



# PJA3409-AU

## 30V P-Channel Enhancement Mode MOSFET

**Voltage**

**-30 V**

**Current**

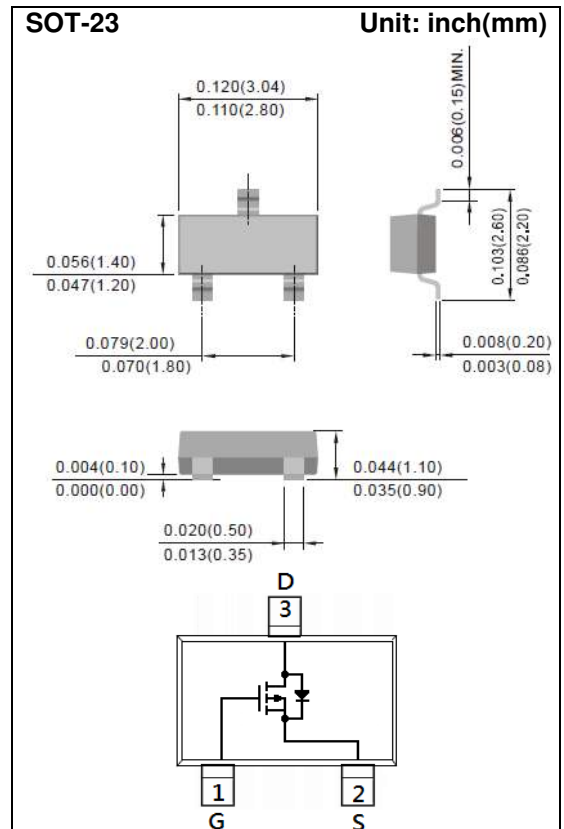
**-2.9A**

### Features

- $R_{DS(ON)}$ ,  $V_{GS}@-10V$ ,  $I_D@-2.9A < 110m\Omega$
- $R_{DS(ON)}$ ,  $V_{GS}@-4.5V$ ,  $I_D@-1.9A < 150m\Omega$
- 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



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

PARAMETER		SYMBOL	LIMIT	UNITS
Drain-Source Voltage		$V_{DS}$	-30	V
Gate-Source Voltage		$V_{GS}$	$\pm 20$	
Continuous Drain Current <sup>(Note 4)</sup>		$I_D$	-2.9	A
Pulsed Drain Current <sup>(Note 1)</sup>		$I_{DM}$	-11.6	
Power Dissipation	$T_a=25^\circ\text{C}$	$P_D$	1.25	W
	Derate above $25^\circ\text{C}$		10	mW/ $^\circ\text{C}$
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 <sup>(Note 3,4)</sup>				



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## Electrical Characteristics ( $T_A=25^\circ\text{C}$ unless otherwise noted)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNITS
<b>Static</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-30	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1	-1.31	-2.1	
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS}=-10V, I_D=-2.9A$	-	92	110	m $\Omega$
		$V_{GS}=-4.5V, I_D=-1.9A$	-	120	150	
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=-30V, V_{GS}=0V$	-	-	-1	$\mu A$
Gate-Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	$\pm 100$	nA
<b>Dynamic</b> (Note 5)						
Total Gate Charge	$Q_g$	$V_{DS}=-15V, I_D=-2.9A,$ $V_{GS}=-10V$ (Note 1,2)	-	9.8	-	nC
Gate-Source Charge	$Q_{gs}$		-	1.5	-	
Gate-Drain Charge	$Q_{gd}$		-	2.2	-	
Input Capacitance	$C_{iss}$	$V_{DS}=-15V, V_{GS}=0V,$ $f=1\text{MHZ}$	-	396	-	pF
Output Capacitance	$C_{oss}$		-	47	-	
Reverse Transfer Capacitance	$C_{rss}$		-	36	-	
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=-15V, I_D=-2.9A,$ $V_{GS}=-10V,$ $R_G=6\Omega$ (Note 1,2)	-	5	-	ns
Turn-On Rise Time	$t_r$		-	30	-	
Turn-Off Delay Time	$t_{d(off)}$		-	25	-	
Turn-Off Fall Time	$t_f$		-	8	-	
<b>Drain-Source Diode</b>						
Maximum Continuous Drain-Source Diode Forward Current	$I_S$	---	-	-	-1.5	A
Diode Forward Voltage	$V_{SD}$	$I_S=-1A, V_{GS}=0V$	-	-0.77	-1.2	V

**NOTES :**

1. Pulse width  $\leq 300\mu s$ , Duty cycle  $\leq 2\%$ .
2. Essentially independent of operating temperature typical characteristics.
3.  $R_{\theta JA}$  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 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

