



PJD50P04

40V P-Channel Enhancement Mode MOSFET

Voltage

-40 V

Current

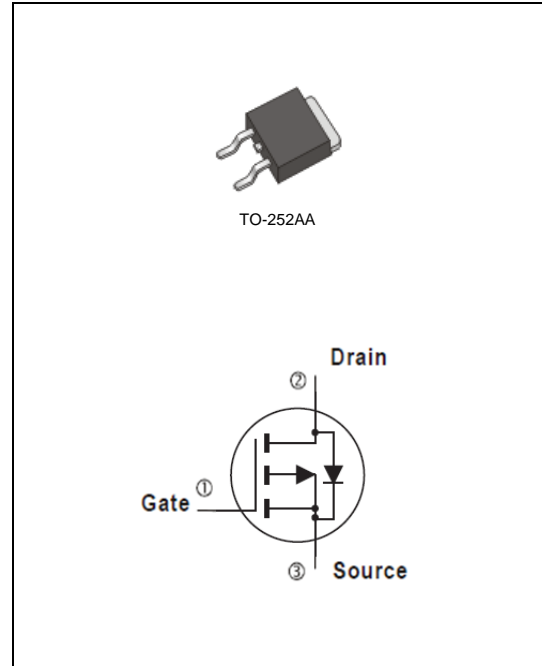
-50 A

Features

- $R_{DS(ON)}$, $V_{GS}@-10V$, $I_D@-10A < 12m\Omega$
- $R_{DS(ON)}$, $V_{GS}@-4.5V$, $I_D@-8A < 17.5m\Omega$
- High switching speed
- Improved dv/dt capability
- Low Gate Charge
- Low reverse transfer capacitance
- Lead free in compliance with EU RoHS 2.0
- Green molding compound as per IEC 61249 standard

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 ($T_A=25^\circ C$ unless otherwise noted)

PARAMETER	SYMBOL	LIMIT	UNITS	
Drain-Source Voltage	V_{DS}	-40	V	
Gate-Source Voltage	V_{GS}	± 20		
Continuous Drain Current	I_D	$T_C=25^\circ C$	-50	A
		$T_C=100^\circ C$	-32	
Pulsed Drain Current ^(Note 1)	I_{DM}	-166		
Power Dissipation	P_D	$T_C=25^\circ C$	63	W
		$T_C=100^\circ C$	25	
Continuous Drain Current	I_D	$T_A=25^\circ C$	-9	A
		$T_A=70^\circ C$	-7	
Power Dissipation	P_D	$T_A=25^\circ C$	2.0	W
Power Dissipation		$T_A=70^\circ C$	1.3	
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55~150	$^\circ C$	
Typical Thermal Resistance ^(Note 4,5)	Junction to Case	$R_{\theta JC}$	2.0	$^\circ C/W$
	Junction to Ambient	$R_{\theta JA}$	62.5	

- Limited only By Maximum Junction Temperature



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

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNITS
Static						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=-250\mu A$	-40	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1	-1.52	-2.5	
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS}=-10V, I_D=-10A$	-	10	12	mΩ
		$V_{GS}=-4.5V, I_D=-8A$	-	13.5	17.5	
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=-40V, V_{GS}=0V$	-	-	-1.0	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 100	nA
Dynamic (Note 6)						
Total Gate Charge	Q_g	$V_{DS}=-32V, I_D=-10A,$ $V_{GS}=-4.5V$ (Note 1,2)	-	23	-	nC
Gate-Source Charge	Q_{gs}		-	8.5	-	
Gate-Drain Charge	Q_{gd}		-	9	-	
Input Capacitance	C_{iss}	$V_{DS}=-25V, V_{GS}=0V,$ $f=1.0\text{MHz}$	-	2767	-	pF
Output Capacitance	C_{oss}		-	247	-	
Reverse Transfer Capacitance	C_{rss}		-	139	-	
Turn-On Delay Time	$t_{d(on)}$	$V_{DS}=-20V, I_D=-1A,$ $V_{GS}=-10V, R_G=6\Omega$ (Note 1,2)	-	23	-	ns
Turn-On Rise Time	t_r		-	10	-	
Turn-Off Delay Time	$t_{d(off)}$		-	135	-	
Turn-Off Fall Time	t_f		-	50	-	
Drain-Source Diode						
Maximum Continuous Drain-Source Diode Forward Current	I_S	---	-	-	-50	A
Diode Forward Voltage	V_{SD}	$I_S=-1A, V_{GS}=0V$	-	-0.7	-1	V

