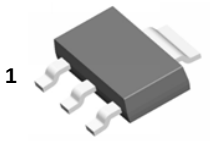
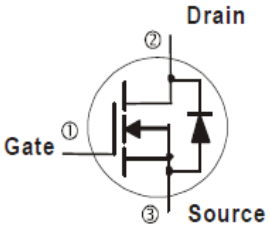
PJW4N06A

60V N-Channel Enhancement Mode MOSFET

Voltage	60 V	Current	4.0 A

SOT-223





Features

- $R_{DS(ON)}$, V_{GS}@10V,I_D@3.0A<100mΩ
- $R_{DS(ON)}$, V_{GS}@4.5V,I_D@2.0A<110mΩ
- Advanced Trench Process Technology
- High density cell design for ultra low on-resistance
- 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: W4N06A

Maximum Ratings and Thermal Characteristics (T_A=25°C unless otherwise noted)

PARAMETER		SYMBOL	LIMIT	UNITS
Drain-Source Voltage		V_{DS}	60	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current	T_A=25°C	I_D	4	A
	T_A=70°C		3.2	
Pulsed Drain Current (Note 1)		I_{DM}	8	A
Power Dissipation	T_A=25°C	P_D	3.1	W
	T_A=70°C		2	
Operating Junction and Storage Temperature Range		T_J,T_{STG}	-55~150	°C
Typical Thermal resistance - Junction to Ambient (Note 5)		$R_{\theta JA}$	40.3	°C/W

- Limited only By Maximum Junction Temperature

PJW4N06A

Electrical Characteristics (T_A=25°C unless otherwise noted)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNITS
Static						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V,I_D=250uA	60	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=250uA	1.0	1.86	2.5	V
Drain-Source On-State Resistance	$R_{DS(on)}$	V_{GS}=10V,I_D=3.0A	-	85	100	mΩ
		V_{GS}=4.5V,I_D=2.0A	-	95	110	
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=48V,V_{GS}=0V	-	-	1.0	uA
Gate-Source Leakage Current	I_{GSS}	V_{GS}=±20V,V_{DS}=0V	-	-	±100	nA
Dynamic (Note 6)						
Total Gate Charge	Q_g	V_{DS}=48V, I_D=3A, V_{GS}=4.5V (Note 2,3)	-	5.1	-	nC
Gate-Source Charge	Q_{gs}		-	1.2	-	
Gate-Drain Charge	Q_{gd}		-	1.9	-	
Input Capacitance	Ciss	V_{DS}=15V, V_{GS}=0V, f=1.0MHZ	-	509	-	pF
Output Capacitance	Coss		-	39	-	
Reverse Transfer Capacitance	Crss		-	26	-	
Turn-On Delay Time	$td_{(on)}$	V_{DD}=30V, I_D=3A, V_{GS}=10V, R_G=3.3Ω (Note 2,3)	-	1.6	-	ns
Turn-On Rise Time	t_r		-	7.3	-	
Turn-Off Delay Time	$td_{(off)}$		-	25	-	
Turn-Off Fall Time	t_f		-	14	-	
Drain-Source Diode						
Maximum Continuous Drain-Source Diode Forward Current	I_S	---	-	-	4	A
Diode Forward Voltage	V_{SD}	I_S=1A,V_{GS}=0V	-	0.8	1.2	V

NOTES :

1. Pulse width≤300us, Duty cycle≤2%
2. Essentially independent of operating temperature typical characteristics
3. Repetitive rating, pulse width limited by junction temperature TJ(MAX)=150°C. Ratings are based on low frequency and duty cycles to keep initial TJ =25°C.
4. The maximum current rating is package limited
5. $R_{\Theta JA}$ 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 $inch^2$ with 2oz.square pad of copper.
6. Guaranteed by design, not subject to production testing

