

PJW5N10

100V N-Channel Enhancement Mode MOSFET

Voltage

100 V

Current

5 A

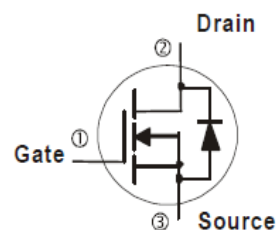
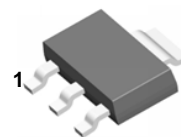
Features

- $R_{DS(ON)}$, $V_{GS}@10V, I_D@2.5A < 130m\Omega$
- $R_{DS(ON)}$, $V_{GS}@6V, I_D@1A < 135m\Omega$
- Low On-Resistance
- Low input 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, 0.123grams
- Marking : W5N10

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}	± 20	V
Continuous Drain Current	$T_C=25^\circ\text{C}$	I_D	5	A
	$T_C=100^\circ\text{C}$		3.1	
Pulsed Drain Current ^(Note 1)	$T_C=25^\circ\text{C}$	I_{DM}	10	
Power Dissipation	$T_C=25^\circ\text{C}$	P_D	8	W
	$T_C=100^\circ\text{C}$		3.2	
Continuous Drain Current	$T_A=25^\circ\text{C}$	I_D	3.1	A
	$T_A=70^\circ\text{C}$		2.5	A
Power Dissipation	$T_A=25^\circ\text{C}$	P_D	3.1	W
Power Dissipation	$T_A=70^\circ\text{C}$		2	
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55~150	$^\circ\text{C}$
Typical Thermal resistance ^(Note 4,5)	Junction to Case	$R_{\theta JC}$	15.6	$^\circ\text{C/W}$
	Junction to Ambient	$R_{\theta JA}$	40.3	

