



PJA3415A-AU

20V P-Channel Enhancement Mode MOSFET

Voltage

-20 V

Current

-4.5A

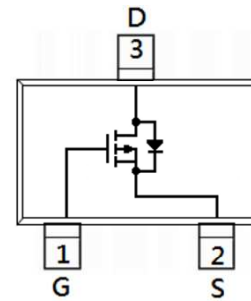
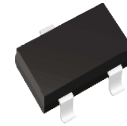
Features

- $R_{DS(ON)}$, $V_{GS}@-4.5V$, $I_D@-4.5A < 48m\Omega$
- $R_{DS(ON)}$, $V_{GS}@-2.5V$, $I_D@-3A < 60m\Omega$
- $R_{DS(ON)}$, $V_{GS}@-1.8V$, $I_D@-1.5A < 88m\Omega$
- Advanced Trench Process Technology
- Specially Designed for Switch Load, PWM Application, etc
- 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°C unless otherwise noted)

PARAMETER	SYMBOL	LIMIT	UNITS	
Drain-Source Voltage	V _{DS}	-20	V	
Gate-Source Voltage	V _{GS}	±12		
Continuous Drain Current ^(Note 4)	I _D	-4.5	A	
Pulsed Drain Current ^(Note 1)	I _{DM}	-18		
Power Dissipation	P _D	T _a =25°C	1.25	W
		Derate above 25°C	10	mW/°C
Operating Junction and Storage Temperature Range	T _J , T _{STG}	-55~150	°C	
Typical Thermal Resistance	R _{θJA}	100	°C/W	
- Junction to Ambient ^(Note 3,4)				



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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	-0.5	-0.74	-1.3	
Drain-Source On-State Resistance	R _{DS(on)}	V _{GS} =-4.5V, I _D =-4.5A	-	40	48	mΩ
		V _{GS} =-2.5V, I _D =-3A	-	50	60	
		V _{GS} =-1.8V, I _D =-1.5A	-	75	88	
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-16V, V _{GS} =0V	-	-	-1	uA
Gate-Source Leakage Current	I _{GSS}	V _{GS} =±12V, V _{DS} =0V	-	-	±100	nA
Dynamic (Note 5)						
Total Gate Charge	Q _g	V _{DS} =-10V, I _D =-4.5A, V _{GS} =-4.5V (Note 1,2)	-	10	-	nC
Gate-Source Charge	Q _{gs}		-	1.7	-	
Gate-Drain Charge	Q _{gd}		-	2.4	-	
Input Capacitance	C _{iss}	V _{DS} =-10V, V _{GS} =0V, f=1MHZ	-	980	-	pF
Output Capacitance	C _{oss}		-	100	-	
Reverse Transfer Capacitance	C _{rss}		-	81	-	
Turn-On Delay Time	t _{d(on)}	V _{DD} =-10V, I _D =-4.5A, V _{GS} =-4.5V, R _G =6Ω (Note 1,2)	-	9.8	-	ns
Turn-On Rise Time	t _r		-	54	-	
Turn-Off Delay Time	t _{d(off)}		-	44	-	
Turn-Off Fall Time	t _f		-	31	-	
Drain-Source Diode						
Maximum Continuous Drain-Source Diode Forward Current	I _s	---	-	-	-1.5	A
Diode Forward Voltage	V _{SD}	I _s =-1A, V _{GS} =0V	-	-0.78	-1.2	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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TYPICAL CHARACTERISTIC CURVES

