



# PJD60R900S / PJP60R900S / PJF60R900S

## 600V N-Channel Enhancement Mode MOSFET

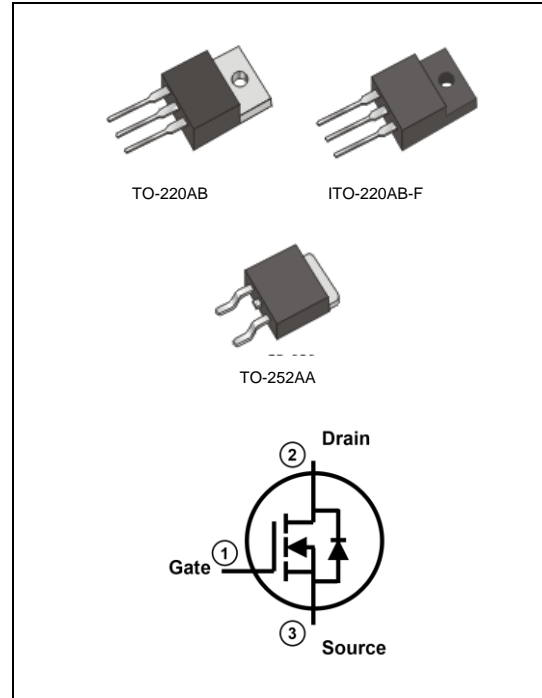
**Voltage** 600 V **Current** 4.5 A

### Features

- $R_{DS(ON)}$ ,  $V_{GS}@10V$ ,  $I_D@2.5A < 0.9\Omega$
- High switching speed
- Low gate input resistance
- Low input capacitance and gate charge
- Lead free in compliance with EU RoHS 2.0
- Green molding compound as per IEC 61249 standard

### Mechanical Data

- Case: TO-252AA, TO-220AB, ITO-220AB-F Package
- Terminals : Solderable per MIL-STD-750, Method 2026
- TO-252AA Approx. Weight : 0.0104 ounces, 0.297grams
- TO-220AB-F Approx. Weight : 0.067 ounces, 1.9 grams
- ITO-220AB-F Approx. Weight : 0.068 ounces, 2.0 grams



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

PARAMETER		SYMBOL	TO-252AA	TO-220AB	ITO-220AB-F	UNITS
Drain-Source Voltage @ $T_J(MAX)$		$V_{DS}$	650			V
Drain-Source Voltage		$V_{DS}$	600			
Gate-Source Voltage		$V_{GS}$	$\pm 25$			
Continuous Drain Current (Note 4)	$T_C=25^\circ\text{C}$	$I_D$	4.5			A
	$T_C=100^\circ\text{C}$		2.9			
Pulsed Drain Current (Note 1)	$T_C=25^\circ\text{C}$	$I_{DM}$	20			
Power Dissipation	$T_C=25^\circ\text{C}$	$P_D$	45	45	20	W
	$T_C=100^\circ\text{C}$		17	17	8	
Single Pulse Avalanche Energy (Note 6)		$E_{AS}$	120			mJ
Operating Junction and Storage Temperature Range		$T_J, T_{STG}$	-55~150			$^\circ\text{C}$
Typical Thermal Resistance (Note 5)	Junction to Case	$R_{\theta JC}$	2.8	2.8	6.5	$^\circ\text{C/W}$
	Junction to Ambient	$R_{\theta JA}$	62.5			



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### 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	600	660	-	V
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250uA	2	3.4	4	
Drain-Source On-State Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =2.5A	-	0.76	0.9	Ω
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =600V, V <sub>GS</sub> =0V	-	-	1	uA
Gate-Source Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =±25V, V <sub>DS</sub> =0V	-	-	±100	nA
<b>Dynamic</b> (Note 7)						
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> =480V, I <sub>D</sub> =2.5A, V <sub>GS</sub> =10V (Note 2,3)	-	15	-	nC
Gate-Source Charge	Q <sub>gs</sub>		-	3	-	
Gate-Drain Charge	Q <sub>gd</sub>		-	8	-	
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =50V, V <sub>GS</sub> =0V, f=1.0MHZ	-	360	-	pF
Output Capacitance	C <sub>oss</sub>		-	25	-	
Reverse Transfer Capacitance	C <sub>rss</sub>		-	1	-	
Gate resistance	R <sub>g</sub>	f=1.0MHZ	-	5.5	-	Ω
Turn-On Delay Time	t <sub>d(on)</sub>	V <sub>DD</sub> =300V, I <sub>D</sub> =2.5A, V <sub>GS</sub> =10V, R <sub>G</sub> =4.7Ω (Note 2,3)	-	7	-	ns
Turn-On Rise Time	t <sub>r</sub>		-	10	-	
Turn-Off Delay Time	t <sub>d(off)</sub>		-	26	-	
Turn-Off Fall Time	t <sub>f</sub>		-	12	-	
<b>Drain-Source Diode</b>						
Diode Forward Current	I <sub>s</sub>	---	-	-	4.5	A
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =2.5A, V <sub>GS</sub> =0V	-	-	1.3	V
Reverse Recovery Time	T <sub>rr</sub>	V <sub>GS</sub> =0V, I <sub>S</sub> =2.5A	-	210	-	ns
Reverse Recovery Charge	Q <sub>rr</sub>	di <sub>s</sub> /dt=100A/us (Note 2,3)	-	1.5	-	uC

