



PJA3416AE-AU

20V N-Channel Enhancement Mode MOSFET – ESD Protected

Voltage

20 V

Current

6.5A

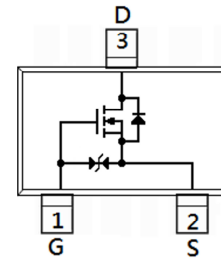
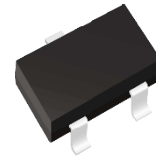
Features

- $R_{DS(ON)}$, $V_{GS}@4.5V$, $I_D@6.5A < 22m\Omega$
- $R_{DS(ON)}$, $V_{GS}@2.5V$, $I_D@5.5A < 26m\Omega$
- $R_{DS(ON)}$, $V_{GS}@1.8V$, $I_D@5.0A < 34m\Omega$
- Advanced Trench Process Technology
- ESD Protected 2KV HBM
- 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 ($T_A=25^\circ C$ 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)		I_D	6.5	A
Pulsed Drain Current ^(Note 1)		I_{DM}	32	
Power Dissipation	$T_a=25^\circ C$	P_D	1.25	W
	Derate above $25^\circ C$		10	mW/ $^\circ C$
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55~150	$^\circ C$
Typical Thermal Resistance		$R_{\theta JA}$	100	$^\circ C/W$
- 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	0.4	0.58	1	
Drain-Source On-State Resistance	R _{DS(on)}	V _{GS} =4.5V, I _D =6.5A	-	18.4	22	mΩ
		V _{GS} =2.5V, I _D =5.5A	-	21.5	26	
		V _{GS} =1.8V, I _D =5A	-	26.4	34	
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 5)						
Total Gate Charge	Q _g	V _{DS} =10V, I _D =6.5A, V _{GS} =4.5V(Note 2)	-	8.6	-	nC
Gate-Source Charge	Q _{gs}		-	1.06	-	
Gate-Drain Charge	Q _{gd}		-	1.04	-	
Input Capacitance	C _{iss}	V _{DS} =10V, V _{GS} =0V, f=1MHZ	-	836	-	pF
Output Capacitance	C _{oss}		-	96	-	
Reverse Transfer Capacitance	C _{rss}		-	80	-	
Turn-On Delay Time	t _{d(on)}	V _{DD} =10V, I _D =1A, V _{GS} =4.5V, R _G =3Ω(Note 2)	-	24	-	ns
Turn-On Rise Time	t _r		-	46	-	
Turn-Off Delay Time	t _{d(off)}		-	0.22	-	us
Turn-Off Fall Time	t _f		-	0.30	-	
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	-	0.74	1	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

