



# PJD70P03

## 30V P-Channel Enhancement Mode MOSFET

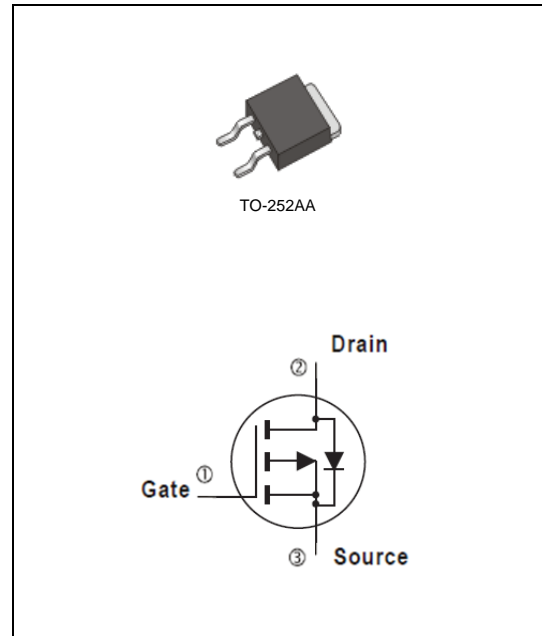
**Voltage**    **-30 V**    **Current**    **-70 A**

### Features

- $R_{DS(ON)}, V_{GS}@-10V, I_D@-10A < 8.5m\Omega$
- $R_{DS(ON)}, V_{GS}@-4.5V, I_D@-8A < 14m\Omega$
- High switching speed
- Improved dv/dt capability
- Low Gate Charge
- 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
- Approx. Weight : 0.0104 ounces, 0.297grams



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

PARAMETER		SYMBOL	LIMIT	UNITS
Drain-Source Voltage		$V_{DS}$	-30	V
Gate-Source Voltage		$V_{GS}$	+20	V
Continuous Drain Current	$T_C=25^\circ\text{C}$	$I_D$	-70	A
	$T_C=100^\circ\text{C}$		-44	
Pulsed Drain Current <sup>(Note 1)</sup>	$T_C=25^\circ\text{C}$	$I_{DM}$	-280	
Power Dissipation	$T_C=25^\circ\text{C}$	$P_D$	63	W
	$T_C=100^\circ\text{C}$		25	
Continuous Drain Current	$T_A=25^\circ\text{C}$	$I_D$	-11	A
	$T_A=70^\circ\text{C}$		-8.8	A
Power Dissipation	$T_A=25^\circ\text{C}$	$P_D$	2.0	W
Power Dissipation	$T_A=70^\circ\text{C}$		1.3	
Operating Junction and Storage Temperature Range		$T_J, T_{STG}$	-55~150	$^\circ\text{C}$
Typical Thermal Resistance <sup>(Note 4,5)</sup>	Junction to Case	$R_{\theta JC}$	2.0	$^\circ\text{C/W}$
	Junction to Ambient	$R_{\theta JA}$	62.5	

- Limited only By Maximum Junction Temperature



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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	-30	-	-	V
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =-250uA	-1.0	-1.5	-2.5	V
Drain-Source On-State Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> =-10V, I <sub>D</sub> =-10A	-	7.1	8.5	mΩ
		V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-8A	-	10	14	
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =-30V, 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 6)						
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> =-15V, I <sub>D</sub> =-10A, V <sub>GS</sub> =-4.5V (Note 1,2)	-	27	-	nC
Gate-Source Charge	Q <sub>gs</sub>		-	8.4	-	
Gate-Drain Charge	Q <sub>gd</sub>		-	8.7	-	
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =-15V, V <sub>GS</sub> =0V, f=1.0MHZ	-	3228	-	pF
Output Capacitance	C <sub>oss</sub>		-	396	-	
Reverse Transfer Capacitance	C <sub>rss</sub>		-	254	-	
Turn-On Delay Time	t <sub>d(on)</sub>	V <sub>DS</sub> =-15V, I <sub>D</sub> =-1A, V <sub>GS</sub> =-10V, R <sub>G</sub> =6Ω (Note 1,2)	-	10	-	ns
Turn-On Rise Time	t <sub>r</sub>		-	13	-	
Turn-Off Delay Time	t <sub>d(off)</sub>		-	111	-	
Turn-Off Fall Time	t <sub>f</sub>		-	51	-	
<b>Drain-Source Diode</b>						
Maximum Continuous Drain-Source Diode Forward Current	I <sub>S</sub>	---	-	-	-70	A
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =-1A, V <sub>GS</sub> =0V	-	-0.7	-1.0	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(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. Guaranteed by design, not subject to production testing.