- Limited only By Maximum Junction Temperature

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

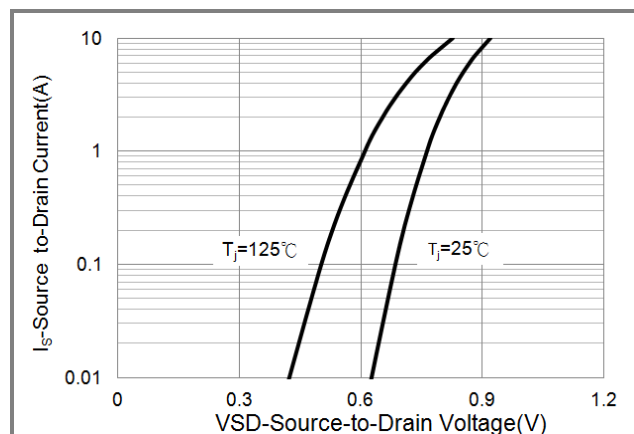
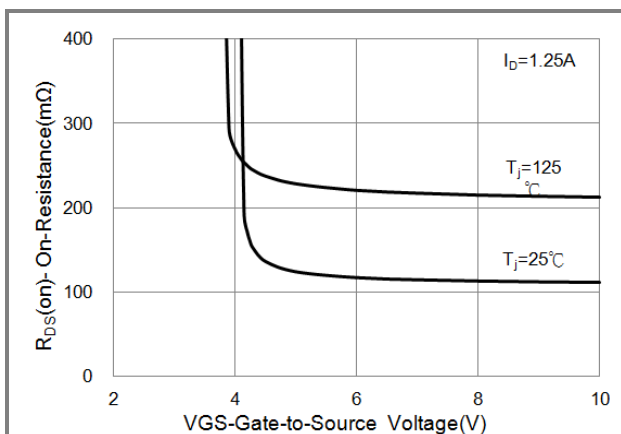
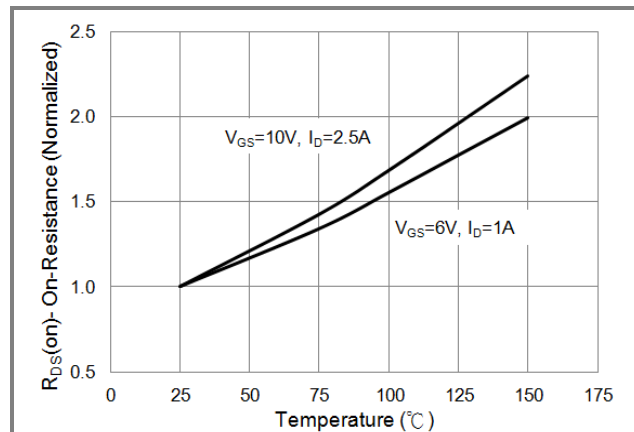
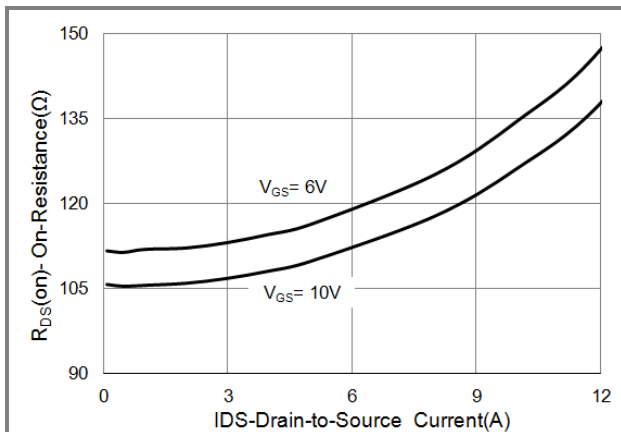
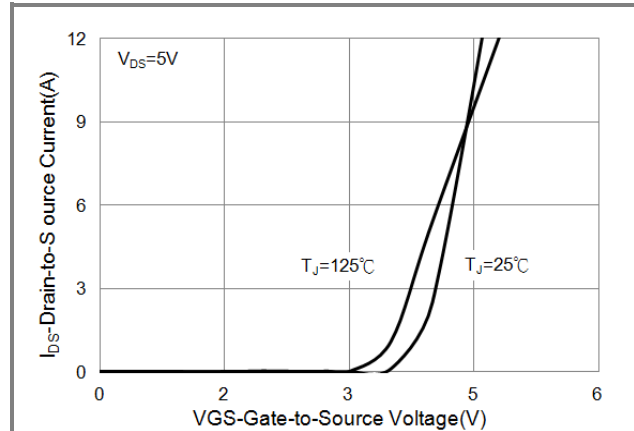
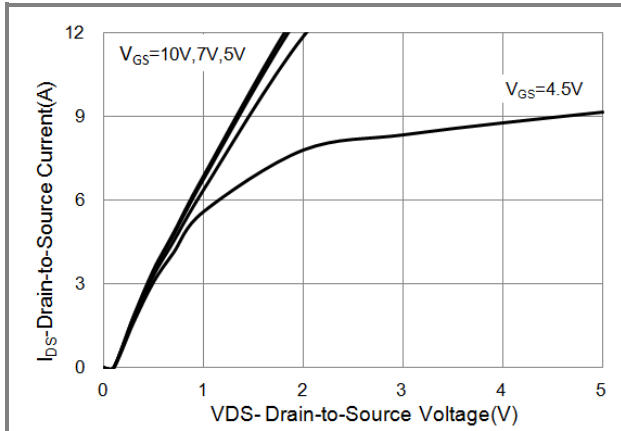
PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNITS
Static						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250uA	100	-	-	V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250uA	2.0	2.76	3.5	V
Drain-Source On-State Resistance	R _{DS(on)}	V _{GS} =10V, I _D =2.5A	-	110	130	mΩ
		V _{GS} =6V, I _D =1A	-	120	135	
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =100V, V _{GS} =0V	-	0.01	1.0	uA
Gate-Source Leakage Current	I _{GSS}	V _{GS} = <u>±</u> 20V, V _{DS} =0V	-	<u>±</u> 20	<u>±</u> 100	nA
Dynamic <small>(Note 6)</small>						
Total Gate Charge	Q _g	V _{DS} =37.5V, I _D =5A, V _{GS} =10V <small>(Note 2,3)</small>	-	12	-	nC
