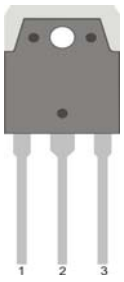
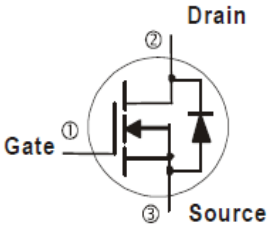
PJZ20N50

500V N-Channel MOSFET

Voltage	500 V	Current	20 A

TO-3PN





Features

- $R_{DS(ON)}$, V_{GS}@10V,I_D@10A<0.3 Ω
- 100% avalanche tested
- Improved dv/dt capability
- Low Gate Charge
- Comply with EU RoHS 2011/65/EU only

Mechanical Data

- Case: TO-3PN Package
- Terminals : Solderable per MIL-STD-750,Method 2026
- Apporx. Weight : 0.182 ounces, 5.174 grams
- Marking : Z20N50

Maximum Ratings and Thermal Characteristics (T_A=25°C unless otherwise noted)

PARAMETER		SYMBOL	LIMIT	UNITS
Drain-Source Voltage		V_{DS}	500	V
Gate-Source Voltage		V_{GS}	±30	V
Continuous Drain Current		I_D	20	A
Pulsed Drain Current (Note 1)		I_{DM}	80	A
Single Pulse Avalanche Energy (Note 2)		E_{AS}	1088	mJ
Repetitive Avalanche Current (Note 1)		I_{AR}	20	A
Repetitive Avalanche Energy (Note 1)		E_{AR}	31.2	W
Power Dissipation	T_C=25°C	P_D	312	W
	Derate above 25°C		2.5	W/°C
Peak Diode Recovery dv/dt (Note 3)		dv/dt	4.5	V/ns
Operating Junction and Storage Temperature Range		T_J,T_{STG}	-55~150	°C
Thermal resistance - Junction to Case - Junction to Ambient		 $R_{\theta JC}$ $R_{\theta JA}$	 0.4 62.5	°C/W

- Limited only By Maximum Junction Temperature

PJZ20N50

Electrical Characteristics (T_A=25°C unless otherwise noted)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNITS
Static						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V,I_D=250uA	500	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=250uA	2	-	4	V
Drain-Source On-State Resistance	$R_{DS(on)}$	V_{GS}=10V,I_D=10A	-	0.25	0.3	Ω
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=500V,V_{GS}=0V	-	-	1	uA
		V_{DS}=400V, T_C=125°C	-	-	10	
Gate-Source Leakage Current	I_{GSS}	V_{GS}=±30V,V_{DS}=0V	-	-	±100	nA
Diode Forward Voltage	V_{SD}	I_S=20A,V_{GS}=0V	-	-	1.5	V
Forward Transconductance	$g_{FS(on)}$	V_{DS}=30V,I_D=10A	-	11	-	S
Dynamic						
Total Gate Charge	Q_g	V_{DS}=400V, I_D=20A, V_{GS}=10V (Note 4,5)	-	54	-	nC
Gate-Source Charge	Q_{gs}		-	15	-	
Gate-Drain Charge	Q_{gd}		-	12.5	-	
Input Capacitance	Ciss	V_{DS}=25V, V_{GS}=0V, f=1.0MHZ	-	3094	-	pF
Output Capacitance	Coss		-	296	-	
Reverse Transfer Capacitance	Crss		-	9.2	-	
Switching						
Turn-On Delay Time	$td_{(on)}$	V_{DD}=250V, I_D=20A, R_G=25Ω (Note 4,5)	-	78	-	ns
Turn-Off Delay Time	$td_{(off)}$		-	184	-	
Turn-On Rise Time	t_r		-	72	-	
Turn-Off Fall Time	t_f		-	68	-	
Drain-Source Diode						
Maximum Continuous Drain-Source Diode Forward Current	I_S	---	-	-	20	A
Maximum Pulsed Drain-Source Diode Forward Current	I_{SM}	---	-	-	80	A
Reverse Recovery Time	trr	V_{GS}=0V, I_S=20A	-	426	-	ns
Reverse Recovery Charge	Qrr	dI_F/ dt=100A/us (Note 4)	-	6	-	uC