NOTES :

1. Pulse width $\leq 300\mu s$, Duty cycle $\leq 2\%$
2. Essentially independent of operating temperature typical characteristics
3. Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}=150^\circ\text{C}$. Ratings are based on low frequency and duty cycles to keep initial $T_J=25^\circ\text{C}$.
4. The maximum current rating is package limited
5. $R_{\theta JA}$ 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 inch² with 2oz.square pad of copper
6. Guaranteed by design, not subject to production testing.



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TYPICAL CHARACTERISTIC CURVES

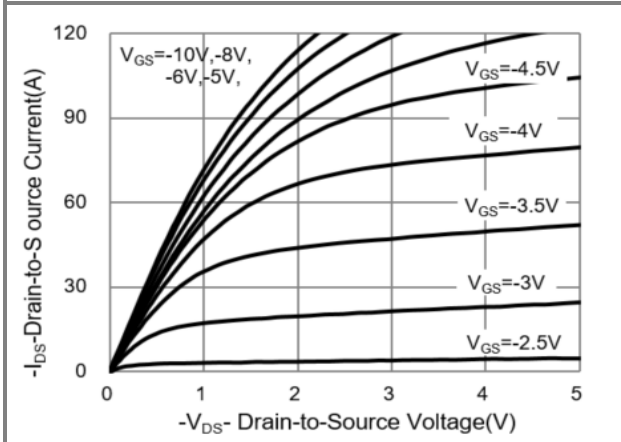


Fig.1 On-Region Characteristics

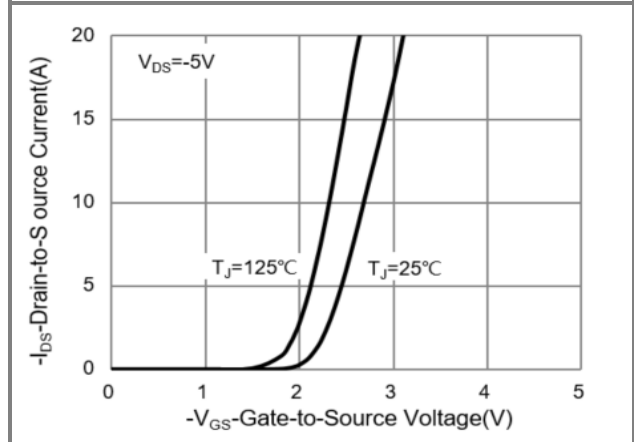


Fig.2 Transfer Characteristics

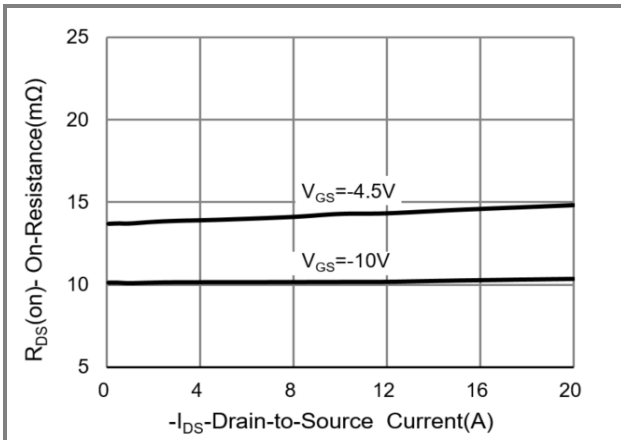


Fig.3 On-Resistance vs. Drain Current

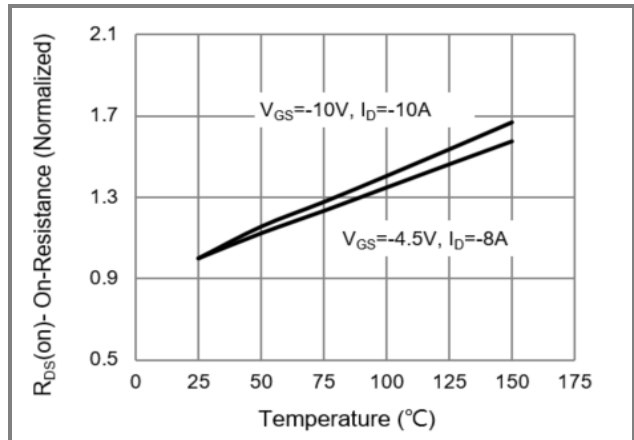


Fig.4 On-Resistance vs. Junction temperature

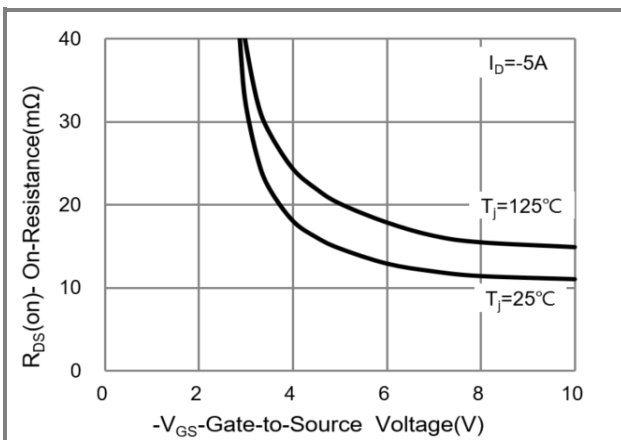


Fig.5 On-Resistance Variation with V_{GS}

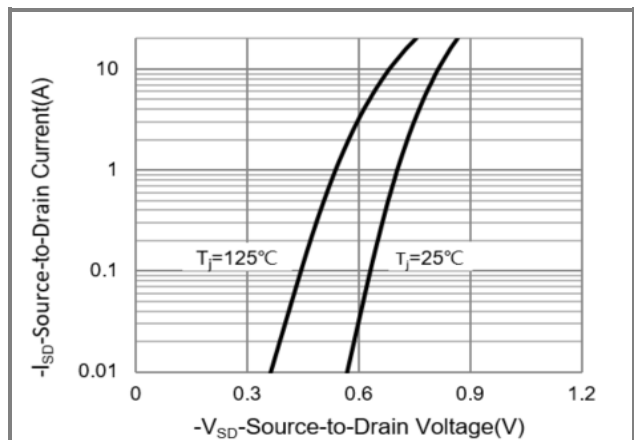


Fig.6 Body Diode Characteristics



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TYPICAL CHARACTERISTIC CURVES

