

# PJA3404

## 30V N-Channel Enhancement Mode MOSFET

**Voltage**

**30 V**

**Current**

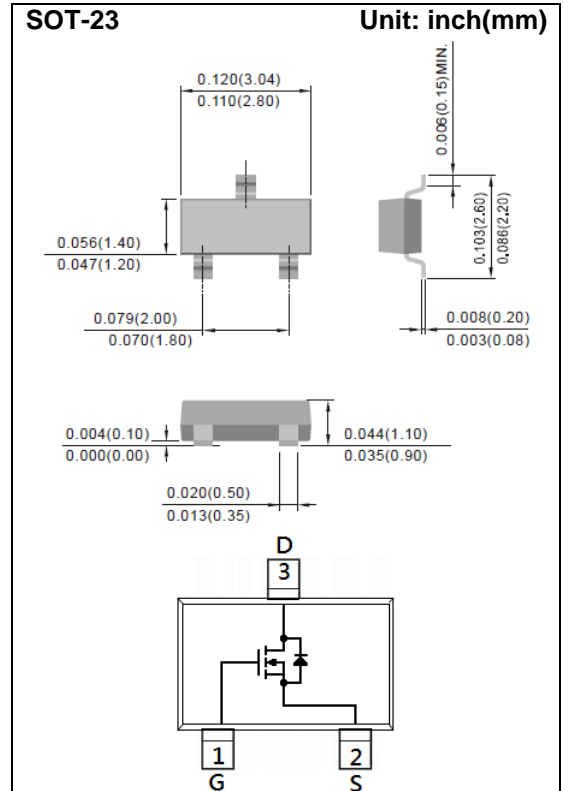
**5.6 A**

### Features

- $R_{DS(ON)}$  ,  $V_{GS}@10V$  ,  $I_D@5.6A < 30m\Omega$
- $R_{DS(ON)}$  ,  $V_{GS}@4.5V$  ,  $I_D@3.5A < 45m\Omega$
- Advanced Trench Process Technology
- Specially Designed for Switch Load, PWM Application, etc.
- Lead free in compliance with EU RoHS 2011/65/EU directive.
- Green molding compound as per IEC61249 Std. (Halogen Free)

### Mechanical Data

- Case : SOT-23 Package
- Terminals : Solderable per MIL-STD-750, Method 2026
- Approx. Weight : 0.0003 ounces, 0.0084 grams
- Marking : A04



### 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	$V_{GS}$	+20	V
Continuous Drain Current	$I_D$	5.6	A
Pulsed Drain Current	$I_{DM}$	22	A
Power Dissipation	$P_D$	$T_a=25^\circ\text{C}$	1.25
		Derate above $25^\circ\text{C}$	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 <sup>(Note 3)</sup>			

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## Electrical Characteristics (T<sub>A</sub>=25°C unless otherwise noted)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNITS
<b>Static</b>						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =250uA	30	-	-	V
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250uA	1.0	1.33	2.1	V
Drain-Source On-State Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =5.6A	-	27	30	mΩ
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =3.5A	-	39	45	
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =30V, V <sub>GS</sub> =0V	-	0.01	1	uA
Gate-Source Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =±20V, V <sub>DS</sub> =0V	-	±10	±100	nA
<b>Dynamic</b>						
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> =15V, I <sub>D</sub> =5.6A, V <sub>GS</sub> =10V(Notes 1,2)	-	7.8	-	nC
Gate-Source Charge	Q <sub>gs</sub>		-	1.2	-	
Gate-Drain Charge	Q <sub>gd</sub>		-	1.5	-	
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =15V, V <sub>GS</sub> =0V, f=1.0MHZ	-	343	-	pF
Output Capacitance	C <sub>oss</sub>		-	48	-	
Reverse Transfer Capacitance	C <sub>rss</sub>		-	34	-	
<b>Switching</b>						
Turn-On Delay Time	t <sub>d(on)</sub>	V <sub>DD</sub> =15V, I <sub>D</sub> =5.6A, V <sub>GS</sub> =10V, R <sub>G</sub> =3Ω(Notes 1,2)	-	3	-	ns
Turn-On Rise Time	t <sub>r</sub>		-	40	-	
Turn-Off Delay Time	t <sub>d(off)</sub>		-	38	-	
Turn-Off Fall Time	t <sub>f</sub>		-	39	-	
<b>Drain-Source Diode</b>						
Maximum Continuous Drain-Source Diode Forward Current	I <sub>S</sub>	---	-	-	1.5	A
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =1.0A, V <sub>GS</sub> =0V	-	0.77	1.2	V

**NOTES :**

1. Pulse width ≤ 300us, Duty cycle ≤ 2%.
2. Essentially independent of operating temperature typical characteristics.
3. R<sub>θJA</sub> 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.