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## TYPICAL CHARACTERISTIC CURVES

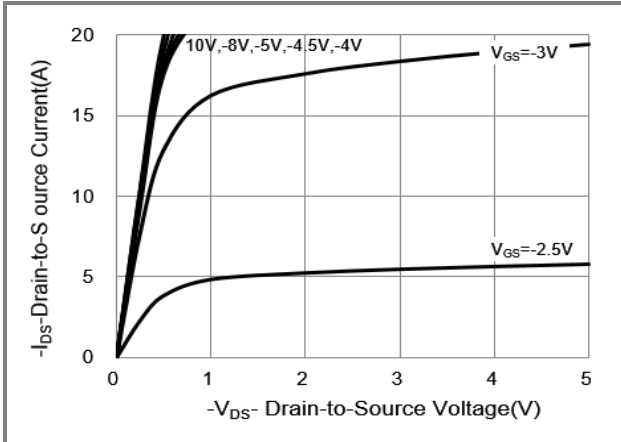


Fig.1 On-Region Characteristics

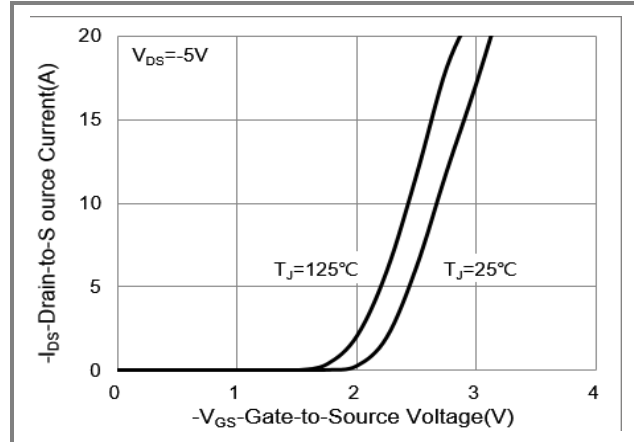


Fig.2 Transfer Characteristics

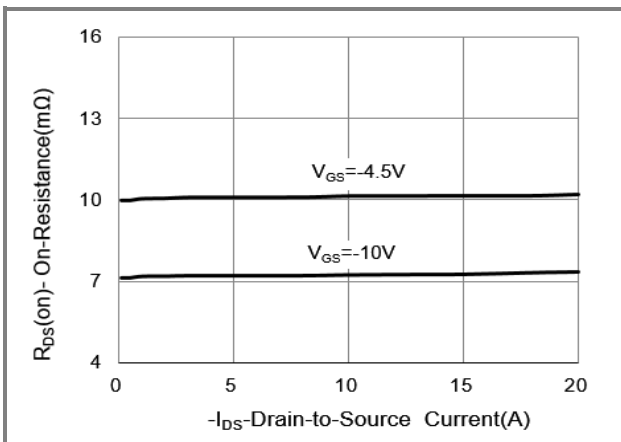


Fig.3 On-Resistance vs. Drain Current

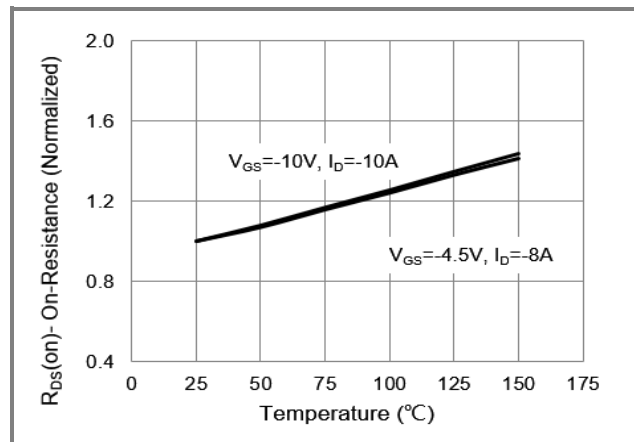


Fig.4 On-Resistance vs. Junction temperature

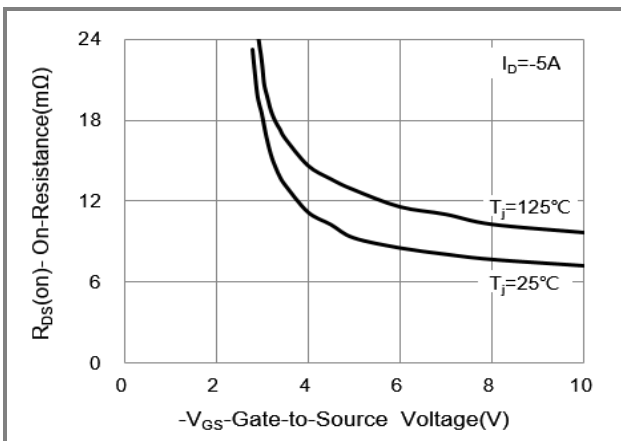


Fig.5 On-Resistance Variation with  $V_{GS}$ .

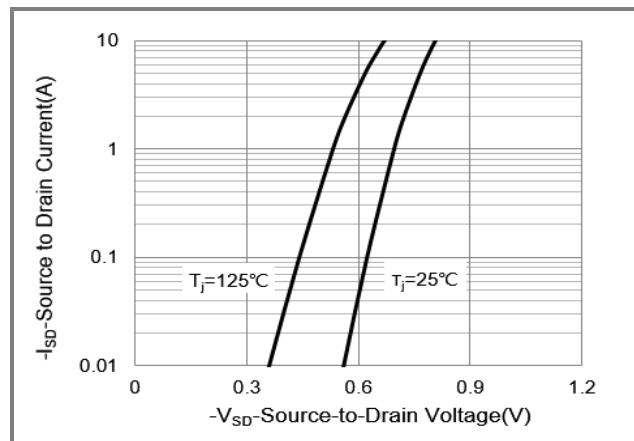


Fig.6 Body Diode Characteristics



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## TYPICAL CHARACTERISTIC CURVES

