



PJD13N10 / PJU13N10

100V N-Channel MOSFET

Voltage

100 V

Current

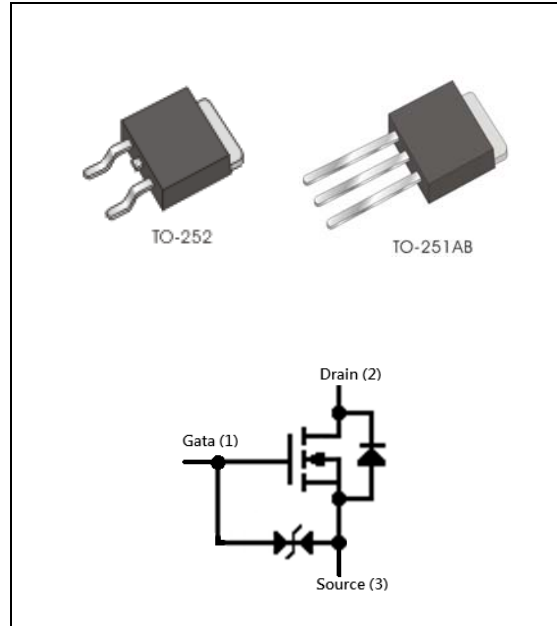
13 A

Features

- $R_{DS(ON)}, V_{GS}@10V, I_D@6.5A < 115m\Omega$
- High power and current handling capability
- Low Gate Charge
- Lead free in compliance with EU RoHS 2011/65/EU directive.
- Green molding compound as per IEC61249 Std. (Halogen Free)

Mechanical Data

- Case: TO-252, TO-251AB Package
- Terminals: Solderable per MIL-STD-750, Method 2026
- Approx. Weight: 0.0104 ounces, 0.297 grams(TO-252)
- Approx. Weight: 0.0104 ounces, 0.297 grams(TO-251AB)
- Marking: D13N10(TO-252), U13N10(TO-251AB)



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	I_D	13	A
Pulsed Drain Current	I_{DM}	52	A
Single Pulse Avalanche Energy ^(Note 1)	E_{AS}	30	mJ
Power Dissipation	PD	$T_C=25^\circ\text{C}$	34.7
		Derate above 25°C	0.28
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55~150	$^\circ\text{C}$
Typical Thermal resistance			
- Junction to Case	$R_{\theta JC}$	3.6	$^\circ\text{C/W}$
- Junction to Ambient	$R_{\theta JA}$	110	

- Limited only By Maximum Junction Temperature



PJD13N10 / PJU13N10

Electrical Characteristics ($T_A=25^\circ\text{C}$ unless otherwise noted)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNITS
Static						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	100	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1.5	2	2.5	V
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=6.5A$	-	95	115	m Ω
		$V_{GS}=4.5V, I_D=2A$	-	105	140	
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=80V, V_{GS}=0V$	-	0.02	1.0	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 16V, V_{DS}=0V$	-	± 4	± 10	μA
Diode Forward Voltage	V_{SD}	$I_S=3A, V_{GS}=0V$	-	0.8	1.1	V
Dynamic						
Total Gate Charge	Q_g	$V_{DS}=50V, I_D=10A,$ $V_{GS}=10V$ (Note 2,3)	-	20.4	-	nC
Gate-Source Charge	Q_{gs}		-	3.2	-	
Gate-Drain Charge	Q_{gd}		-	4.3	-	
Input Capacitance	C_{iss}	$V_{DS}=30V, V_{GS}=0V,$ $f=1.0\text{MHZ}$	-	906	-	pF
Output Capacitance	C_{oss}		-	63	-	
Reverse Transfer Capacitance	C_{rss}		-	33	-	
Switching						
Turn-On Delay Time	$t_{d(on)}$	$V_{DS}=30V, R_L=3\Omega,$ $V_{GEN}=10V, R_G=6\Omega$ (Note 2,3)	-	5	-	ns
Turn-On Rise Time	t_r		-	25	-	
Turn-Off Delay Time	$t_{d(off)}$		-	26	-	
Turn-Off Fall Time	t_f		-	7	-	
Drain-Source Diode						
Maximum Continuous Drain-Source Diode Forward Current	I_S	---	-	-	3	A
Reverse Recovery Time	t_{rr}	$V_{GS}=0V, I_S=3.5A$	-	44	-	ns
Reverse Recovery Charge	Q_{rr}	$di_F/dt=100A/\mu s$ (Note 2)	-	80	-	nC