# PJA3404

## TYPICAL CHARACTERISTIC CURVES

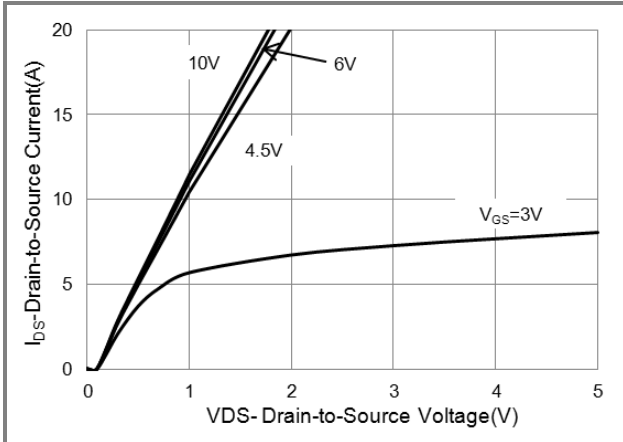


Fig.1 On-Region Characteristics

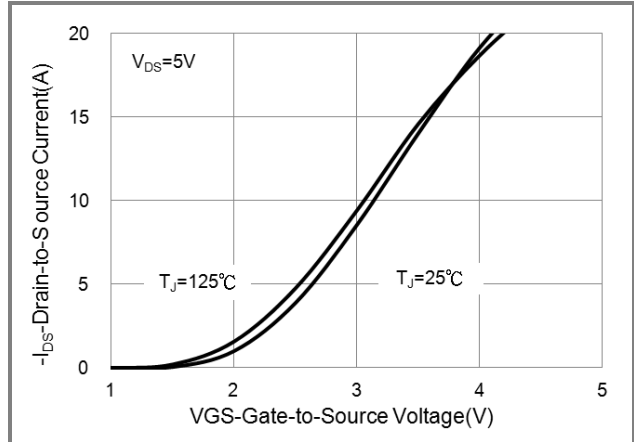


Fig.2 Transfer Characteristics

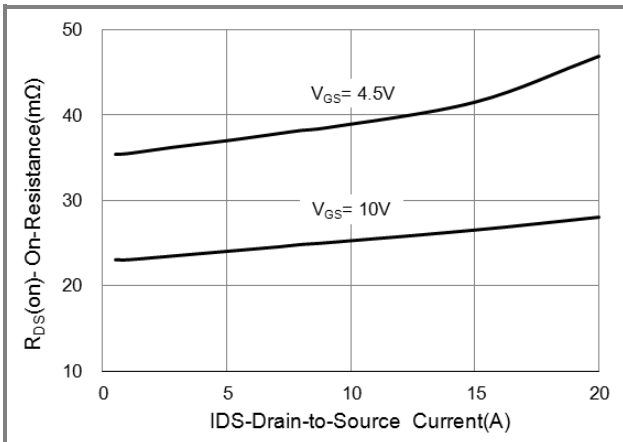


Fig.3 On-Resistance vs. Drain Current

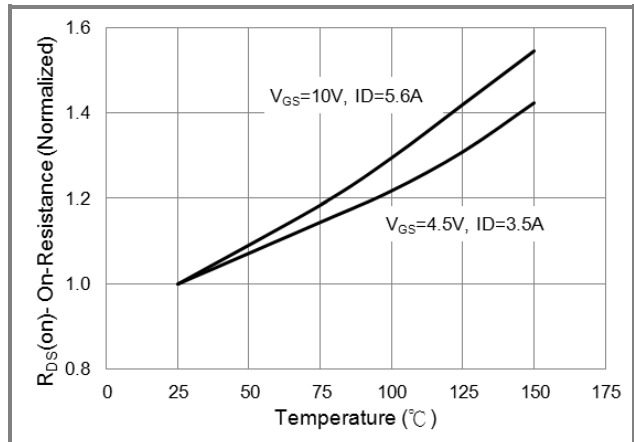


Fig.4 On-Resistance vs. Junction temperature

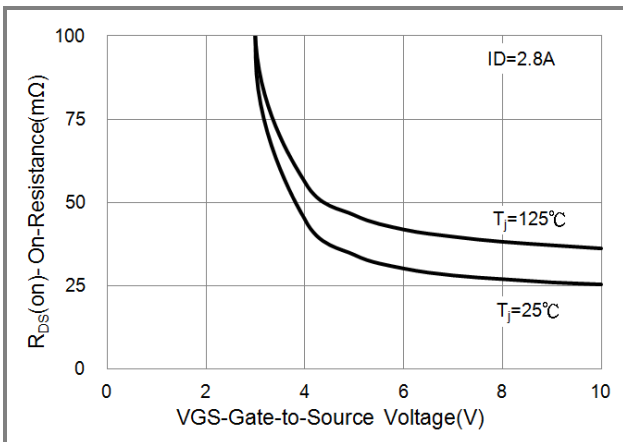


Fig.5 On-Resistance Variation with VGS.

