



PJX8603

Complementary Enhancement Mode MOSFET – ESD Protected

Voltage 50 / -60V **Current** 0.36A / -0.2A

Features

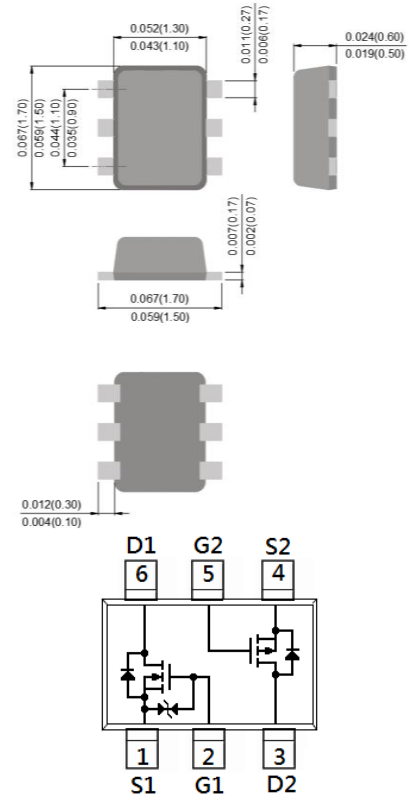
- Advanced Trench Process Technology
- Specially Designed for Switch Load, PWM Application, etc.
- ESD Protected 2KV HBM
- Lead free in compliance with EU RoHS 2.0
- Green molding compound as per IEC 61249 standard

Mechanical Data

- Case : SOT-563 Package
- Terminals : Solderable per MIL-STD-750, Method 2026
- Approx. Weight : 0.0026 grams
- Marking : X63

SOT-563

Unit: inch(mm)



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}	50	-60	V	
Gate-Source Voltage	V _{GS}	+20	+20	V	
Continuous Drain Current	I _D	360	-200	mA	
Pulsed Drain Current ^(Note 4)	I _{DM}	1200	-900	mA	
Power Dissipation	P _D	T _a =25°C		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 _{θJA}	417		°C/W	



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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	50	-	-	V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D = 250uA	0.5	0.9	1.0	V
Drain-Source On-State Resistance	R _{DS(on)}	V _{GS} = 10V, I _D = 500mA	-	1.26	1.5	Ω
		V _{GS} = 4.5V, I _D = 200mA	-	1.34	2.5	
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 50V, V _{GS} =0V	-	-	1	uA
Gate-Source Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V	-	-	±10	uA
Dynamic (Note 5)						
Total Gate Charge	Q _g	V _{DS} =25V, I _D =500mA, V _{GS} =4.5V	-	0.95	-	nC
Gate-Source Charge	Q _{gs}		-	0.34	-	
Gate-Drain Charge	Q _{gd}		-	0.32	-	
Input Capacitance	C _{iss}	V _{DS} =25V, V _{GS} =0V, f=1.0MHZ	-	36	-	pF
Output Capacitance	C _{oss}		-	11	-	
Reverse Transfer Capacitance	C _{rss}		-	6.6	-	
Turn-On Delay Time	td _(on)	V _{DD} =25V, I _D =500mA, V _{GS} =10V, R _G =6Ω(Note 1,2)	-	2.3	-	ns
Turn-On Rise Time	tr		-	20	-	
Turn-Off Delay Time	td _(off)		-	7	-	
Turn-Off Fall Time	tf		-	20	-	
Drain-Source Diode						
Maximum Continuous Drain-Source Diode Forward Current	I _S	---	-	-	360	mA
Diode Forward Voltage	V _{SD}	I _S = 500mA, V _{GS} =0V	-	0.9	1.5	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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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	-60	-	-	V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =-250uA	-1.0	-1.5	-2.5	V
Drain-Source On-State Resistance	R _{DS(on)}	V _{GS} =-10V, I _D =-500mA	-	2.6	6	Ω
		V _{GS} =-4.5V, I _D =-200mA	-	2.9	7	
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-48V, V _{GS} =0V	-	-	-1	uA
Gate-Source Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V	-	-	±100	nA
Dynamic (Note 5)						
Total Gate Charge	Q _g	V _{DS} =-25V, I _D =-100mA, V _{GS} =-4.5V	-	1.1	-	nC
Gate-Source Charge	Q _{gs}		-	0.3	-	
Gate-Drain Charge	Q _{gd}		-	0.2	-	
Input Capacitance	C _{iss}	V _{DS} =-25V, V _{GS} =0V, f=1.0MHZ	-	51	-	pF
Output Capacitance	C _{oss}		-	15	-	
Reverse Transfer Capacitance	C _{rss}		-	2.2	-	
Turn-On Delay Time	t _{d(on)}	V _{DD} =-25V, I _D =-100mA, V _{GS} =-10V, R _G =6Ω (Note 1,2)	-	4.8	-	ns
Turn-On Rise Time	t _r		-	19	-	
Turn-Off Delay Time	t _{d(off)}		-	52	-	
Turn-Off Fall Time	t _f		-	32	-	
Drain-Source Diode						
Maximum Continuous Drain-Source Diode Forward Current	I _S	---	-	-	-200	mA
Diode Forward Voltage	V _{SD}	I _S =-500mA, V _{GS} =0V	-	-0.9	-1.5	V



