



# PJZ22NA50A

## 500V N-Channel MOSFET

**Voltage**

**500 V**

**Current**

**20.5 A**

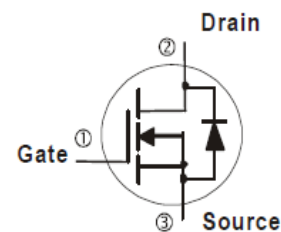
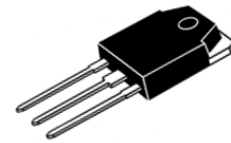
### Features

- $R_{DS(ON)}$ ,  $V_{GS}@10V$ ,  $I_D@10A < 0.26\Omega$
- 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-3PL Package
- Terminals : Solderable per MIL-STD-750, Method 2026
- TO-3PL Approx. Weight : 0.182 ounces, 5.174grams

TO-3PL



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

PARAMETER	SYMBOL	TO-3PL	UNITS
Drain-Source Voltage	$V_{DS}$	500	V
Gate-Source Voltage	$V_{GS}$	$\pm 30$	
Continuous Drain Current	$T_C=25^\circ\text{C}$	20.5	A
	$T_C=100^\circ\text{C}$	13.0	
Pulsed Drain Current	$I_{DM}$	82	
Single Pulse Avalanche Energy <sup>(Note 1)</sup>	$E_{AS}$	1500	mJ
Power Dissipation	$T_C=25^\circ\text{C}$	260	W
	$T_C=100^\circ\text{C}$	100	
Operating Junction and Storage Temperature Range	$T_J, T_{STG}$	-55~150	$^\circ\text{C}$
Typical Thermal Resistance			$^\circ\text{C/W}$
- Junction to Case	$R_{\theta JC}$	0.48	
- Junction to Ambient	$R_{\theta JA}$	50	

- 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
<b>Static</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V, I_D=250\mu A$	500	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	2	3.0	4	V
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=10A$	-	0.19	0.26	$\Omega$
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=500V, V_{GS}=0V$	-	-	1	$\mu A$
Gate-Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 30V, V_{DS}=0V$	-	-	$\pm 100$	nA
Diode Forward Voltage	$V_{SD}$	$I_S=20A, V_{GS}=0V$	-	0.84	1.4	V
<b>Dynamic</b> (Note 4)						
Total Gate Charge	$Q_g$	$V_{DS}=400V, I_D=22A,$ $V_{GS}=10V$ (Note 2,3)	-	74	-	nC
Gate-Source Charge	$Q_{gs}$		-	12	-	
Gate-Drain Charge	$Q_{gd}$		-	28	-	
Input Capacitance	$C_{iss}$	$V_{DS}=25V, V_{GS}=0V,$ $f=1.0\text{MHz}$	-	2972	-	pF
Output Capacitance	$C_{oss}$		-	308	-	
Reverse Transfer Capacitance	$C_{rss}$		-	30	-	
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=250V, I_D=22A,$ $R_G=25\Omega$ (Note 2)	-	46	-	ns
Turn-On Rise Time	$t_r$		-	83	-	
Turn-Off Delay Time	$t_{d(off)}$		-	248	-	
Turn-Off Fall Time	$t_f$		-	104	-	
<b>Drain-Source Diode</b>						
Maximum Continuous Drain-Source Diode Forward Current	$I_S$	---	-	-	20.5	A
Maximum Pulsed Drain-Source Diode Forward Current	$I_{SM}$	---	-	-	82	A
Reverse Recovery Time	$t_{rr}$	$V_{GS}=0V, I_S=22A$	-	424	-	ns
Reverse Recovery Charge	$Q_{rr}$	$di_F/dt=100A/\mu s$ (Note 2)	-	6.38	-	$\mu C$

