



# PJW3N10A

## 100V N-Channel Enhancement Mode MOSFET

**Voltage**

**100 V**

**Current**

**2.2 A**

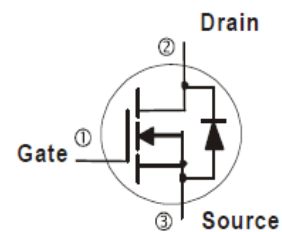
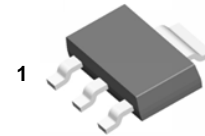
### Features

- $R_{DS(ON)}$ ,  $V_{GS}@10V, I_D@2.2A < 310m\Omega$
- $R_{DS(ON)}$ ,  $V_{GS}@4.5V, I_D@1A < 320m\Omega$
- Low On-Resistance
- Low input capacitance
- Lead free in compliance with EU RoHS 2011/65/EU directive
- Green molding compound as per IEC61249 Std. (Halogen Free)

### Mechanical Data

- Case : SOT-223 Package
- Terminals : Solderable per MIL-STD-750, Method 2026
- Approx. Weight : 0.043 ounces, 0.123 grams
- Marking: W3N10A

SOT-223



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

PARAMETER		SYMBOL	LIMIT	UNITS
Drain-Source Voltage		$V_{DS}$	100	V
Gate-Source Voltage		$V_{GS}$	$\pm 20$	V
Continuous Drain Current	$T_A=25^\circ\text{C}$	$I_D$	2.2	A
	$T_A=70^\circ\text{C}$		1.7	
Pulsed Drain Current <sup>(Note 1)</sup>		$I_{DM}$	4.4	A
Power Dissipation	$T_A=25^\circ\text{C}$	$P_D$	3.1	W
	$T_A=70^\circ\text{C}$		2.0	
Operating Junction and Storage Temperature Range		$T_J, T_{STG}$	-55~150	$^\circ\text{C}$
Typical Thermal resistance		$R_{\theta JA}$	40.3	$^\circ\text{C/W}$
- Junction to Ambient, $t \leq 10s$ <sup>(Note 5)</sup>				

- Limited only By Maximum Junction Temperature



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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	100	-	-	V
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250uA	1.0	2.06	2.5	V
Drain-Source On-State Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =2.2A	-	284	310	mΩ
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =1.0A	-	287	320	
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =80V, V <sub>GS</sub> =0V	-	-	1.0	uA
Gate-Source Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =±20V, V <sub>DS</sub> =0V	-	-	±100	nA
<b>Dynamic</b> (Note 6)						
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> =50V, I <sub>D</sub> =2.2A, V <sub>GS</sub> =10V (Note 1,2)	-	9.1	-	nC
Gate-Source Charge	Q <sub>gs</sub>		-	2.1	-	
Gate-Drain Charge	Q <sub>gd</sub>		-	1.4	-	
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =30V, V <sub>GS</sub> =0V, f=1.0MHZ	-	508	-	pF
Output Capacitance	C <sub>oss</sub>		-	29	-	
Reverse Transfer Capacitance	C <sub>rss</sub>		-	18	-	
Turn-On Delay Time	t <sub>d(on)</sub>	V <sub>DD</sub> =50V, I <sub>D</sub> =2.2A, V <sub>GS</sub> =10V, R <sub>G</sub> =6Ω (Note 1,2)	-	2	-	ns
Turn-On Rise Time	t <sub>r</sub>		-	21	-	
Turn-Off Delay Time	t <sub>d(off)</sub>		-	12	-	
Turn-Off Fall Time	t <sub>f</sub>		-	19	-	
<b>Drain-Source Diode</b>						
Maximum Continuous Drain-Source Diode Forward Current	I <sub>S</sub>	---	-	-	2.2	A
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =1A, V <sub>GS</sub> =0V	-	0.78	1.2	V

**NOTES :**

1. Pulse width ≤ 300us, Duty cycle ≤ 2%
2. Essentially independent of operating temperature typical characteristics.
3. The maximum current rating is package limited.
4. Repetitive rating, pulse width limited by junction temperature T<sub>J</sub>(MAX)=150°C. Ratings are based on low frequency and duty cycles to keep initial T<sub>J</sub> = 25°C.
5. 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<sup>2</sup> with 2oz.square pad of copper.
6. Guaranteed by design, not subject to production testing.



