



# PJW2P10A

## 100V P-Channel Enhancement Mode MOSFET

**Voltage** -100 V **Current** -1.5 A

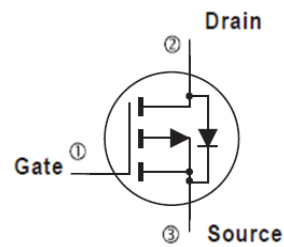
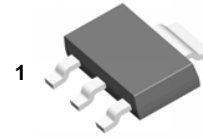
### Features

- $R_{DS(ON)}$ ,  $V_{GS}@-10V, I_D@-1.5A < 650m\Omega$
- $R_{DS(ON)}$ ,  $V_{GS}@-4.5V, I_D@-1.0 A < 700m\Omega$
- High switching speed
- Improved dv/dt capability
- Low Gate Charge
- Low reverse transfer capacitance
- Lead free in compliance with EU RoHS 2.0
- Green molding compound as per IEC 61249 standard

### Mechanical Data

- Case : SOT-223 Package
- Terminals : Solderable per MIL-STD-750, Method 2026
- Approx. Weight : 0.043 ounces, 0.123 grams
- Marking: W2P10A

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	$I_D$	$T_A=25^\circ\text{C}$	-1.5
		$T_A=70^\circ\text{C}$	-1.2
Pulsed Drain Current (Note 1)	$I_{DM}$	-6	A
Power Dissipation	$P_D$	$T_A=25^\circ\text{C}$	3.1
		$T_A=70^\circ\text{C}$	2
Single Pulse Avalanche Energy (Note 5)	$E_{AS}$	0.2	mJ
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 (Note 6)			

- Limited only By Maximum Junction Temperature



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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	$BV_{DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-100	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1.0	-2.0	-2.5	V
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS}=-10V, I_D=-1.5A$	-	500	650	m $\Omega$
		$V_{GS}=-4.5V, I_D=-1.0A$	-	560	700	
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=-80V, V_{GS}=0V$	-	-	-1.0	$\mu A$
Gate-Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	$\pm 100$	nA
<b>Dynamic</b> (Note 7)						
Total Gate Charge	$Q_g$	$V_{DS}=-50V, I_D=-1.5A,$ $V_{GS}=-10V$ (Note 1,2)	-	8	-	nC
Gate-Source Charge	$Q_{gs}$		-	1.8	-	
Gate-Drain Charge	$Q_{gd}$		-	1.4	-	
Input Capacitance	$C_{iss}$	$V_{DS}=-15V, V_{GS}=0V,$ $f=1.0\text{MHz}$	-	448	-	pF
Output Capacitance	$C_{oss}$		-	28	-	
Reverse Transfer Capacitance	$C_{rss}$		-	21	-	
Turn-On Delay Time	$t_{d(on)}$	$V_{DS}=-50V, R_L=33\Omega,$ $V_{GS}=-10V, R_G=6.2\Omega$ (Note 1,2)	-	3.7	-	ns
Turn-On Rise Time	$t_r$		-	25	-	
Turn-Off Delay Time	$t_{d(off)}$		-	21	-	
Turn-Off Fall Time	$t_f$		-	22	-	
<b>Drain-Source Diode</b>						
Maximum Continuous Drain-Source Diode Forward Current	$I_S$	---	-	-	-1.5	A
Diode Forward Voltage	$V_{SD}$	$I_S=-1A, V_{GS}=0V$	-	-0.82	-1.2	V

**NOTES :**

1. Pulse width  $\leq 300\mu s$ , Duty cycle  $\leq 2\%$
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  $T_J(\text{MAX})=150^\circ\text{C}$ . Ratings are based on low frequency and duty cycles to keep initial  $T_J=25^\circ\text{C}$ .
5. The test condition is  $L=0.1\text{mH}, I_{AS}=-2A, V_{DD}=-25V, V_{GS}=-10V$
6.  $R_{\theta JA}$  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<sup>2</sup> with 2oz. square pad of copper.
7. Guaranteed by design, not subject to production testing.