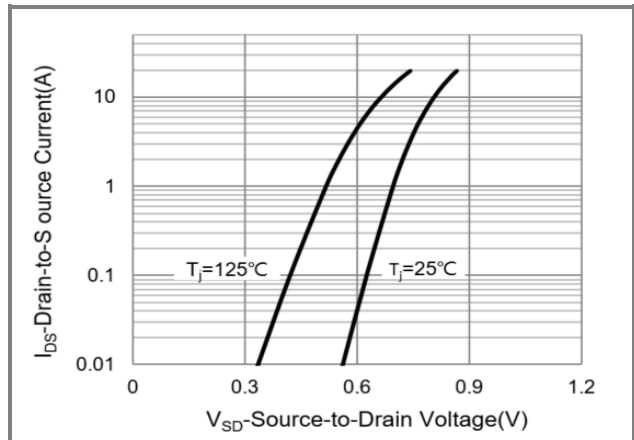
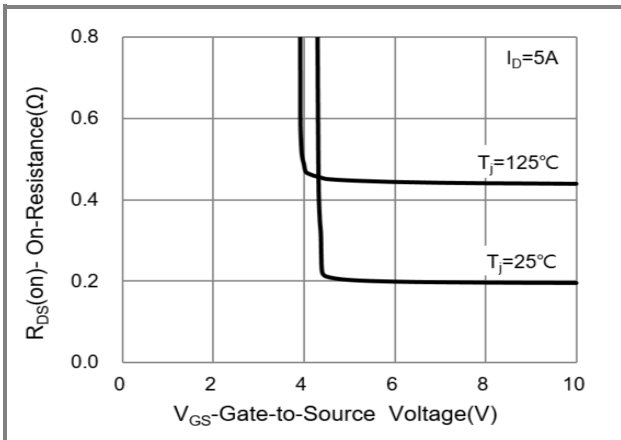
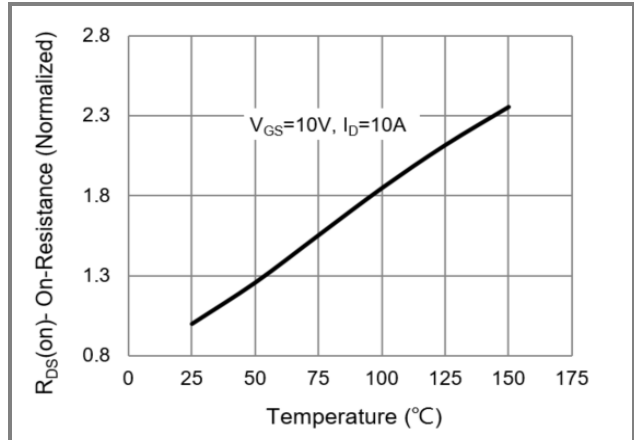
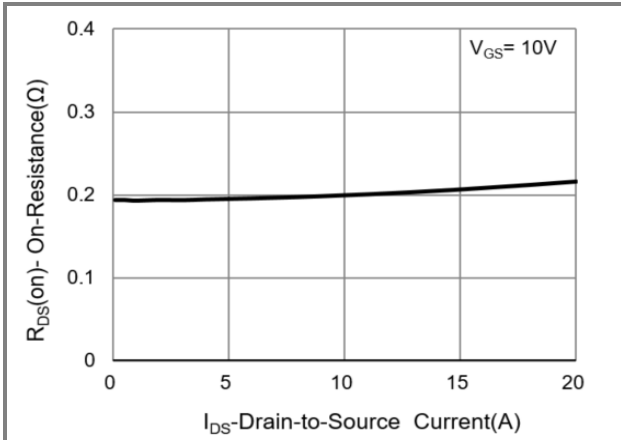
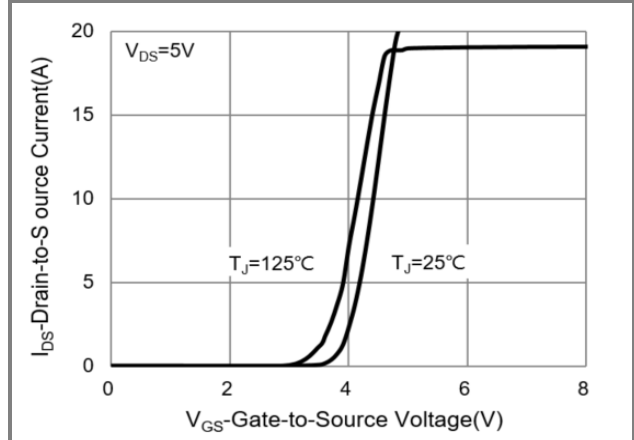
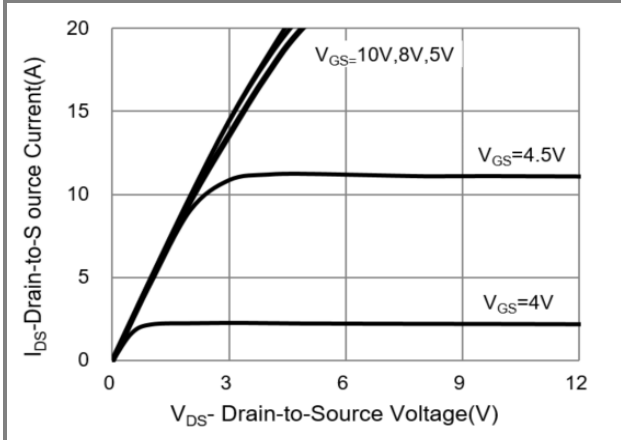
**NOTES :**

