

# PJA3402

## 30V N-Channel Enhancement Mode MOSFET

**Voltage**

**30 V**

**Current**

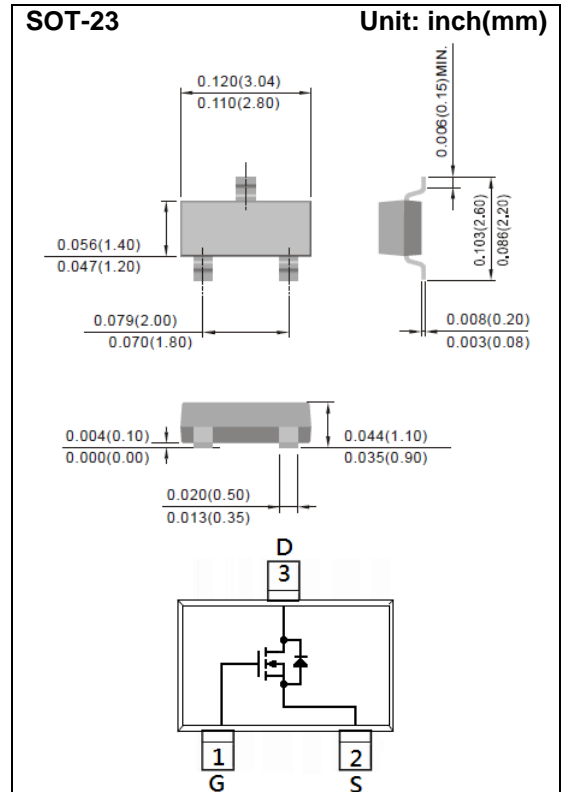
**4.4 A**

### Features

- $R_{DS(ON)}$  ,  $V_{GS}@10V$  ,  $I_D@4.4A < 48m\Omega$
- $R_{DS(ON)}$  ,  $V_{GS}@4.5V$  ,  $I_D@3.6A < 53m\Omega$
- $R_{DS(ON)}$  ,  $V_{GS}@2.5V$  ,  $I_D@2.5A < 66m\Omega$
- $R_{DS(ON)}$  ,  $V_{GS}@1.8V$  ,  $I_D@1.5A < 92m\Omega$
- Advanced Trench Process Technology
- Specially Designed for Switch Load, PWM Application, etc.
- Lead free in comply with EU RoHS 2011/65/EU directives.
- 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 : A02



### 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	$V_{GS}$	$\pm 12$	V
Continuous Drain Current	$I_D$	4.4	A
Pulsed Drain Current	$I_{DM}$	17.6	A
Power Dissipation	$T_a=25^\circ\text{C}$	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)</sup>			

# PJA3402

## 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	0.4	0.72	1.2	V
Drain-Source On-State Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =4.4A	-	37	48	mΩ
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =3.6A	-	40	53	
		V <sub>GS</sub> =2.5V, I <sub>D</sub> =2.5A	-	48	66	
		V <sub>GS</sub> =1.8V, I <sub>D</sub> =1.5A	-	62	92	
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> =±12V, 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> =4.4A, V <sub>GS</sub> =10V(Notes 1,2)	-	11.3	-	nC
Gate-Source Charge	Q <sub>gs</sub>		-	1	-	
Gate-Drain Charge	Q <sub>gd</sub>		-	1.2	-	
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =15V, V <sub>GS</sub> =0V, f=1.0MHZ	-	447	-	pF
Output Capacitance	C <sub>oss</sub>		-	34	-	
Reverse Transfer Capacitance	C <sub>rss</sub>		-	22	-	
<b>Switching</b>						
Turn-On Delay Time	t <sub>d(on)</sub>	V <sub>DD</sub> =15V, I <sub>D</sub> =4.4A, V <sub>GS</sub> =10V, R <sub>G</sub> =3Ω(Notes 1,2)	-	1.7	-	ns
Turn-On Rise Time	t <sub>r</sub>		-	38	-	
Turn-Off Delay Time	t <sub>d(off)</sub>		-	82	-	
Turn-Off Fall Time	t <sub>f</sub>		-	64	-	
<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.

