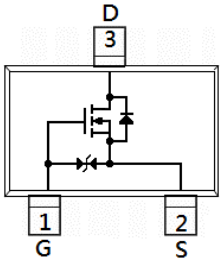
PJA3420E

20V N-Channel Enhancement Mode MOSFET– ESD Protected

Voltage 20 V **Current** 5.1 A

SOT-23



Features

- $R_{DS(ON)}$, V_{GS}@4.5V, I_D@5.1A<27mΩ
- $R_{DS(ON)}$, V_{GS}@2.5V, I_D@3.2A<33mΩ
- $R_{DS(ON)}$, V_{GS}@1.8V, I_D@2.0A<46mΩ
- Advanced Trench Process Technology
- ESD Protected HBM Class 1C
- Specially Designed for Switch Load, PWM Application, etc.
- Lead free in compliance with EU RoHS 2.0
- Green molding compound as per IEC 61249 standard

Mechanical Data

- Case : SOT-23 Package
- Terminals : Solderable per MIL-STD-750, Method 2026
- Approx. Weight : 0.0084 grams

Maximum Ratings and Thermal Characteristics (T_A=25°C unless otherwise noted)

PARAMETER		SYMBOL	LIMIT	UNITS
Drain-Source Voltage		V_{DS}	20	V
Gate-Source Voltage		V_{GS}	±8	
Continuous Drain Current(Note 4)	T_A=25°C	I_D	5.1	A
	T_A=70°C		4.1	
Pulsed Drain Current(Note 1)	T_A=25°C	I_{DM}	20	
Power Dissipation	T_A=25°C	P_D	1.3	W
	Derate above 25°C		10	mW/°C
Operating Junction and Storage Temperature Range		T_J,T_{STG}	-55~150	°C
Typical Thermal Resistance - Junction to Ambient(Note 5)		$R_{\theta JA}$	100	°C/W

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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	0.4	0.67	0.9	
Drain-Source On-State Resistance	$R_{DS(on)}$	V_{GS}=4.5V, I_D=5.1A	-	22	27	mΩ
		V_{GS}=2.5V, I_D=3.2A	-	26	33	
		V_{GS}=1.8V, I_D=2.0A	-	34	46	
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=20V, V_{GS}=0V	-	-	1	uA
Gate-Source Leakage Current	I_{GSS}	V_{GS}=±8V, V_{DS}=0V	-	-	±10	
Dynamic(Note 6)						
Total Gate Charge	Q_g	V_{DS}=10V, I_D=5.2A, V_{GS}=4.5V(Note 2,3)	-	6.3	-	nC
Gate-Source Charge	Q_{gs}		-	1.2	-	
Gate-Drain Charge	Q_{gd}		-	1.0	-	
Input Capacitance	Ciss	V_{DS}=10V, V_{GS}=0V, f=1MHZ	-	515	-	pF
Output Capacitance	Coss		-	60	-	
Reverse Transfer Capacitance	Crss		-	47	-	
Turn-On Delay Time	$td_{(on)}$	V_{DS}=10V, I_D=5.2A, V_{GS}=4.5V, R_G=6Ω (Note 2,3)	-	7	-	ns
Turn-On Rise Time	t_r		-	43	-	
Turn-Off Delay Time	$td_{(off)}$		-	170	-	
Turn-Off Fall Time	t_f		-	13	-	
Drain-Source Diode						
Diode Forward Current	I_S	T_A=25°C	-	-	1.5	A
Diode Forward Voltage	V_{SD}	I_S=1A,V_{GS}=0V	-	0.76	1.2	V

Notes：

1.Pulse width<300us, Duty cycle<2%.

2.Essentially independent of operating temperature typical characteristics.

3.Repetitive rating, pulse width limited by junction temperature T_J(MAX)=150℃.Ratings are based on low frequency and duty cycles to keep initial T_J =25℃.

4.The maximum current rating is package limited.

5.$R_{\theta JA}$ 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^2 with 2oz.square pad of copper.

6.Guaranteed by design, not subject to production testing.

