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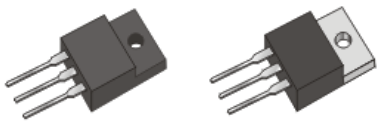
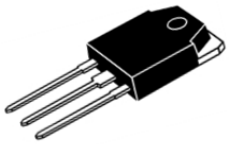
900V N-Channel MOSFET

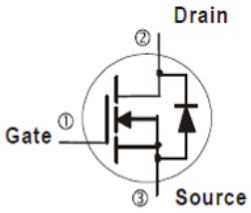
Voltage	900 V	Current	9 A



ITO-220AB-F TO-220AB



TO-3PL



Features

- $R_{DS(ON)}$, V_{GS}@10V,I_D@4.5A<1.4Ω
- High switching speed
- Improved dv/dt capability
- Low Gate Charge
- Low reverse transfer capacitance
- Lead free in compliance with EU RoHS 2011/65/EU directive.
- Green molding compound as per IEC61249 Std. (Halogen Free)

Mechanical Data

- Case : TO-220AB, ITO-220AB-F, TO-3PL Package
- Terminals : Solderable per MIL-STD-750, Method 2026
- TO-220AB Approx. Weight : 0.065 ounces, 1.859 grams
- ITO-220AB-F Approx. Weight : 0.068 ounces, 1.945 grams
- TO-3PL Approx. Weight : 0.182 ounces, 5.174grams

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

PARAMETER		SYMBOL	TO-220AB	ITO-220AB-F	TO-3PL	UNITS
Drain-Source Voltage		V_{DS}	900			V
Gate-Source Voltage		V_{GS}	±30			V
Continuous Drain Current		I_D	9			A
Pulsed Drain Current		I_{DM}	36			A
Single Pulse Avalanche Energy (Note 1)		E_{AS}	823			mJ
Power Dissipation	T_C=25°C	P_D	205	68	240	W
	Derate above 25°C		1.64	0.54	1.92	W/°C
Operating Junction and Storage Temperature Range		T_J,T_{STG}	-55~150			°C
Typical Thermal resistance						
- Junction to Case		$R_{\theta JC}$	0.61	1.84	0.52	°C/W
- Junction to Ambient		$R_{\theta JA}$	62.5	120	50	

- Limited only By Maximum Junction Temperature

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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	900	-	-	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=4.5A	-	1.1	1.4	Ω
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=900V,V_{GS}=0V	-	0.03	1.0	uA
Gate-Source Leakage Current	I_{GSS}	V_{GS}=±30V,V_{DS}=0V	-	±10	±100	nA
Diode Forward Voltage	V_{SD}	I_S=9A,V_{GS}=0V	-	-	1.4	V
Dynamic (Note 4)						
Total Gate Charge	Q_g	V_{DS}=720V, I_D=9A, V_{GS}=10V (Note 2,3)	-	31	-	nC
Gate-Source Charge	Q_{gs}		-	8	-	
Gate-Drain Charge	Q_{gd}		-	12	-	
Input Capacitance	Ciss	V_{DS}=25V, V_{GS}=0V, f=1.0MHZ	-	1634	-	pF
Output Capacitance	Coss		-	143	-	
Reverse Transfer Capacitance	Crss		-	7.1	-	
Turn-On Delay Time	$td_{(on)}$	V_{DD}=450V, I_D=9A, R_G=25Ω (Note 2,3)	-	22	-	ns
Turn-On Rise Time	t_r		-	31	-	
Turn-Off Delay Time	$td_{(off)}$		-	56	-	
Turn-Off Fall Time	t_f		-	31	-	
Drain-Source Diode						
Maximum Continuous Drain-Source Diode Forward Current	I_S	---	-	-	9	A
Maximum Pulsed Drain-Source Diode Forward Current	I_{SM}	---	-	-	36	A
Reverse Recovery Time	trr	V_{GS}=0V, I_S=9A dI_F/ dt=100A/us (Note 2)	-	657	-	ns
Reverse Recovery Charge	Qrr		-	5.6	-	uC

NOTES :

1. L=30mH, I_{AS}=7.1A, V_{DD}=50V, R_G=25ohm, Starting T_J=25°C
2. Pulse width≤300us, Duty cycle≤2%
3. Essentially independent of operating temperature typical characteristics.
4. Guaranteed by design, not subject to production testing