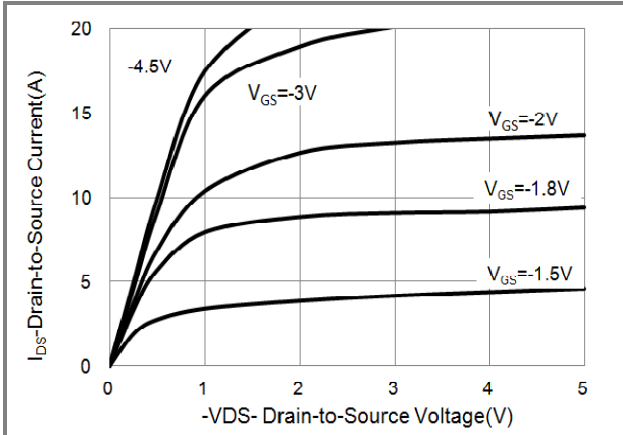


Fig.1 On-Region Characteristics

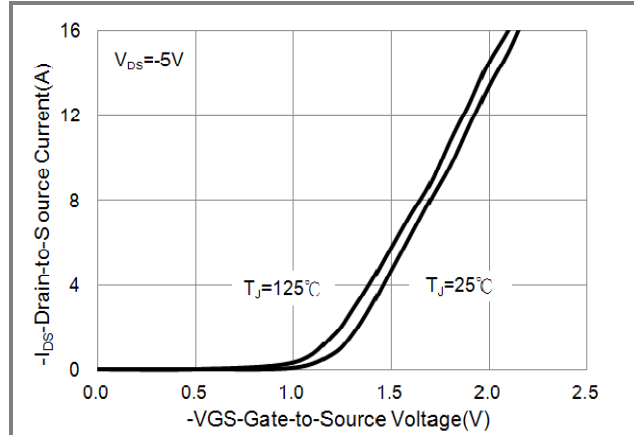


Fig.2 Transfer Characteristics

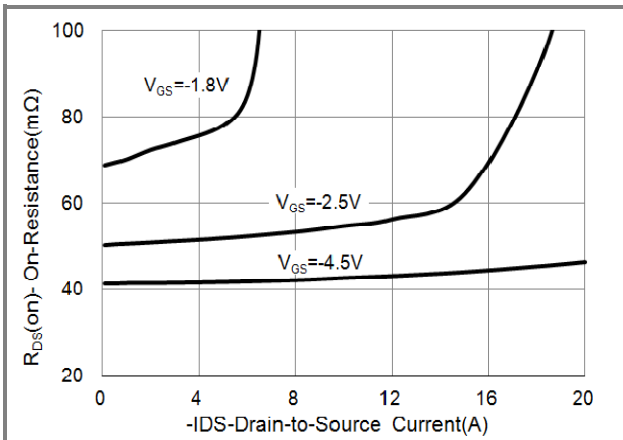


Fig.3 On-Resistance vs. Drain Current

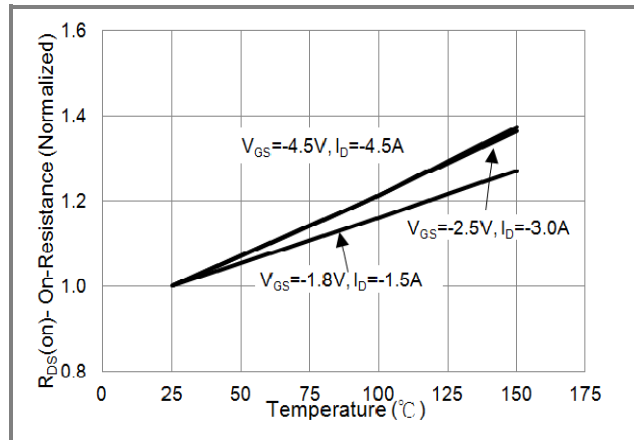


Fig.4 On-Resistance vs. Junction temperature

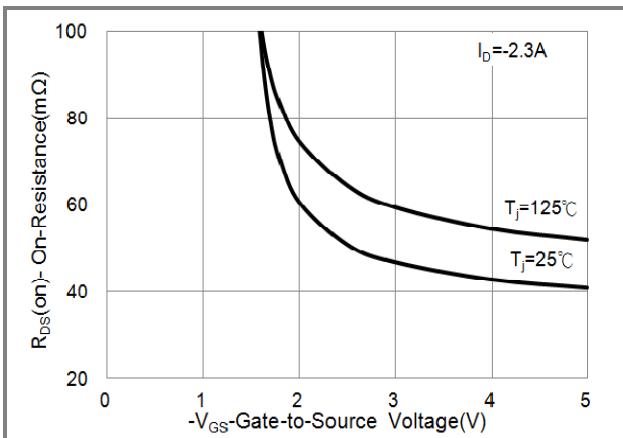


Fig.5 On-Resistance Variation with V_{GS}

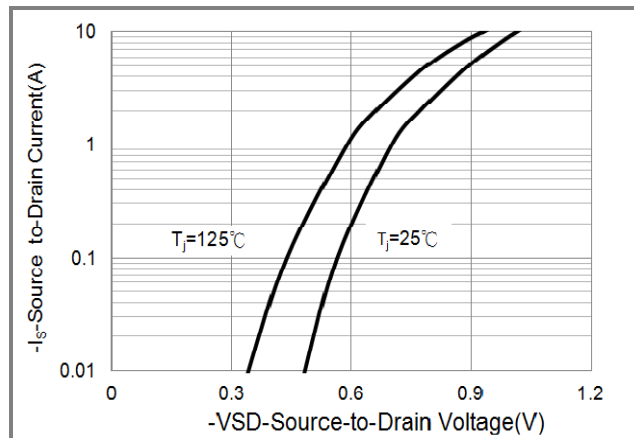


Fig.6 Body Diode Characteristics



