



PJA3446-AU

40V N-Channel Enhancement Mode MOSFET

Voltage	40 V	Current	4.1 A
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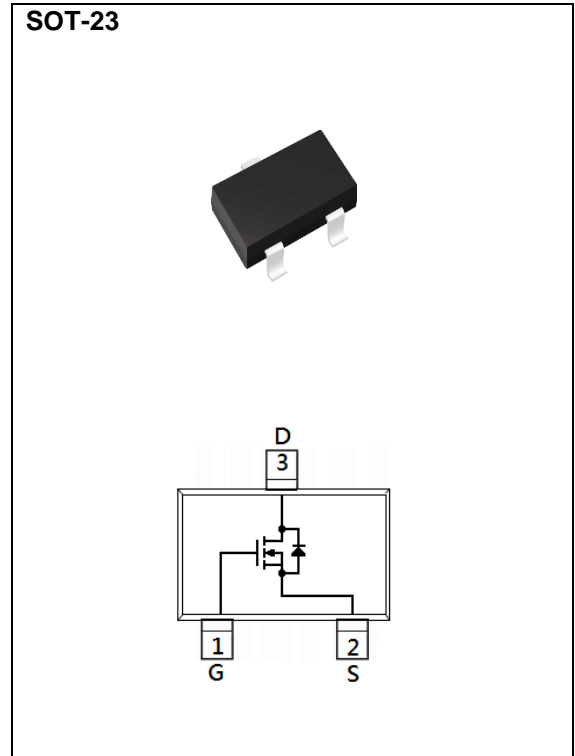
Features

- $R_{DS(ON)}$, $V_{GS}@10V$, $I_D@4.1A < 42m\Omega$
- $R_{DS(ON)}$, $V_{GS}@4.5V$, $I_D@2A < 51m\Omega$
- High switching speed
- Low gate charge
- Low reverse transfer capacitance
- AEC-Q101 qualified
- 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 : 0.0003 ounces, 0.0084 grams

SOT-23



Maximum Ratings and Thermal Characteristics ($T_A=25^\circ\text{C}$ unless otherwise noted)

PARAMETER	SYMBOL	LIMIT	UNITS
Drain-Source Voltage	V_{DS}	40	V
Gate-Source Voltage	V_{GS}	± 20	
Continuous Drain Current ^(Note 4)	I_D	$T_A=25^\circ\text{C}$	4.1
		$T_A=70^\circ\text{C}$	3.3
Pulsed Drain Current ^(Note 1)	I_{DM}	13.2	A
Power Dissipation	P_D	$T_A=25^\circ\text{C}$	125
		Derate above 25°C	10
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55~150	$^\circ\text{C}$
Typical Thermal Resistance - Junction to Ambient ^(Note 5)	$R_{\theta JA}$	100	$^\circ\text{C/W}$



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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	40	-	-	V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250uA	1.0	1.8	2.5	
Drain-Source On-State Resistance	R _{DS(on)}	V _{GS} =10V, I _D =4.1A	-	27	42	mΩ
		V _{GS} =4.5V, I _D =2A	-	35	51	
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =40V, V _{GS} =0V	-	-	1	uA
Gate-Source Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V	-	-	±100	nA
Dynamic ^(Note 6)						
Total Gate Charge	Q _g	V _{DS} =20V, I _D =5A, V _{GS} =4.5V ^(Note 2,3)	-	4.4	-	nC
Gate-Source Charge	Q _{gs}		-	1.3	-	
Gate-Drain Charge	Q _{gd}		-	1.7	-	
Input Capacitance	C _{iss}	V _{DS} =25V, V _{GS} =0V, f=1MHZ	-	425	-	pF
Output Capacitance	C _{oss}		-	48	-	
Reverse Transfer Capacitance	C _{rss}		-	36	-	
Turn-On Delay Time	t _{d(on)}	V _{DS} =20V, I _D =1A, V _{GS} =4.5V, R _G =25Ω ^(Note 2,3)	-	9.4	-	ns
Turn-On Rise Time	t _r		-	29	-	
Turn-Off Delay Time	t _{d(off)}		-	21	-	
Turn-Off Fall Time	t _f		-	29	-	
Drain-Source Diode						
Diode Forward Current	I _S	T _A =25°C	-	-	4.1	A
Diode Forward Voltage	V _{SD}	I _S =1A, V _{GS} =0V	-	0.74	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°C.Ratings are based on low frequency and duty cycles to keep initial T_J =25°C.
- 4.The maximum current rating is package limited.
- 5.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 inch² with 2oz.square pad of copper.
- 6.Guaranteed by design, not subject to production testing.