**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(MAX)</sub>=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=60mH, I<sub>AS</sub>=2A, R<sub>G</sub>=25 ohm, Starting T<sub>J</sub>=25°C.
7. Guaranteed by design, not subject to production testing.



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## TYPICAL CHARACTERISTIC CURVES

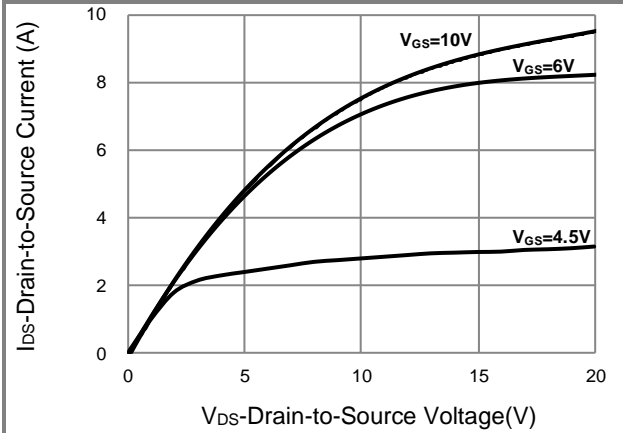


Fig.1 Output Characteristics

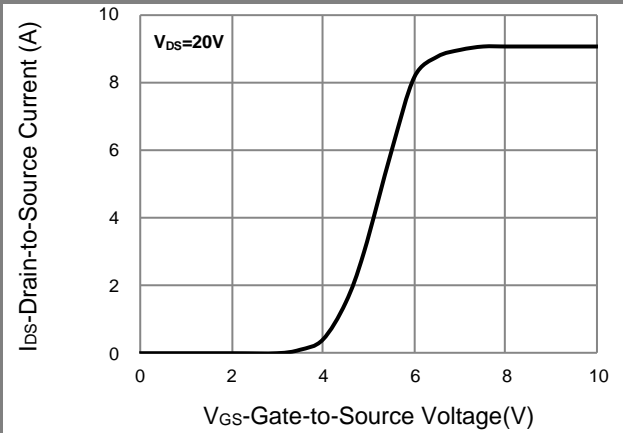


Fig.2 Transfer Characteristics

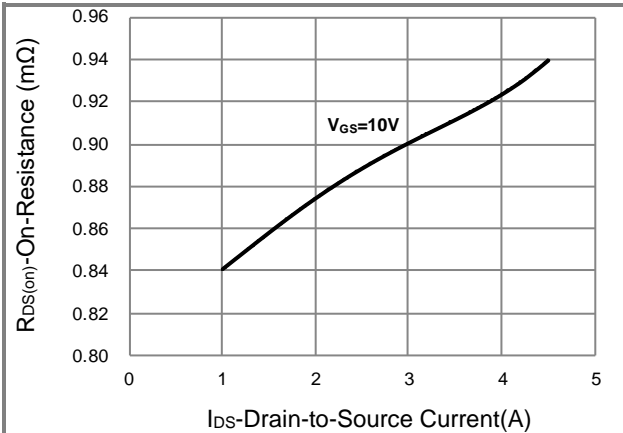


Fig.3 On-Resistance vs. Drain Current

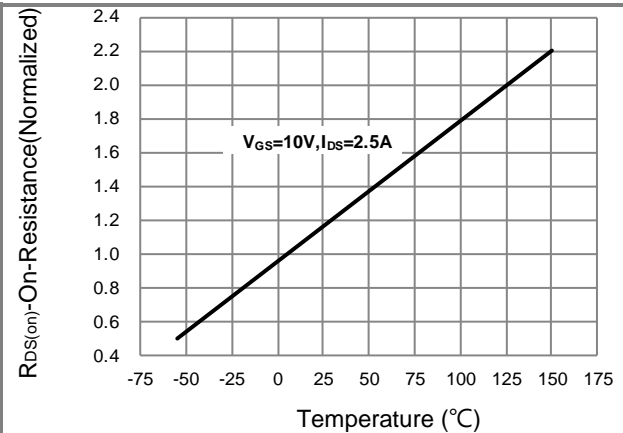


Fig.4 On-Resistance vs. Junction temperature

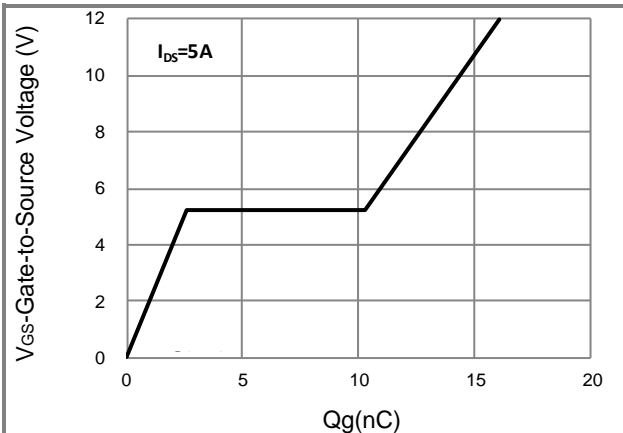


Fig.5 Gate-Charge Characteristics

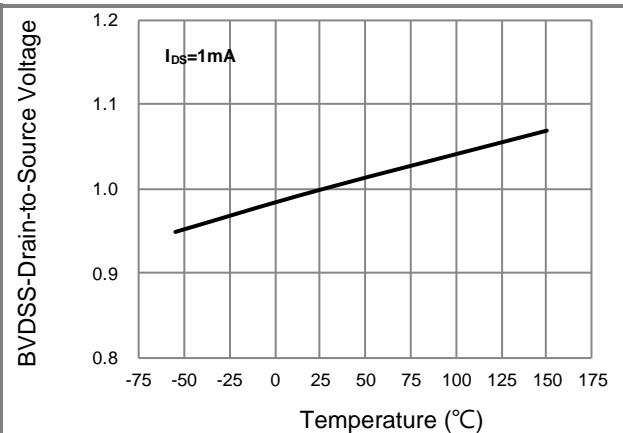


Fig.6 Breakdown Voltage Variation vs. Temperature



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## TYPICAL CHARACTERISTIC CURVES

