

# PJA3441

## 40V P-Channel Enhancement Mode MOSFET

**Voltage**

**-40 V**

**Current**

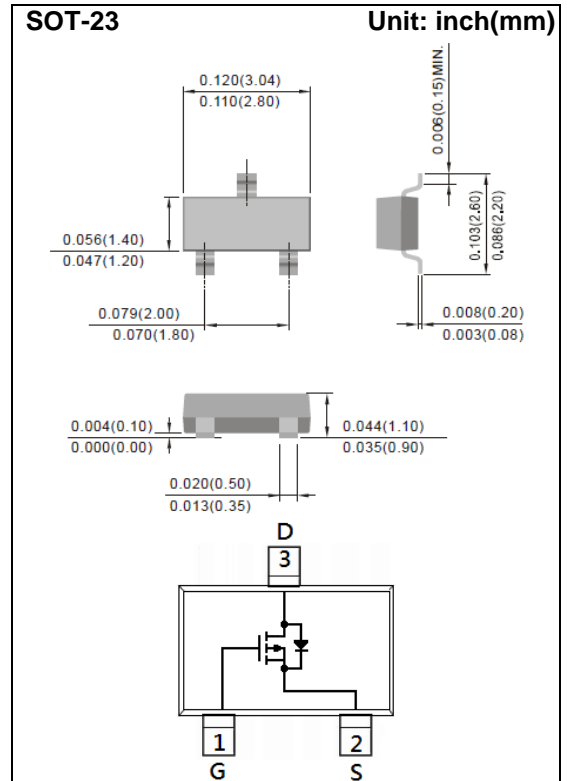
**-3.1A**

### Features

- $R_{DS(ON)}$  ,  $V_{GS}@-10V$  ,  $I_D@-3.1A < 88m\Omega$
- $R_{DS(ON)}$  ,  $V_{GS}@-4.5V$  ,  $I_D@-2.6A < 108m\Omega$
- 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 : A41



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

PARAMETER	SYMBOL	LIMIT	UNITS
Drain-Source Voltage	$V_{DS}$	-40	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Continuous Drain Current	$I_D$	-3.1	A
Pulsed Drain Current <sup>(Note 4)</sup>	$I_{DM}$	-12.4	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	-40	-	-	V
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =-250uA	-1.0	-1.5	-2.5	V
Drain-Source On-State Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> =-10V, I <sub>D</sub> =-3.1A	-	74	88	mΩ
		V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-2.6A	-	88	108	
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =-40V, 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> (Note 5)						
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> =-20V, I <sub>D</sub> =-3.1A, V <sub>GS</sub> =-4.5V(Note 1,2)	-	6	-	nC
Gate-Source Charge	Q <sub>gs</sub>		-	1.6	-	
Gate-Drain Charge	Q <sub>gd</sub>		-	2.3	-	
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =-20V, V <sub>GS</sub> =0V, f=1.0MHZ	-	505	-	pF
Output Capacitance	C <sub>oss</sub>		-	48	-	
Reverse Transfer Capacitance	C <sub>rss</sub>		-	33	-	
Turn-On Delay Time	t <sub>d(on)</sub>	V <sub>DD</sub> =-20V, I <sub>D</sub> =-2.5A, V <sub>GS</sub> =-10V, R <sub>G</sub> =1Ω(Note 1,2)	-	6	-	ns
Turn-On Rise Time	t <sub>r</sub>		-	35	-	
Turn-Off Delay Time	t <sub>d(off)</sub>		-	18	-	
Turn-Off Fall Time	t <sub>f</sub>		-	10	-	
<b>Drain-Source Diode</b>						
Maximum Continuous Drain-Source Diode Forward Current	I <sub>s</sub>	---	-	-	-1.0	A
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =-1.0A, V <sub>GS</sub> =0V	-	-0.82	-1.2	V
Reverse Recovery Time	t <sub>rr</sub>	V <sub>GS</sub> =0V, I <sub>S</sub> =-2.5A	-	13	-	ns
Reverse Recovery Charge	Q <sub>rr</sub>	dI <sub>F</sub> / dt=100A/us	-	8.7	-	nC

**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.
5. Guaranteed by design, not subject to production testing.

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## TYPICAL CHARACTERISTIC CURVES