NOTES:

1. Repeated Rating: Pulse width limited by safe operating area
2. L=4.9mH, I_{AS}=20A, V_{DD}=50V, R_G=25ohm, Starting T_J=25°C
3. I_{SD}≤20A, di/dt≤ 200A/us, V_{DD}< BV_{DS}, Starting T_J=25 °C
4. Pulse width≤300us, Duty cycle≤2%
5. Essentially independent of operating temperature typical characteristics.

PJZ20N50

TYPICAL CHARACTERISTIC CURVES

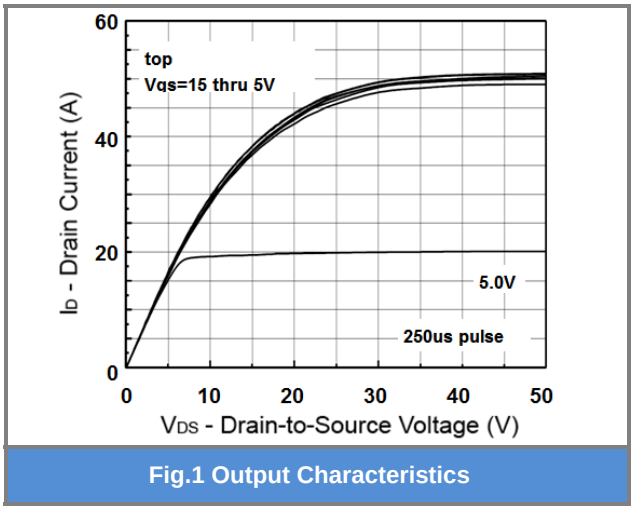