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TYPICAL CHARACTERISTIC CURVES

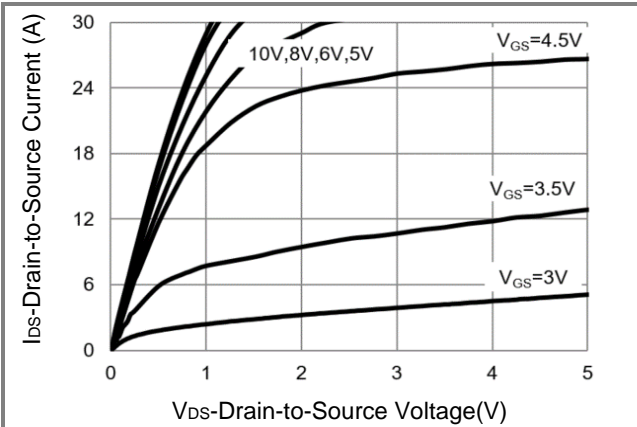


Fig.1 Output Characteristics

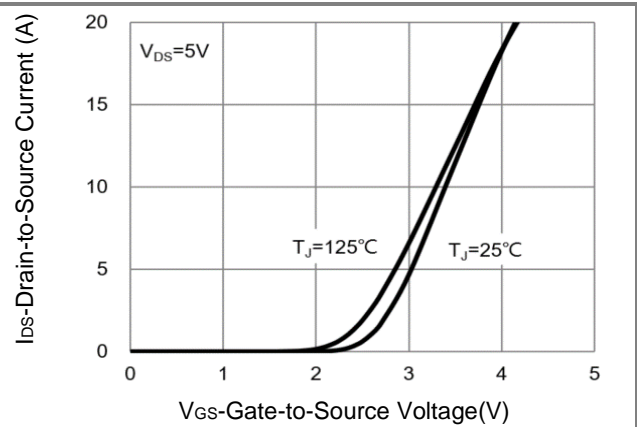


Fig.2 Transfer Characteristics

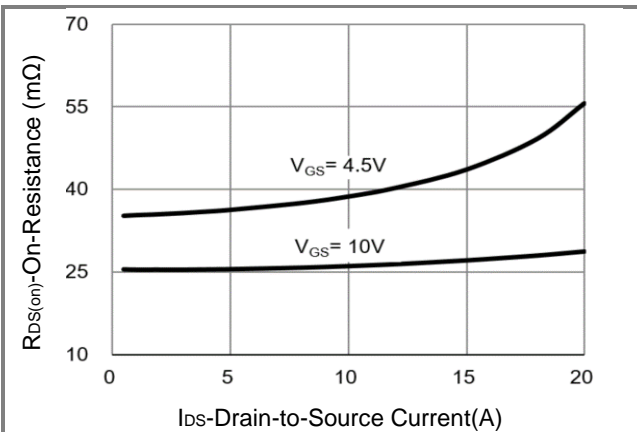


Fig.3 On-Resistance vs. Drain Current

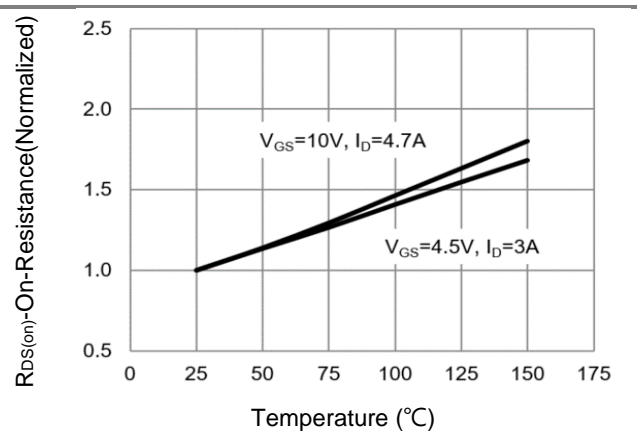


Fig.4 On-Resistance vs. Junction temperature

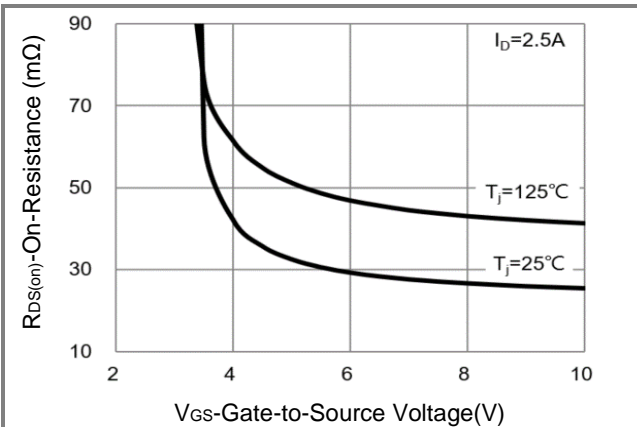


Fig.5 On-Resistance Variation with Vgs

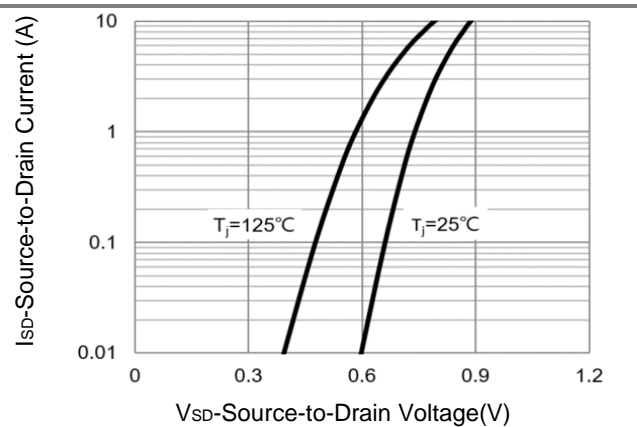


Fig.6 Body Diode Characteristic



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TYPICAL CHARACTERISTIC CURVES