PJW4N06A

TYPICAL CHARACTERISTIC CURVES

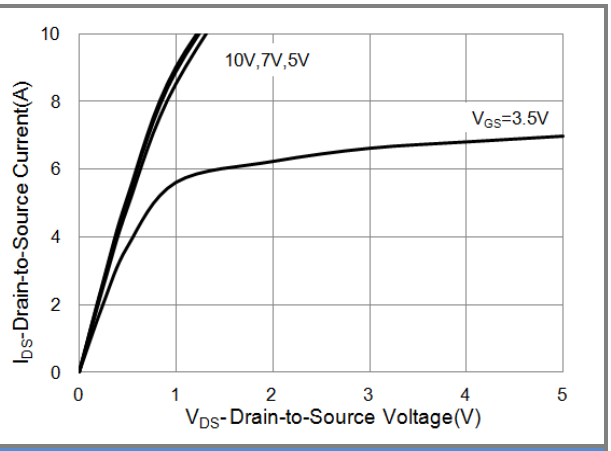


Fig.1 Output Characteristics

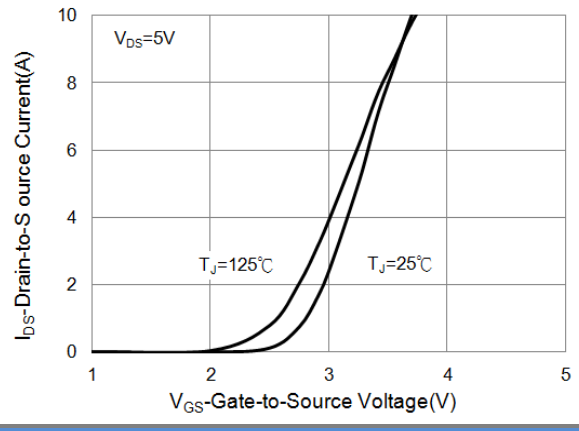


Fig.2 Transfer Characteristics

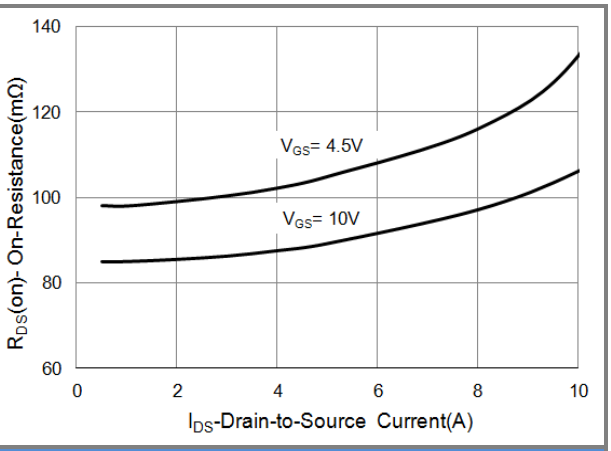


Fig.3 On-Resistance vs. Drain Current

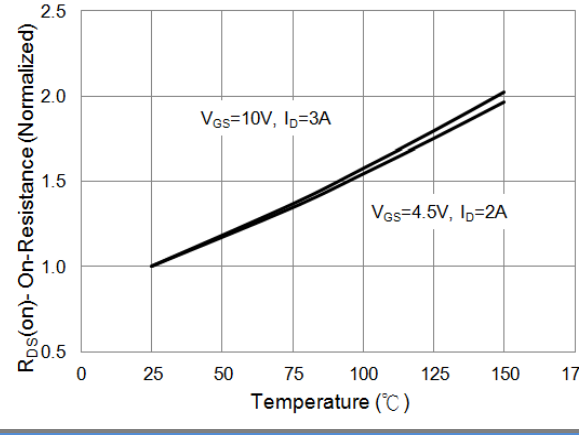


Fig.4 On-Resistance vs. Junction temperature

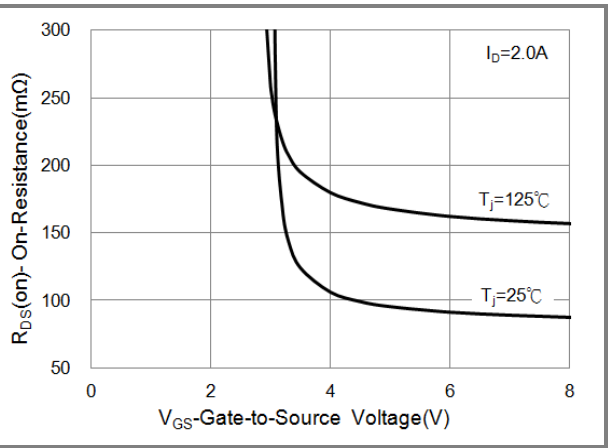


Fig.5 On-Resistance Variation with VGS.