Gate-Source Charge	Q _{gs}		-	3.1	-	
Gate-Drain Charge	Q _{gd}		-	2.2	-	
Input Capacitance	C _{iss}	V _{DS} =30V, V _{GS} =0V, f=1.0MHZ	-	707	-	pF
Output Capacitance	C _{oss}		-	40	-	
Reverse Transfer Capacitance	C _{rss}		-	16	-	
Turn-On Delay Time	t _{d(on)}	V _{DS} =37.5V, R _L =7.5Ω, V _{GS} =10V, R _G =3Ω <small>(Note 2,3)</small>	-	6	-	ns
Turn-On Rise Time	t _r		-	27	-	
Turn-Off Delay Time	t _{d(off)}		-	15	-	
Turn-Off Fall Time	t _f		-	7	-	
Drain-Source Diode						
Maximum Continuous Drain-Source Diode Forward Current	I _S	---	-	-	5	A
Diode Forward Voltage	V _{SD}	I _S =1A, V _{GS} =0V	-	0.78	1	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 T_J(MAX)=150°C. Ratings are based on low frequency and duty cycles to keep initial T_J = 25°C.
4. The maximum current rating is package limited
5. R_{θJA} 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 inch² with 2oz.square pad of copper.
6. Guaranteed by design, not subject to production testing

