



# PJD20N06A

## 60V N-Channel Enhancement Mode MOSFET

**Voltage**

**60 V**

**Current**

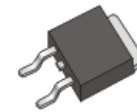
**20 A**

### Features

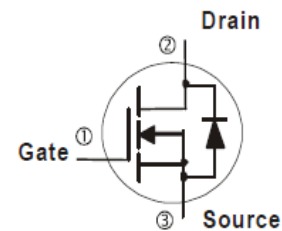
- $R_{DS(ON)}, V_{GS}@10V, I_D@10A < 42m\Omega$
- $R_{DS(ON)}, V_{GS}@4.5V, I_D@5A < 52m\Omega$
- High switching speed
- Improved dv/dt capability
- Low reverse transfer capacitance
- Lead free in compliance with EU RoHS 2011/65/EU directive.
- Green molding compound as per IEC61249 Std.. (Halogen Free)

### Mechanical Data

- Case : TO-252AA Package
- Terminals : Solderable per MIL-STD-750, Method 2026
- Approx. Weight : 0.0104 ounces, 0.297grams



TO-252AA



### Maximum Ratings and Thermal Characteristics ( $T_A=25^\circ\text{C}$ unless otherwise noted)

PARAMETER		SYMBOL	LIMIT	UNITS
Drain-Source Voltage		$V_{DS}$	60	V
Gate-Source Voltage		$V_{GS}$	+20	V
Continuous Drain Current	$T_C=25^\circ\text{C}$	$I_D$	20	A
	$T_C=100^\circ\text{C}$		12	
Pulsed Drain Current <sup>(Note 1)</sup>		$I_{DM}$	80	
Power Dissipation	$T_C=25^\circ\text{C}$	$P_D$	31	W
	$T_C=100^\circ\text{C}$		12	
Continuous Drain Current	$T_A=25^\circ\text{C}$	$I_D$	5	A
	$T_A=70^\circ\text{C}$		4	A
Power Dissipation		$P_D$	2.0	W
Power Dissipation			$T_A=70^\circ\text{C}$	
Single Pulse Avalanche Energy <sup>(Note 6)</sup>		$E_{AS}$	20	mJ
Operating Junction and Storage Temperature Range		$T_J, T_{STG}$	-55~150	$^\circ\text{C}$
Typical Thermal Resistance <small>(Note 4,5)</small>	Junction to Case	$R_{\theta JC}$	4.0	$^\circ\text{C/W}$
	Junction to Ambient	$R_{\theta JA}$	62.5	

- Limited only By Maximum Junction Temperature



# PJD20N06A

## Electrical Characteristics (T<sub>A</sub>=25 °C unless otherwise noted)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNITS
<b>Static</b>						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =250uA	60	-	-	V
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250uA	1.0	1.8	2.5	V
Drain-Source On-State Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =10A	-	36	42	mΩ
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =5A	-	40	52	
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =60V, V <sub>GS</sub> =0V	-	-	1.0	uA
Gate-Source Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =±20V, V <sub>DS</sub> =0V	-	-	±100	nA
<b>Dynamic</b> (Note 7)						
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> =30V, I <sub>D</sub> =10A, V <sub>GS</sub> =10V (Note 1,2)	-	14	-	nC
Gate-Source Charge	Q <sub>gs</sub>		-	2.3	-	
Gate-Drain Charge	Q <sub>gd</sub>		-	2.4	-	
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =25V, V <sub>GS</sub> =0V, f=1.0MHZ	-	685	-	pF
Output Capacitance	C <sub>oss</sub>		-	59	-	
Reverse Transfer Capacitance	C <sub>rss</sub>		-	30	-	
Turn-On Delay Time	t <sub>d(on)</sub>		V <sub>DD</sub> =15V, I <sub>D</sub> =10A, V <sub>GS</sub> =10V, R <sub>G</sub> =6Ω (Note 1,2)	-	4.5	
Turn-On Rise Time	t <sub>r</sub>	-		41	-	
Turn-Off Delay Time	t <sub>d(off)</sub>	-		19	-	
Turn-Off Fall Time	t <sub>f</sub>	-		6	-	
<b>Drain-Source Diode</b>						
Maximum Continuous Drain-Source Diode Forward Current	I <sub>S</sub>	---	-	-	20	A
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =1A, V <sub>GS</sub> =0V	-	0.7	1.2	V