# PJW3N10A

## TYPICAL CHARACTERISTIC CURVES

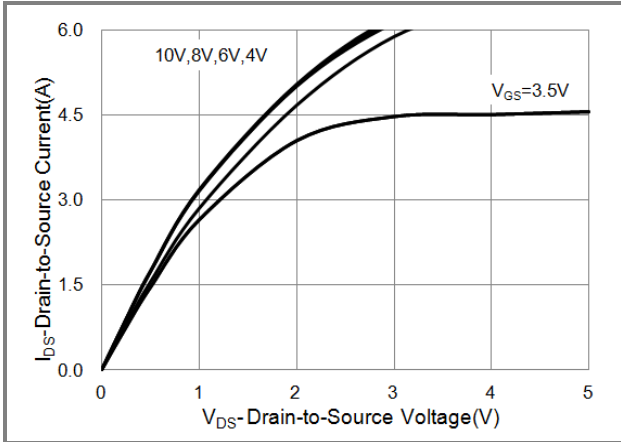


Fig.1 Output Characteristics

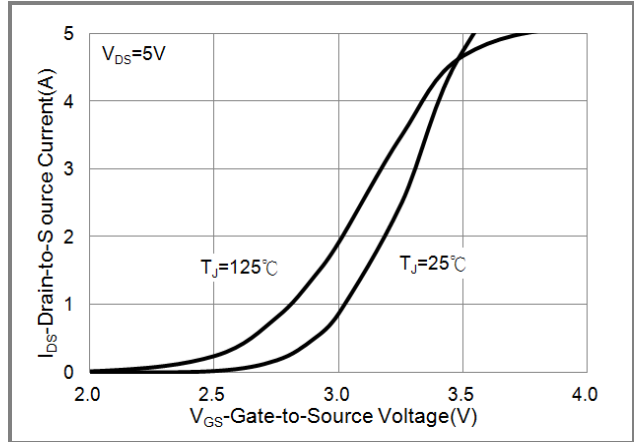


Fig.2 Transfer Characteristics

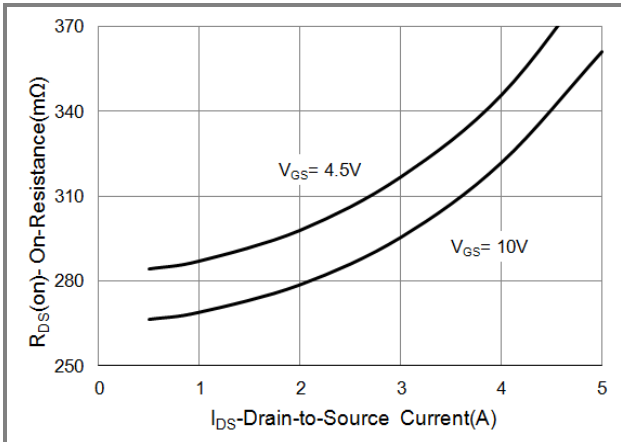


Fig.3 On-Resistance vs. Drain Current

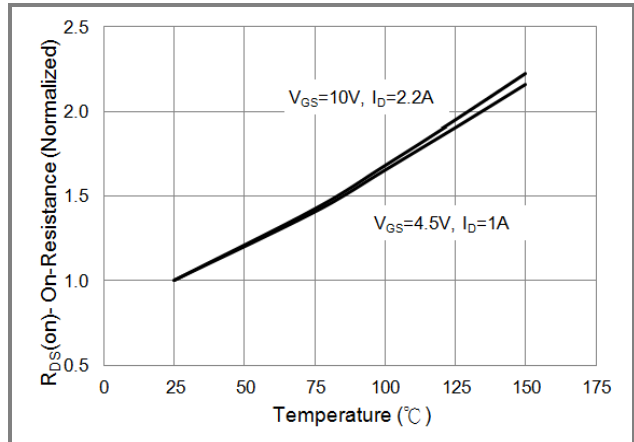


