

PJA3415AE

20V P-Channel Enhancement Mode MOSFET – ESD Protected

Voltage

-20 V

Current

-4.3A

Features

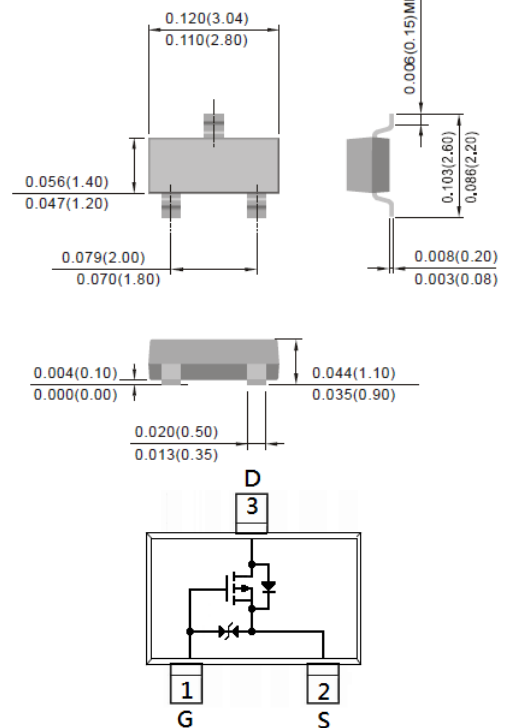
- $R_{DS(ON)}$, $V_{GS}@-4.5V$, $I_D@-4.3A < 50m\Omega$
- $R_{DS(ON)}$, $V_{GS}@-2.5V$, $I_D@-4.0A < 58m\Omega$
- $R_{DS(ON)}$, $V_{GS}@-1.8V$, $I_D@-2.4A < 73m\Omega$
- Advanced Trench Process Technology
- Specially Designed for Switch Load, PWM Application, etc
- ESD Protected 2KV HBM
- Lead free in compliance with EU RoHS 2.0
- Green molding compound as per IEC 61249 standard

Mechanical Data

- Case: SOT-23 Package
- Terminals: Solderable per MIL-STD-750, Method 2026
- Approx. Weight: 0.0003 ounces, 0.0084 grams
- Marking: A5AE

SOT-23

Unit : inch(mm)



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

PARAMETER	SYMBOL	LIMIT	UNITS
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	± 8	V
Continuous Drain Current	I_D	-4.3	A
Pulsed Drain Current	I_{DM}	-17.2	A
Power Dissipation	P_D	$T_a=25^\circ\text{C}$	1.25
		Derate above 25°C	10
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55~150	$^\circ\text{C}$
Typical Thermal Resistance	$R_{\theta JA}$	100	$^\circ\text{C/W}$
- Junction to Ambient (Note 3)			

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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	-0.55	-1.0	V
Drain-Source On-State Resistance	R _{DS(on)}	V _{GS} =-4.5V, I _D =-4.3A	-	42	50	mΩ
		V _{GS} =-2.5V, I _D =-4.0A	-	49	58	
		V _{GS} =-1.8V, I _D =-2.4A	-	59	73	
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-20V, V _{GS} =0V	-	-0.01	-1	uA
Gate-Source Leakage Current	I _{GSS}	V _{GS} =±8V, V _{DS} =0V	-	±6	±10	uA
Dynamic (Note 5)						
Total Gate Charge	Q _g	V _{DS} =-10V, I _D =-4.3A, V _{GS} =-4.5V (Note 1,2)	-	24	-	nC
Gate-Source Charge	Q _{gs}		-	1.5	-	
Gate-Drain Charge	Q _{gd}		-	2.5	-	
Input Capacitance	C _{iss}	V _{DS} =-10V, V _{GS} =0V, f=1.0MHZ	-	907	-	pF
Output Capacitance	C _{oss}		-	90	-	
Reverse Transfer Capacitance	C _{rss}		-	70	-	
Turn-On Delay Time	t _{d(on)}	V _{DD} =-10V, I _D =-4.3A, V _{GS} =-4.5V, R _G =6Ω (Note 1,2)	-	45	-	ns
Turn-On Rise Time	t _r		-	79	-	
Turn-Off Delay Time	t _{d(off)}		-	193	-	
Turn-Off Fall Time	t _f		-	826	-	
Drain-Source Diode						
Maximum Continuous Drain-Source Diode Forward Current	I _S	---	-	-	-1.5	A
Diode Forward Voltage	V _{SD}	I _S =-1.0A, 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. 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