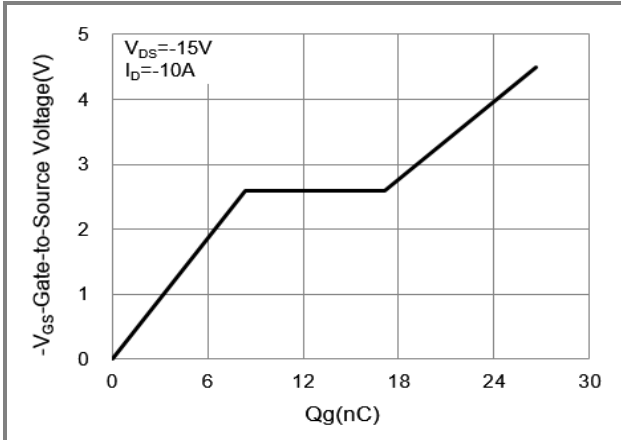


Fig.7 Gate-Charge Characteristics

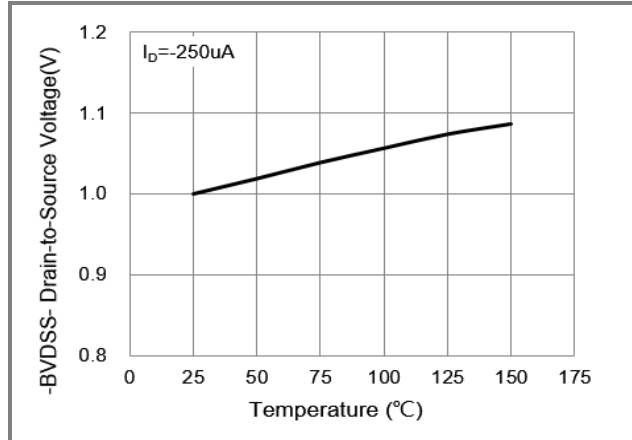


Fig.8 Breakdown Voltage Variation vs. Temperature

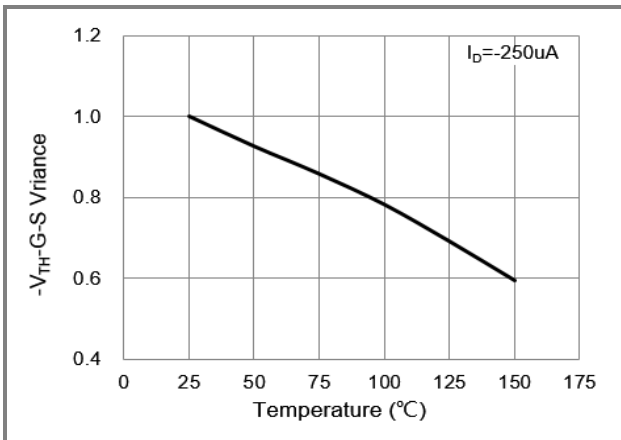