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TYPICAL CHARACTERISTIC CURVES

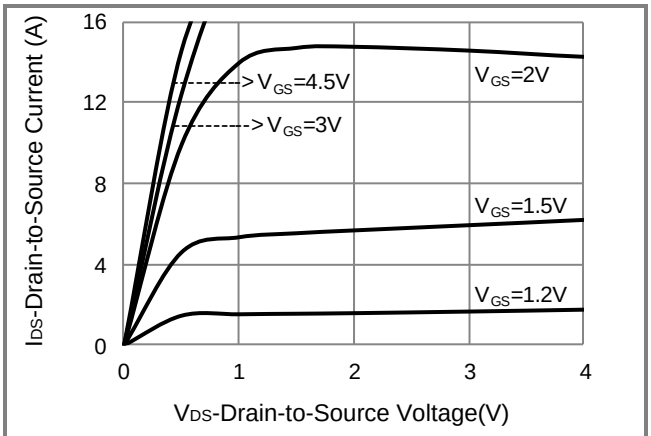

Fig.1 Output Characteristics

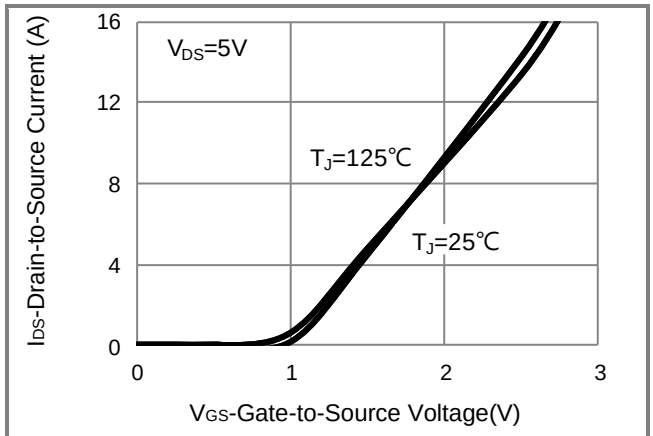

Fig.2 Transfer Characteristics

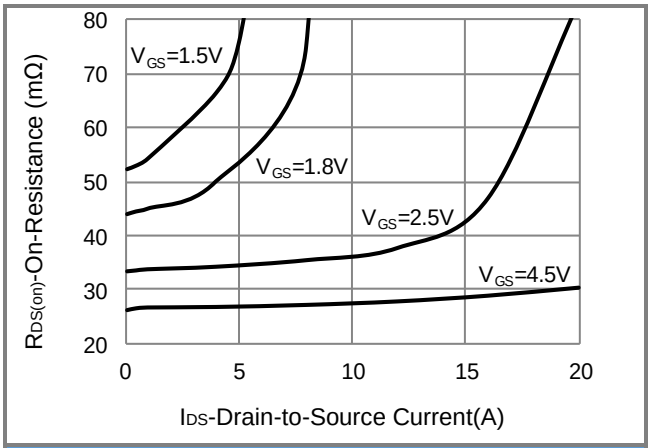

Fig.3 On-Resistance vs. Drain Current