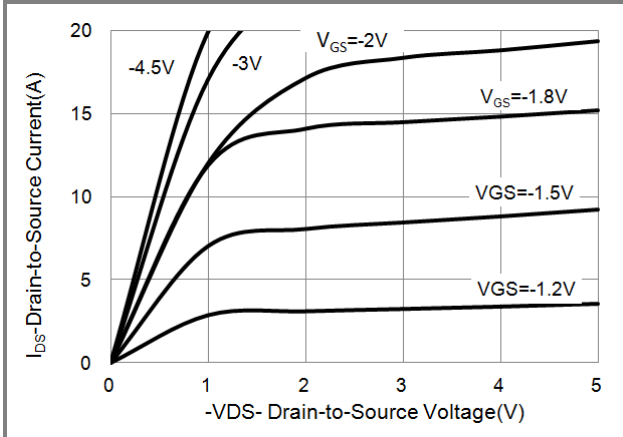


Fig.1 On-Region Characteristics

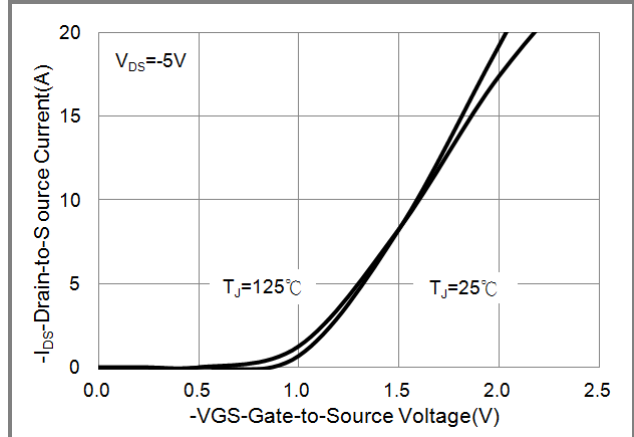


Fig.2 Transfer Characteristics

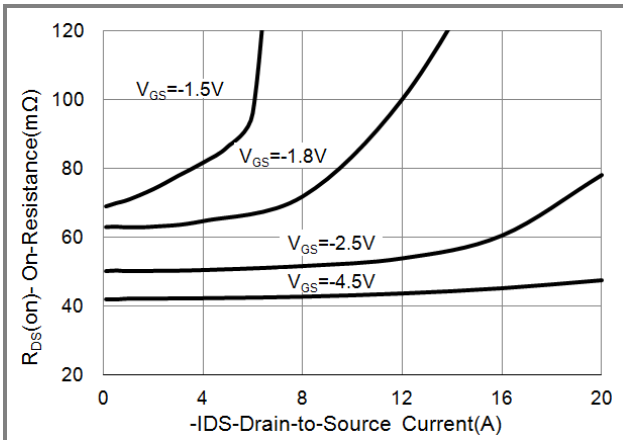


Fig.3 On-Resistance vs. Drain Current

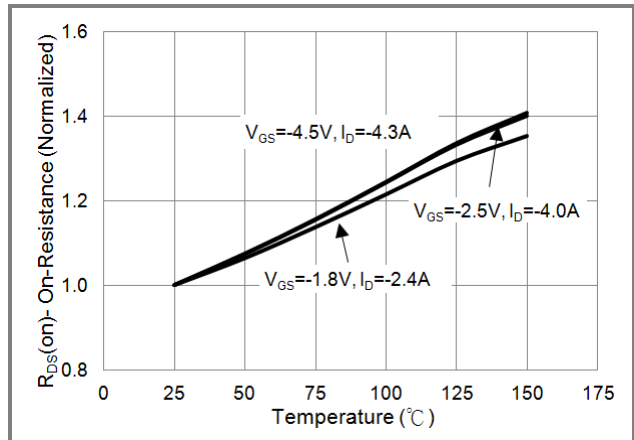