NOTES :

1. $L=0.3\text{mH}, I_{AS}=10A, V_{DD}=25V, V_{GS}=10V, R_G=25\text{ohm},$ Starting $T_J=25^\circ\text{C}$
2. Pulse width $\leq 300\mu s,$ Duty cycle $\leq 2\%$
3. Essentially independent of operating temperature typical characteristics.



PJD13N10 / PJU13N10

TYPICAL CHARACTERISTIC CURVES

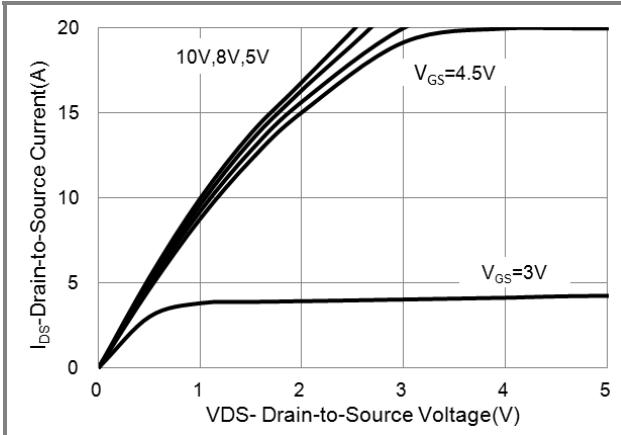


Fig.1 Output Characteristics

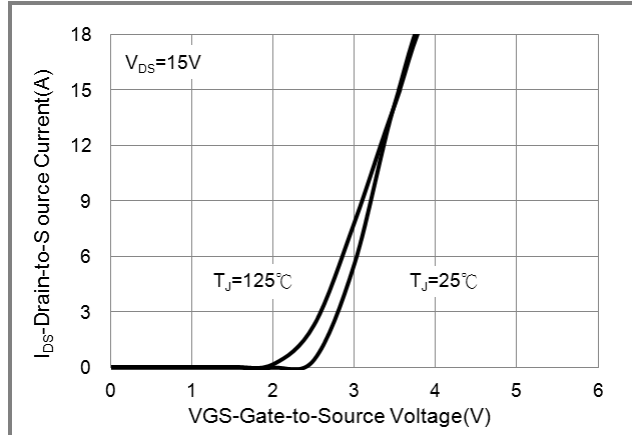


Fig.2 Transfer Characteristics

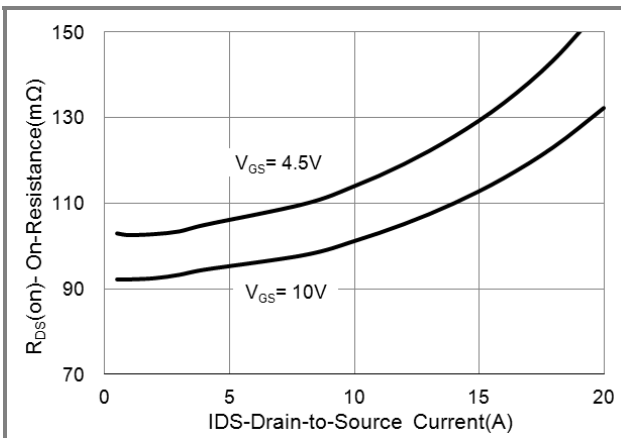


Fig.3 On-Resistance vs. Drain Current

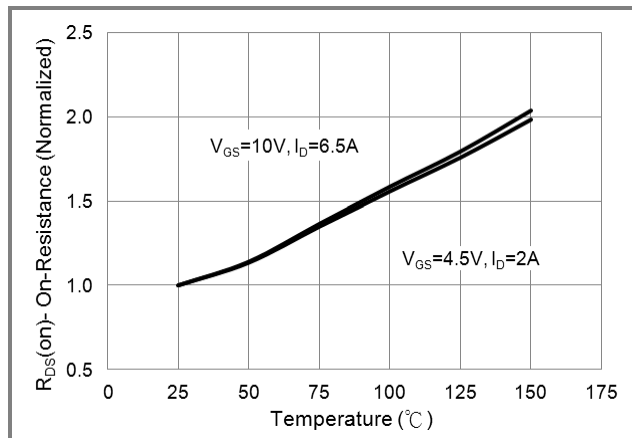


Fig.4 On-Resistance vs. Junction temperature

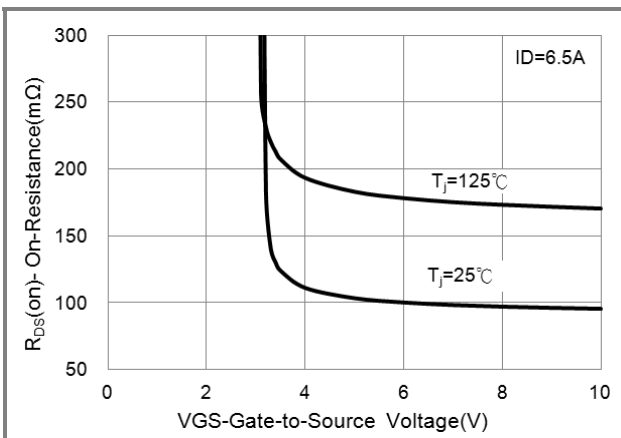


Fig.5 On-Resistance Variation with VGS.