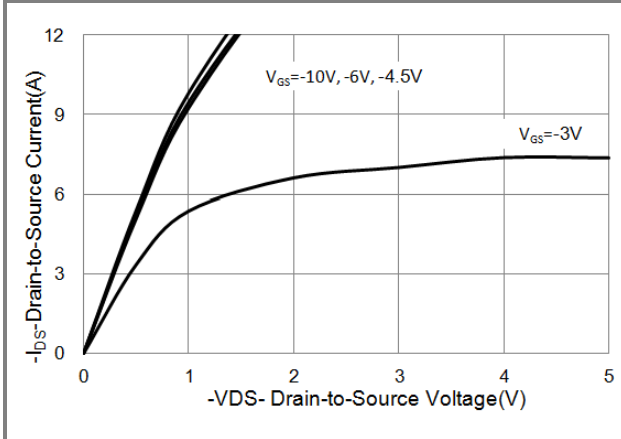


Fig.1 On-Region Characteristics

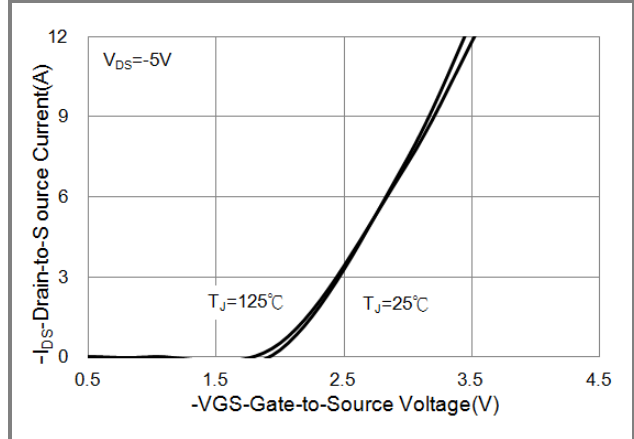


Fig.2 Transfer Characteristics

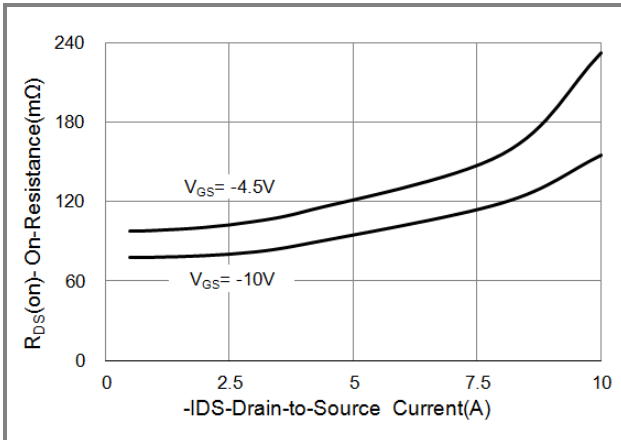


Fig.3 On-Resistance vs. Drain Current

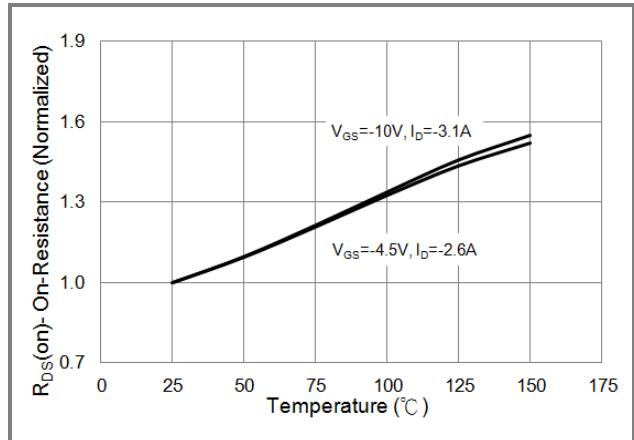


Fig.4 On-Resistance vs. Junction temperature

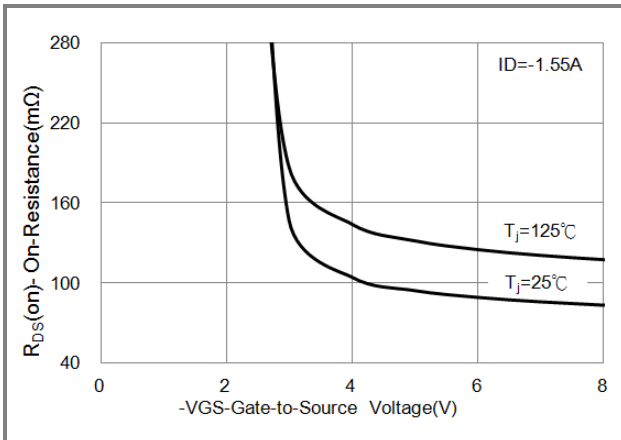


Fig.5 On-Resistance Variation with VGS.

