PJD30N15

150V N-Channel Enhancement Mode MOSFET

| Voltage	150 V	Current	25 A

Features

- $R_{DS(ON)}$, V_{GS}@10V,I_D@5A<65mΩ
- $R_{DS(ON)}$, V_{GS}@6V, I_D@3A<90mΩ
- High switching speed
- Improved dv/dt capability
- Low reverse transfer capacitance
- Lead free in compliance with EU RoHS2.0 (2011/65/EU & 2015/865/EU directive)
- Green molding compound as per IEC61249 Std. (Halogen Free)

Mechanical Data

- Case : TO-252AA Package
- Terminals : Solderable per MIL-STD-750, Method 2026
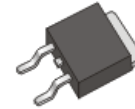
TO-252AA
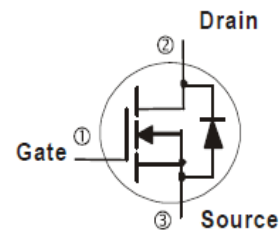
Maximum Ratings and Thermal Characteristics (T_A=25°C unless otherwise noted)

PARAMETER		SYMBOL	LIMIT	UNITS
Drain-Source Voltage		V_{DS}	150	V
Gate-Source Voltage		V_{GS}	$\pm$25	V
Continuous Drain Current	T_C=25°C	I_D	25	A
	T_C=100°C		16	
Pulsed Drain Current [(Note 1)]	T_C=25°C	I_{DM}	100	
Power Dissipation	T_C=25°C	P_D	102	W
	T_C=100°C		41	
Continuous Drain Current	T_A=25°C	I_D	3.5	A
	T_A=70°C		2.8	A
Power Dissipation	T_A=25°C	P_D	2.0	W
Power Dissipation	T_A=70°C		1.3	
Single Pulse Avalanche Energy [(Note 6)]		E_{AS}	242	mJ
Operating Junction and Storage Temperature Range		T_J,T_{STG}	-55~150	^{o}C
Typical Thermal Resistance[(Note 4,5)]	Junction to Case	$R_{\theta JC}$	1.23	^{o}C/W
	Junction to Ambient	$R_{\theta JA}$	62.5	

- Limited only By Maximum Junction Temperature

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Electrical Characteristics $(T_A=25^{o}C$ unless otherwise noted)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNITS
Static						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250uA$	150	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250uA$	2.0	2.7	4.0	V
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=5A$	-	50	65	mΩ
		$V_{GS}=6V, I_D=3A$	-	60	90	
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=150V, V_{GS}=0V$	-	-	1.0	uA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm25V, V_{DS}=0V$	-	-	±100	nA
Dynamic [7]						
Total Gate Charge	Q_g	$V_{DS}=75V, I_D=4A,$ $V_{GS}=10V$ [1,2]	-	29.5	-	nC
Gate-Source Charge	Q_{gs}		-	9.2	-	
Gate-Drain Charge	Q_{gd}		-	8.0	-	
Input Capacitance	Ciss	$V_{DS}=30V, V_{GS}=0V,$ $f=1.0MHZ$	-	1764	-	pF
Output Capacitance	Coss		-	148	-	
Reverse Transfer Capacitance	Crss		-	62	-	
Turn-On Delay Time	$td_{(on)}$	$V_{DS}=30V, I_D=1A,$ $V_{GS}=10V, R_G=6Ω$ [1,2]	-	14	-	ns
Turn-On Rise Time	t_r		-	21	-	
Turn-Off Delay Time	$td_{(off)}$		-	32	-	
Turn-Off Fall Time	t_f		-	23	-	
Drain-Source Diode						
Maximum Continuous Drain-Source Diode Forward Current	I_S	---	-	-	25	A
Diode Forward Voltage	V_{SD}	$I_S=1A, V_{GS}=0V$	-	0.7	1.0	V

NOTES :