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TYPICAL CHARACTERISTIC CURVES

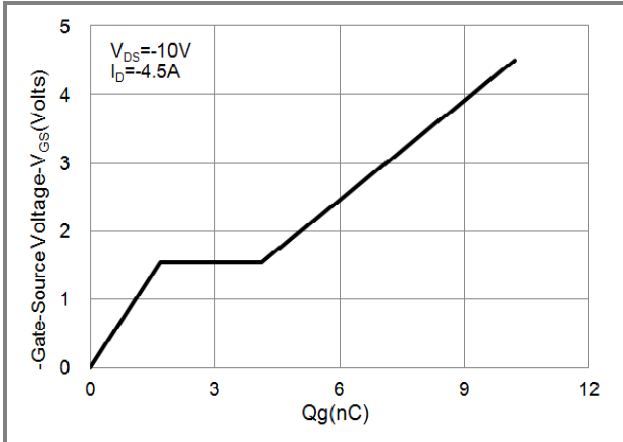


Fig.7 Gate-Charge Characteristics

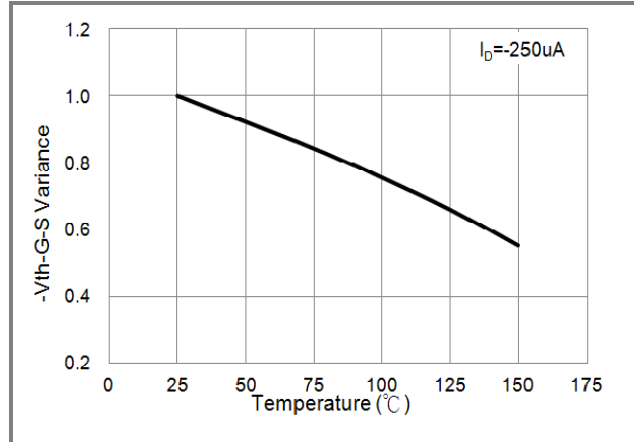


Fig.8 Threshold Voltage Variation with Temperature

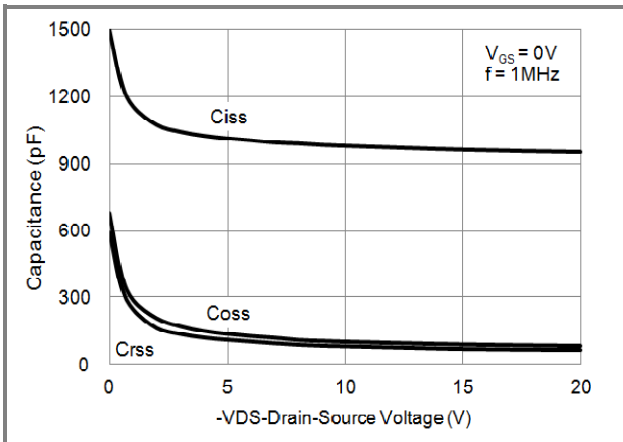


Fig.9 Capacitance vs. Drain-Source Voltage



PJA3415A-AU

Part No. Packing Code Version

Part No. Packing Code	Package Type	Packing Type	Marking	Version
PJA3415A-AU_R1_000A1	SOT-23	3K pcs / 7" reel	A5A	Halogen free

Packaging Information & Mounting Pad Layout