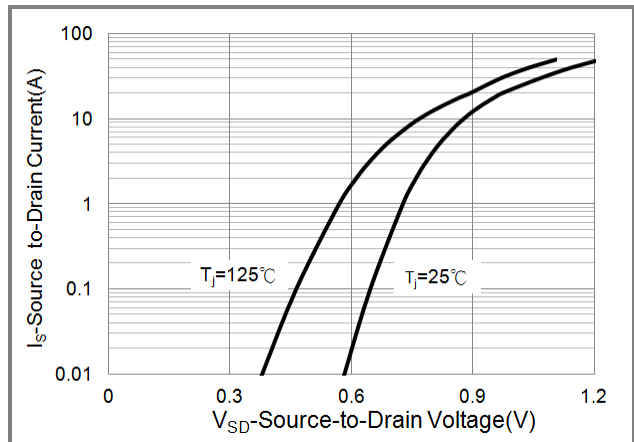
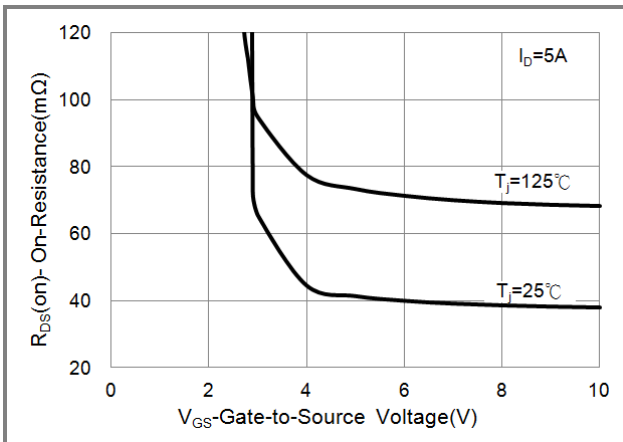
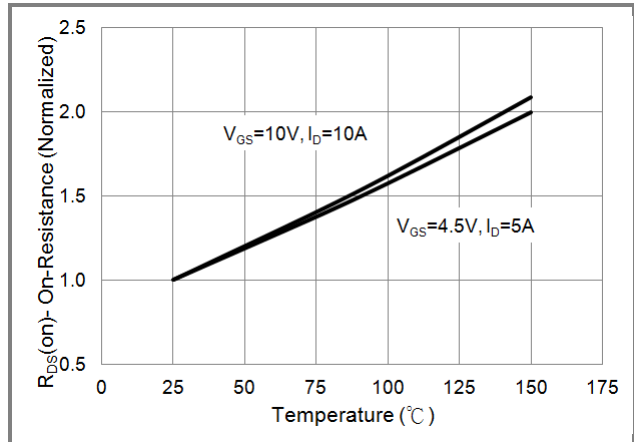
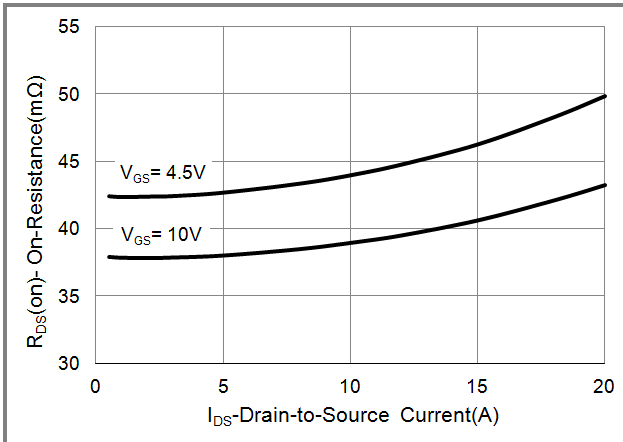
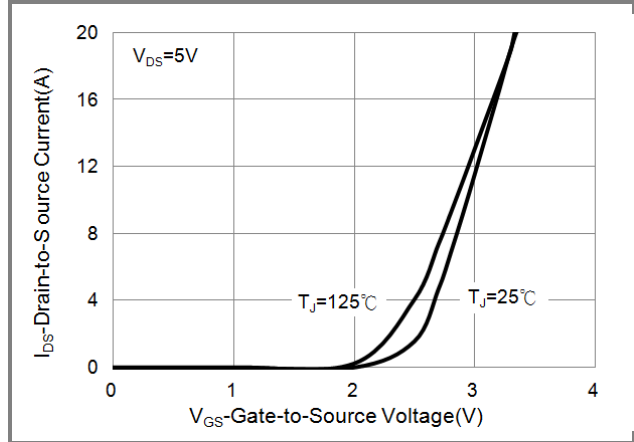
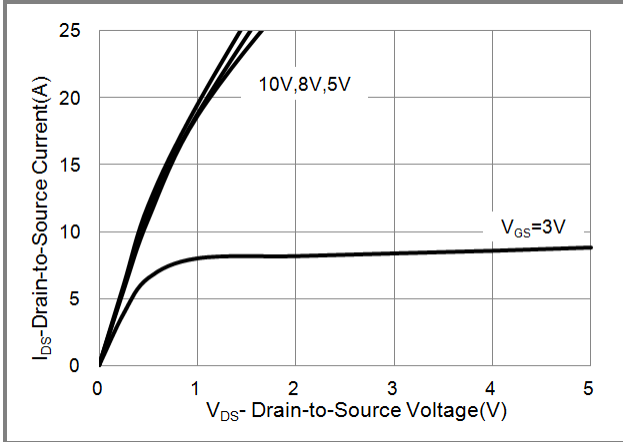
NOTES :