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N-Channel TYPICAL CHARACTERISTIC CURVES

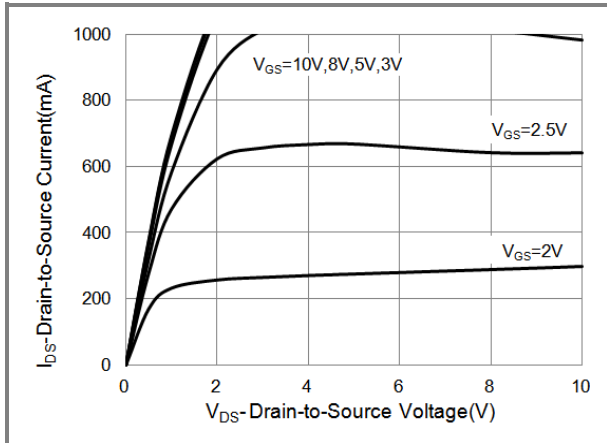


Fig.1 On-Region Characteristics

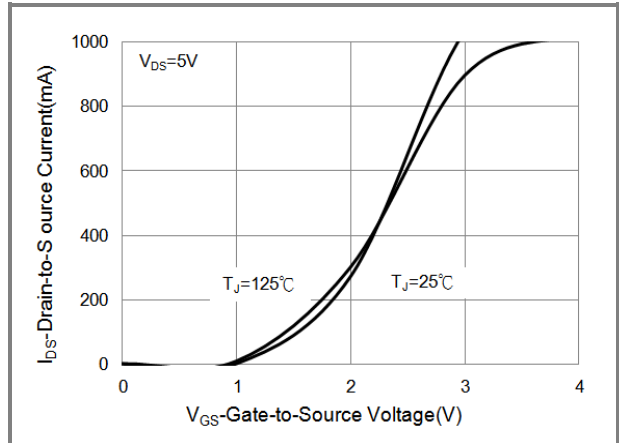


Fig.2 Transfer Characteristics

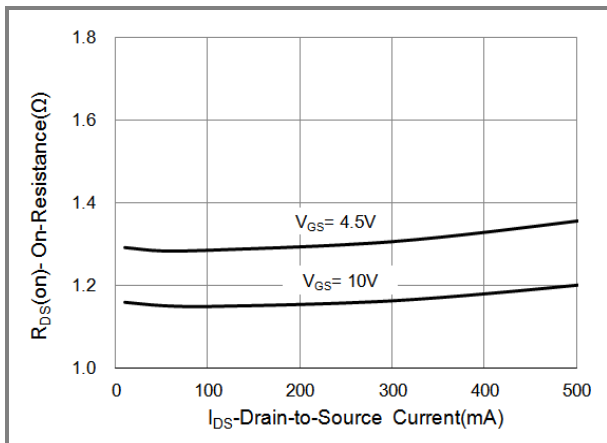


Fig.3 On-Resistance vs. Drain Current

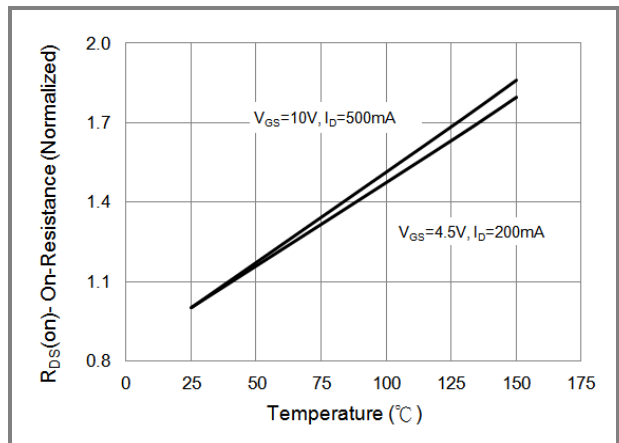


Fig.4 On-Resistance vs. Junction temperature