Fig.4 On-Resistance vs. Junction temperature

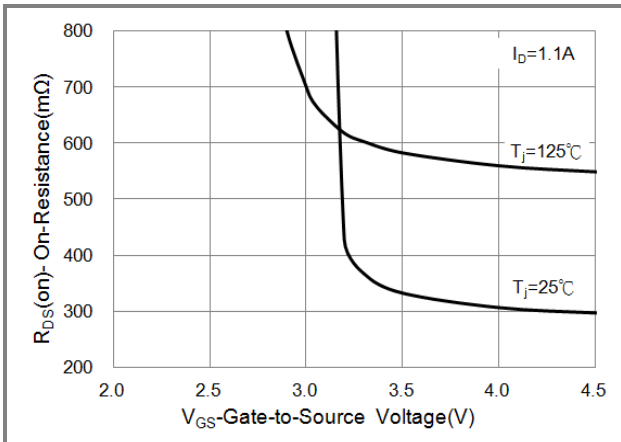


Fig.5 On-Resistance Variation with VGS.

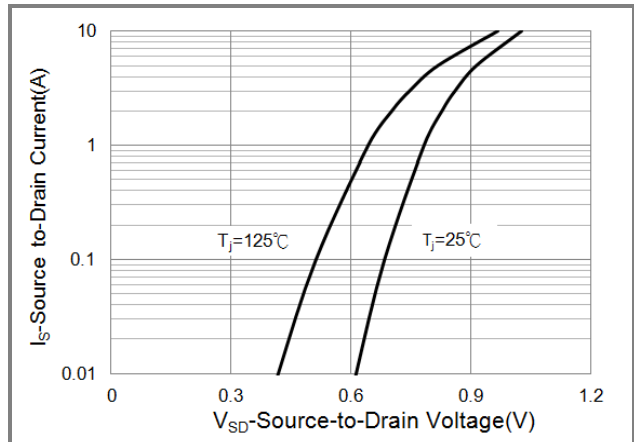


Fig.6 Source-Drain Diode Forward Voltage



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## TYPICAL CHARACTERISTIC CURVES