Fig.9 Threshold Voltage Variation with Temperature.

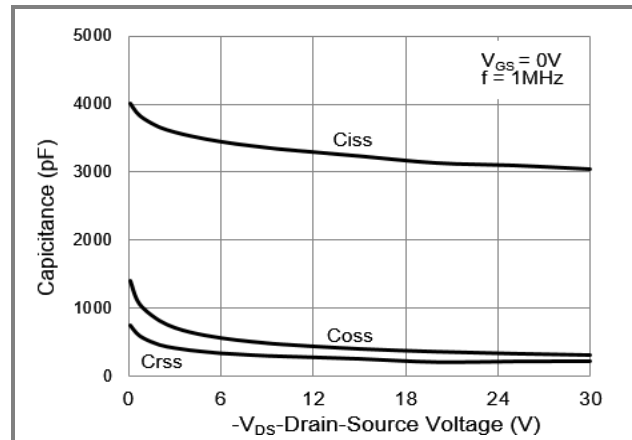


Fig.10 Capacitance vs. Drain-Source Voltage.

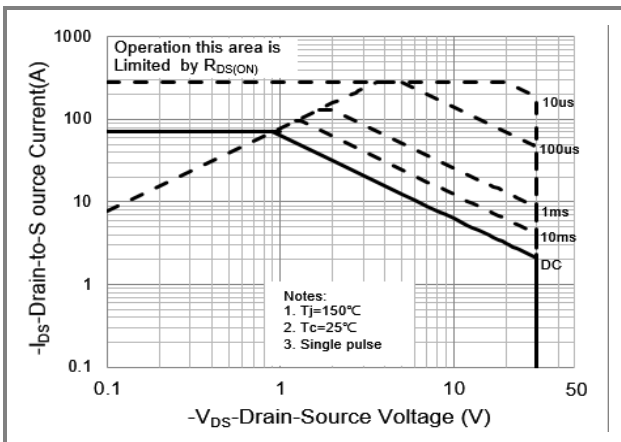
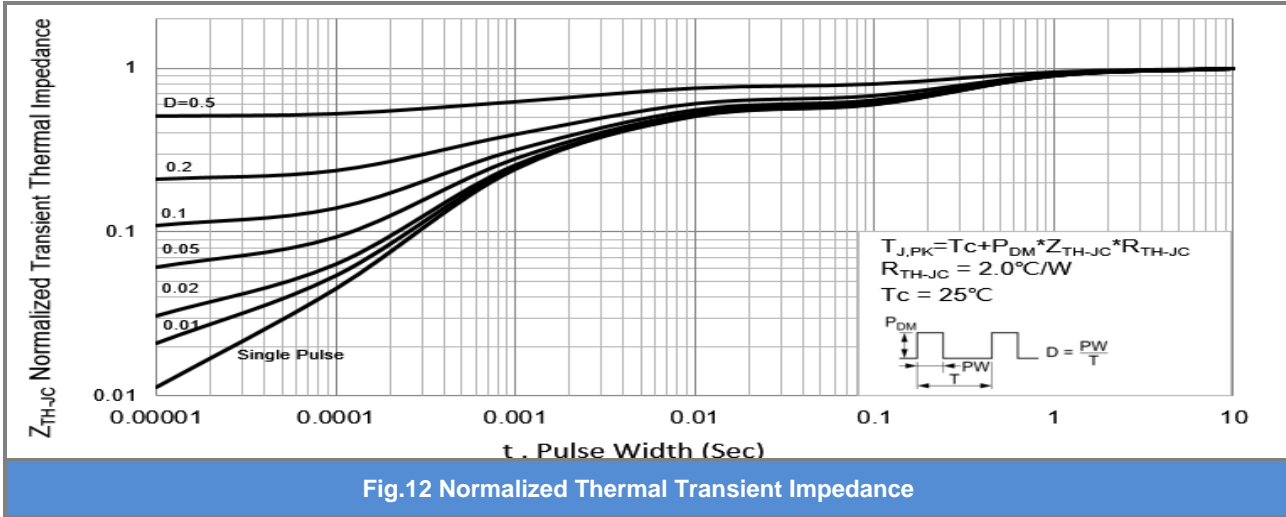


