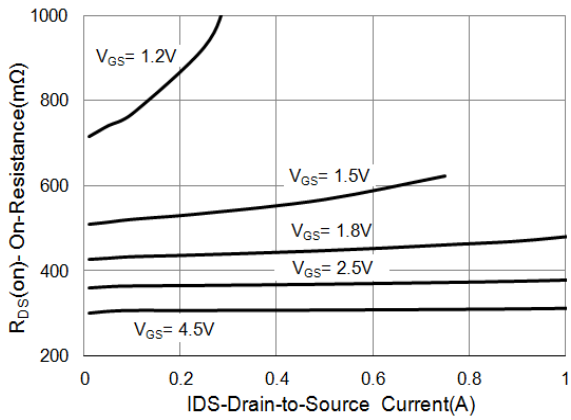


Fig.3 On-Resistance vs. Drain Current

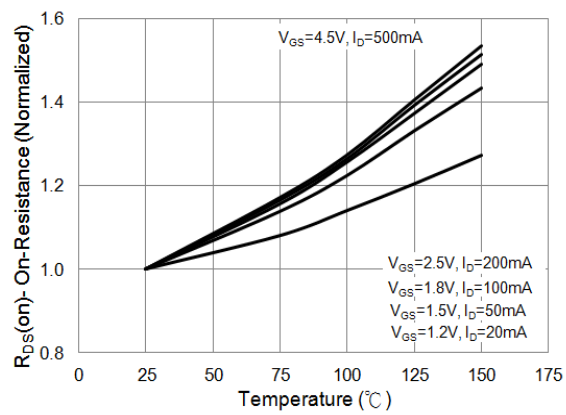


Fig.4 On-Resistance vs. Junction temperature

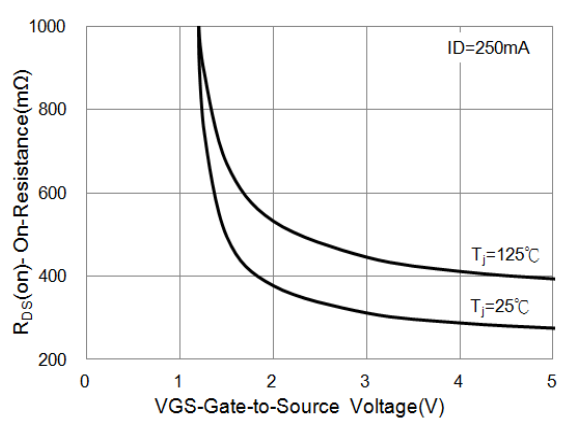


Fig.5 On-Resistance Variation with VGS.