1. Pulse width ≤ 300us, Duty cycle ≤ 2%
2. Essentially independent of operating temperature typical characteristics
3. Repetitive rating, pulse width limited by junction temperature T<sub>J</sub>(MAX)=150°C. Ratings are based on low frequency and duty cycles to keep initial T<sub>J</sub> = 25°C.
4. The maximum current rating is package limited
5. R<sub>θJA</sub> 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.
6. The test condition is L=0.1mH, I<sub>AS</sub>=20A, V<sub>DD</sub>=25V, V<sub>GS</sub>=10V
7. Guaranteed by design, not subject to production testing



# PJD20N06A

## TYPICAL CHARACTERISTIC CURVES





# PJD20N06A

## TYPICAL CHARACTERISTIC CURVES

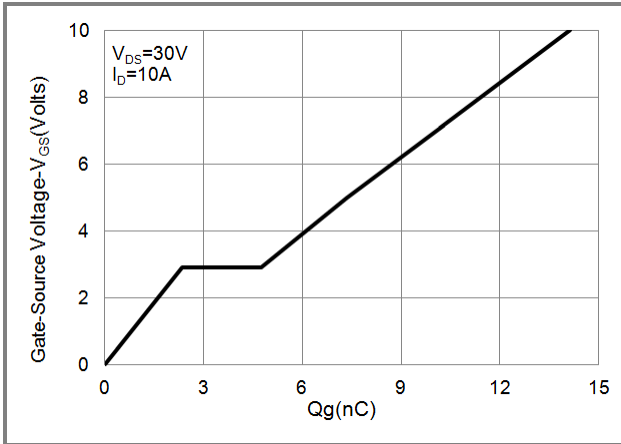


Fig.7 Gate-Charge Characteristics

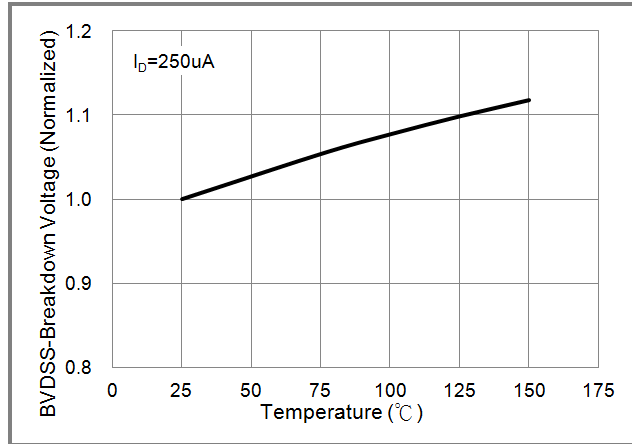


Fig.8 Breakdown Voltage Variation vs. Temperature

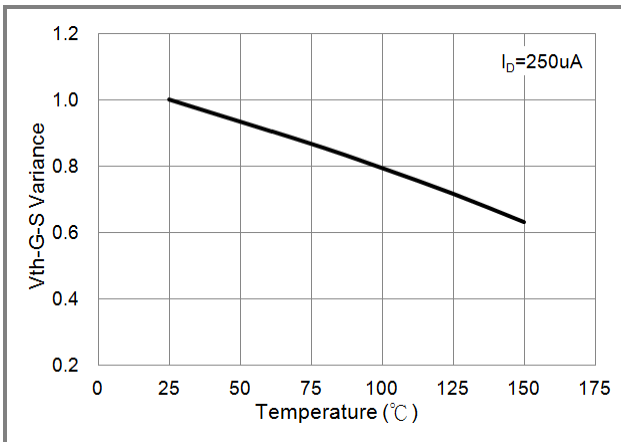


Fig.9 Threshold Voltage Variation with Temperature

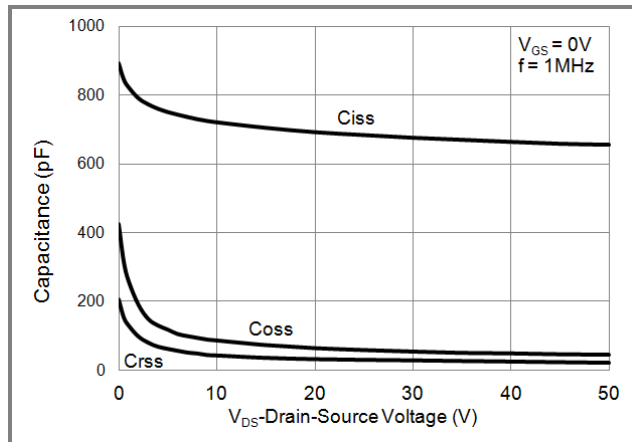


Fig.10 Capacitance vs. Drain-Source Voltage

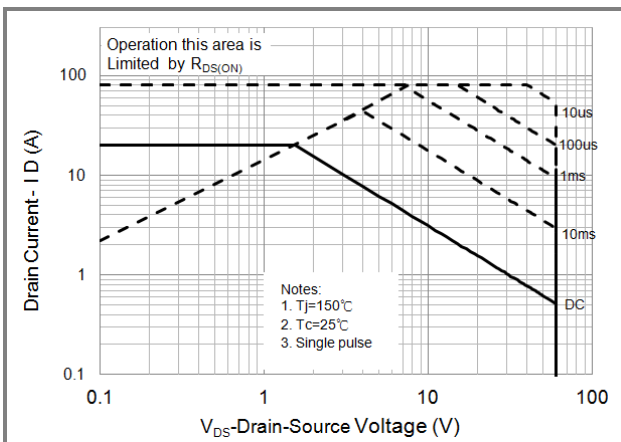


Fig.11 Maximum Safe Operating Area