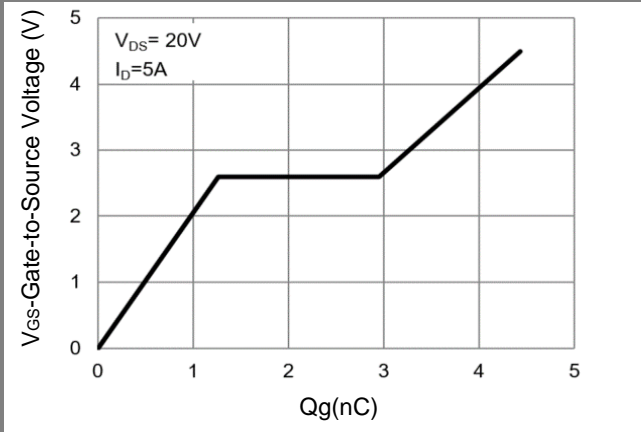


Fig.7 Gate-Charge Characteristics

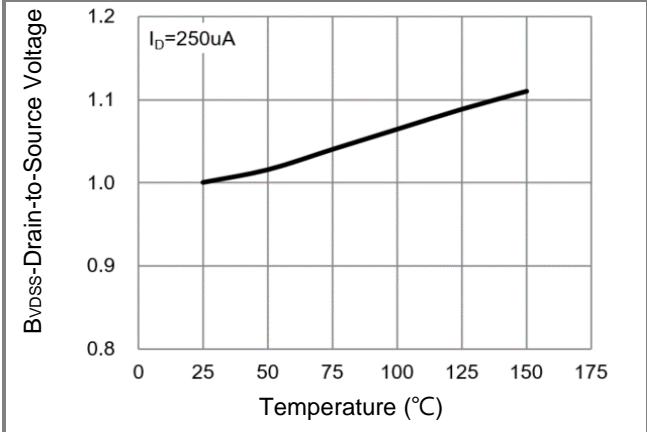


Fig.8 Breakdown Voltage Variation vs. Temperature

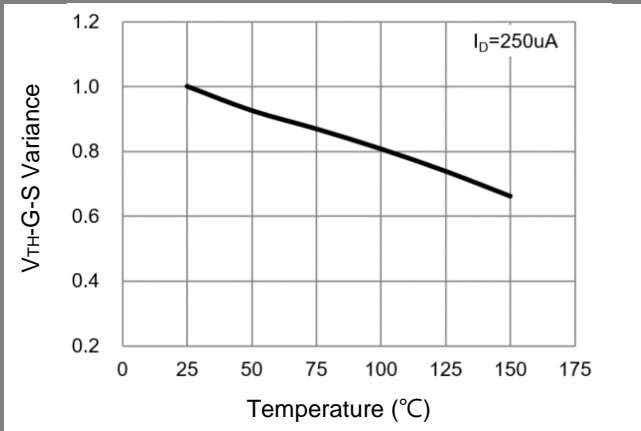


Fig.9 Threshold Voltage Variation with Temperature

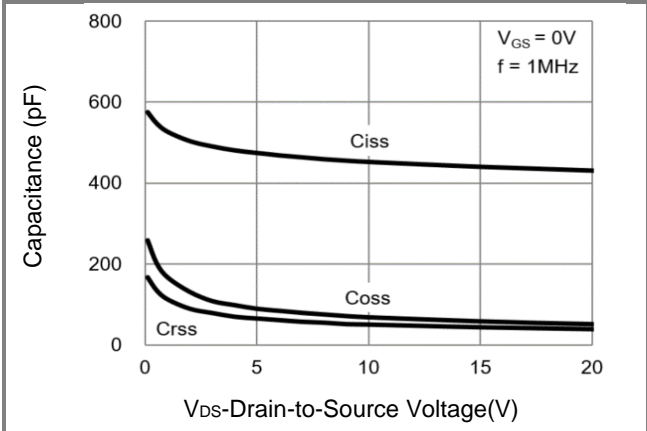


Fig.10 Capacitance vs. Drain-Source Voltage