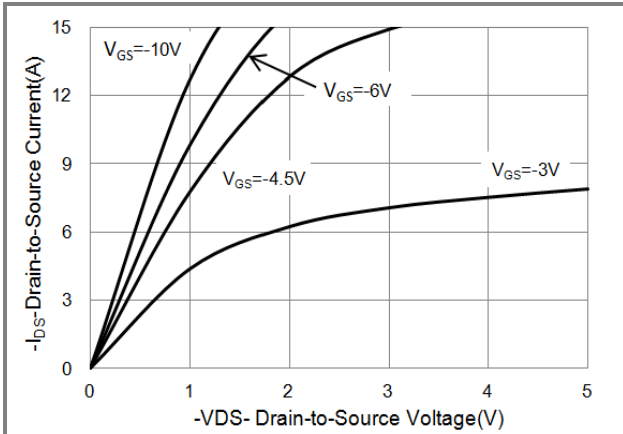


Fig.1 On-Region Characteristics

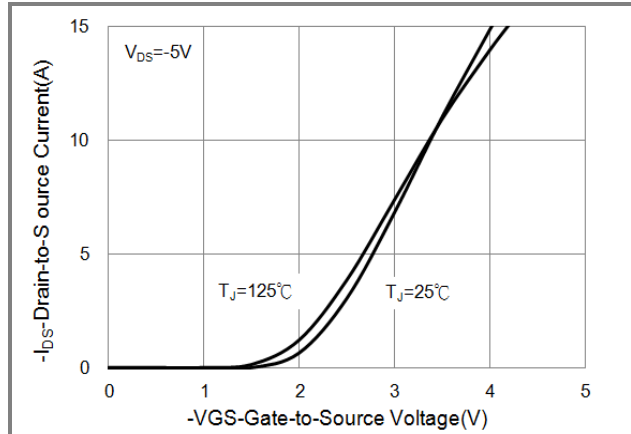


Fig.2 Transfer Characteristics

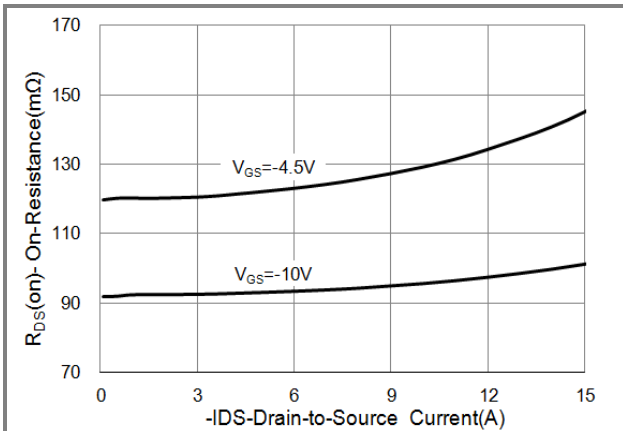


Fig.3 On-Resistance vs. Drain Current

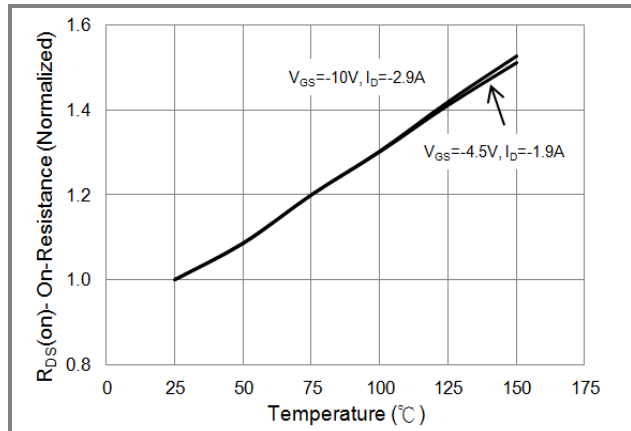


Fig.4 On-Resistance vs. Junction temperature

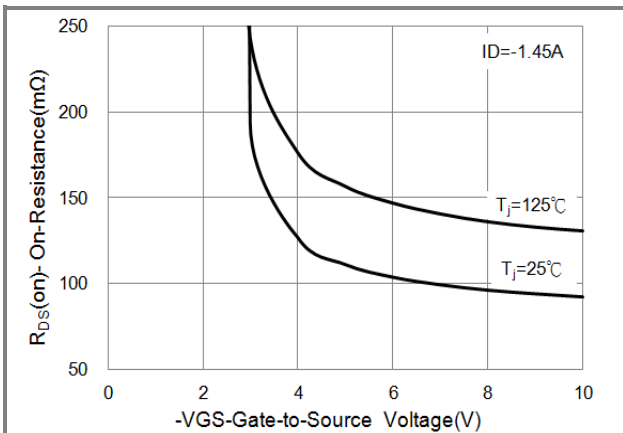


Fig.5 On-Resistance Variation with  $V_{GS}$

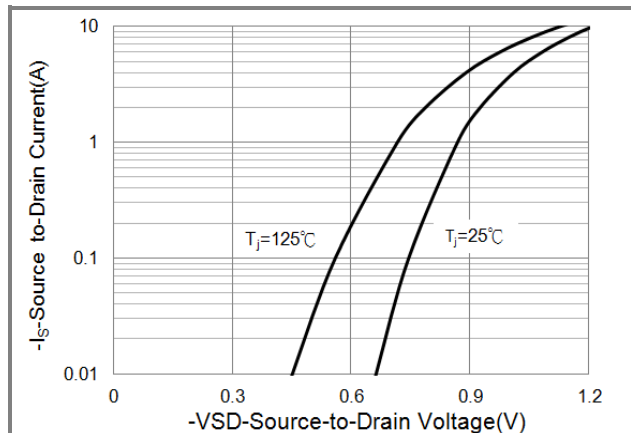


Fig.6 Body Diode Characteristics



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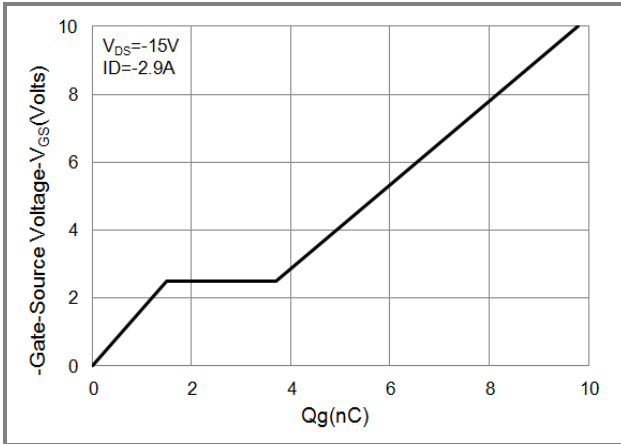