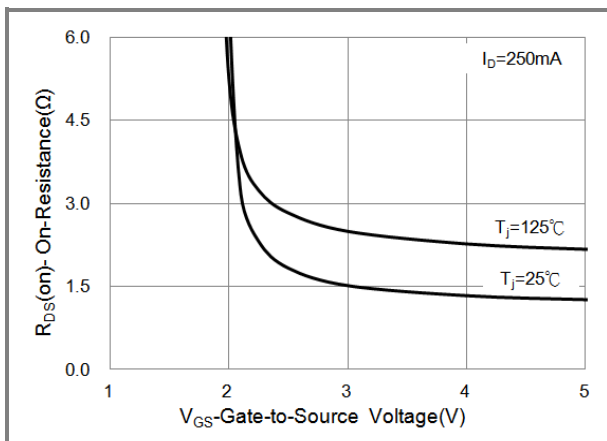


Fig.5 On-Resistance Variation with VGS.

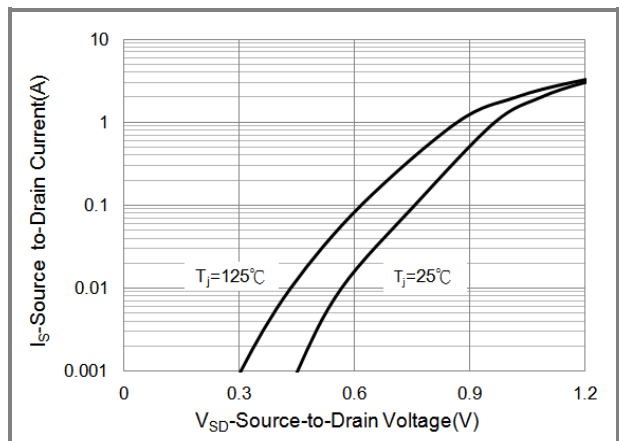


Fig.6 Body Diode Characteristics



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N-Channel TYPICAL CHARACTERISTIC CURVES

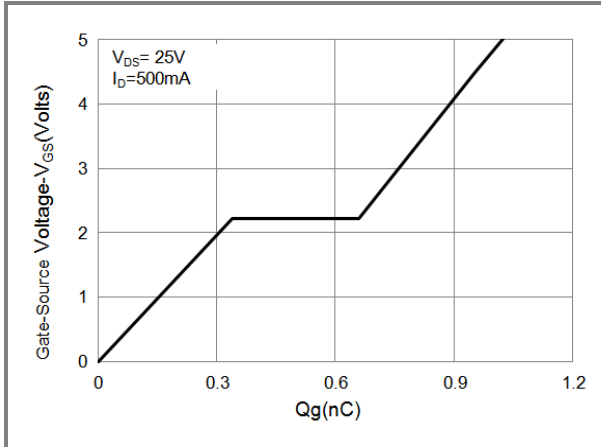


Fig.7 Gate-Charge Characteristics

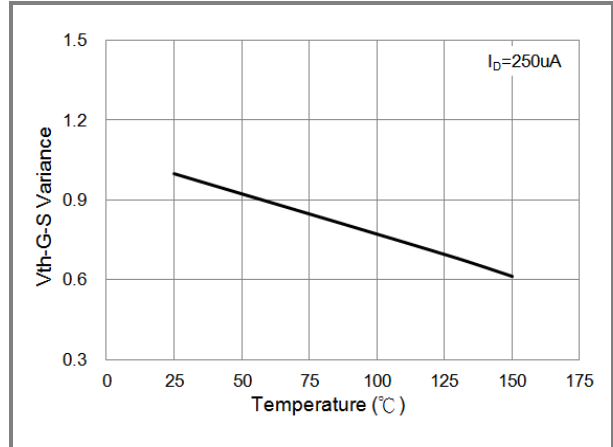


Fig.8 Threshold Voltage Variation with Temperature.