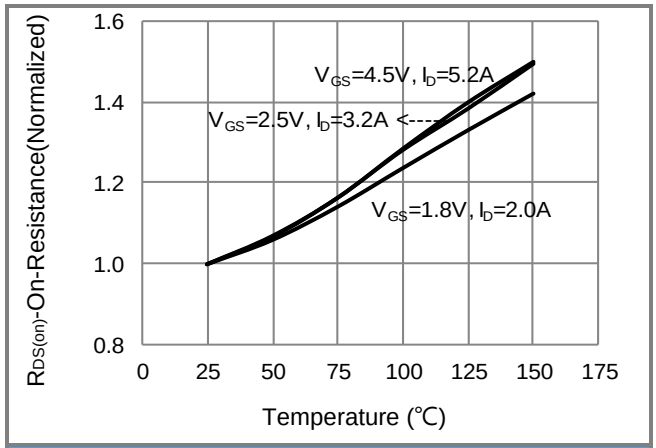

Fig.4 On-Resistance vs. Junction temperature

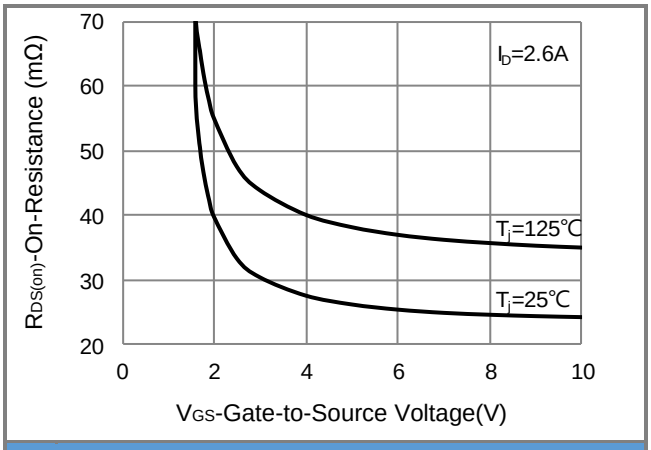

Fig.5 On-Resistance Variation with V_{GS}

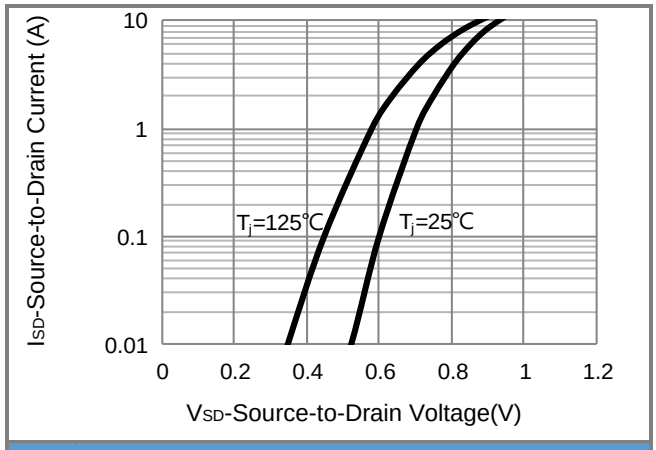

Fig.6 Body Diode Characteristic

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TYPICAL CHARACTERISTIC CURVES