PJW5N10

TYPICAL CHARACTERISTIC CURVES



PJW5N10

TYPICAL CHARACTERISTIC CURVES

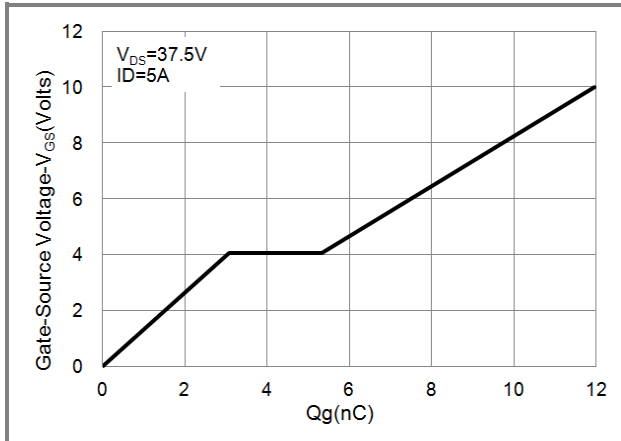


Fig.7 Gate-Charge Characteristics

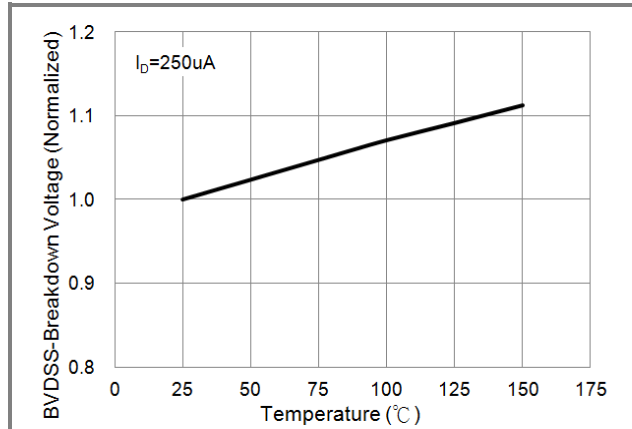


Fig.8 Breakdown Voltage Variation vs. Temperature

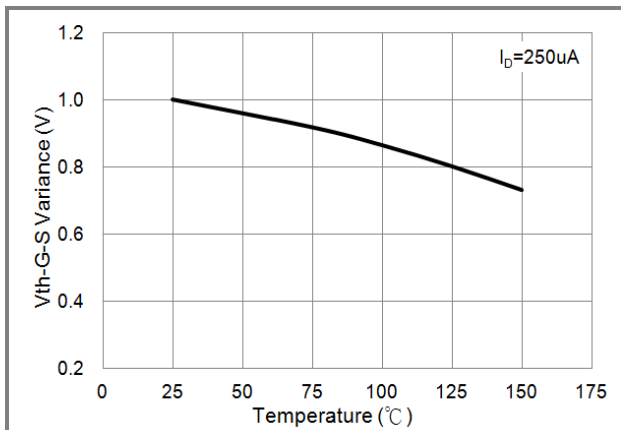


Fig.9 Threshold Voltage Variation with Temperature

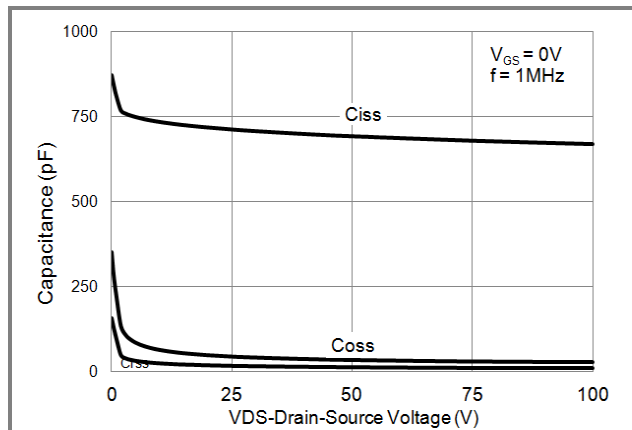


Fig.10 Capacitance vs. Drain-Source Voltage

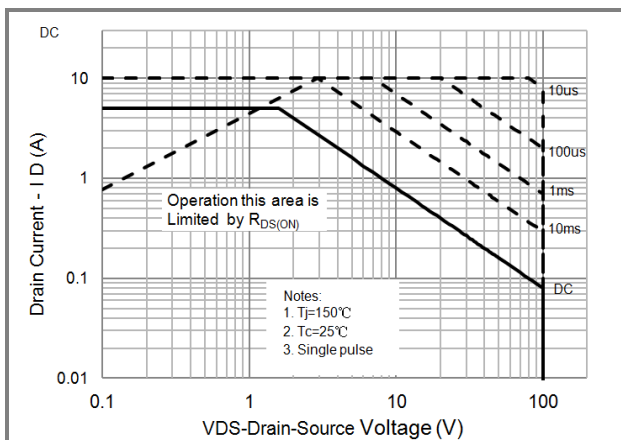


Fig.11 Maximum Safe Operating Area