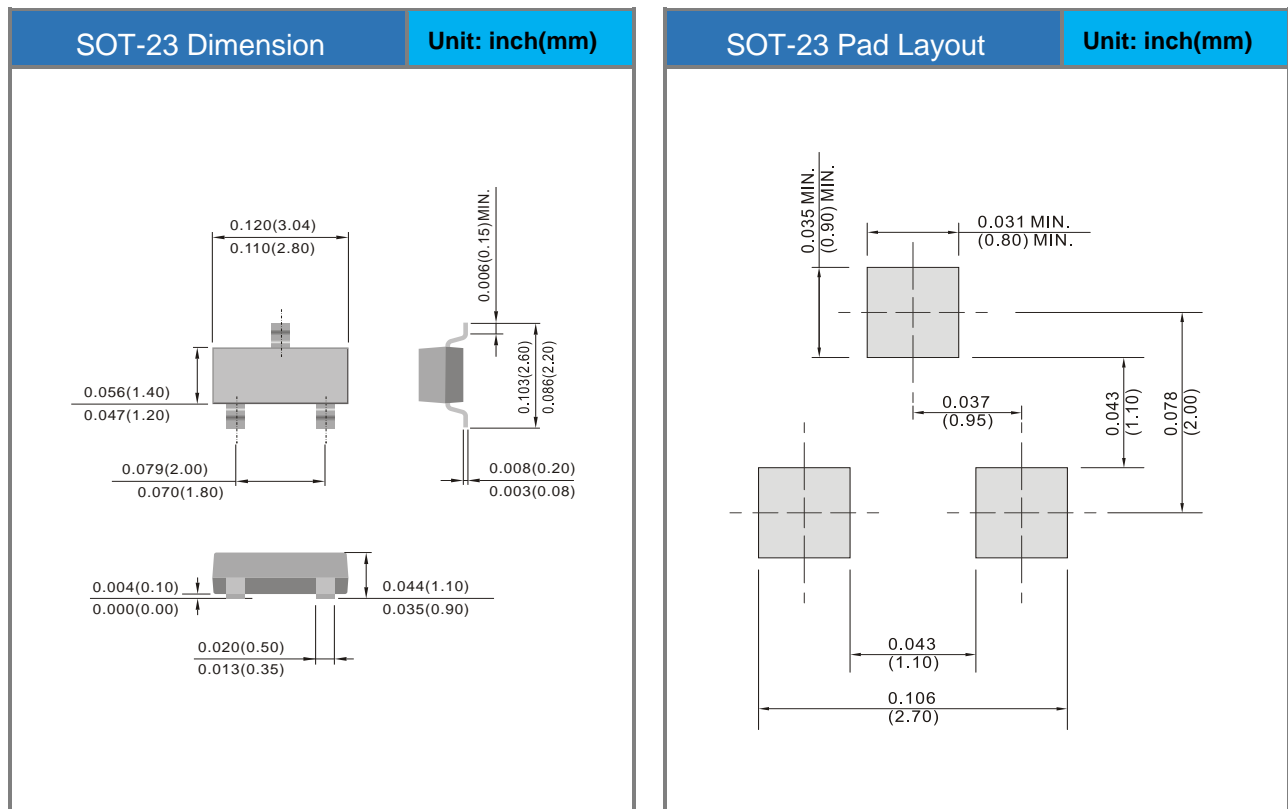


PJA3446-AU

Part No. Packing Code Version

Part No. Packing Code	Package Type	Packing Type	Marking	Version
PJA3446-AU_R1_000A1	SOT-23	3K pcs / 7" reel	A46	Halogen free RoHS compliant

Packaging Information & Mounting Pad Layout





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