Fig.1 Output Characteristics

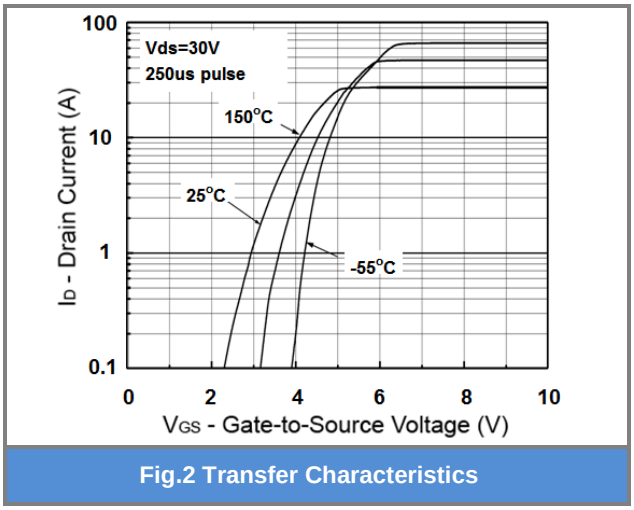


Fig.2 Transfer Characteristics

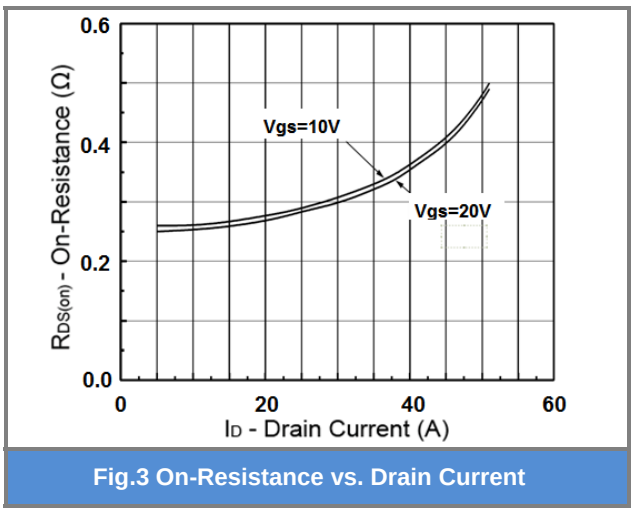


Fig.3 On-Resistance vs. Drain Current

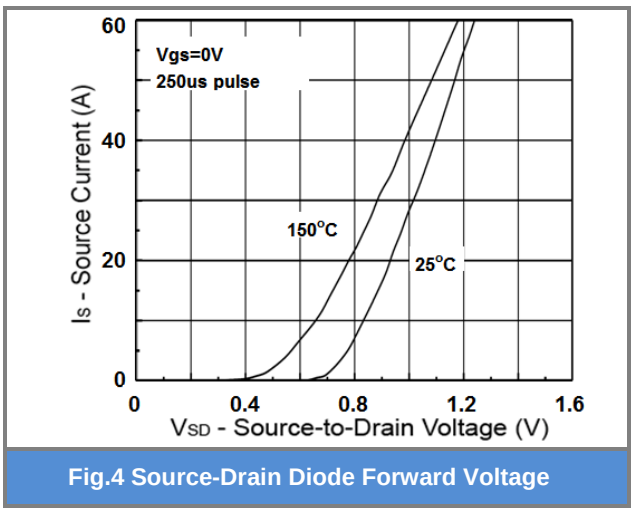


Fig.4 Source-Drain Diode Forward Voltage

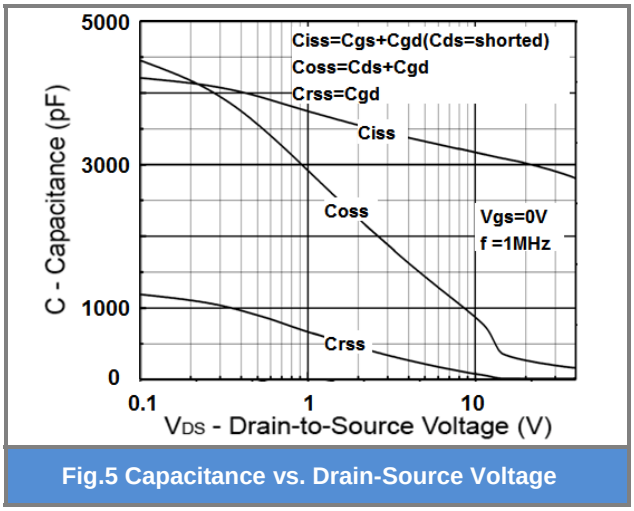


Fig.5 Capacitance vs. Drain-Source Voltage

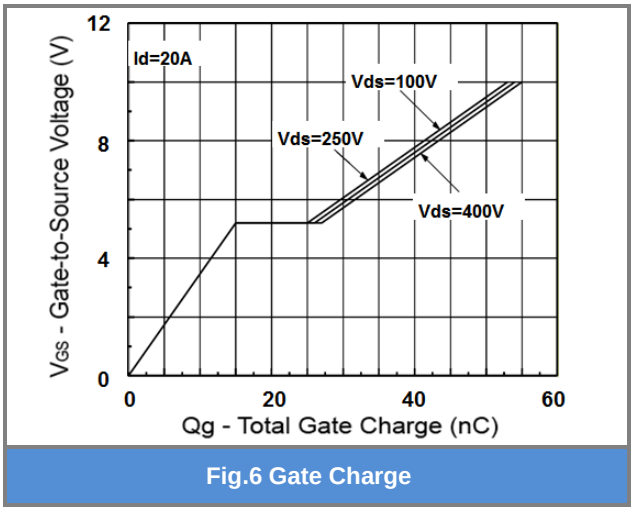


Fig.6 Gate Charge