# PJW2P10A

## TYPICAL CHARACTERISTIC CURVES

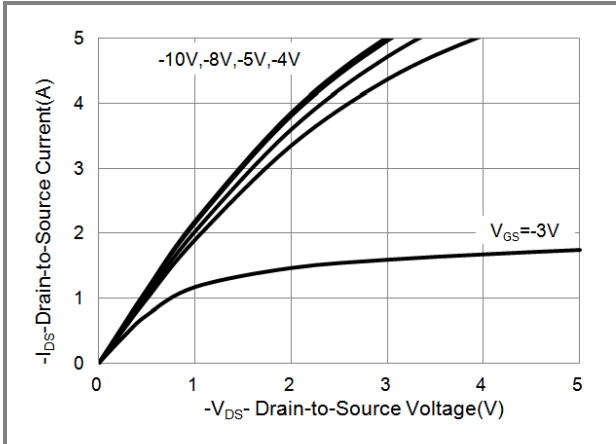


Fig.1 Output Characteristics

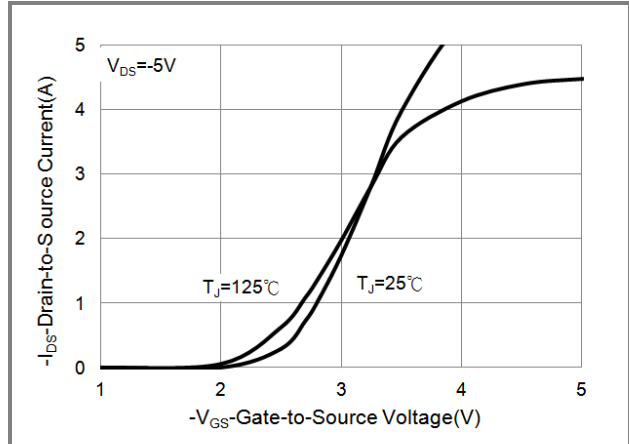


Fig.2 Transfer Characteristics

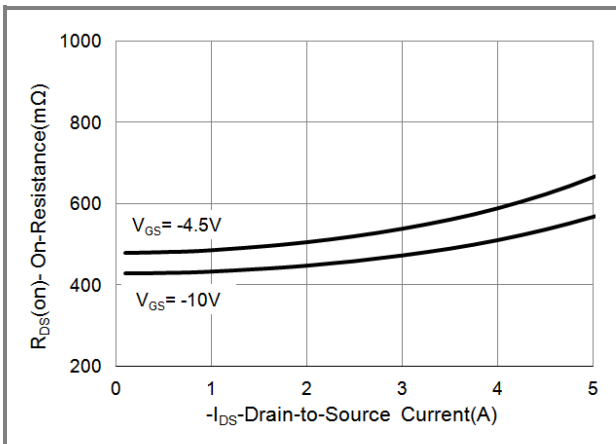


Fig.3 On-Resistance vs. Drain Current

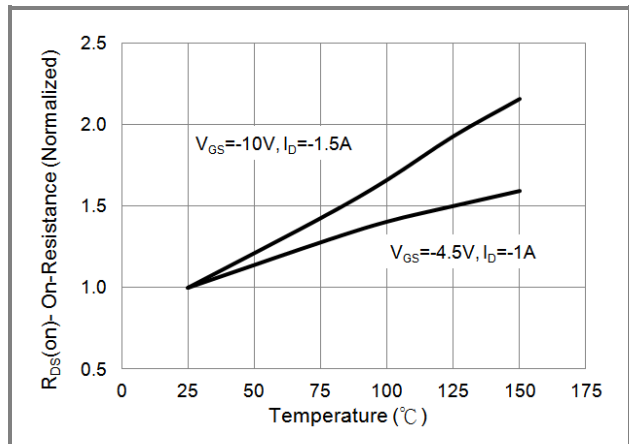


Fig.4 On-Resistance vs. Junction temperature

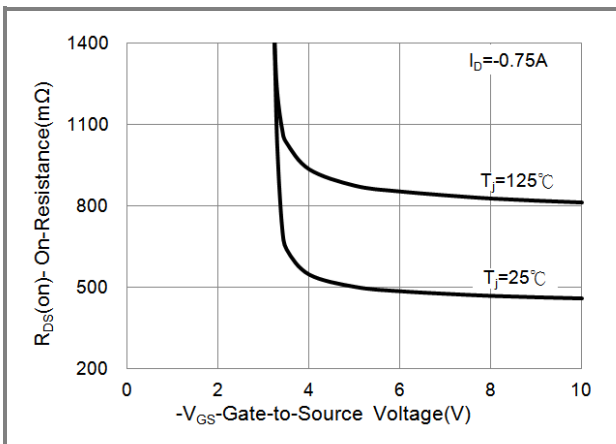


Fig.5 On-Resistance Variation with VGS.