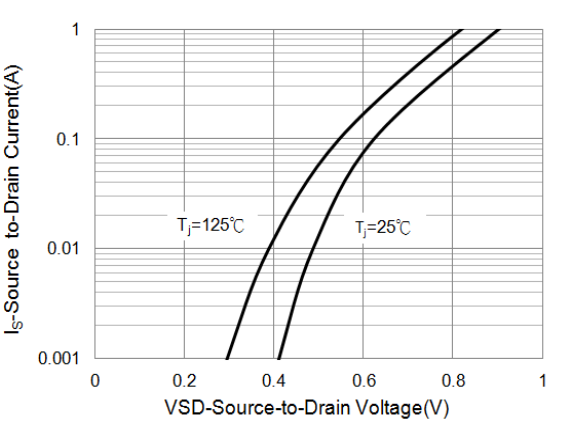


Fig.6 Body Diode Characteristics

N-Channel TYPICAL CHARACTERISTIC CURVES

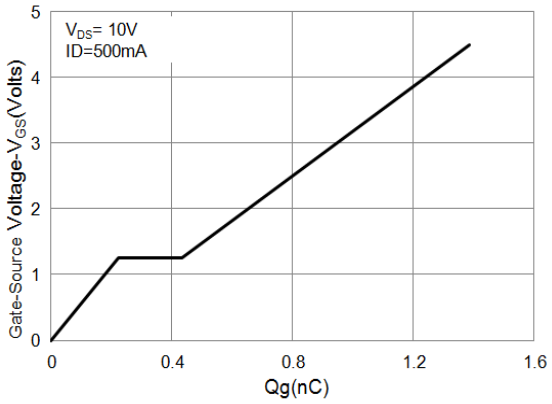


Fig.7 Gate-Charge Characteristics

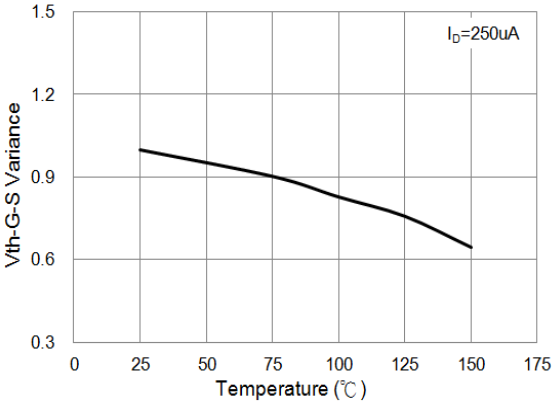


Fig.8 Threshold Voltage Variation with Temperature.

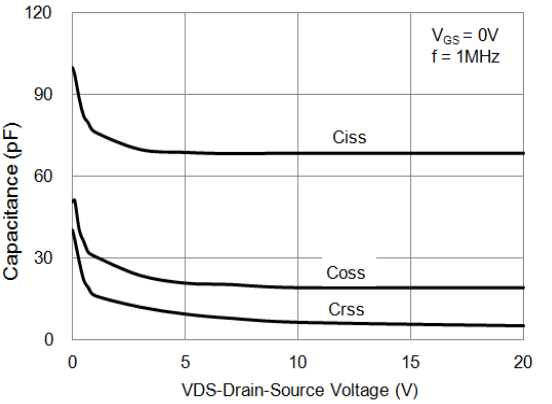


Fig.9 Capacitance vs. Drain-Source Voltage.