PJW5N10

TYPICAL CHARACTERISTIC CURVES

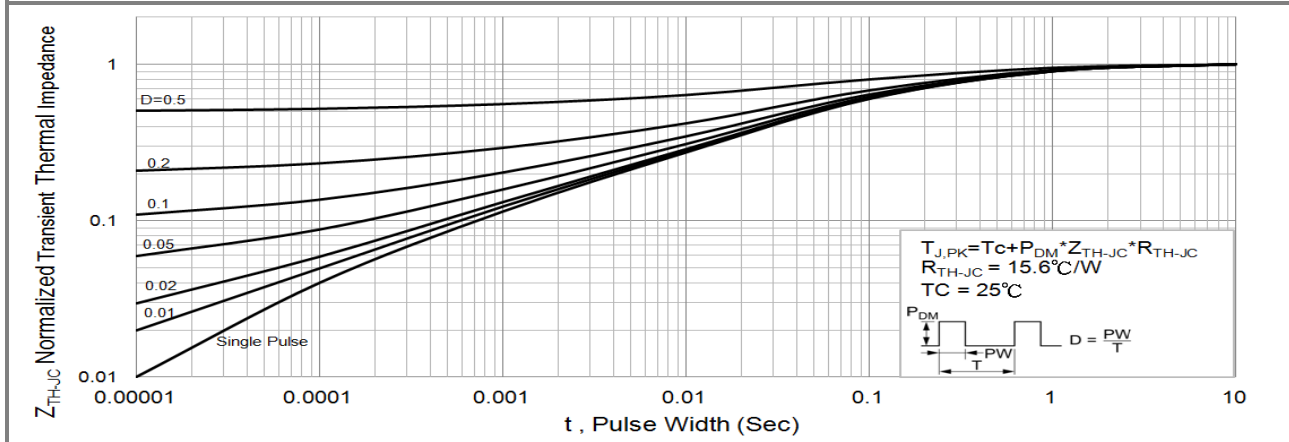
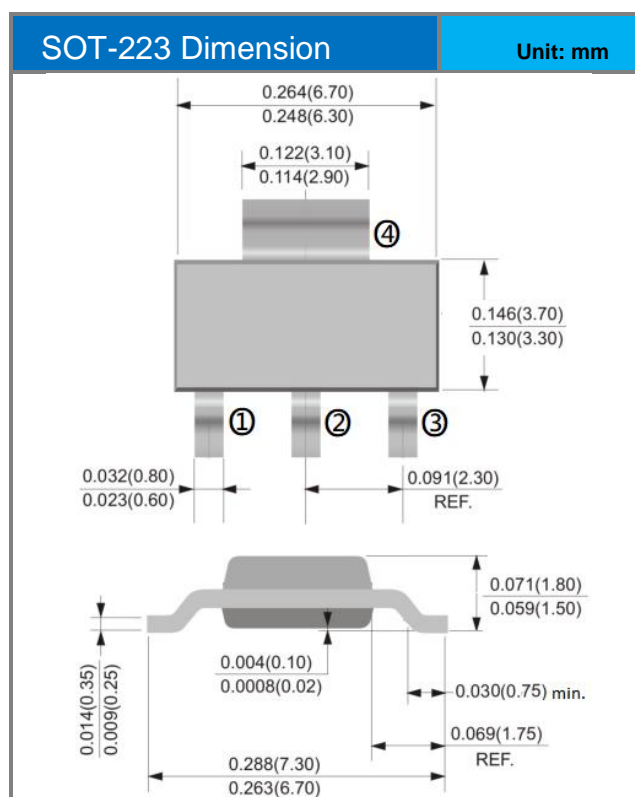


Fig.12 Normalized Transient Thermal Impedance vs. Pulse Width

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Packaging Information

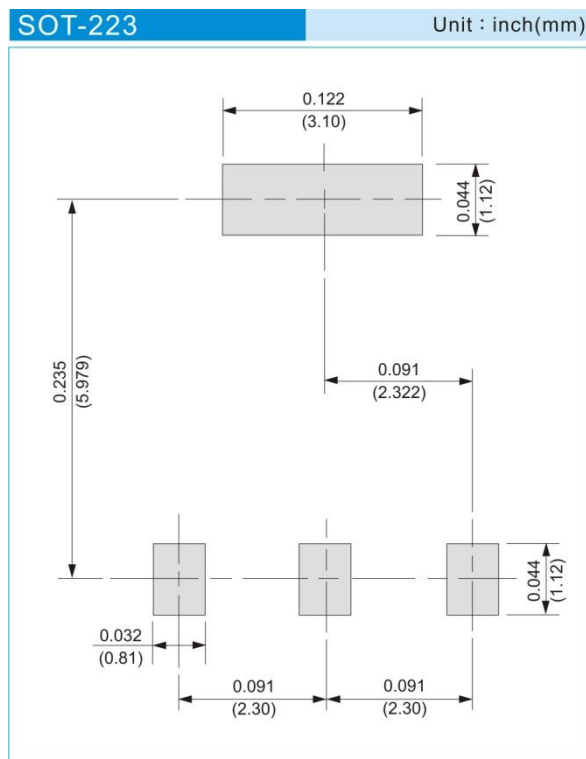


PJW5N10

Product and Packing Information

Part No.	Package Type	Packing type	Marking
PJW5N10	SOT-223	2,500pcs / 13" reel	W5N10

Mounting Pad Layout



PJW5N10

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