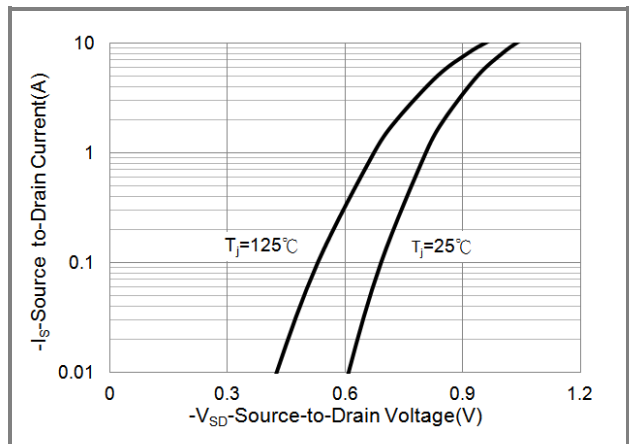


Fig.6 Source-Drain Diode Forward Voltage



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## TYPICAL CHARACTERISTIC CURVES

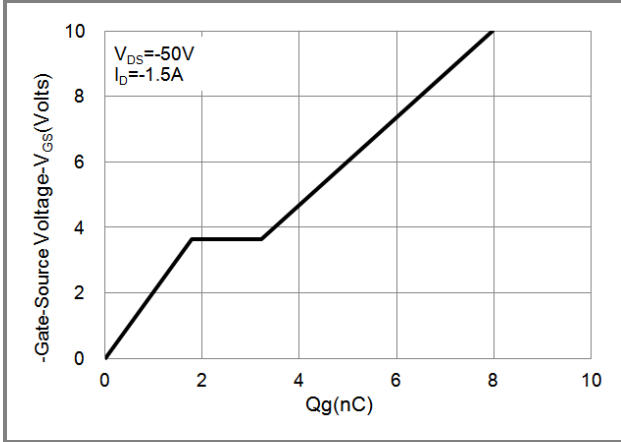


Fig.7 Gate-Charge Characteristics

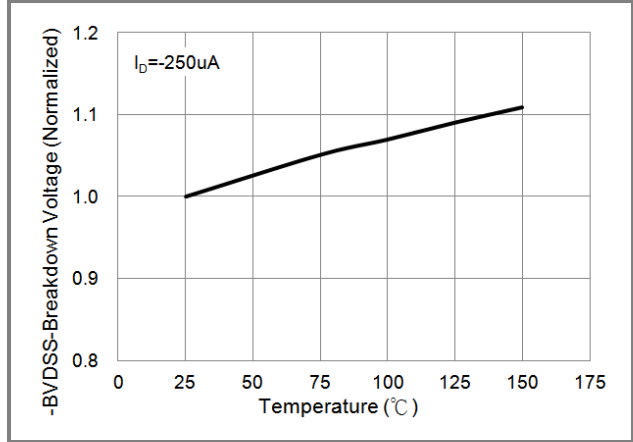


Fig.8 Breakdown Voltage Variation vs. Temperature