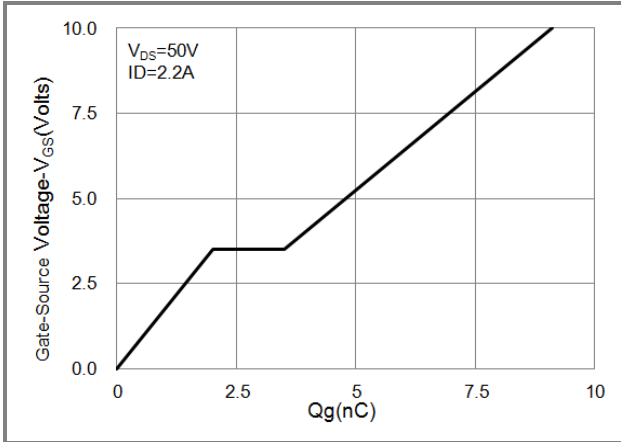


Fig.7 Gate-Charge Characteristics

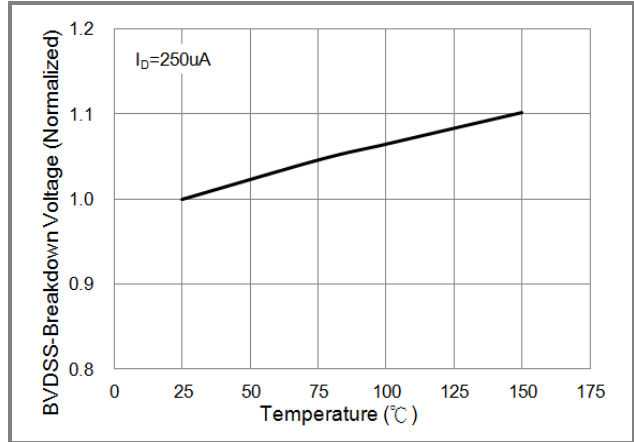


Fig.8 Breakdown Voltage Variation vs. Temperature

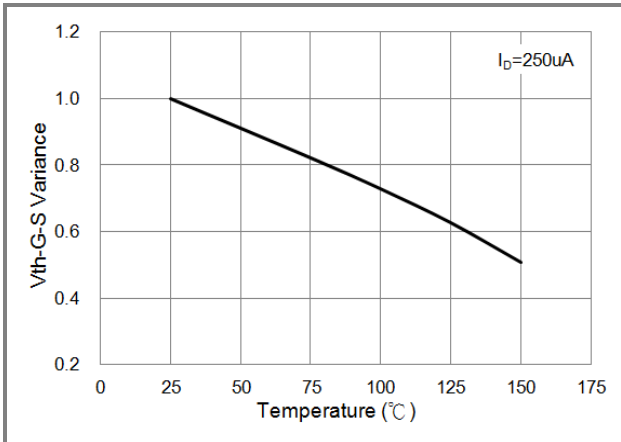


Fig.9 Threshold Voltage Variation with Temperature

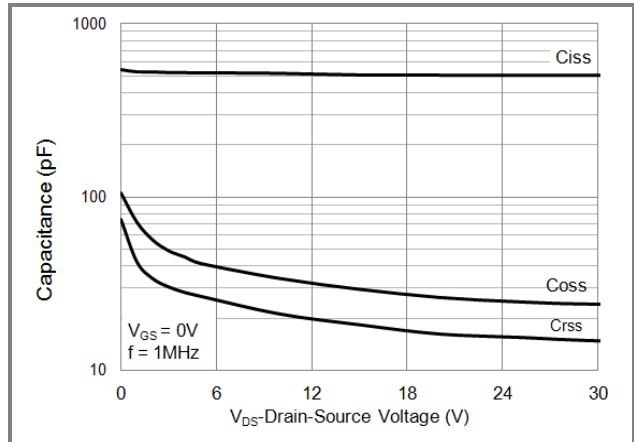


Fig.10 Capacitance vs. Drain-Source Voltage

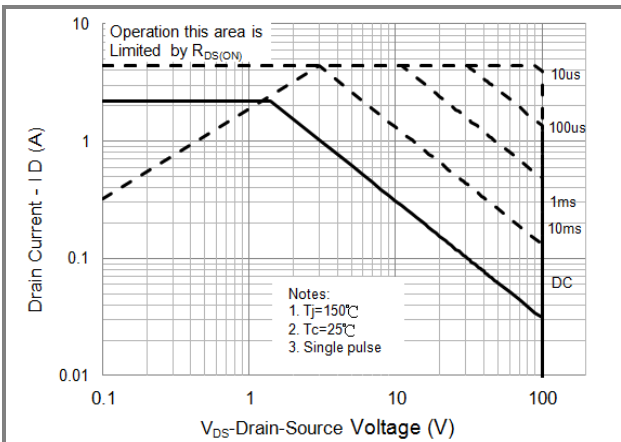


Fig.11 Maximum Safe Operating Area



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## TYPICAL CHARACTERISTIC CURVES