PJZ20N50

TYPICAL CHARACTERISTIC CURVES

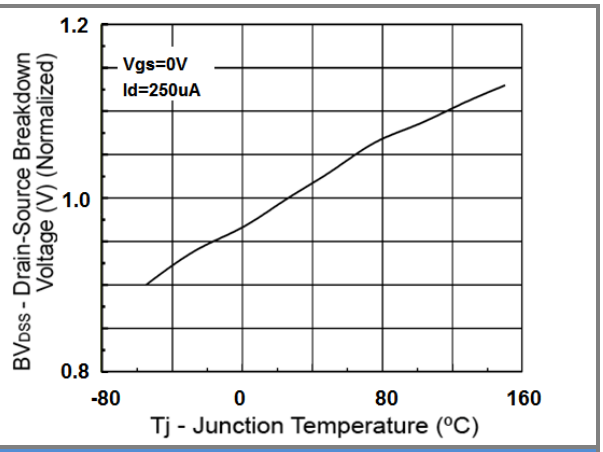


Fig.7 BV_{DSS} vs. Junction Temperature

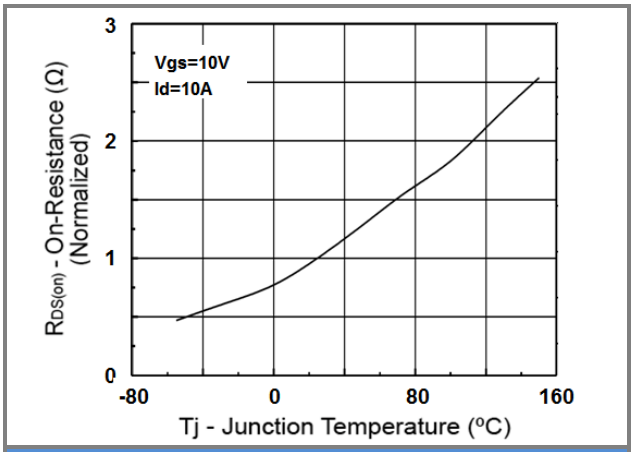


Fig.8 On-Resistance vs. Junction Temperature

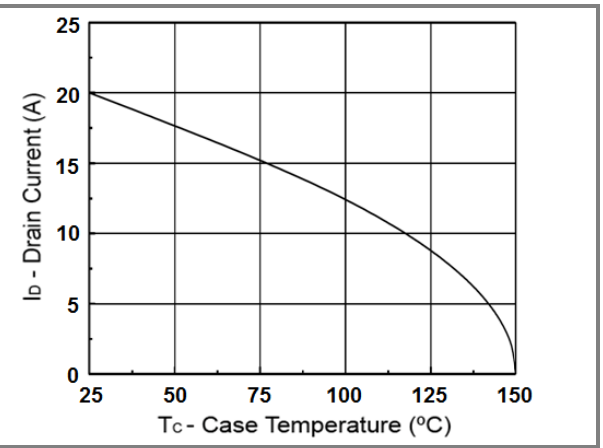


Fig.9 Drain Current vs. Case Temperature

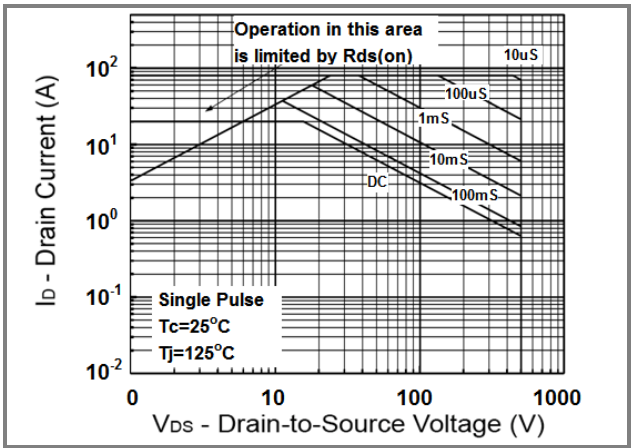


Fig.10 Maximum Safe Operating Area

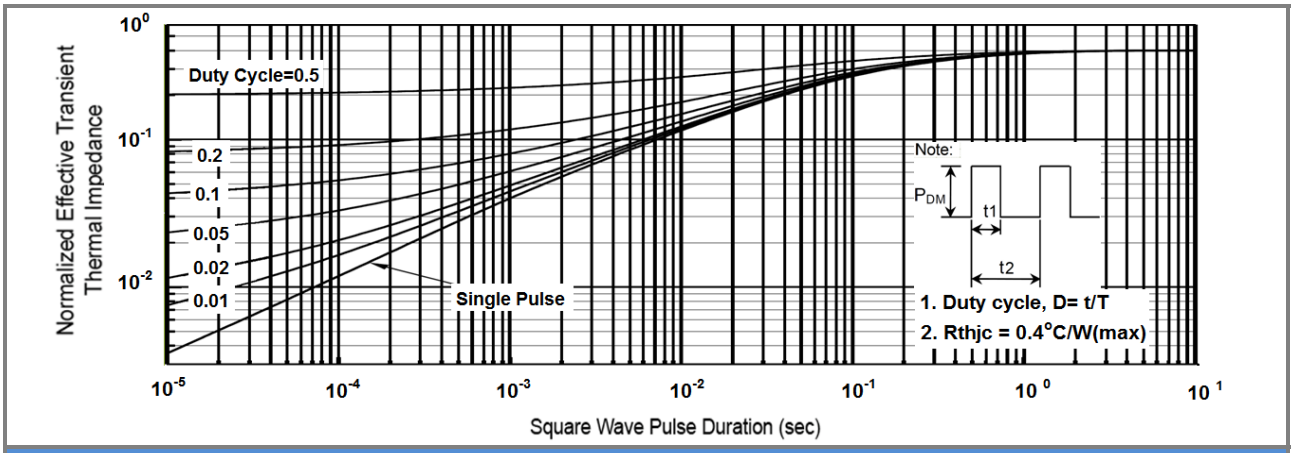