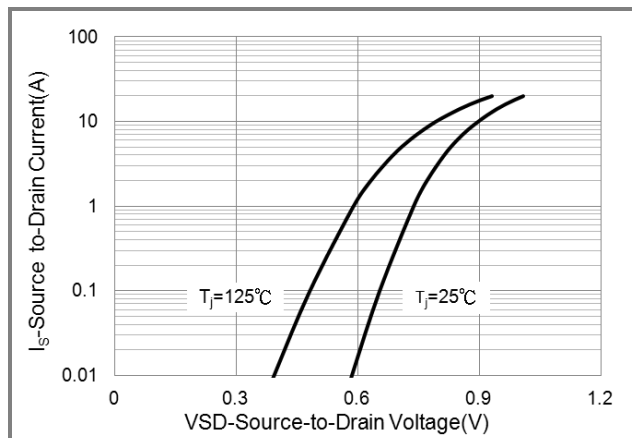


Fig.6 Source-Drain Diode Forward Voltage



PJD13N10 / PJU13N10

TYPICAL CHARACTERISTIC CURVES

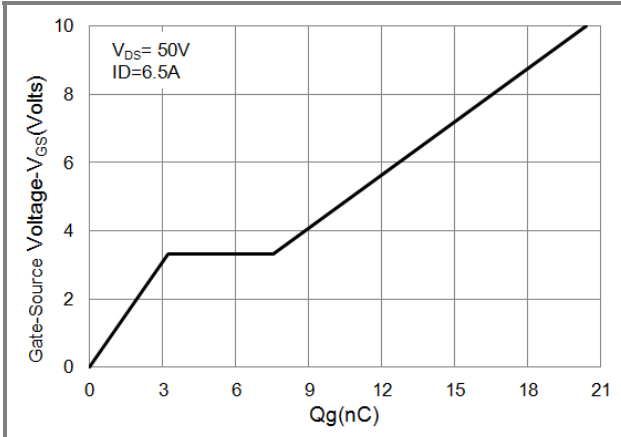


Fig.7 Gate-Charge Characteristics

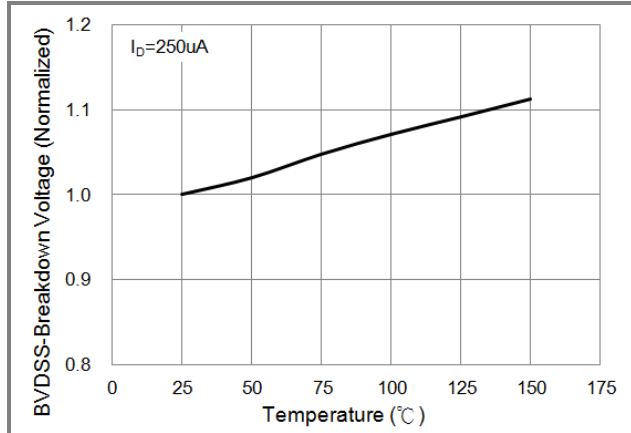