1. Pulse width$\leq$300us, Duty cycle$\leq$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. RΘJA 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. The test condition is L=0.1mH, $I_{AS}=22A$, $V_{DD}=50V$, $V_{GS}=10V$
7. Guaranteed by design, not subject to production testing.
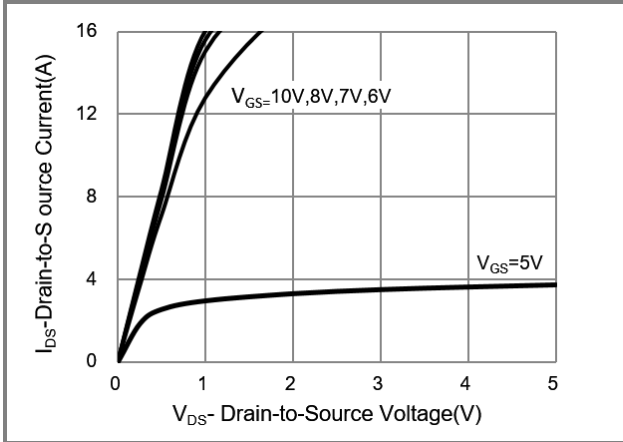
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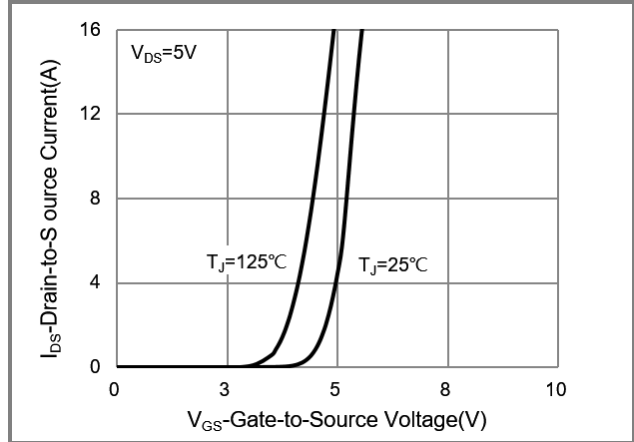## TYPICAL CHARACTERISTIC CURVES

Fig.1 Output Characteristics
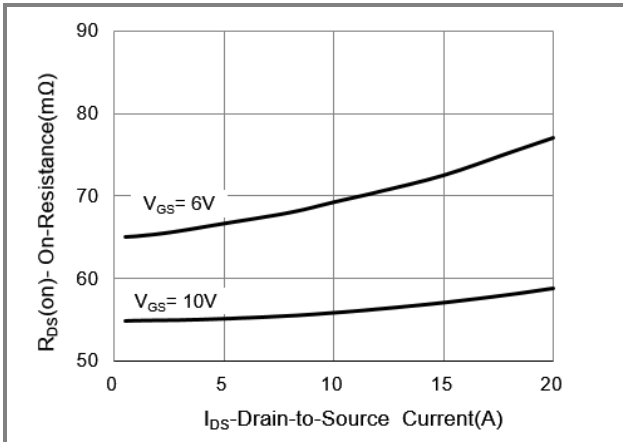

Fig.2 Transfer Characteristics

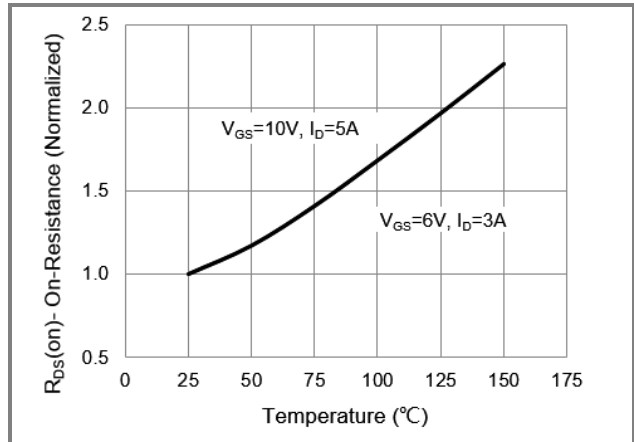**Fig.3 On-Resistance vs. Drain Current**

Fig.4 On-Resistance vs. Junction temperature
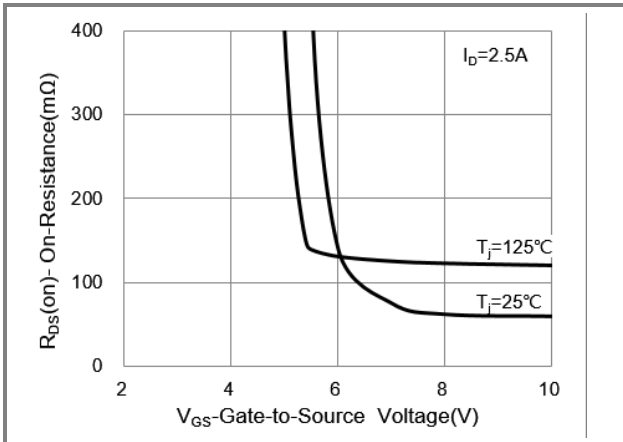