Fig.7 Gate-Charge Characteristics

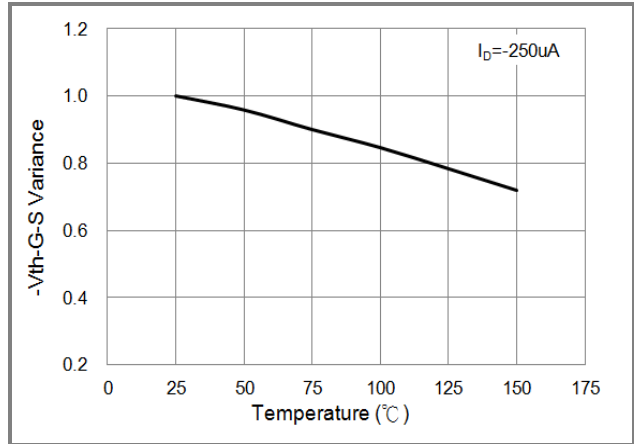


Fig.8 Threshold Voltage Variation with Temperature

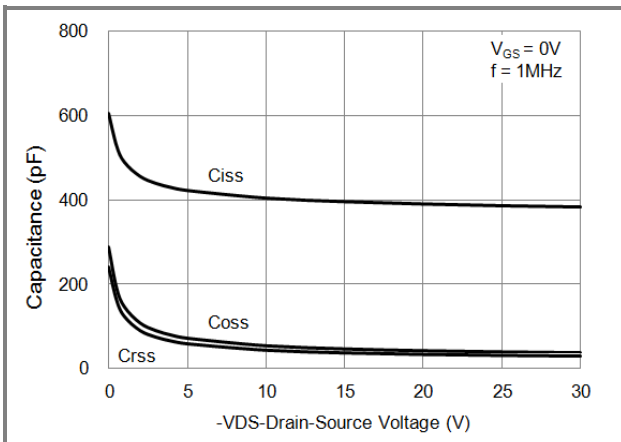


Fig.9 Capacitance vs. Drain-Source Voltage

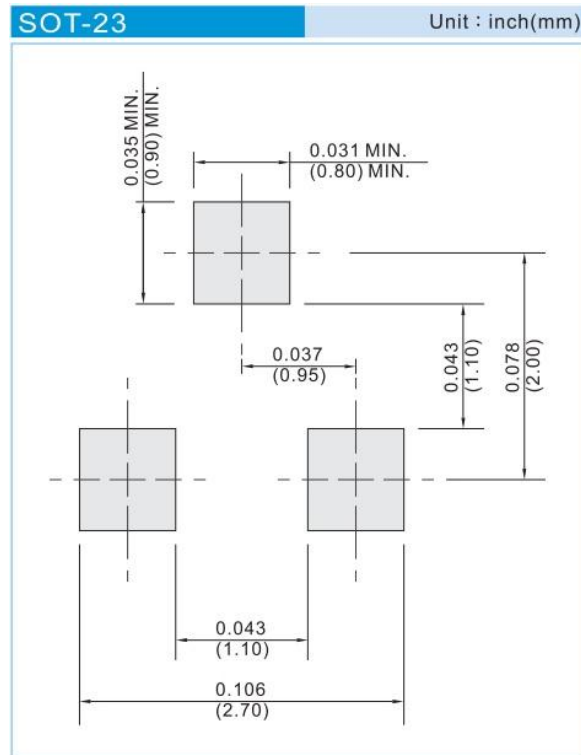


# PJA3409-AU

## Part No Packing Code Version

Part No Packing Code	Package Type	Packing Type	Marking	Version
PJA3409-AU_R1_000A1	SOT-23	3K pcs / 7" reel	A09	Halogen free

## Packaging Information & Mounting Pad Layout





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