PJP9NA90 / PJF9NA90 / PJZ9NA90

TYPICAL CHARACTERISTIC CURVES

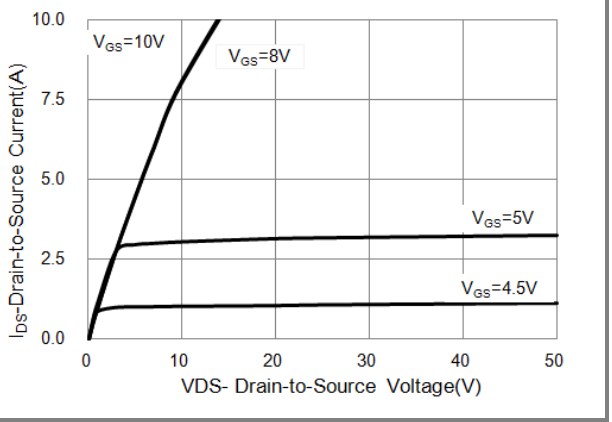

Fig.1 Output Characteristics

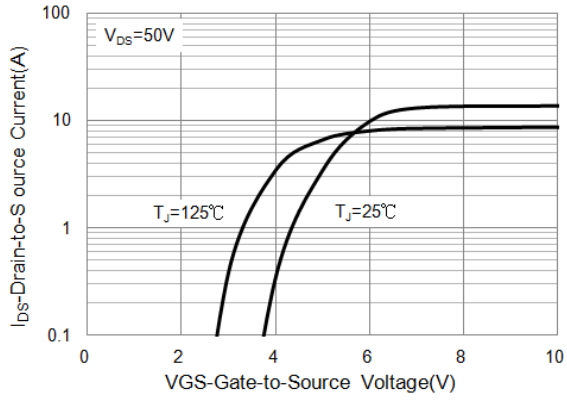

Fig.2 Transfer Characteristics

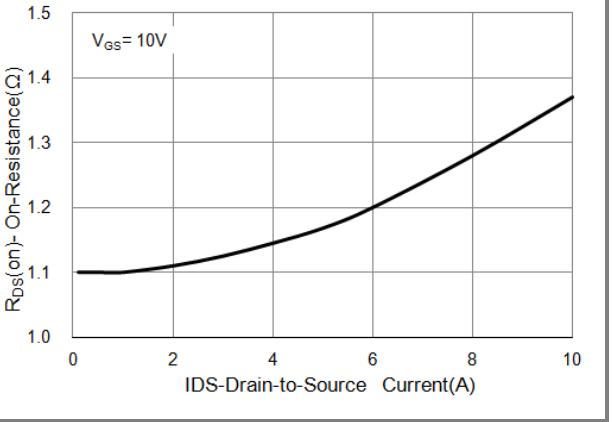

Fig.3 On-Resistance vs. Drain Current

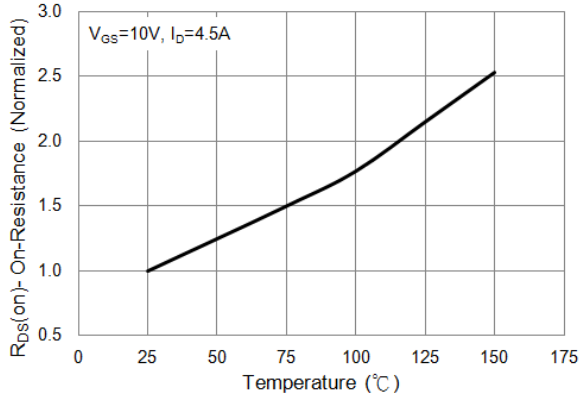

Fig.4 On-Resistance vs. Junction Temperature

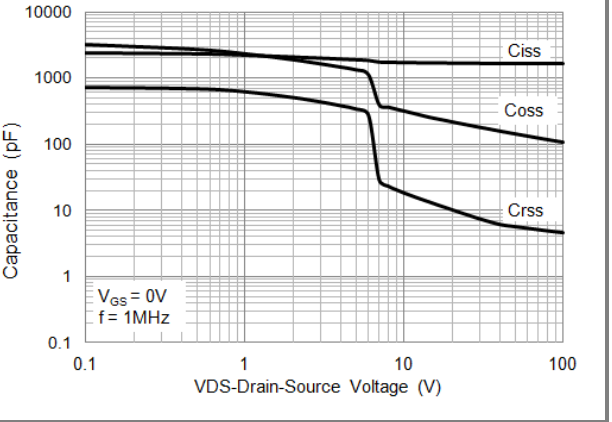

Fig.5 Capacitance vs. Drain-Source Voltage

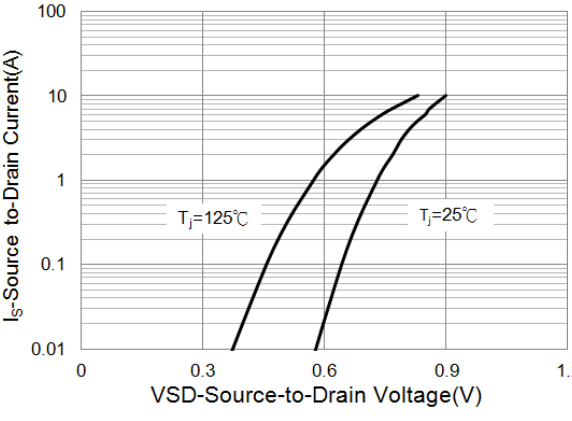

Fig.6 Source-Drain Diode Forward Voltage

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TYPICAL CHARACTERISTIC CURVES