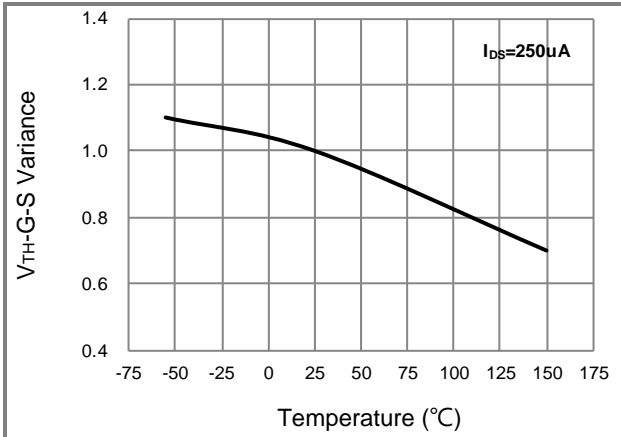


Fig.7 Threshold Voltage Variation with Temperature

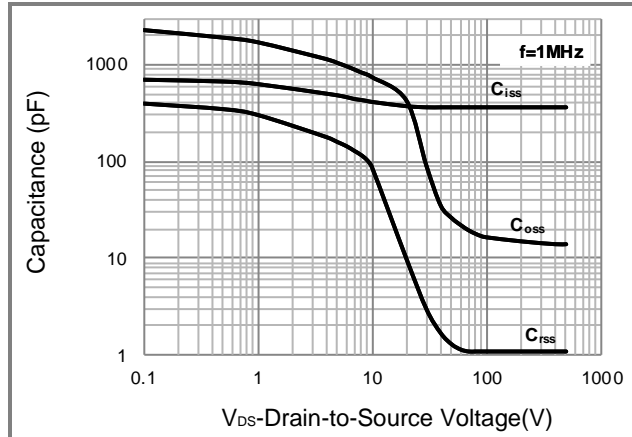


Fig.8 Capacitance vs. Drain-Source Voltage

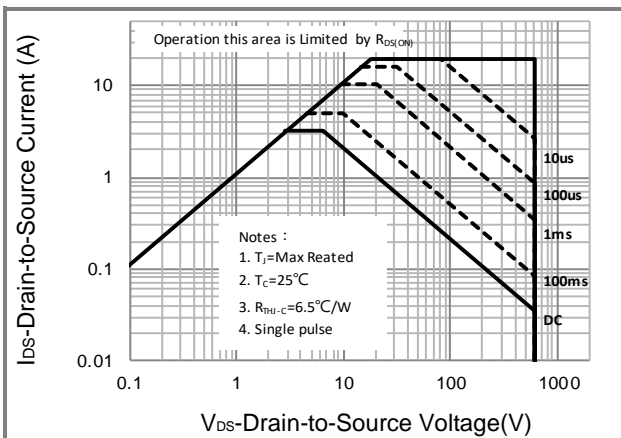


Fig.9 PJF60R900S Maximum Safe Operating Area

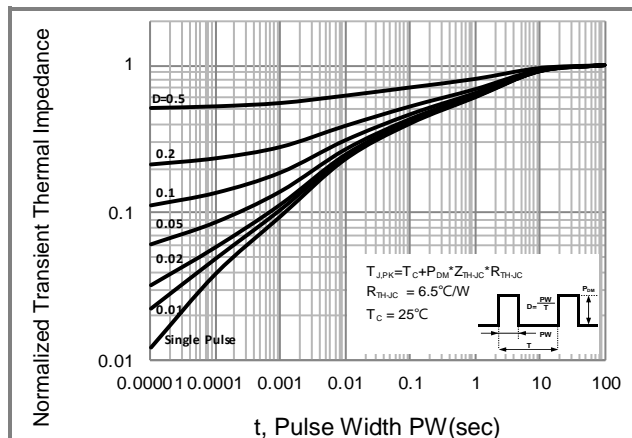


Fig.10 Normalized Transient Thermal Impedance