# PJA3402

## TYPICAL CHARACTERISTIC CURVES

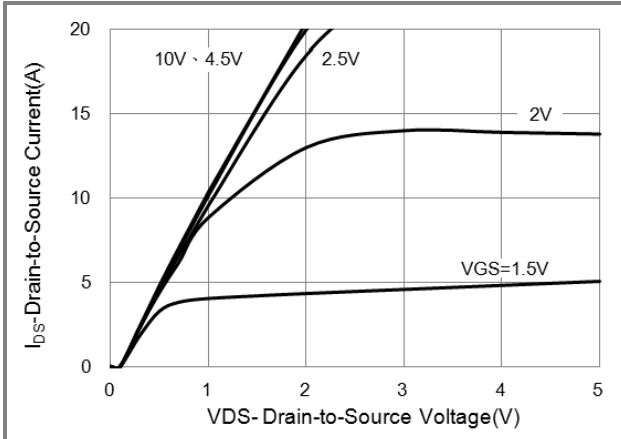


Fig.1 On-Region Characteristics

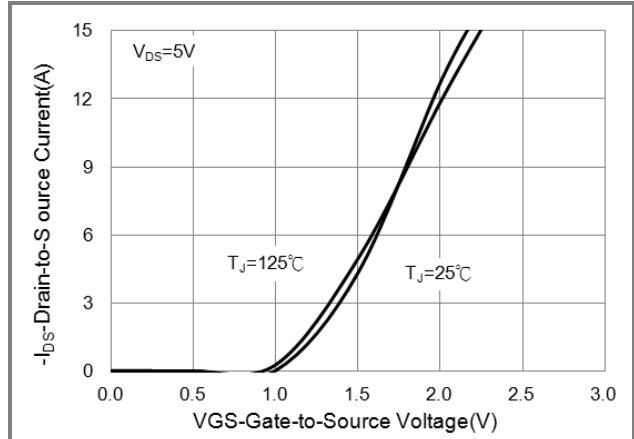


Fig.2 Transfer Characteristics

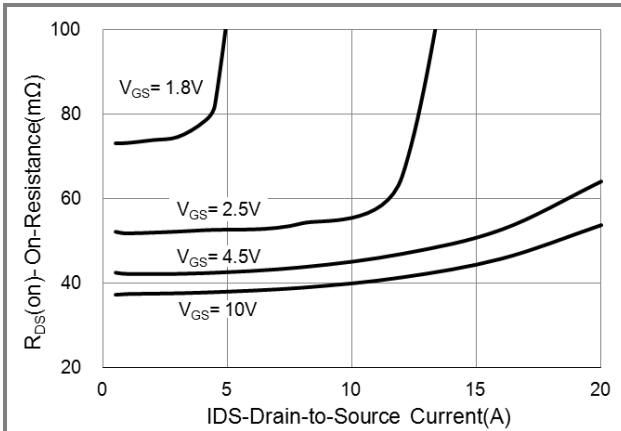


Fig.3 On-Resistance vs. Drain Current

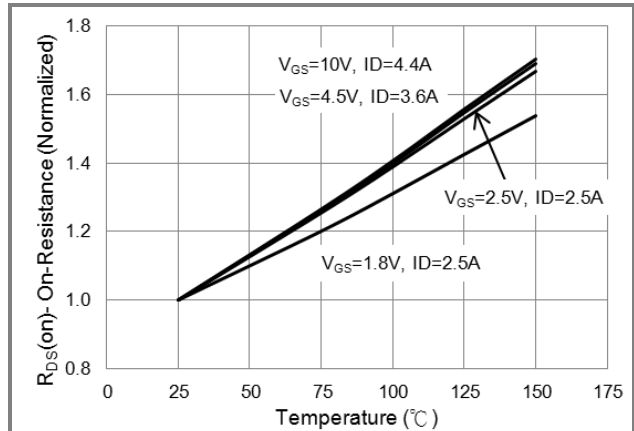


Fig.4 On-Resistance vs. Junction temperature

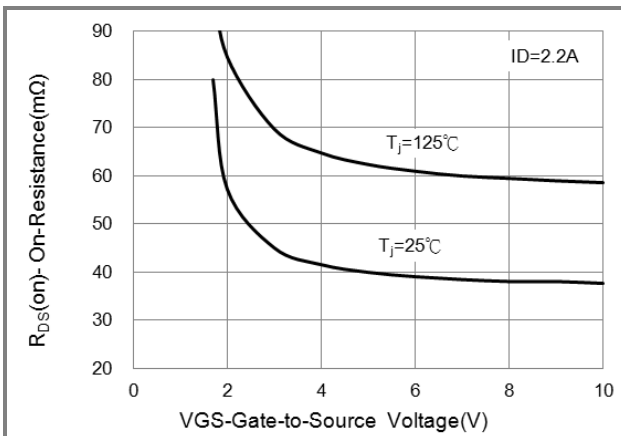


Fig.5 On-Resistance Variation with VGS.