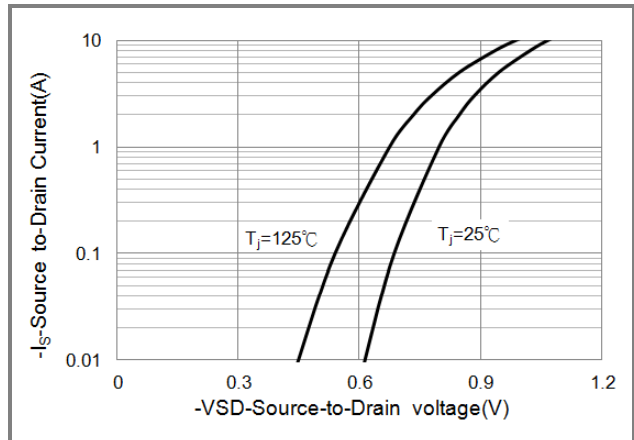


Fig.6 Body Diode Characteristics

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## TYPICAL CHARACTERISTIC CURVES

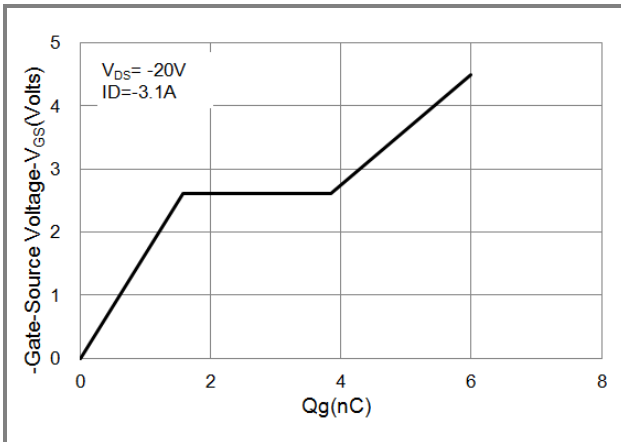


Fig.7 Gate-Charge Characteristics

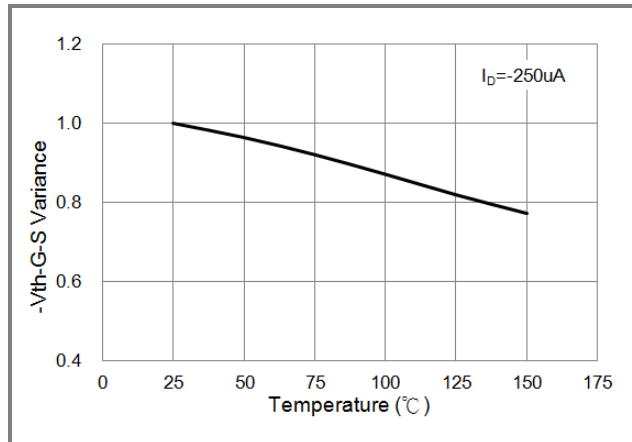


Fig.8 Threshold Voltage Variation with Temperature.

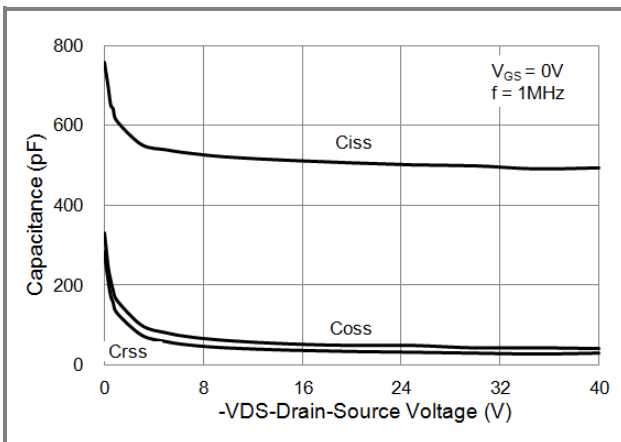


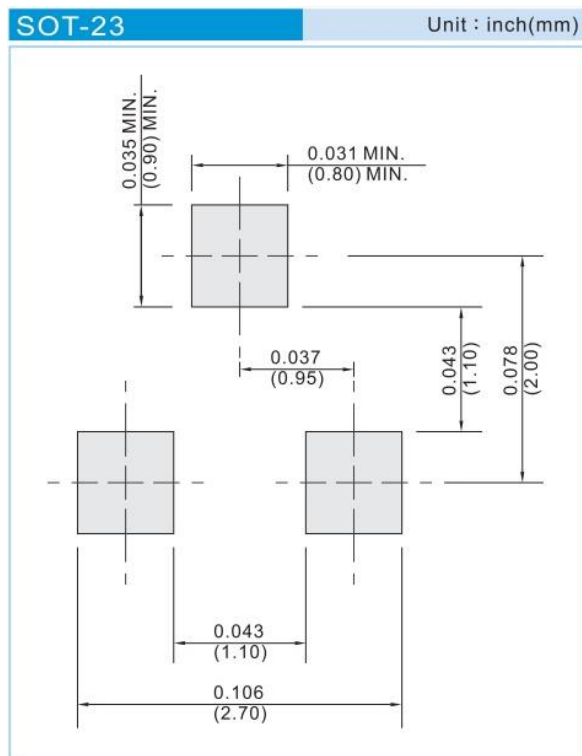
Fig.9 Capacitance vs. Drain-Source Voltage.

# PJA3441

## Product and Packing Information

Part No.	Package Type	Packing Type	Marking
PJA3441	SOT-23	3K pcs / 7" reel	A41

## Mounting Pad Layout



## PJA3441

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