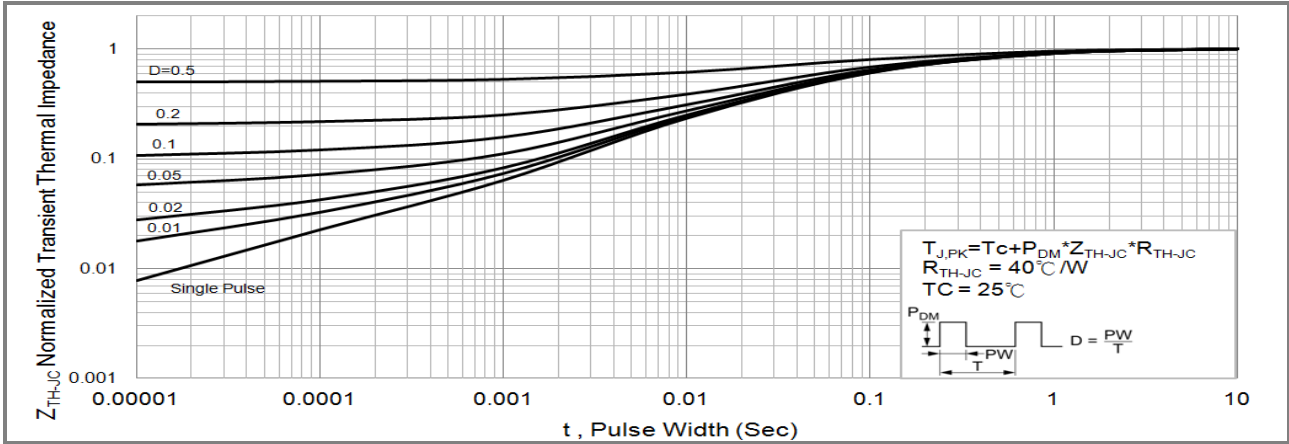
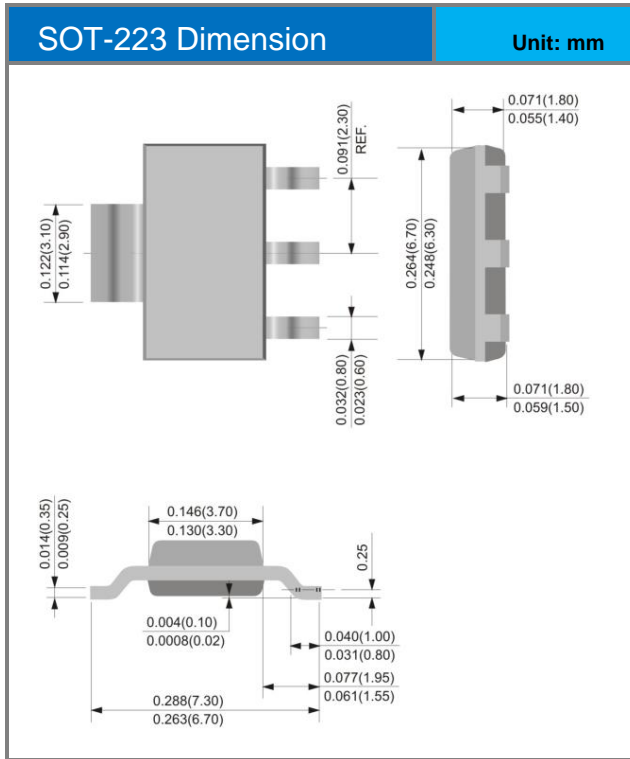


Fig.12 Normalized Transient Thermal Impedance vs. Pulse Width



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## Packaging Information



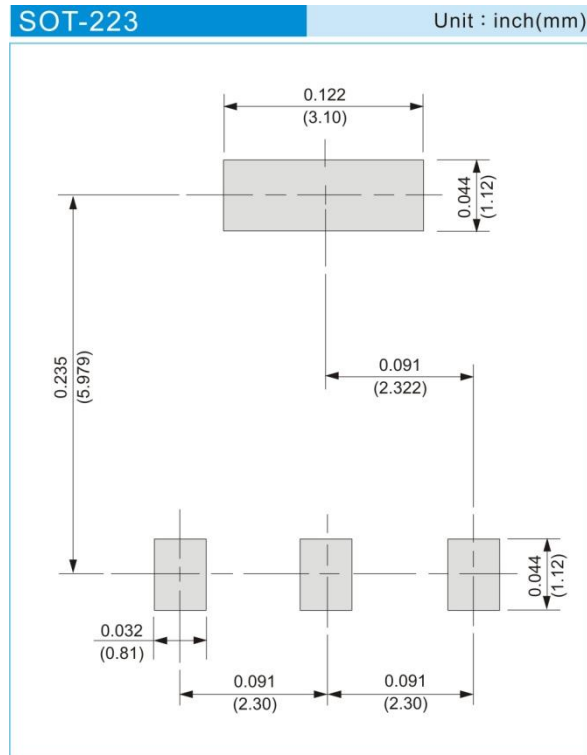


# PJW3N10A

## PART NO PACKING CODE VERSION

Part No Packing Code	Package Type	Packing type	Marking	Version
PJW3N10A_R2_00001	SOT-223	2.5K pcs / 13" reel	W3N10A	Halogen free

## MOUNTING PAD LAYOUT





## PJW3N10A

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