1.  $L=30\text{mH}, I_{AS}=10A, V_{DD}=50V, R_G=25\text{ohm}$ , Starting  $T_J=25^\circ\text{C}$ .
2. Pulse width  $\leq 300\mu s$ , Duty cycle  $\leq 2\%$ .
3. Essentially independent of operating temperature typical characteristics.
4. Guaranteed by design, not subject to production testing.



# PJZ22NA50A

## TYPICAL CHARACTERISTIC CURVES





# PJZ22NA50A

## TYPICAL CHARACTERISTIC CURVES

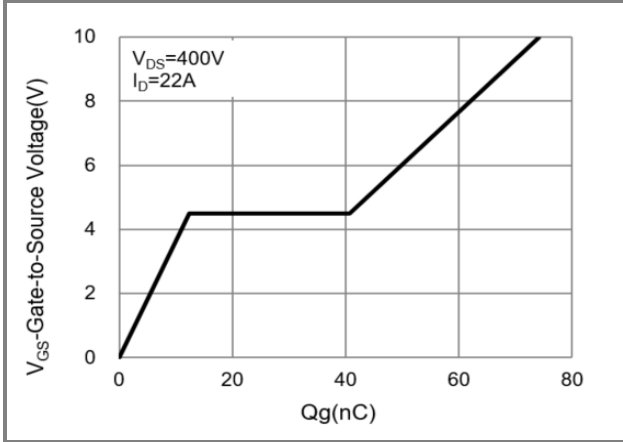


Fig.7 Gate-Charge Characteristics

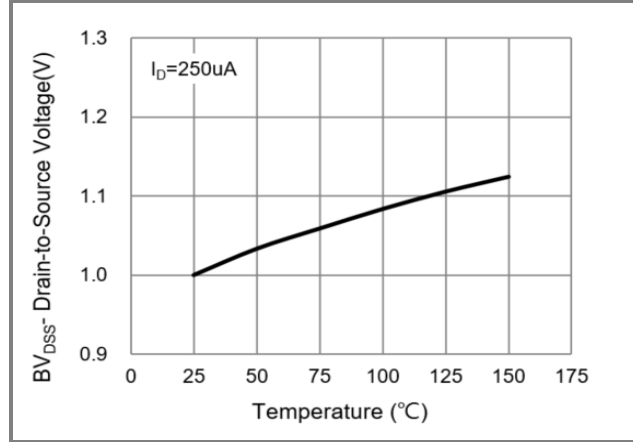


Fig.8 Breakdown Voltage Variation vs. Temperature

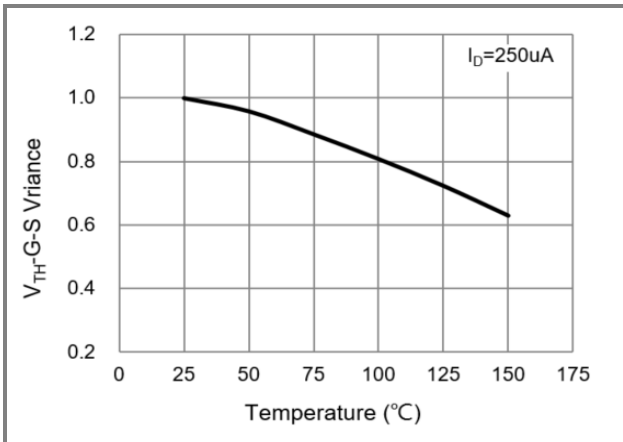