# PJD20N06A

## TYPICAL CHARACTERISTIC CURVES

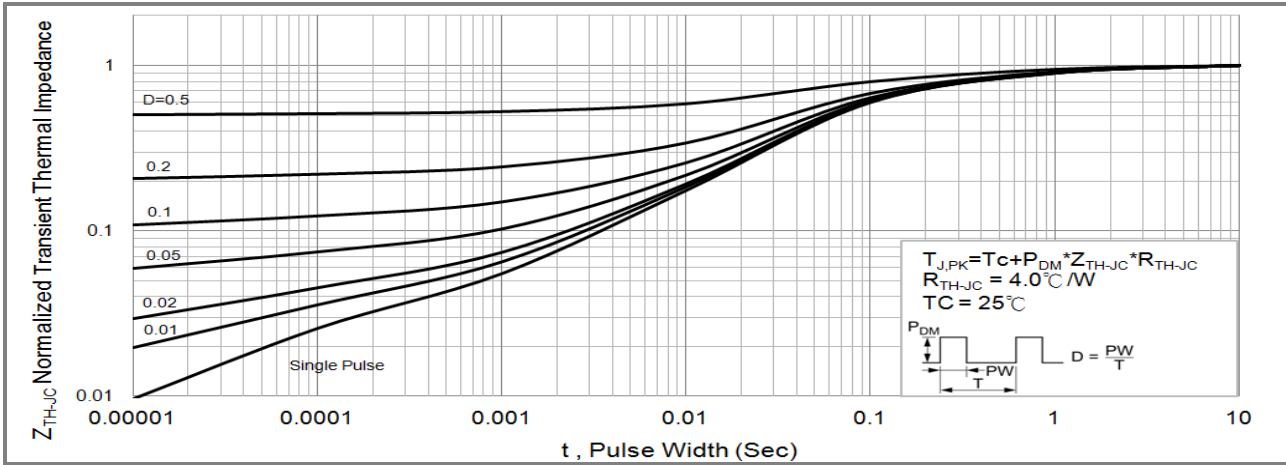
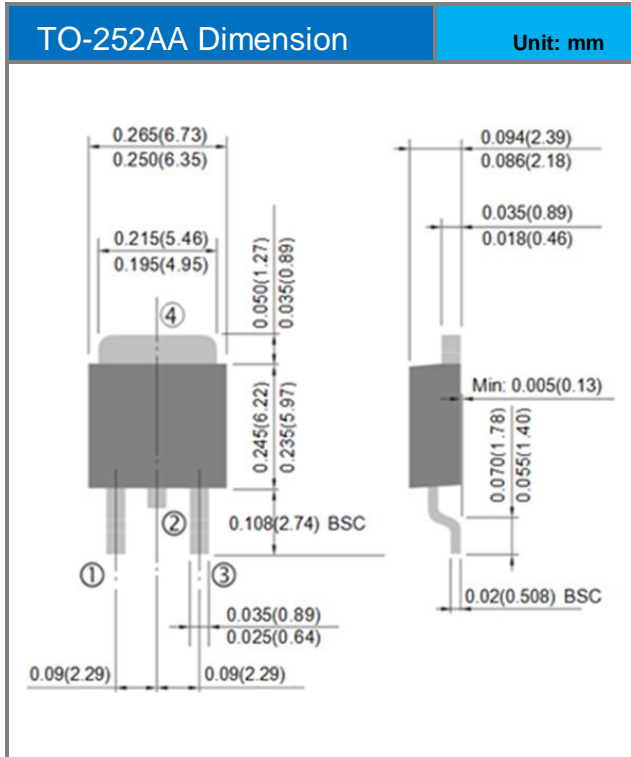


Fig.12 Normalized Transient Thermal Impedance vs. Pulse Width



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## Packaging Information



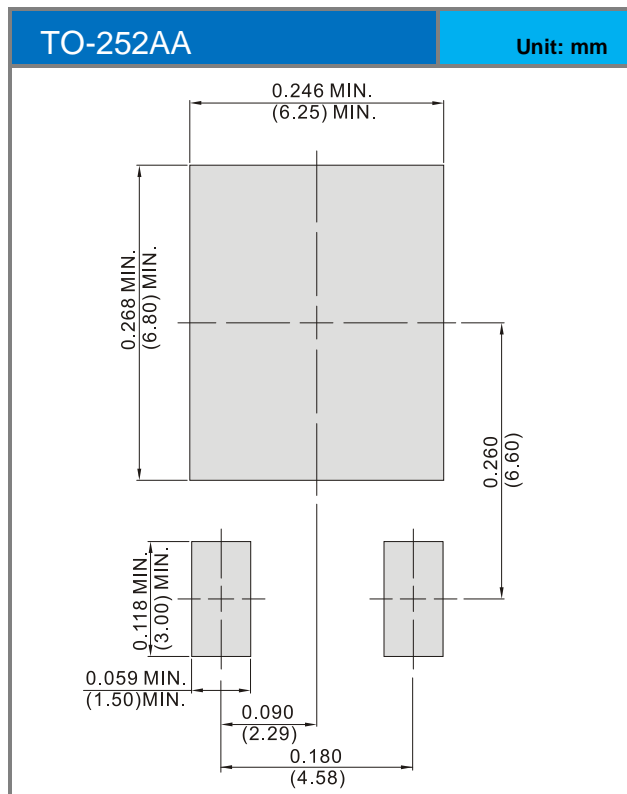


# PJD20N06A

## PART NO PACKING CODE VERSION

Part No Packing Code	Package Type	Packing Type	Marking	Version
PJD20N06A_L2_00001	TO-252AA	3,000pcs / 13" reel	D20N06A	Halogen free

## MOUNTING PAD LAYOUT





## PJD20N06A

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