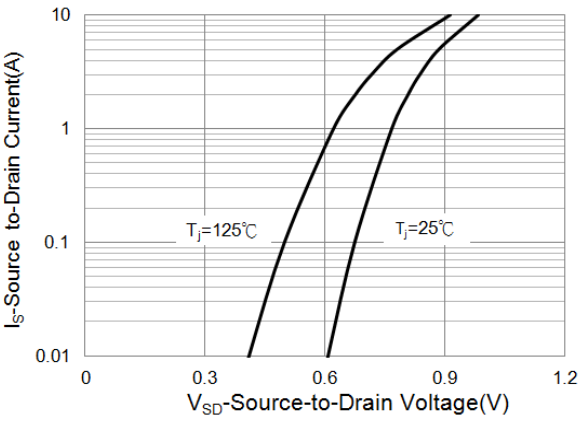


Fig.6 Source-Drain Diode Forward Voltage

PJW4N06A

TYPICAL CHARACTERISTIC CURVES

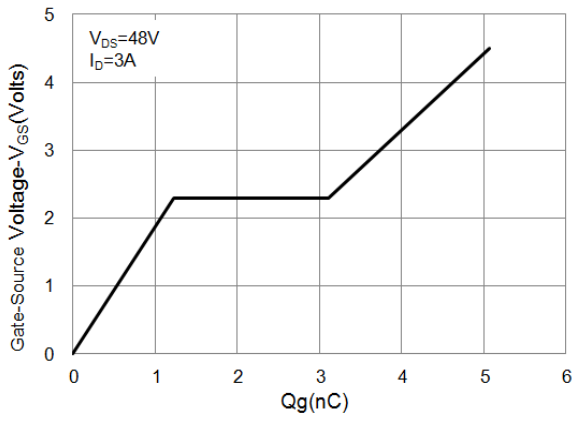


Fig.7 Gate-Charge Characteristics

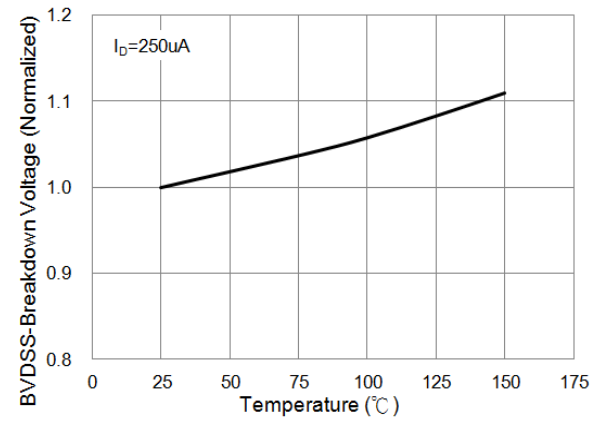


Fig.8 Breakdown Voltage Variation vs. Temperature

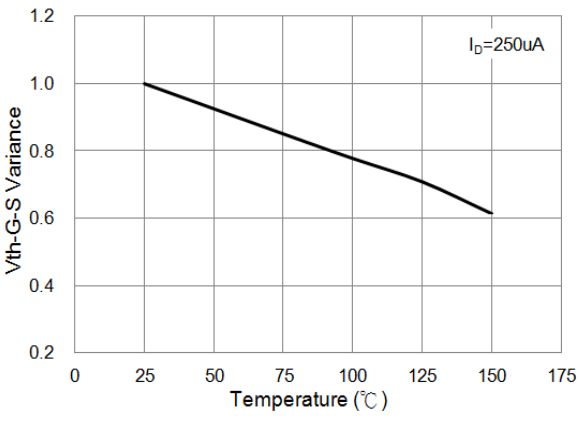


Fig.9 Threshold Voltage Variation with Temperature