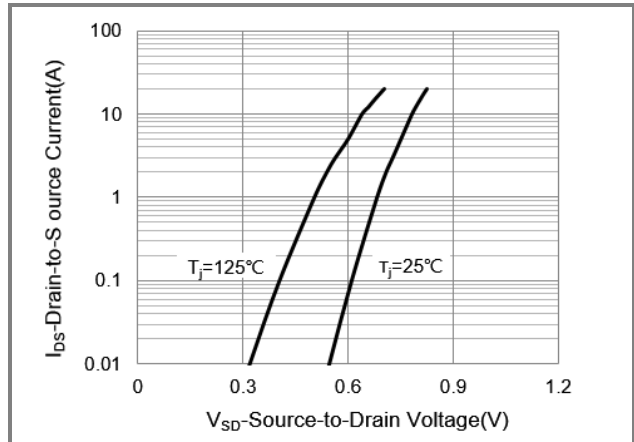**Fig.5 On-Resistance Variation with VGS.**

Fig.6 Source-Drain Diode Forward Voltage

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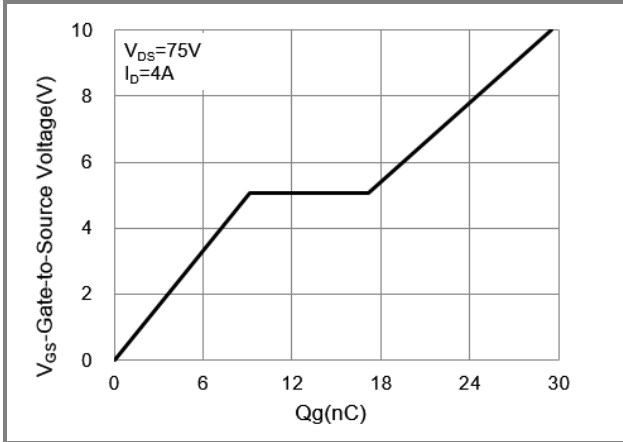## TYPICAL CHARACTERISTIC CURVES

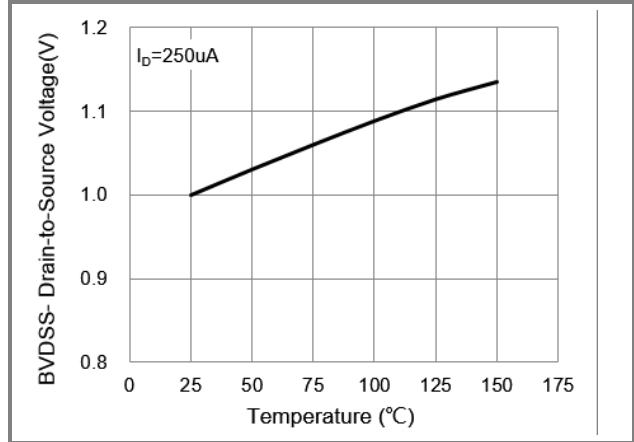**Fig.7 Gate-Charge Characteristics**

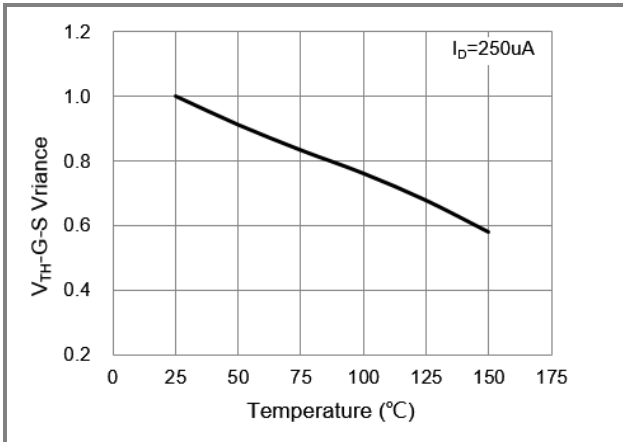**Fig.8 Breakdown Voltage Variation vs. Temperature**