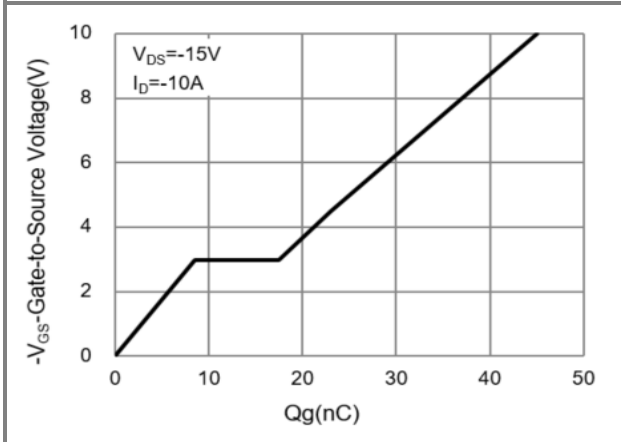


Fig.7 Gate-Charge Characteristics

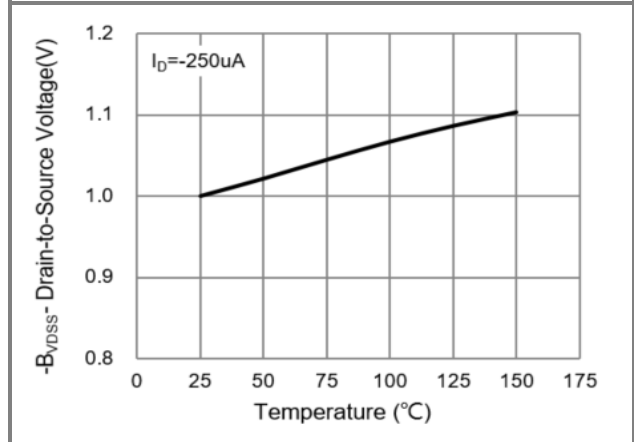


Fig.8 Breakdown Voltage Variation vs. Temperature

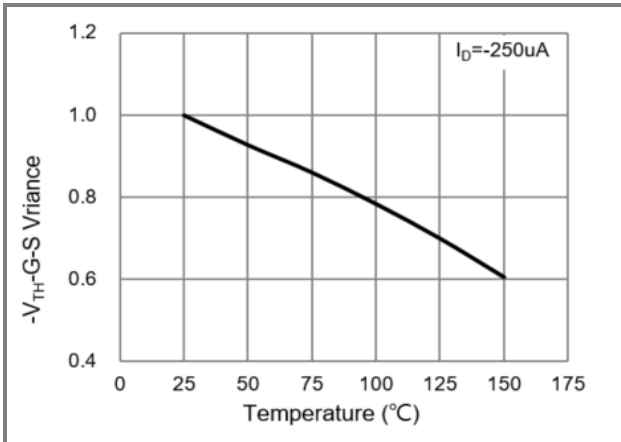


Fig.9 Threshold Voltage Variation with Temperature

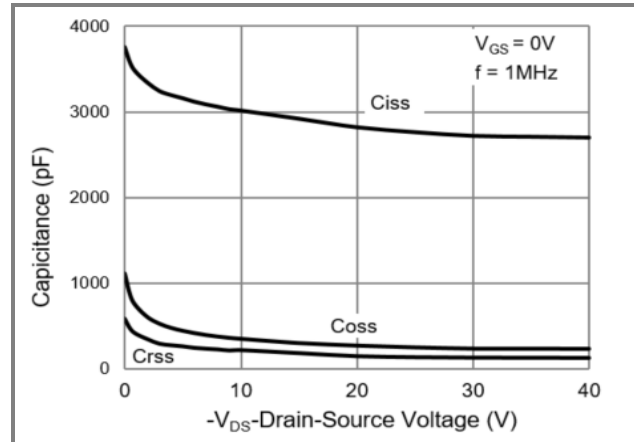


Fig.10 Capacitance vs. Drain-Source Voltage

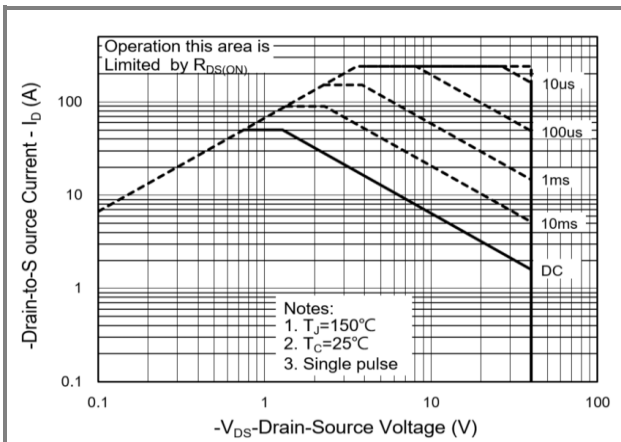


Fig.11 Maximum Safe Operating Area