PJX8601-AU

P-Channel TYPICAL CHARACTERISTIC CURVES

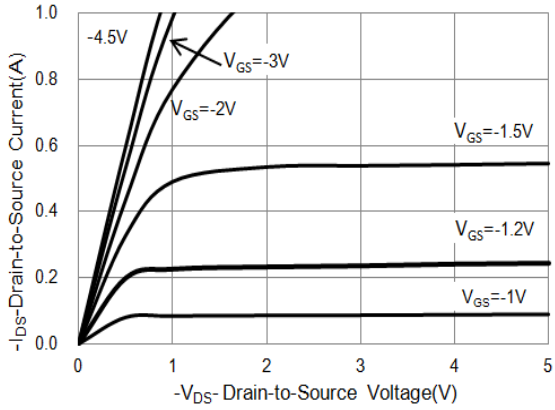


Fig.1 On-Region Characteristics

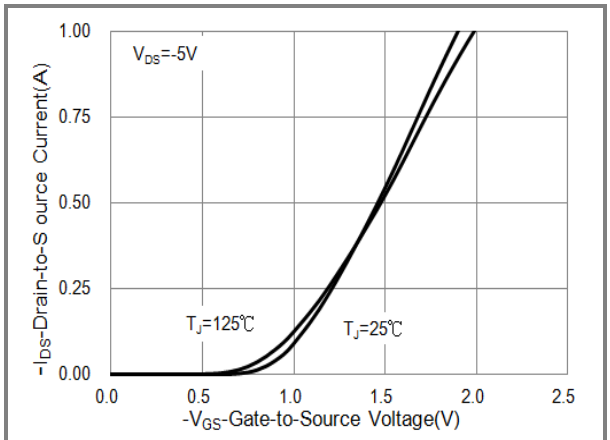


Fig.2 Transfer Characteristics

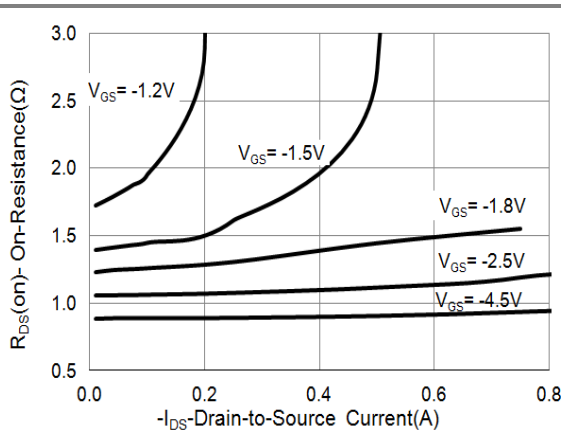


Fig.3 On-Resistance vs. Drain Current

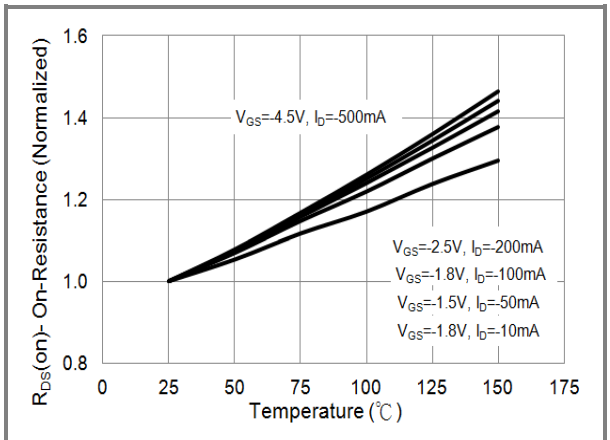


Fig.4 On-Resistance vs. Junction temperature

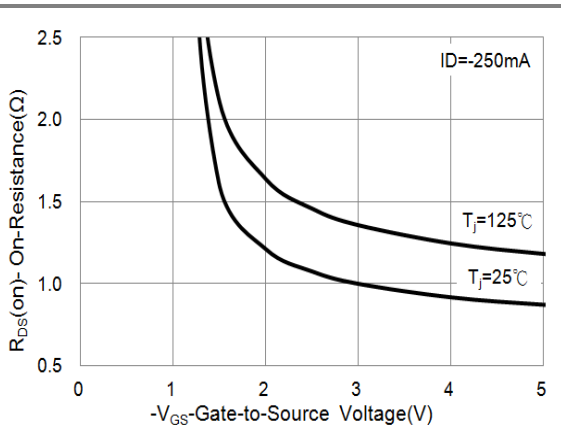


Fig.5 On-Resistance Variation with VGS.

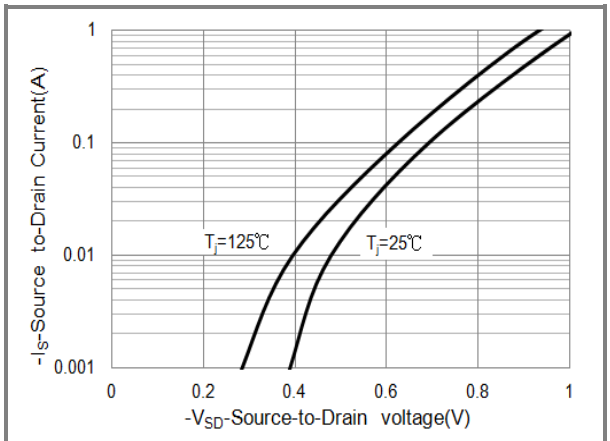


Fig.6 Body Diode Characteristics

PJX8601-AU

P-Channel TYPICAL CHARACTERISTIC CURVES

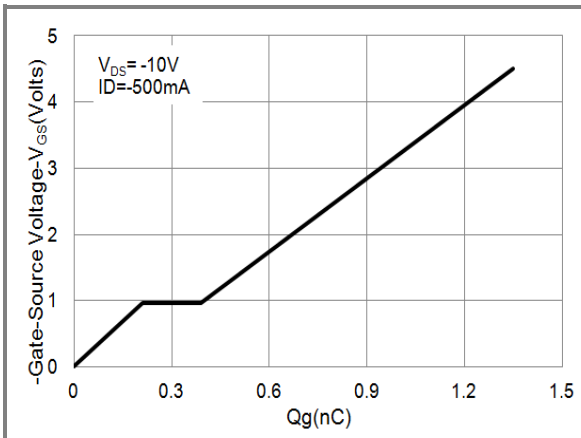


Fig.7 Gate-Charge Characteristics

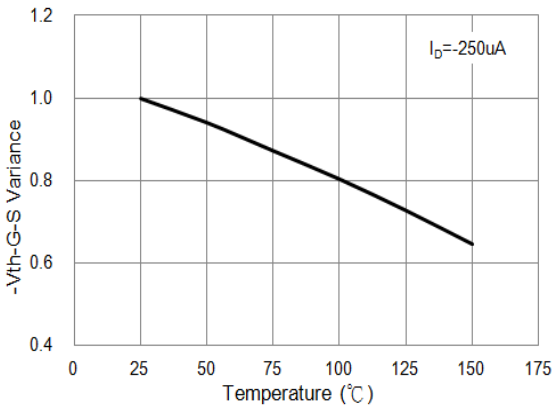


Fig.8 Threshold Voltage Variation with Temperature.