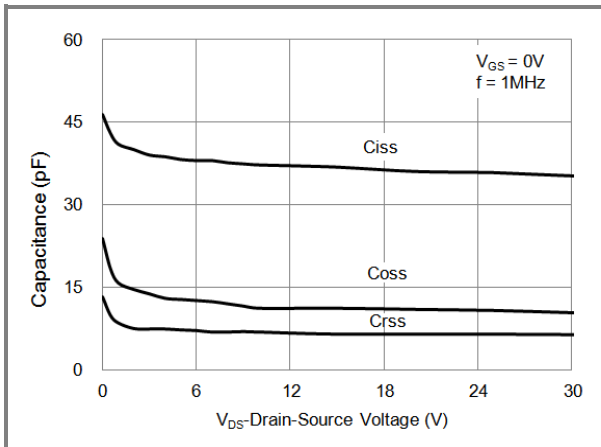


Fig.9 Capacitance vs. Drain-Source Voltage.



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P-Channel TYPICAL CHARACTERISTIC CURVES

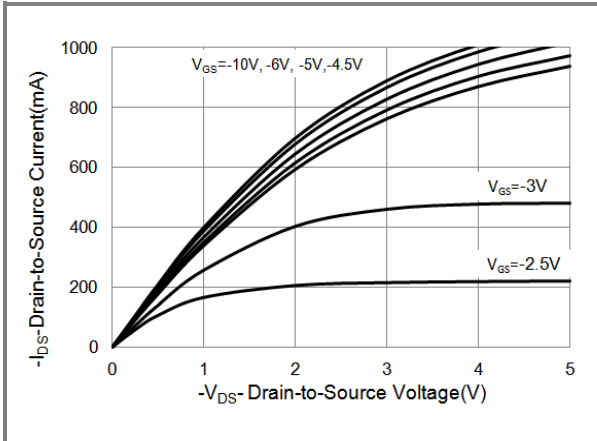


Fig.1 On-Region Characteristics

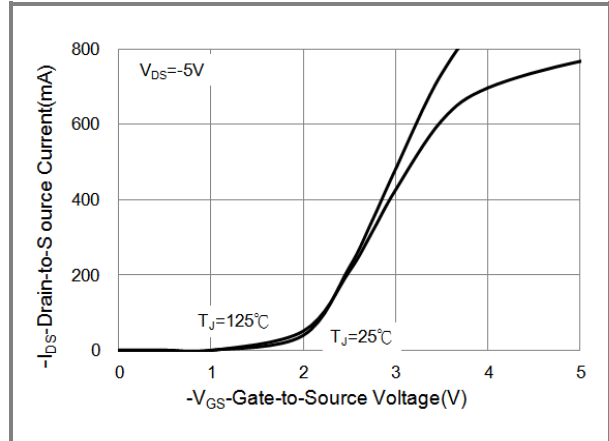


Fig.2 Transfer Characteristics

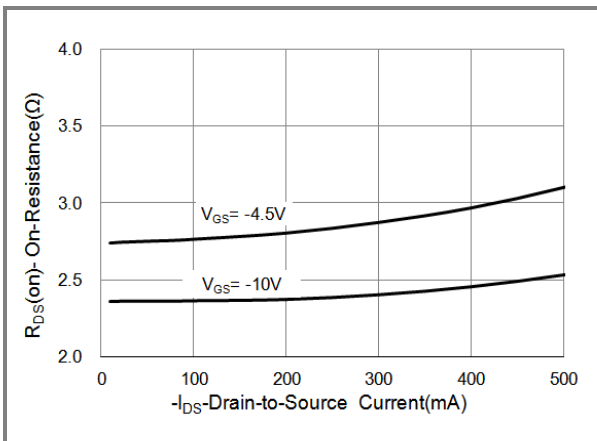