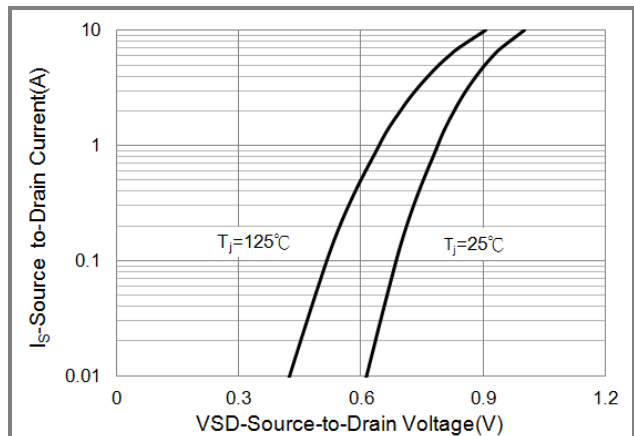


Fig.6 Body Diode Characteristics

# PJA3402

## TYPICAL CHARACTERISTIC CURVES

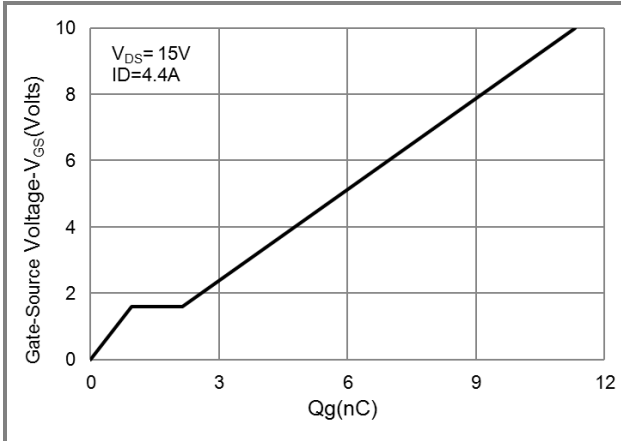


Fig.7 Gate-Charge Characteristics

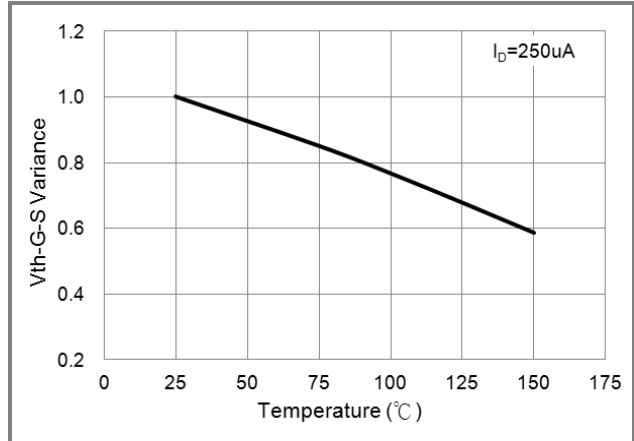


Fig.8 Threshold Voltage Variation with Temperature.

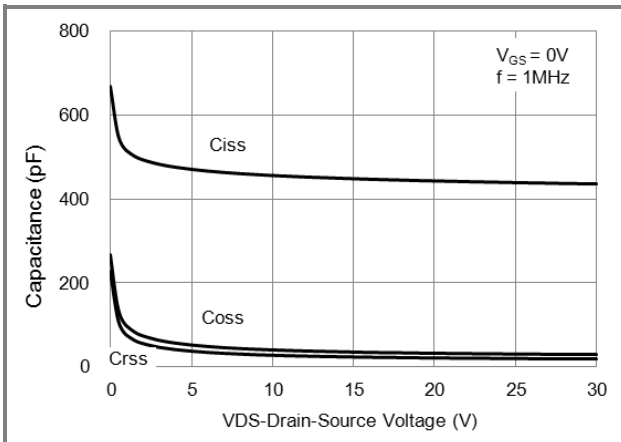


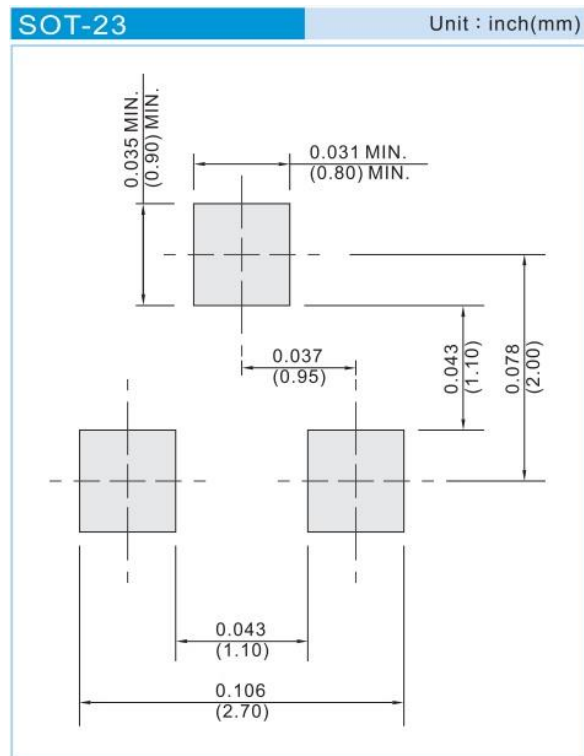
Fig.9 Capacitance vs. Drain-Source Voltage.

# PJA3402

## Product and Packing Information

Part No.	Package Type	Packing Type	Marking
PJA3402	SOT-23	3K pcs / 7" reel	A02

## Mounting Pad Layout



## PJA3402

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