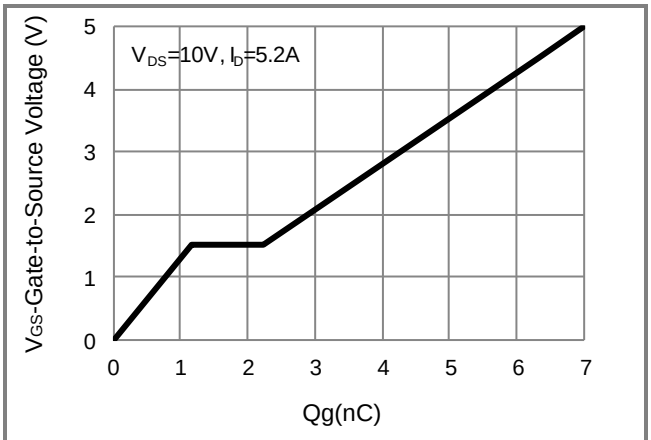

Fig.7 Gate-Charge Characteristics

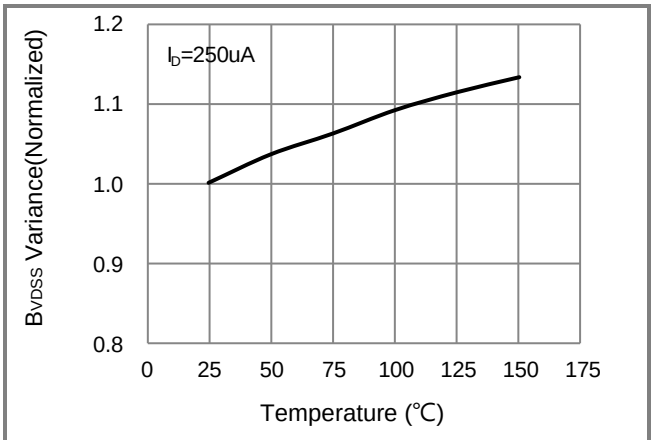

Fig.8 Breakdown Voltage Variation vs. Temperature

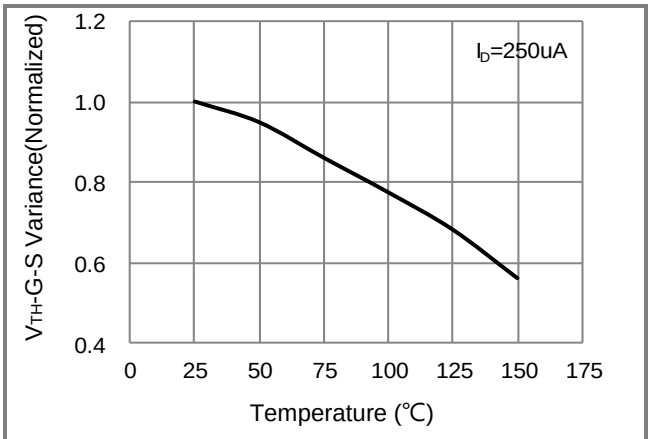

Fig.9 Threshold Voltage Variation with Temperature

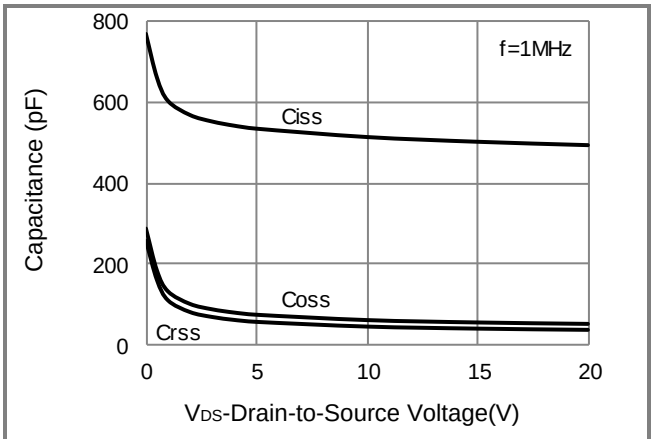

Fig.10 Capacitance vs. Drain-Source Voltage

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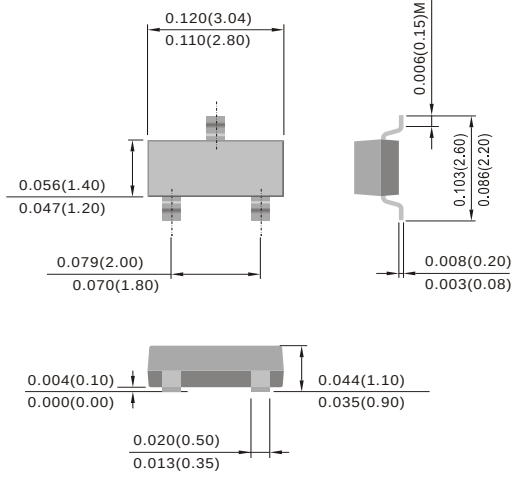
Product and Packing Information

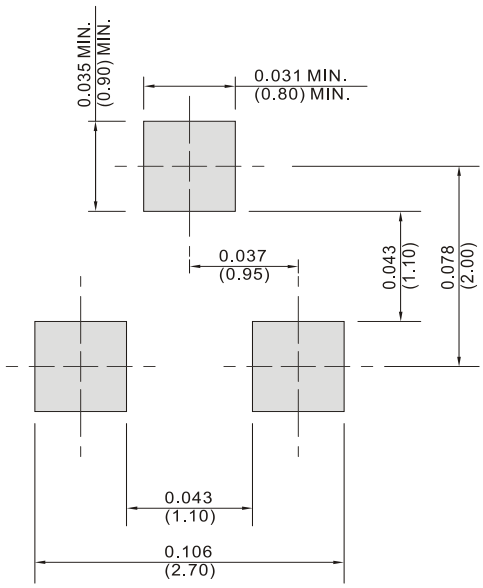
Part No.	Package Type	Packing Type	Marking
PJA3420E	SOT-23	3K pcs / 7” reel	20E

Packaging Information & Mounting Pad Layout

SOT-23 Dimension — Unit: inch(mm)



SOT-23 Pad Layout — Unit: inch(mm)



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