Fig.4 On-Resistance vs. Junction temperature

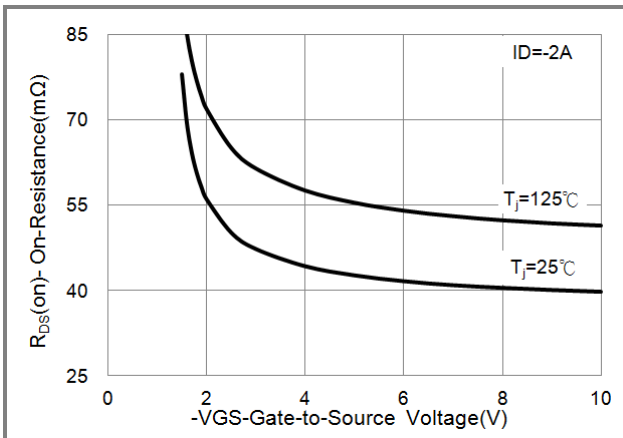


Fig.5 On-Resistance Variation with V_{GS} .

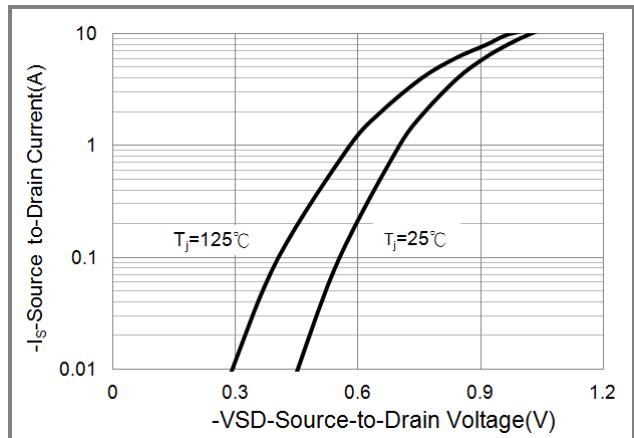


Fig.6 Body Diode Characteristics

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TYPICAL CHARACTERISTIC CURVES