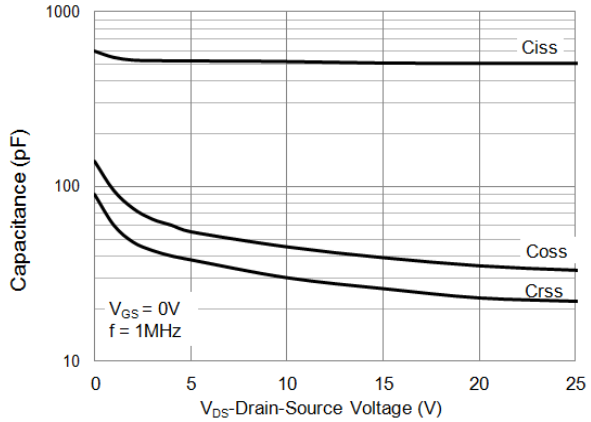


Fig.10 Capacitance vs. Drain-Source Voltage

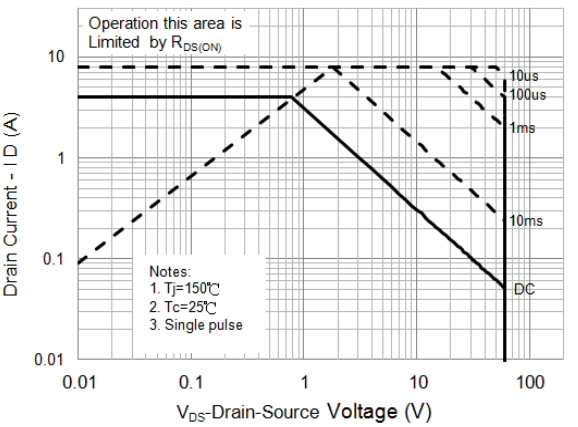


Fig.11 Maximum Safe Operating Area

PJW4N06A

TYPICAL CHARACTERISTIC CURVES

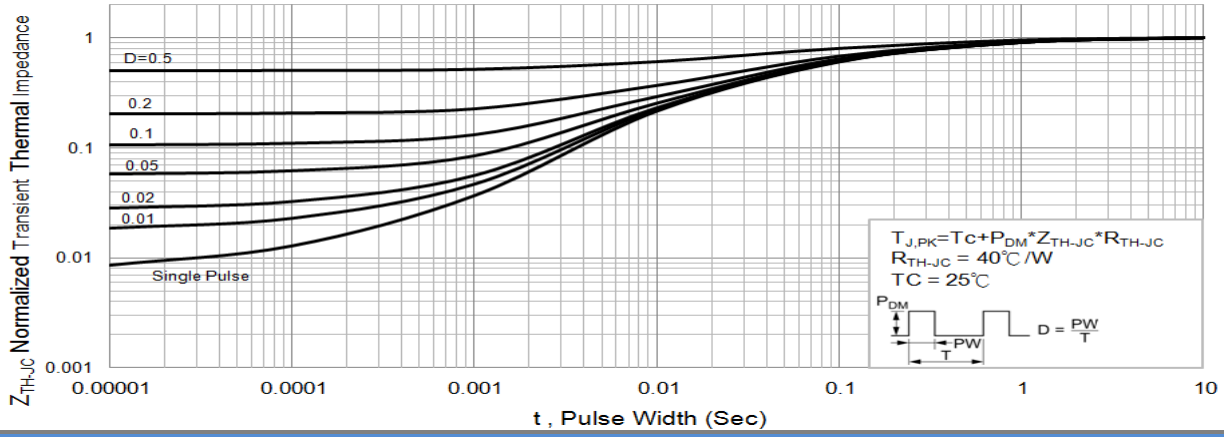
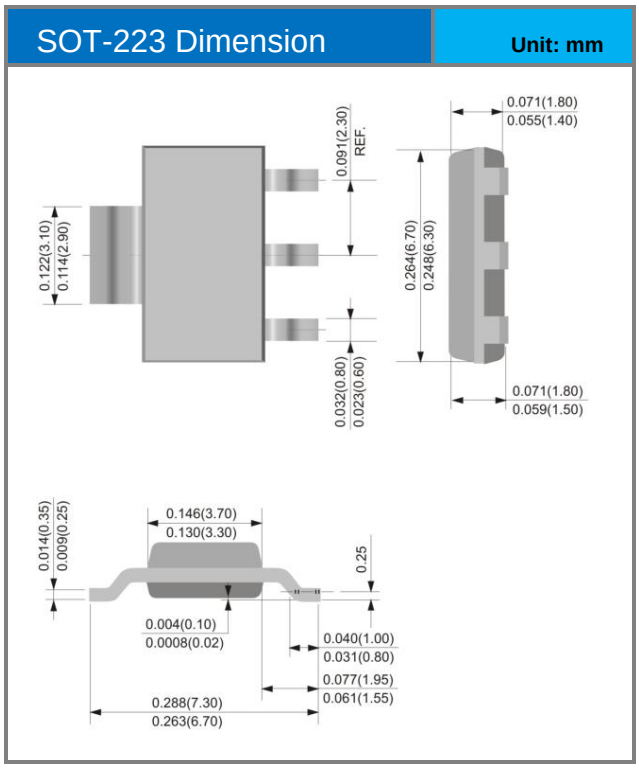


Fig.12 Normalized Transient Thermal Impedance vs. Pulse Width