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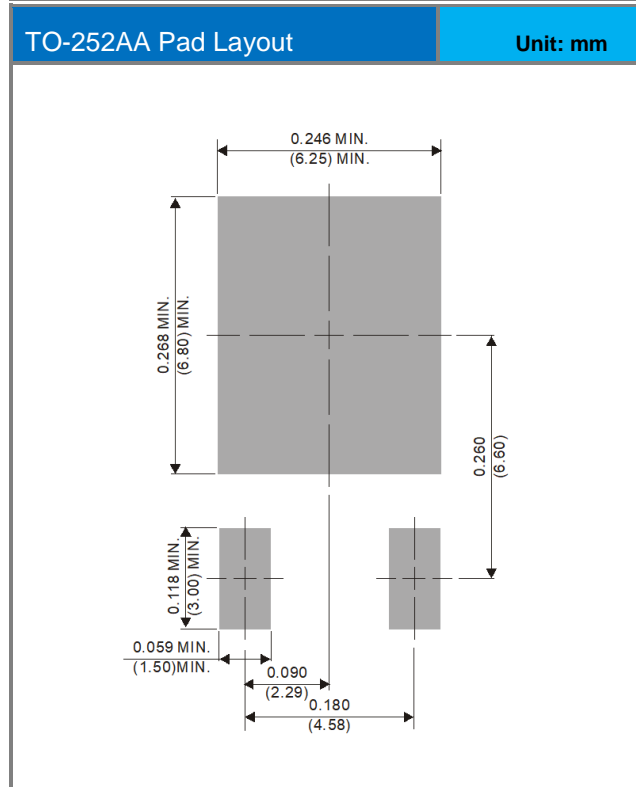
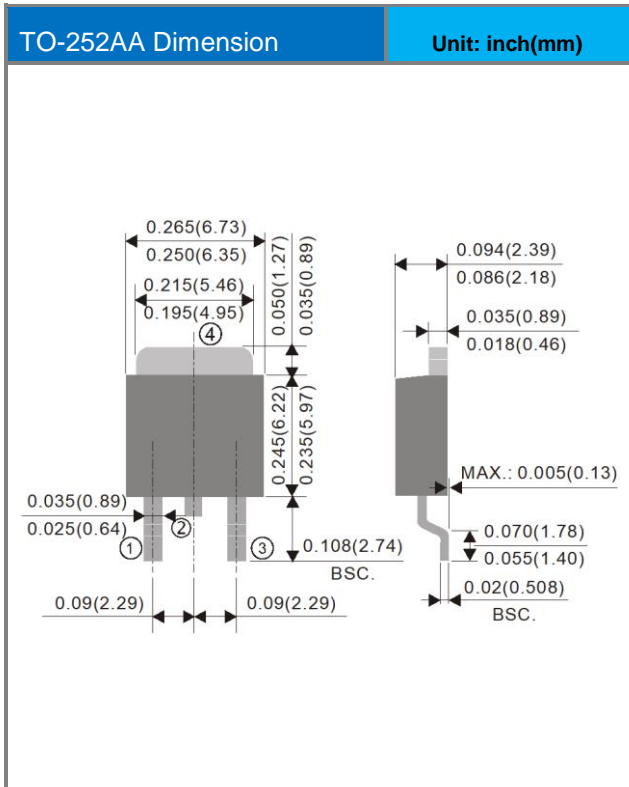
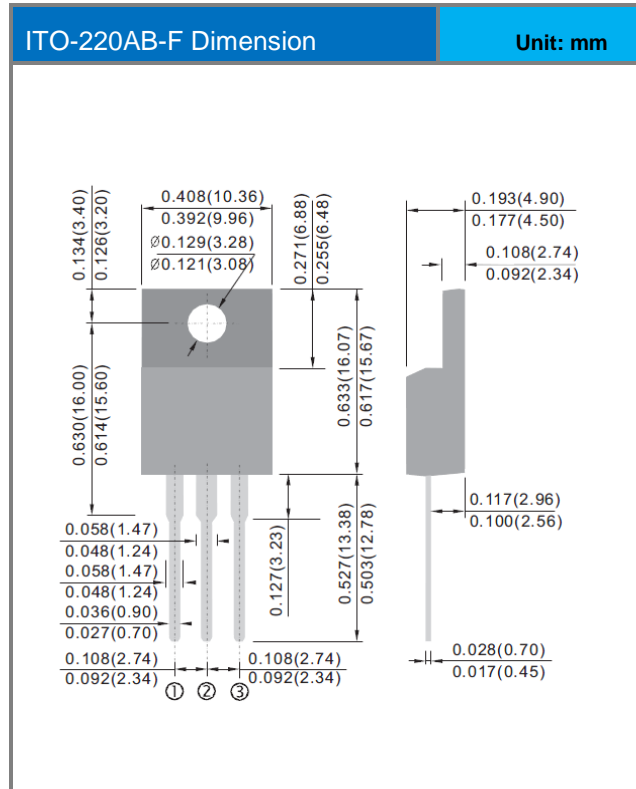
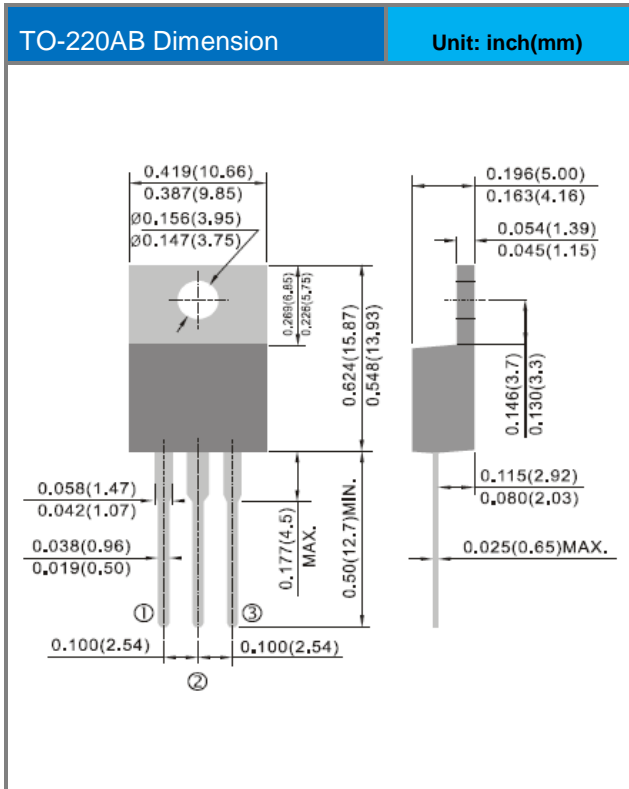
### Part No Packing Code Version

Part No Packing Code	Package Type	Packing Type	Marking	Version
PJD60R900S_L2_00201	TO-252AA	3,000pcs / 13" reel	60R900S	Halogen free
PJP60R900S_T0_00201	TO-220AB-F	50pcs / Tube	60R900S	Halogen free
PJF60R900S_T0_00201	ITO-220AB-F	50pcs / Tube	60R900S	Halogen free



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## Packaging Information





## **PJD60R900S / PJP60R900S / PJF60R900S**

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