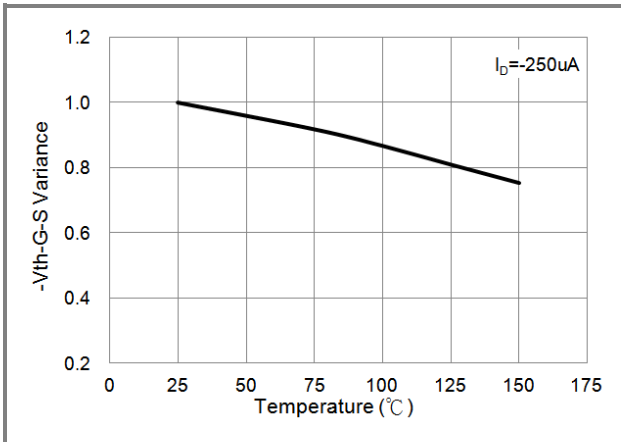


Fig.9 Threshold Voltage Variation with Temperature

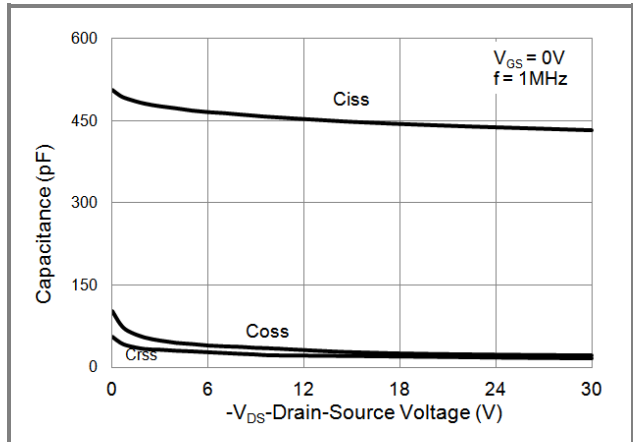


Fig.10 Capacitance vs. Drain-Source Voltage

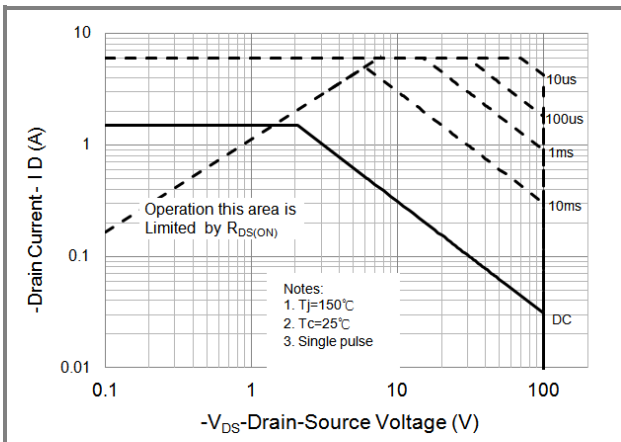


Fig.11 Maximum Safe Operating Area



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## TYPICAL CHARACTERISTIC CURVES