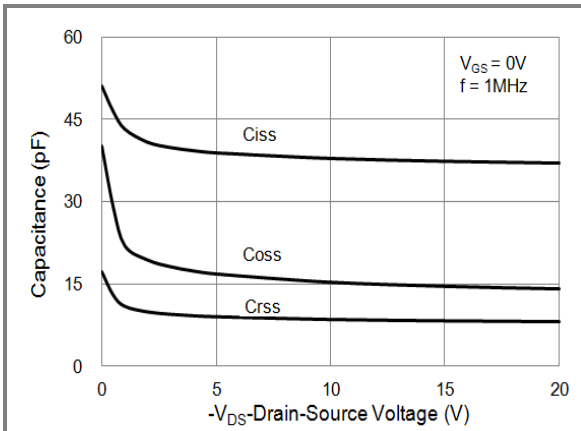


Fig.9 Threshold Voltage Variation with Temperature.

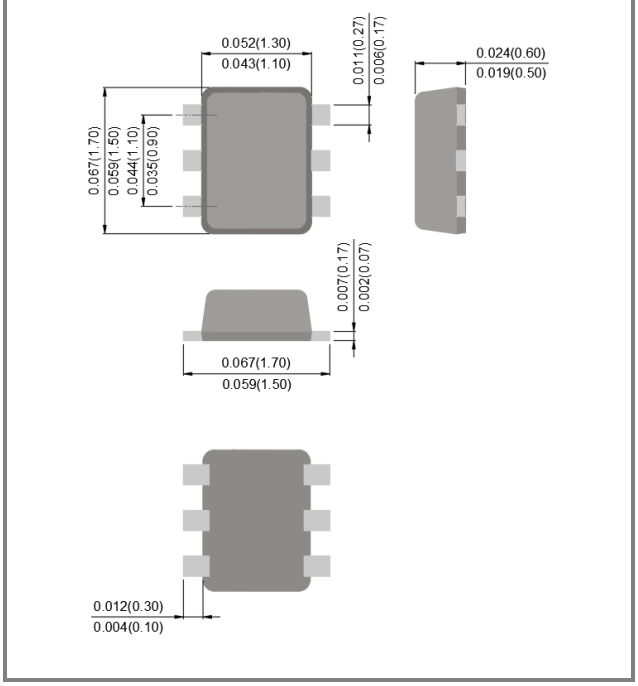
PJX8601-AU

PART NO. PACKING CODE VERSION

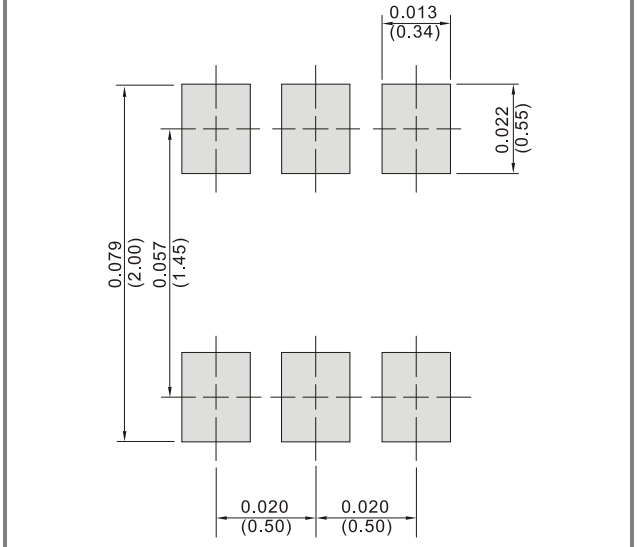
Part No. Packing Code	Package Type	Packing Type	Marking	Version
PJX8601-AU_R1_000A1	SOT-563	4K pcs / 7" reel	X61	Halogen free RoHS compliant

Packaging Information & Mounting Pad Layout

SOT-563 Dimension — Unit: inch(mm)



SOT-563 Pad Layout — Unit: inch(mm)



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