Fig.8 Breakdown Voltage Variation vs. Temperature

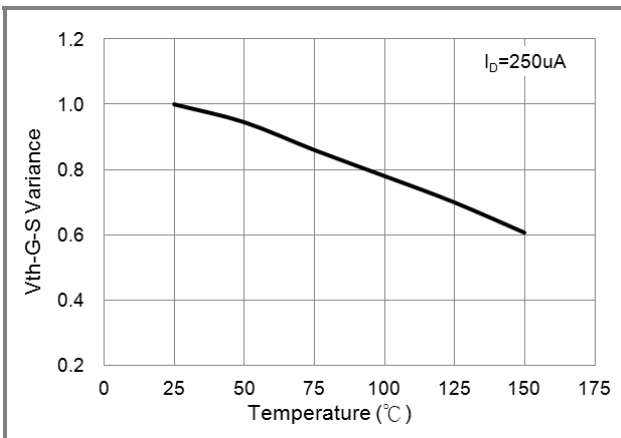


Fig.9 Threshold Voltage Variation with Temperature

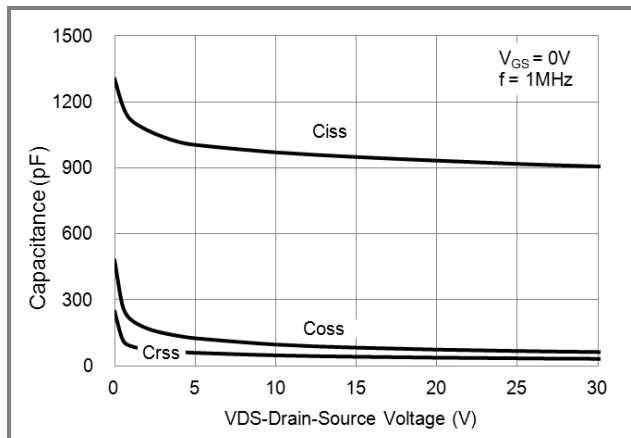


Fig.10 Capacitance vs. Drain-Source Voltage