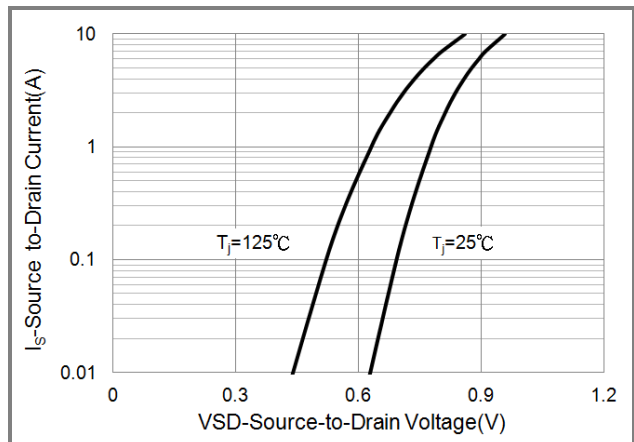


Fig.6 Body Diode Characteristics

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## TYPICAL CHARACTERISTIC CURVES

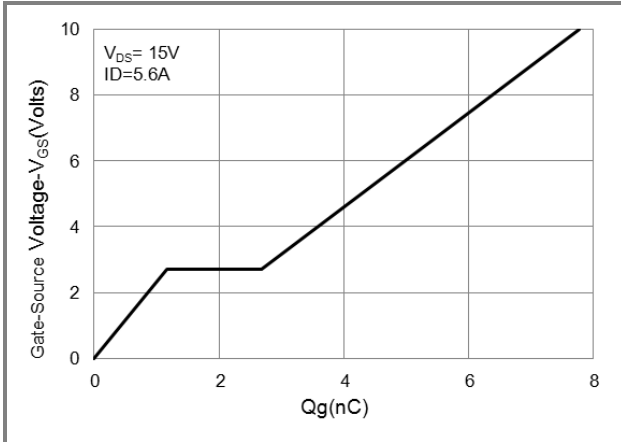


Fig.7 Gate-Charge Characteristics

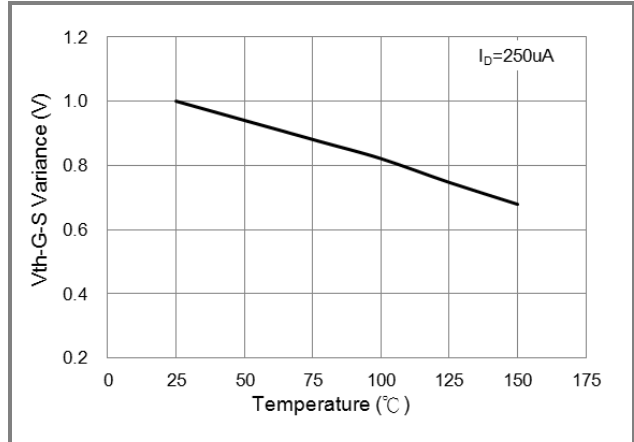


Fig.8 Threshold Voltage Variation with Temperature

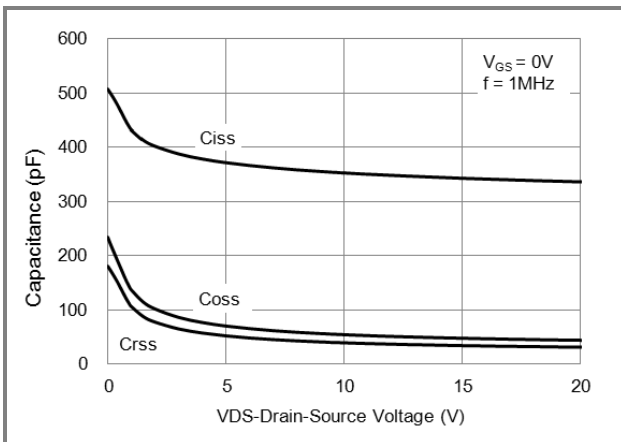


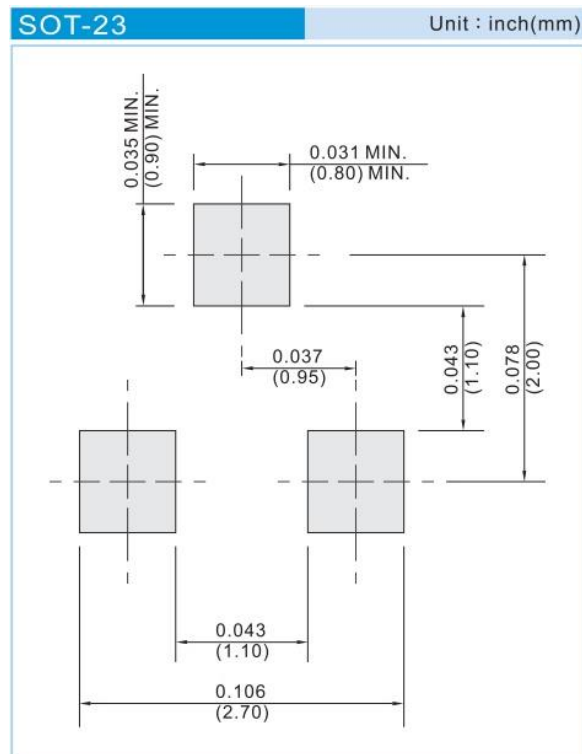
Fig.9 Capacitance vs. Drain-Source Voltage.

# PJA3404

## Product and Packing Information

Part No.	Package Type	Packing Type	Marking
PJA3404	SOT-23	3K pcs / 7" reel	A04

## Mounting Pad Layout



## **PJA3404**

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