Fig.9 Threshold Voltage Variation with Temperature

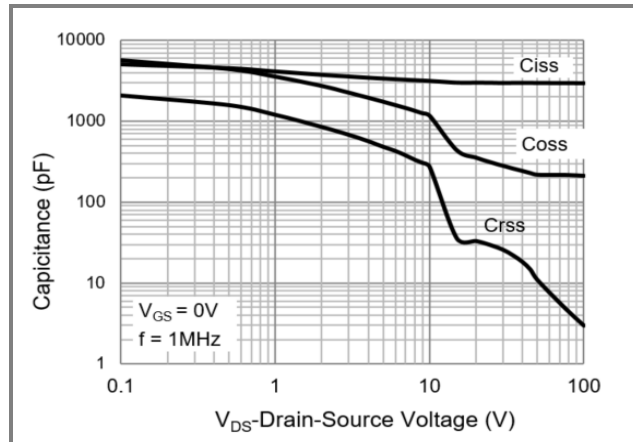


Fig.10 Maximum Safe Operating Area

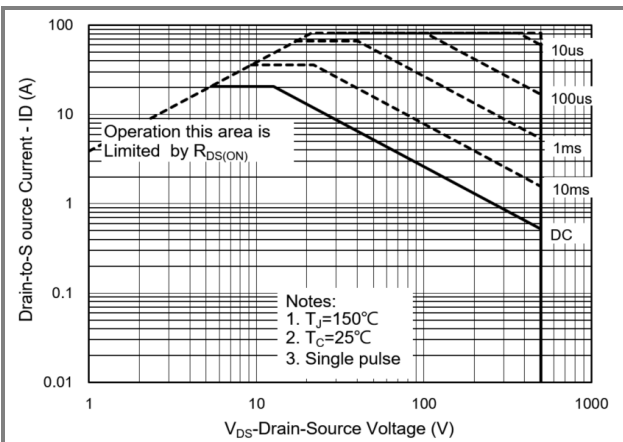


Fig.11 Maximum Safe Operating Area

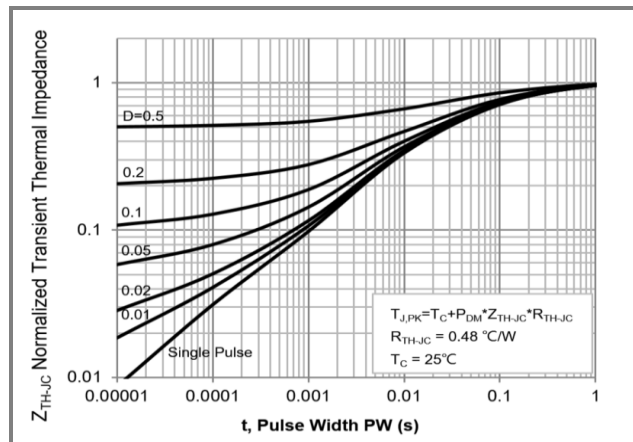
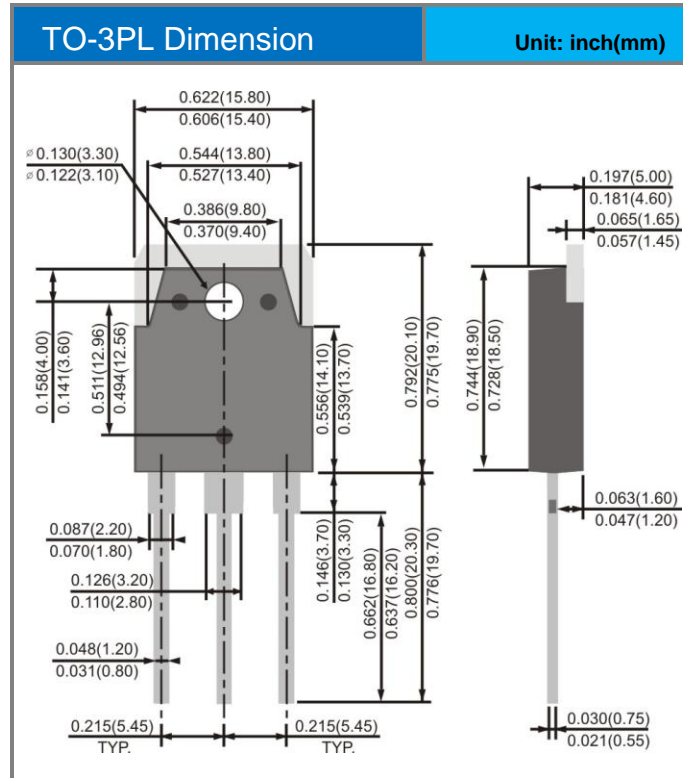


Fig.12 Normalized Transient Thermal Impedance



# PJZ22NA50A

## Packaging Information





# PJZ22NA50A

## Part No Packing Code Version

Part No Packing Code	Package Type	Packing Type	Marking	Version
PJZ22NA50A_T0_10001	TO-3PL	30pcs / Tube	22NA50A	RoHS



## PJZ22NA50A

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