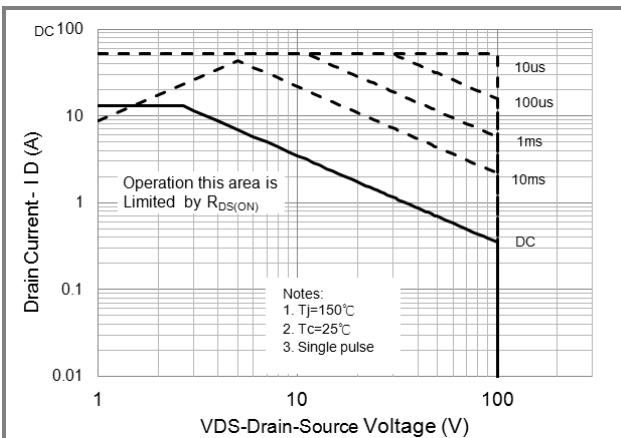


Fig.11 Maximum Safe Operating Area



PJD13N10 / PJU13N10

TYPICAL CHARACTERISTIC CURVES

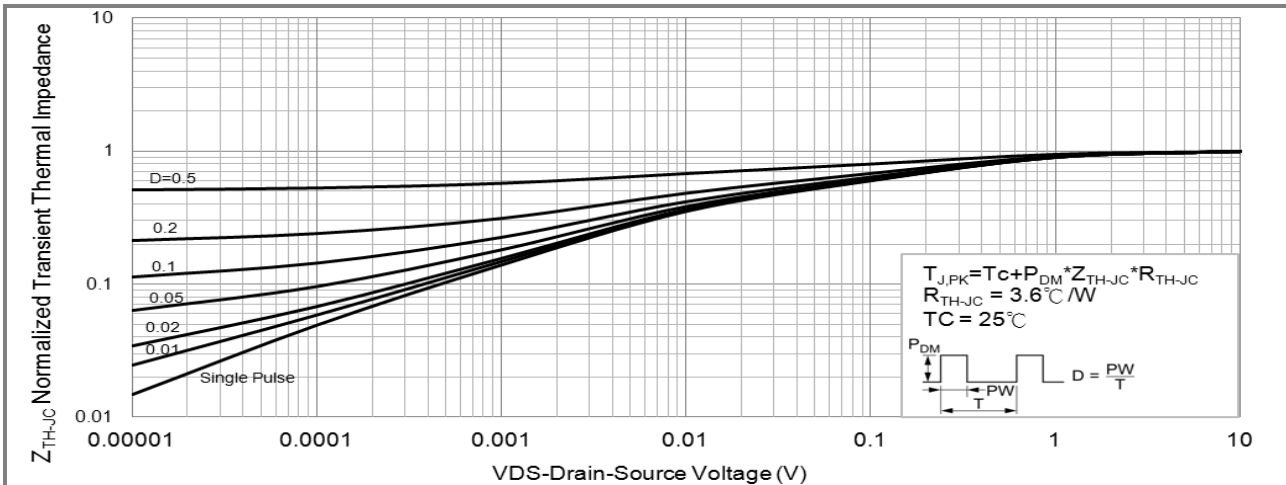
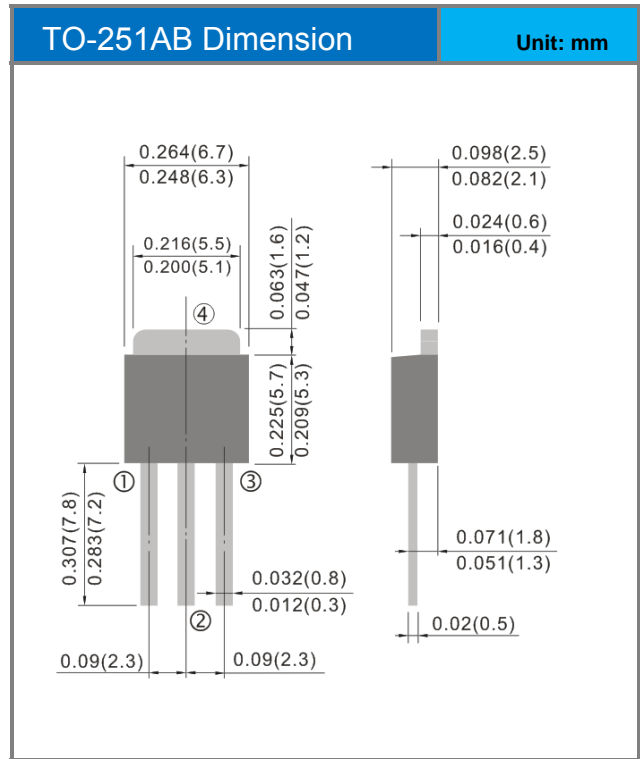
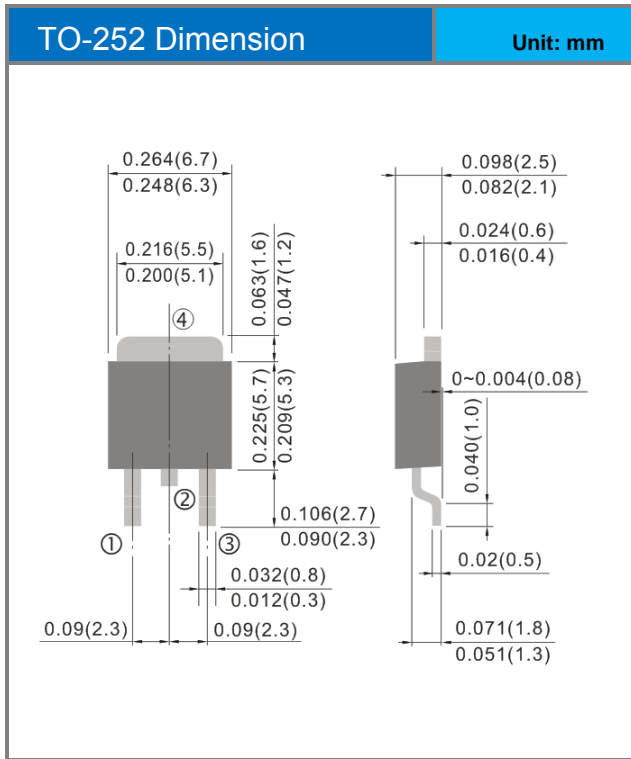