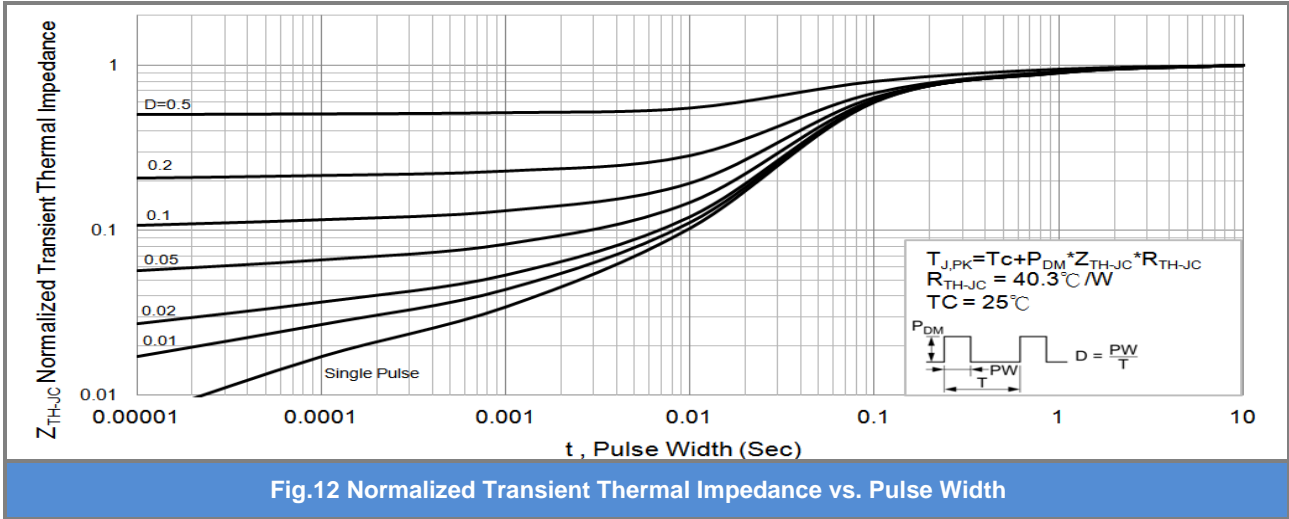
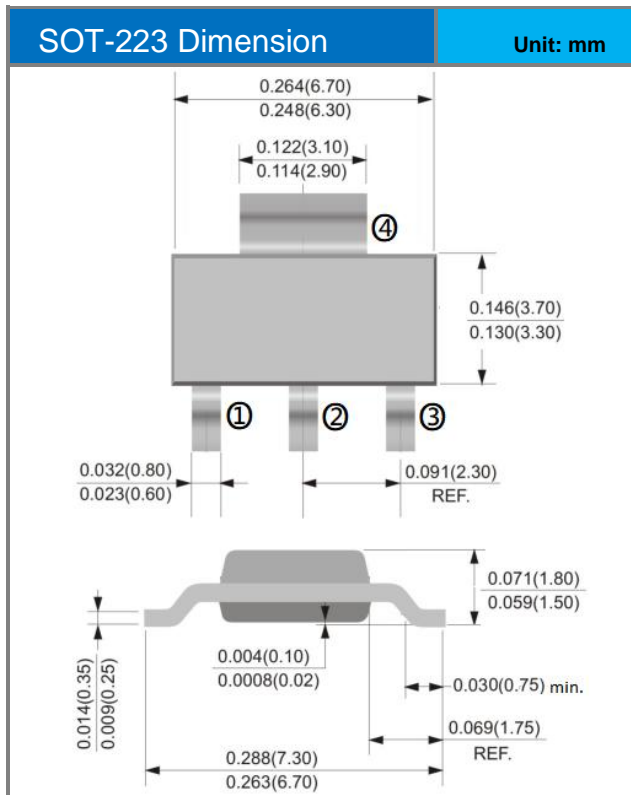


Fig.12 Normalized Transient Thermal Impedance vs. Pulse Width



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## Packaging Information



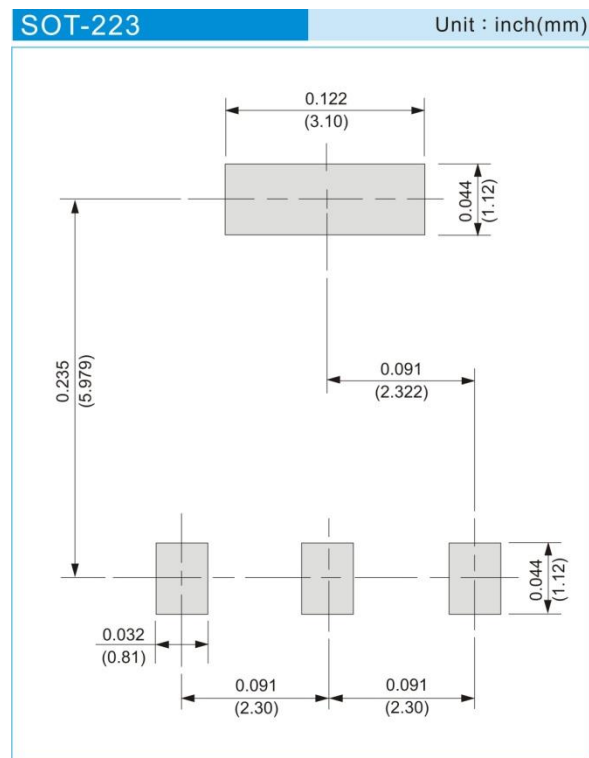


# PJW2P10A

## PART NO PACKING CODE VERSION

Part No Packing Code	Package Type	Packing type	Marking	Version
PJW2P10A_R2_00001	SOT-223	2,500pcs / 13" reel	W2P10A	Halogen free

## MOUNTING PAD LAYOUT





## PJW2P10A

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