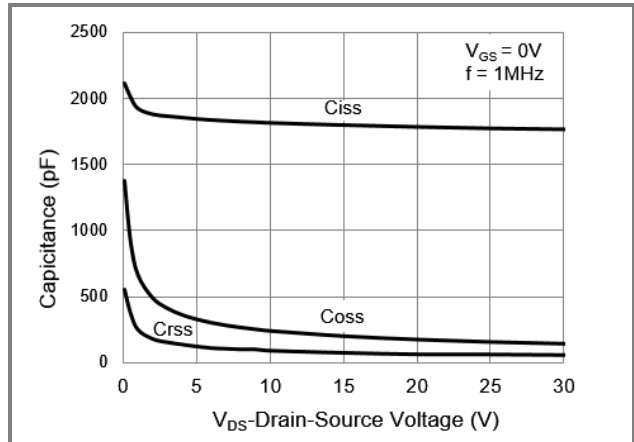**Fig.9 Threshold Voltage Variation with Temperature**

Fig.10 Capacitance vs. Drain-Source Voltage
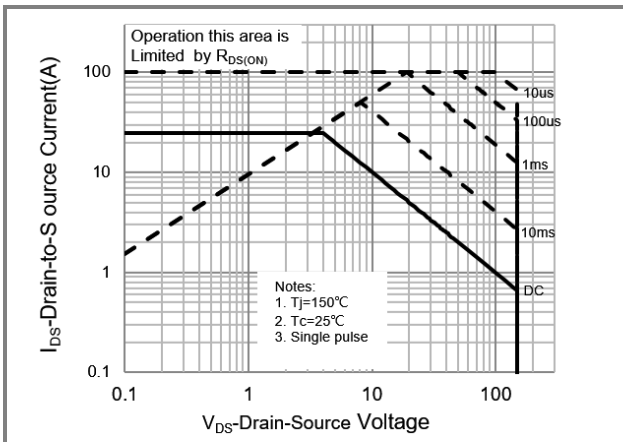
Fig.11 Maximum Safe Operating Area

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TYPICAL CHARACTERISTIC CURVES

$$T_{J,PK} = T_C + P_{DM} * Z_{TH-JC} * R_{TH-JC}$$
$$R_{TH-JC} = 1.23°C/W$$
$$T_C = 25°C$$

$$D = \frac{PW}{T}$$
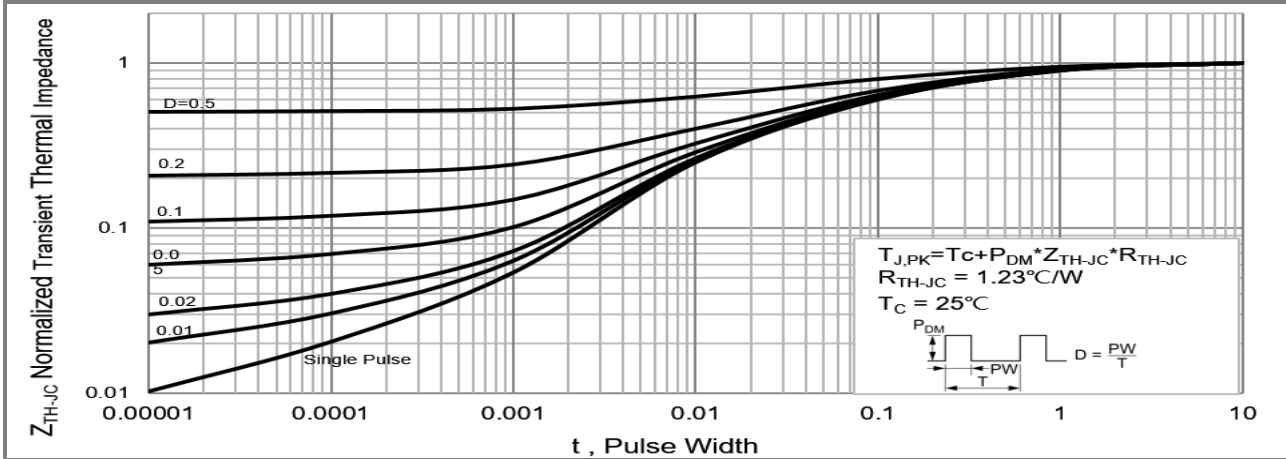
Fig.12 Normalized Transient Thermal Impedance vs. Pulse Width

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Packaging Information .