Fig.3 On-Resistance vs. Drain Current

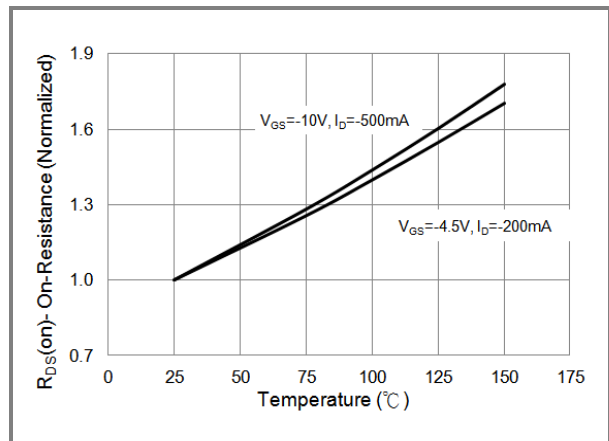


Fig.4 On-Resistance vs. Junction temperature

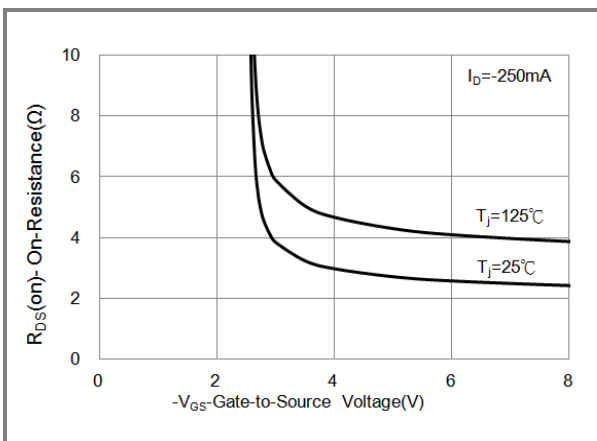


Fig.5 On-Resistance Variation with V_{GS} .

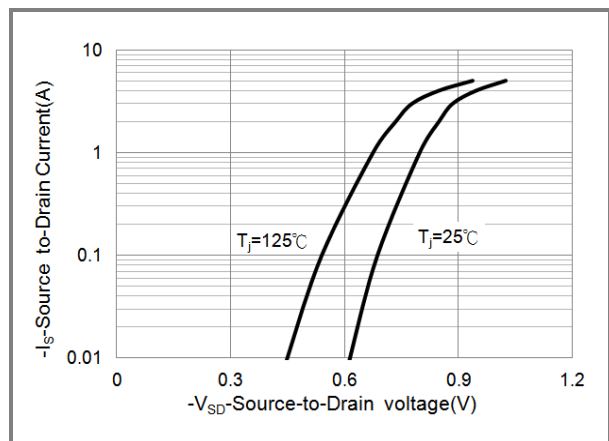


Fig.6 Body Diode Characteristics



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P-Channel TYPICAL CHARACTERISTIC CURVES