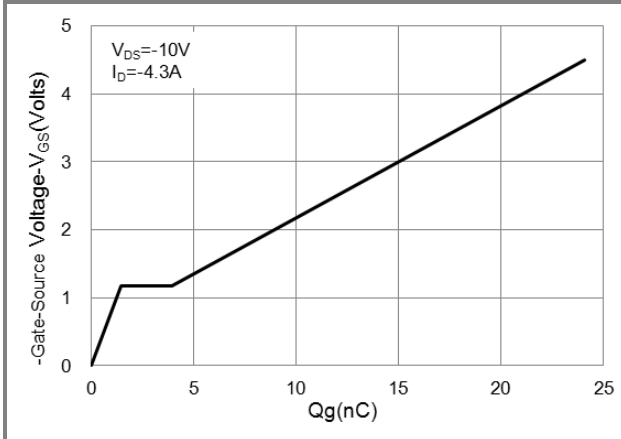


Fig.7 Gate-Charge Characteristics

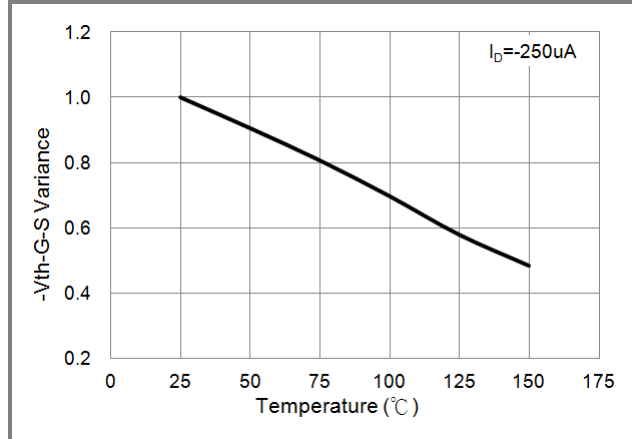


Fig.8 Threshold Voltage Variation with Temperature.

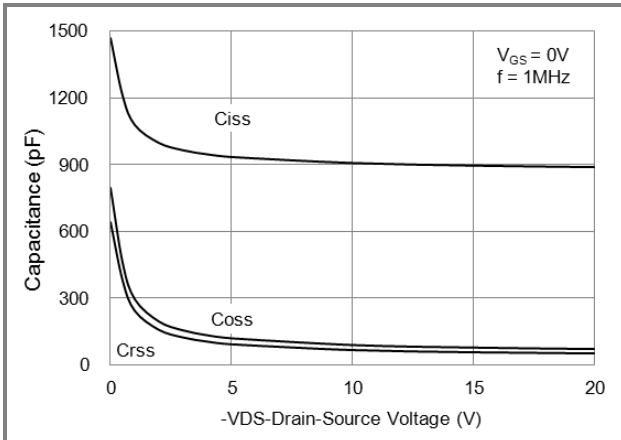


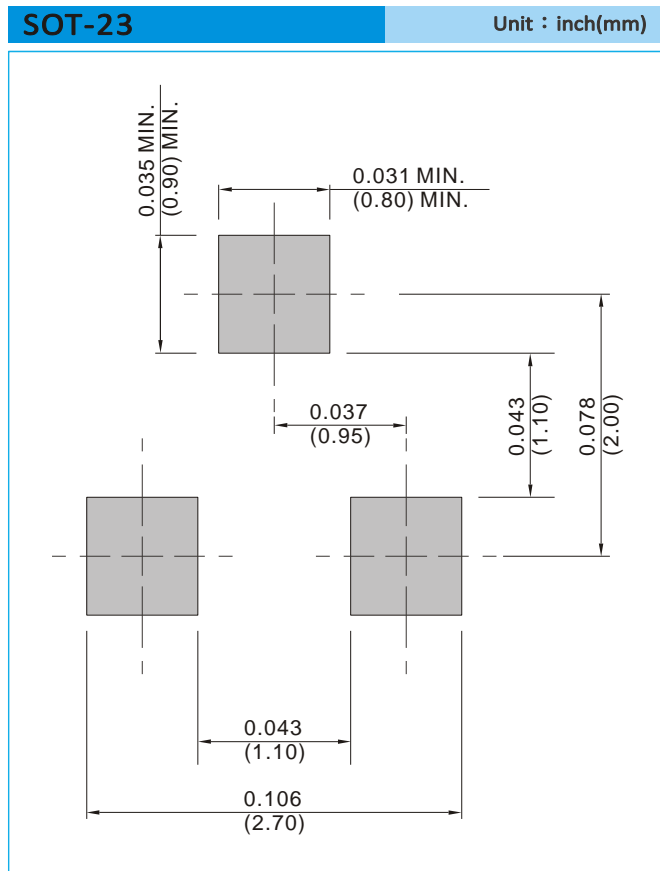
Fig.9 Capacitance vs. Drain-Source Voltage.

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Product and Packing Information

Part No.	Package Type	Packing Type	Marking
PJA3415AE	SOT-23	3K pcs / 7" reel	A5AE

MOUNTING PAD LAYOUT



PJA3415AE

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