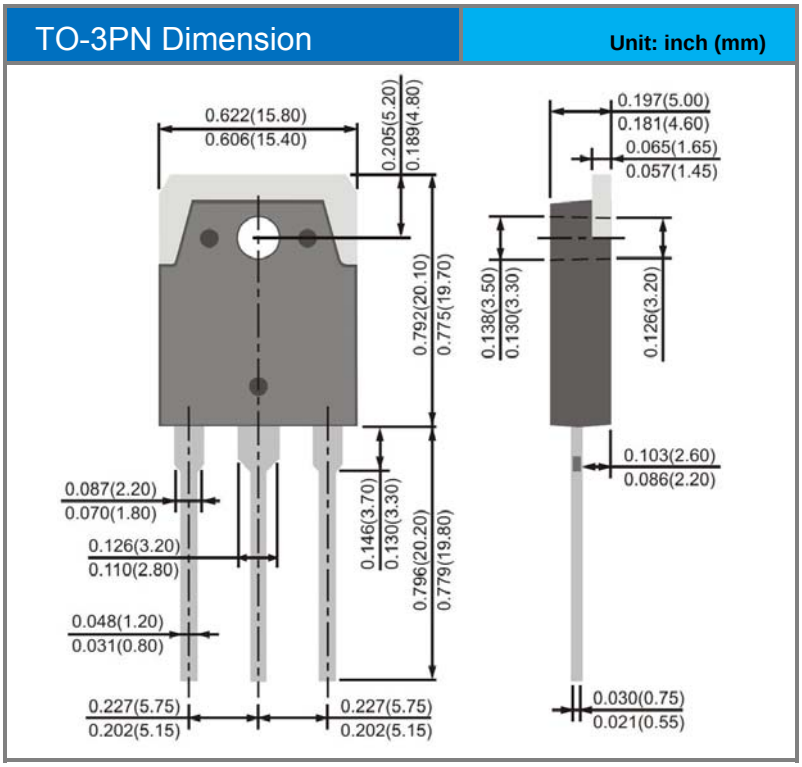
Fig.11 Normalized Thermal Transient Impedance, Junction to Ambient

PJZ20N50

Packaging Information .

TO-3PN Dimension

Unit: inch (mm)



PJZ20N50

PART NO PACKING CODE VERSION

PART NO PACKING CODE VERSION	Package Type	Packing type	Marking	Version
PJZ20N50_T0_10001	TO-3PN	30pcs/tube	Z20N50	RoHS

PJZ20N50

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