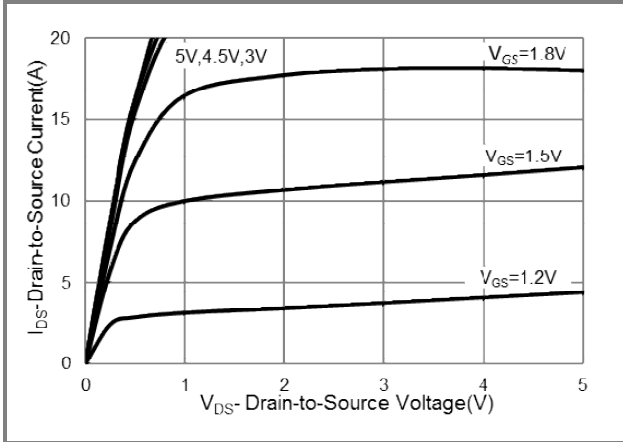


Fig.1 On-Region Characteristics

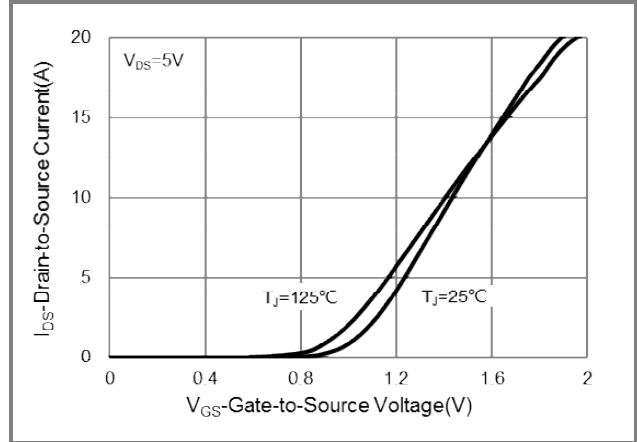


Fig.2 Transfer Characteristics

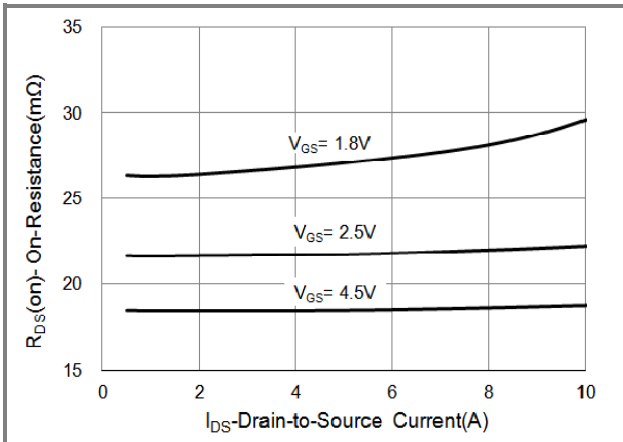


Fig.3 On-Resistance vs. Drain Current

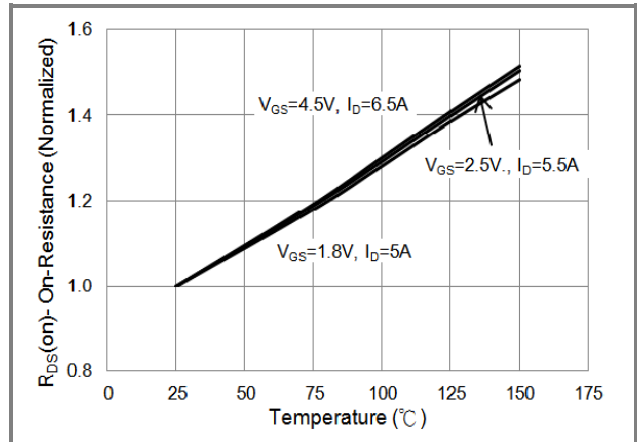


Fig.4 On-Resistance vs. Junction temperature

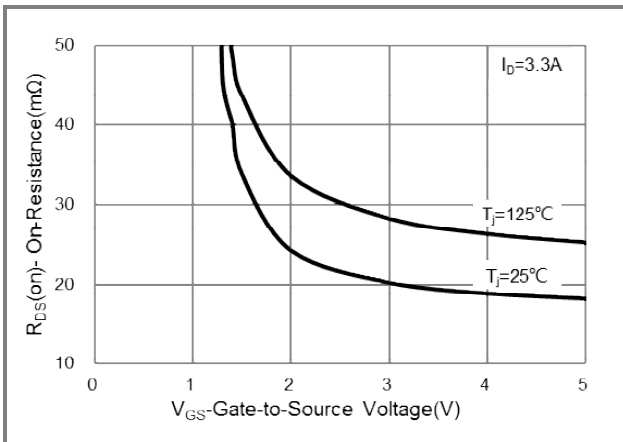


Fig.5 On-Resistance Variation with VGS

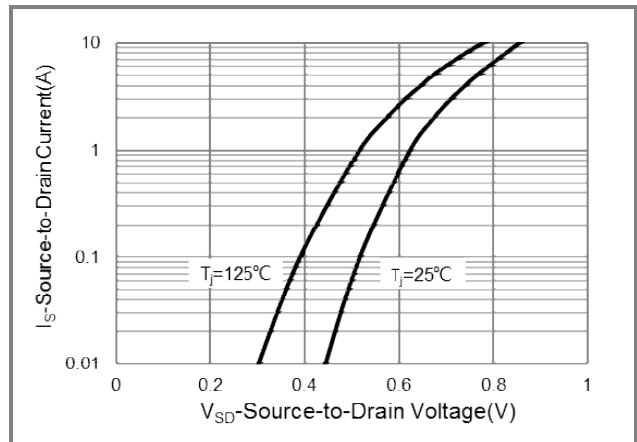


Fig.6 Body Diode Characteristics



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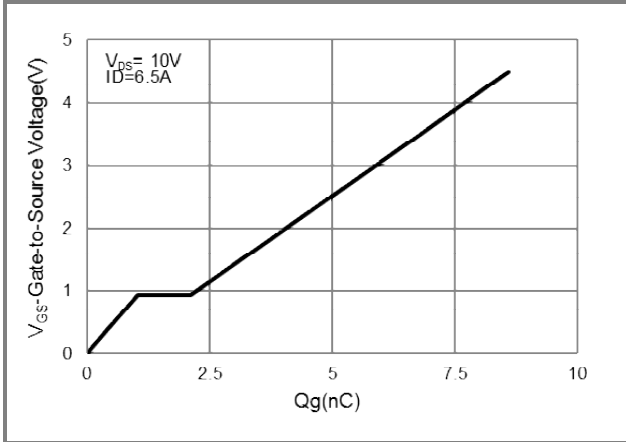