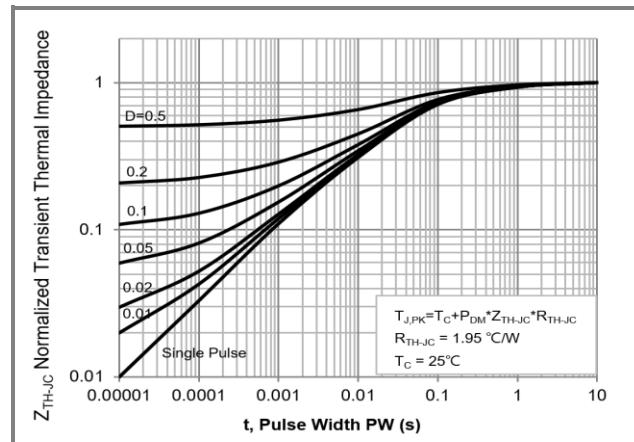


Fig.12 Normalized Thermal Transient Impedance

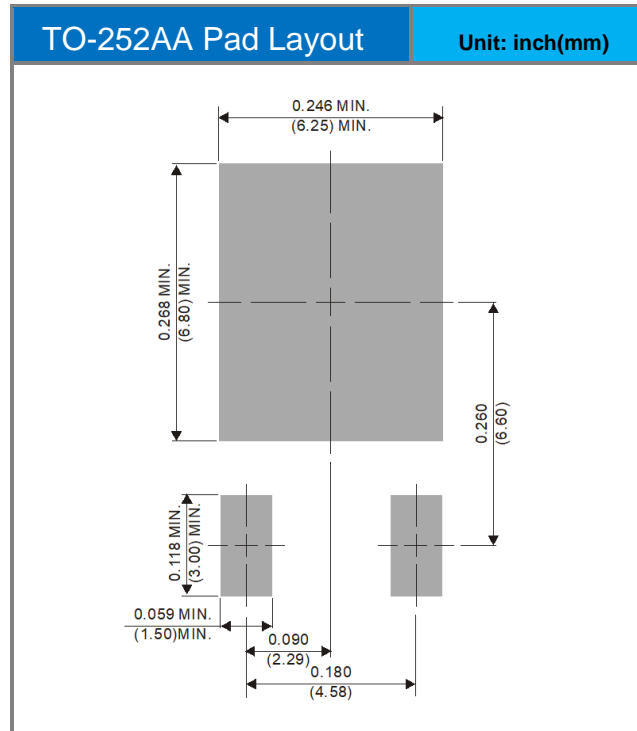
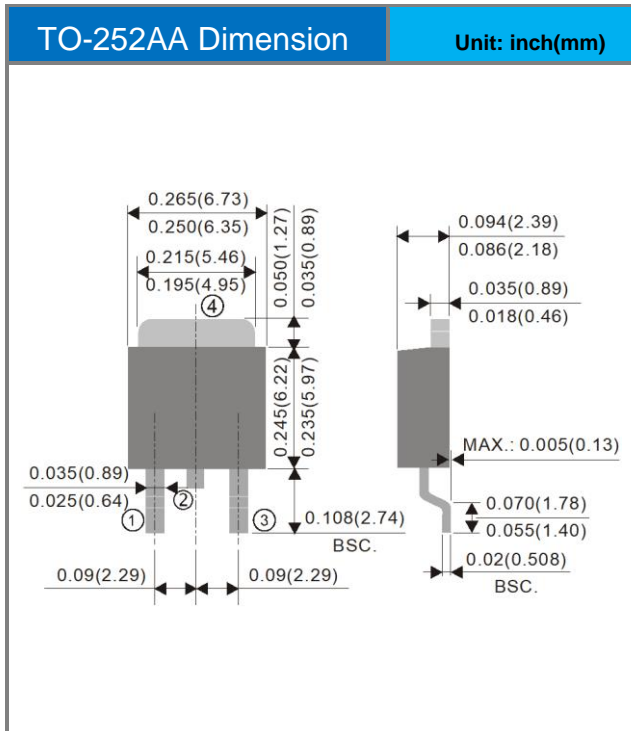


PJD50P04

Part No Packing Code Version

Part No Packing Code	Package Type	Packing Type	Marking	Version
PJD50P04_L2_00001	TO-252AA	3,000pcs / 13" reel	D50P04	Halogen free

Packaging Information & Mounting Pad Layout





PJD50P04

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