Fig.12 Normalized Transient Thermal Impedance vs. Pulse Width



PJD13N10 / PJU13N10

Packaging Information



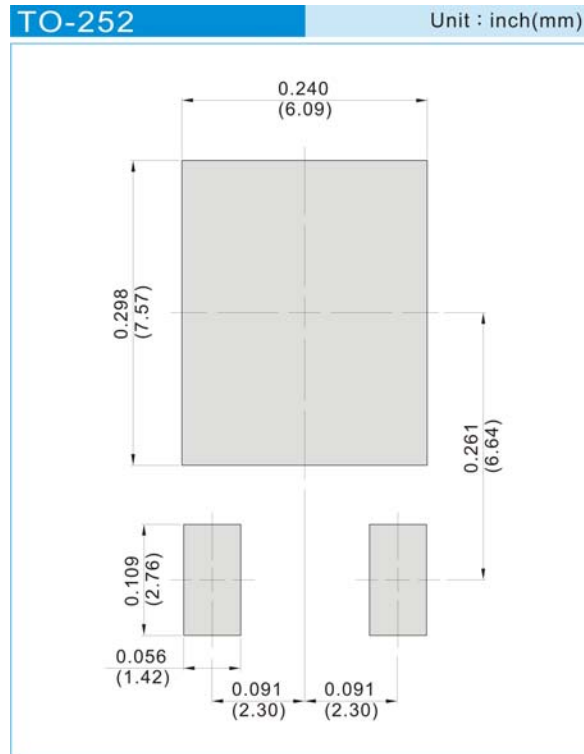


PJD13N10 / PJU13N10

PART NO PACKING CODE VERSION

Part No Packing Code	Package Type	Packing type	Marking	Version
PJD13N10_L2_00001	TO-252	13" tape & reel	D13N10	Halogen free
PJU13N10_T0_00001	TO-251AB	Tube packing	U13N10	Halogen free

MOUNTING PAD LAYOUT





PJD13N10 / PJU13N10

Disclaimer

- Reproducing and modifying information of the document is prohibited without permission from Panjit International Inc..
- Panjit International Inc. reserves the rights to make changes of the content herein the document anytime without notification. Please refer to our website for the latest document.
- Panjit International Inc. disclaims any and all liability arising out of the application or use of any product including damages incidentally and consequentially occurred.
- Panjit International Inc. does not assume any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.
- Applications shown on the herein document are examples of standard use and operation. Customers are responsible in comprehending the suitable use in particular applications. Panjit International Inc. makes no representation or warranty that such applications will be suitable for the specified use without further testing or modification.
- The products shown herein are not designed and authorized for equipments requiring high level of reliability or relating to human life and for any applications concerning life-saving or life-sustaining, such as medical instruments, transportation equipment, aerospace machinery et cetera. Customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify Panjit International Inc. for any damages resulting from such improper use or sale.
- Since Panjit uses lot number as the tracking base, please provide the lot number for tracking when complaining.