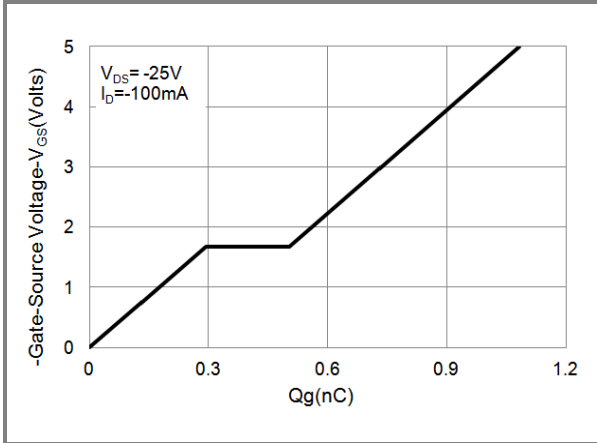


Fig.7 Gate-Charge Characteristics

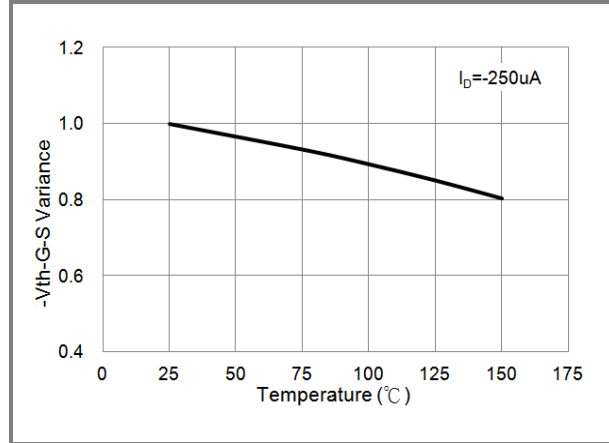


Fig.8 Threshold Voltage Variation with Temperature.

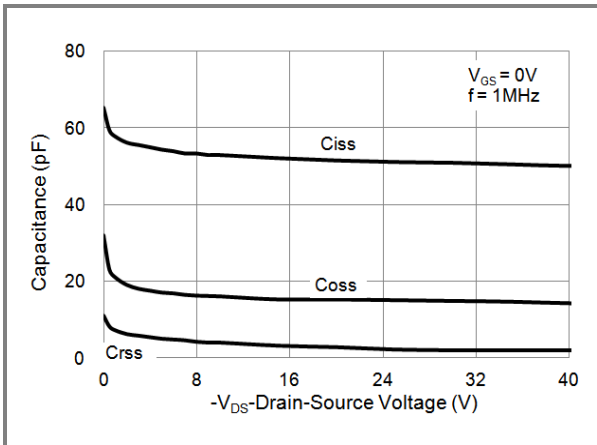


Fig.9 Threshold Voltage Variation with Temperature.

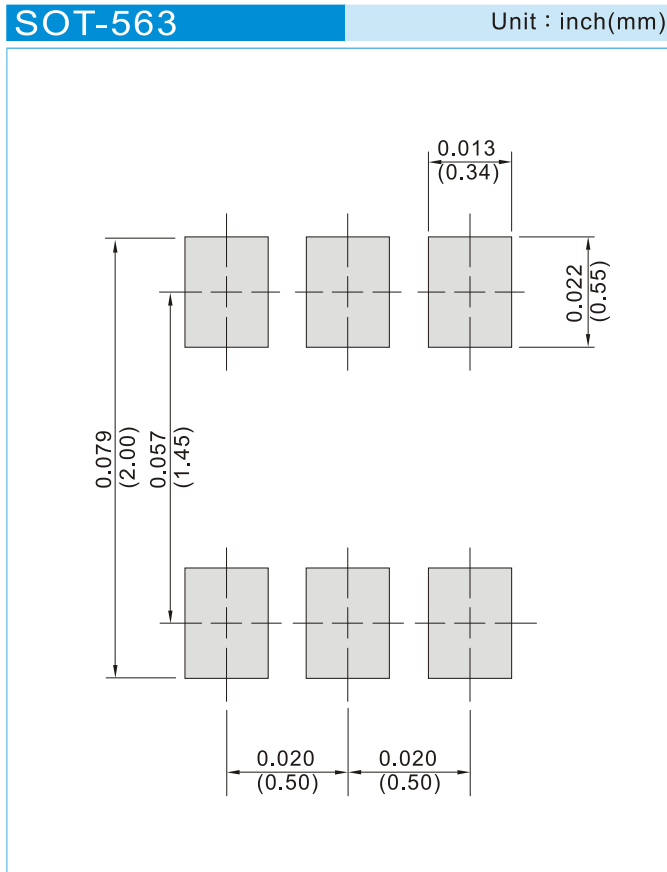


PJX8603

PART NO. PACKING CODE VERSION

Part No. Packing Code	Package Type	Packing Type	Marking	Version
PJX8603_R1_00001	SOT-563	4K pcs / 7" reel	X63	Halogen free RoHS compliant
PJX8603_R2_00001	SOT-563	10K pcs / 13" reel	X63	Halogen free RoHS compliant
PJX8603_R1_00002	SOT-563	8K pcs / 7" reel	X63	Halogen free RoHS compliant
PJX8603_R2_00002	SOT-563	20K pcs / 13" reel	X63	Halogen free RoHS compliant

MOUNTING PAD LAYOUT





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