Fig.7 Gate-Charge Characteristics

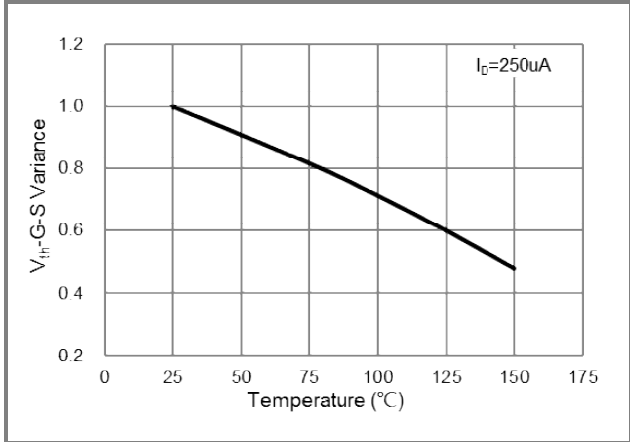


Fig.8 Threshold Voltage Variation with Temperature

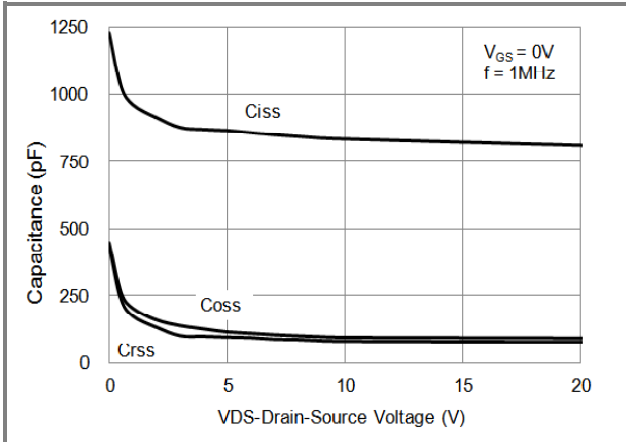


Fig.9 Capacitance vs. Drain-Source Voltage

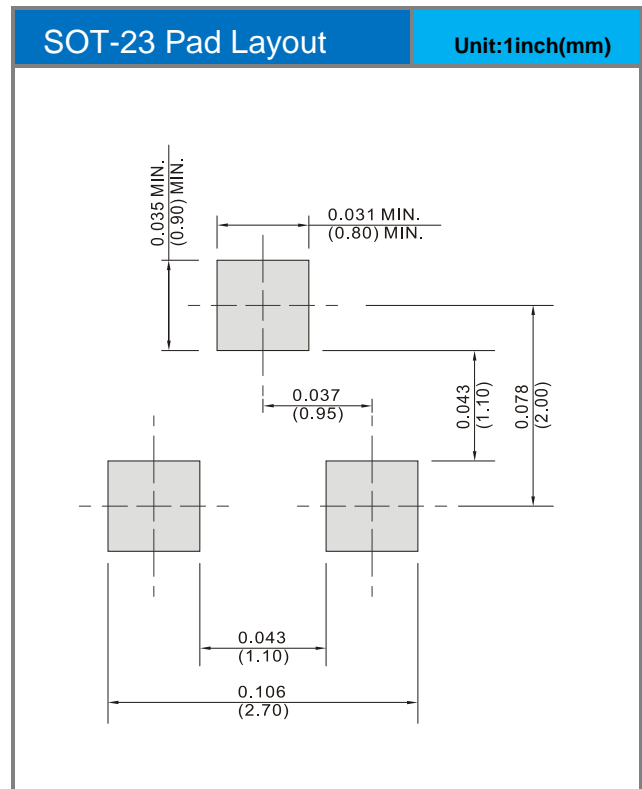
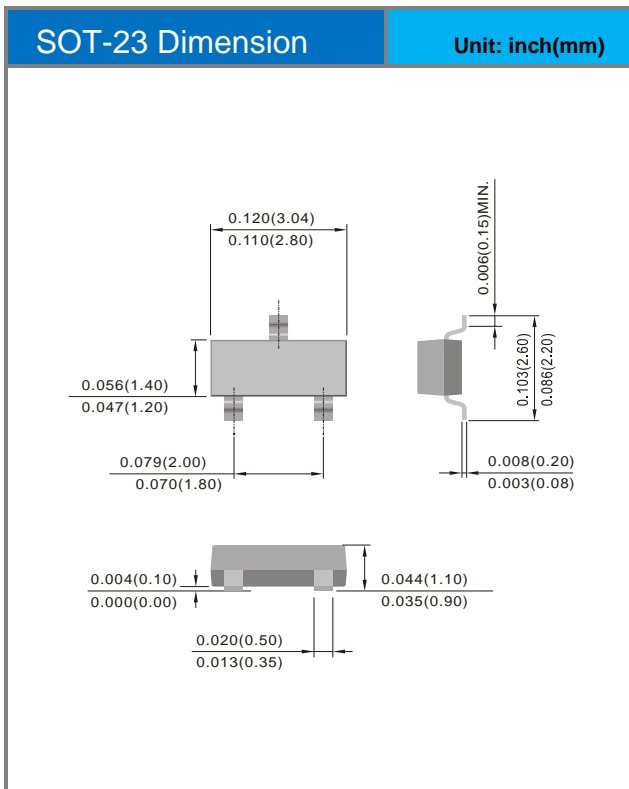


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Part No. Packing Code Version

Part No. Packing Code	Package Type	Packing Type	Marking	Version
PJA3416AE-AU_R1_000A1	SOT-23	3K pcs / 7" reel	A6E	Halogen free RoHS compliant

Packaging Information & Mounting Pad Layout





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