TO-252AA Dimension	Unit: mm

0.265(6.73)
0.250(6.35)

0.094(2.39)
0.086(2.18)

0.035(0.89)
0.018(0.46)

0.215(5.46)
0.195(4.95)

0.050(1.27)
0.035(0.89)

④

Min: 0.005(0.13)

0.245(6.22)
0.235(5.97)

0.070(1.78)
0.055(1.40)

②

0.108(2.74) BSC

① ③

0.035(0.89)
0.025(0.64)

0.02(0.508) BSC

0.09(2.29)   0.09(2.29)
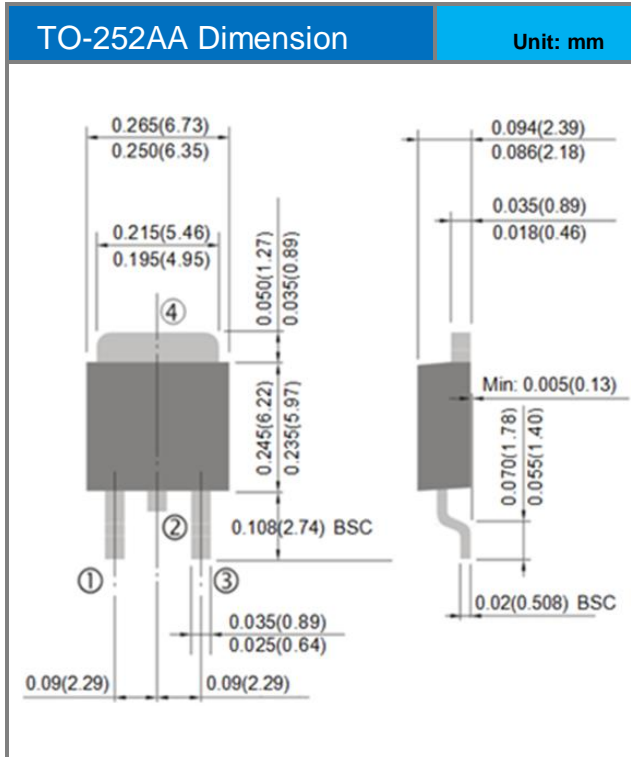
PART NO PACKING CODE VERSION

Part No Packing Code	Package Type	Packing Type	Marking	Version
PJD30N15_L2_00001	TO-252AA	3,000pcs / 13" reel	D30N15	Halogen free

MOUNTING PAD LAYOUT

TO-252AA   Unit : inch(mm)

0.246 MIN.
(6.25) MIN.

0.268 MIN.
(6.80) MIN.

0.260
(6.60)

0.118 MIN.
(3.00) MIN.

0.059 MIN.
(1.50)MIN.

0.090
(2.29)

0.180
(4.58)
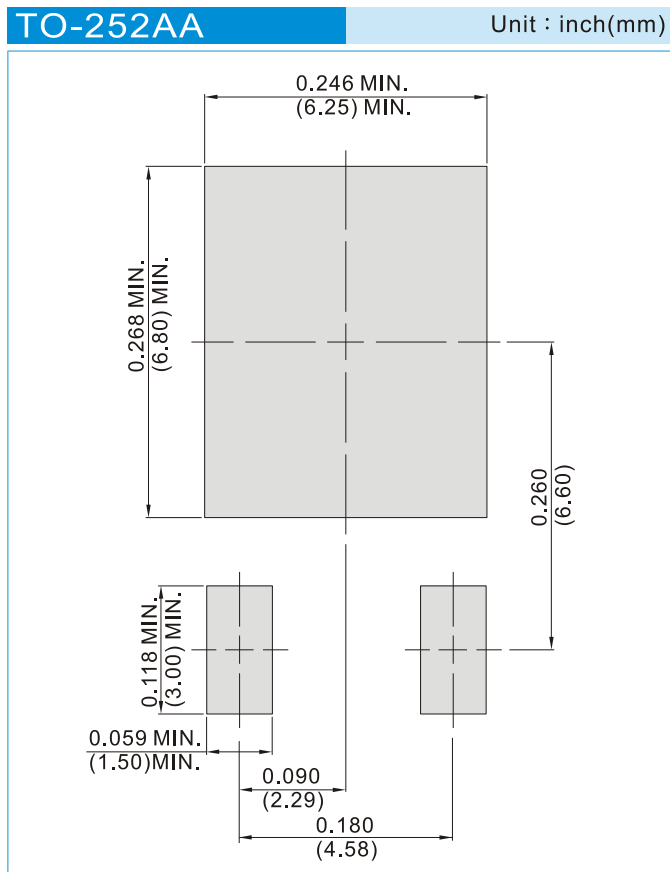
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