PJW4N06A

Packaging Information .

SOT-223 Dimension — Unit: mm

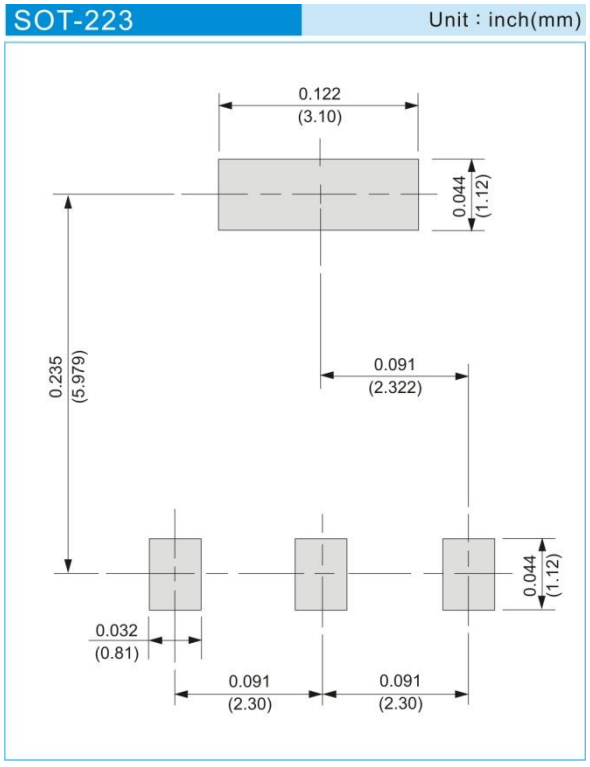


PJW4N06A

PART NO PACKING CODE VERSION

Part No Packing Code	Package Type	Packing type	Marking	Version
PJW4N06A_R2_00001	SOT-223	2,500pcs / 13” reel	W4N06A	Halogen free

MOUNTING PAD LAYOUT



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