Fig.11 Maximum Safe Operating Area



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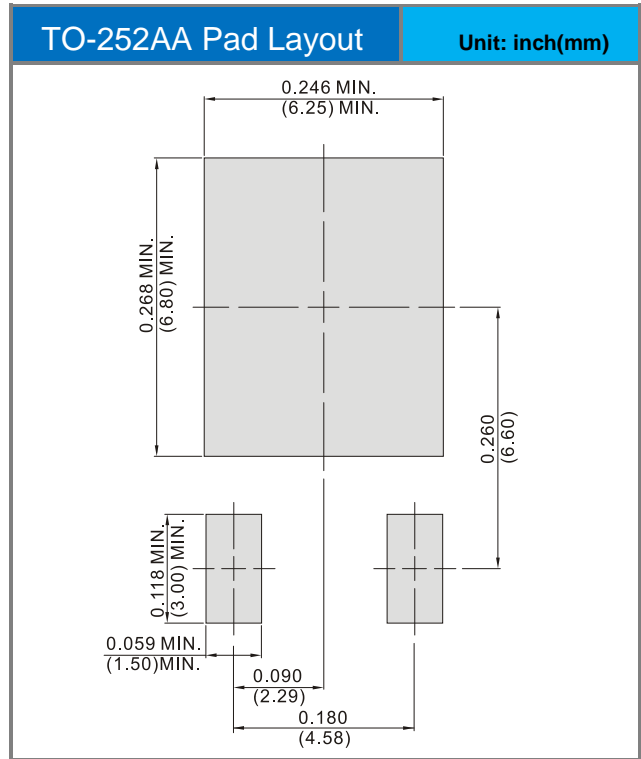
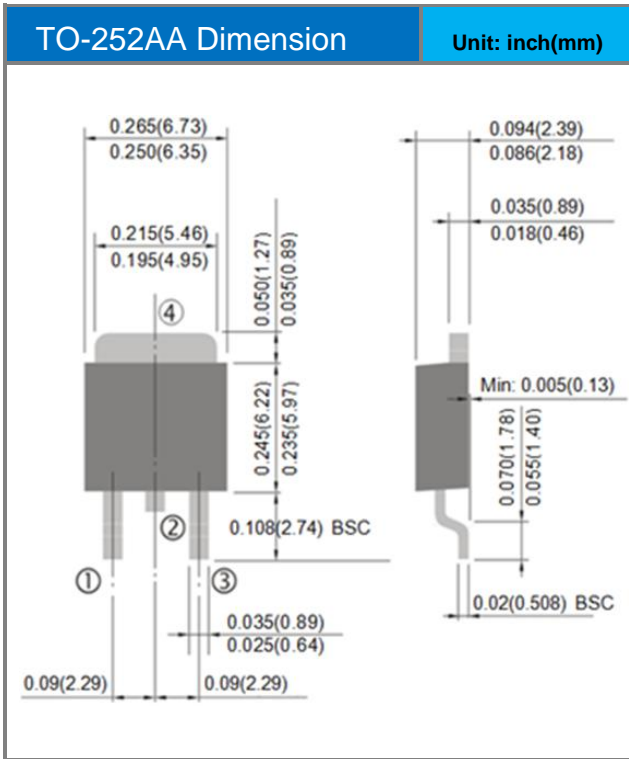
## TYPICAL CHARACTERISTIC CURVES





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## Packaging Information





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## PART NO PACKING CODE VERSION

Part No Packing Code	Package Type	Packing Type	Marking	Version
PJD70P03_L2_00001	TO-252AA	3,000pcs / 13" reel	D70P03	Halogen free



## PJD70P03

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