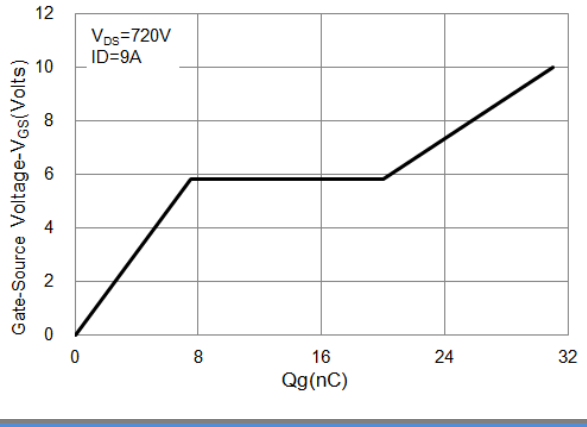

Fig.7 Gate Charge

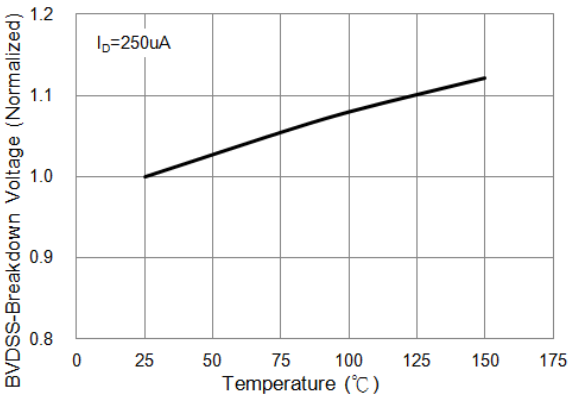

Fig.8 BV_{DSS} vs. Junction Temperature

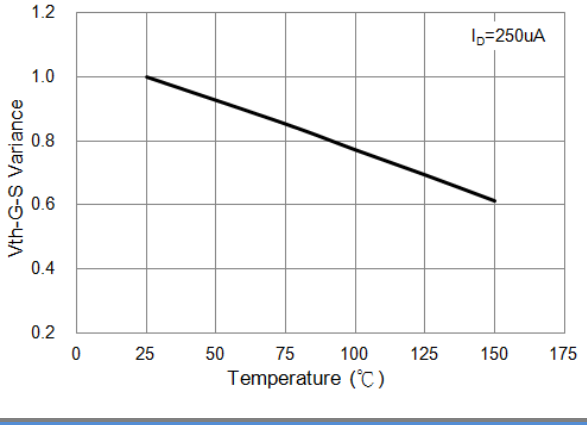

Fig.9 Threshold Voltage Variation with Temperature

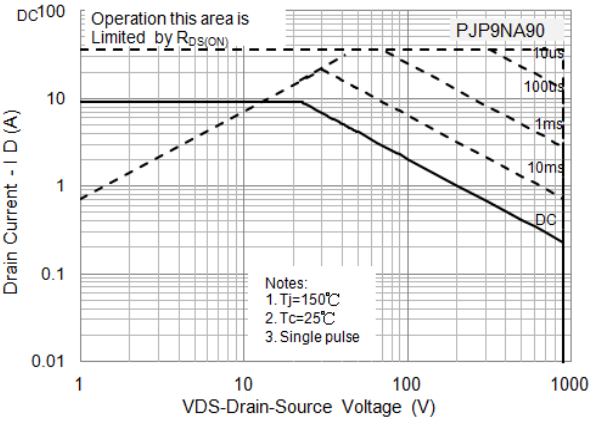

Fig.10 Maximum Safe Operating Area

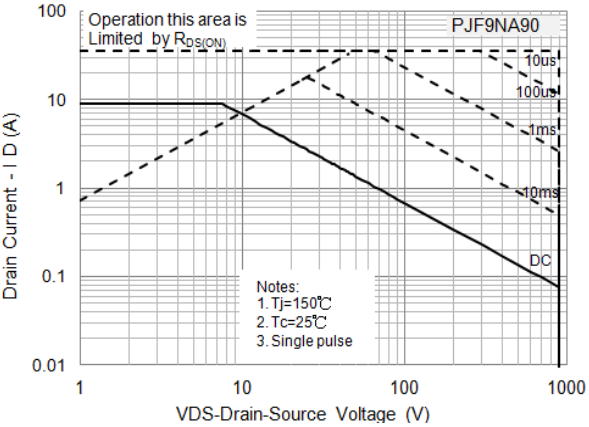

Fig.11 Maximum Safe Operating Area

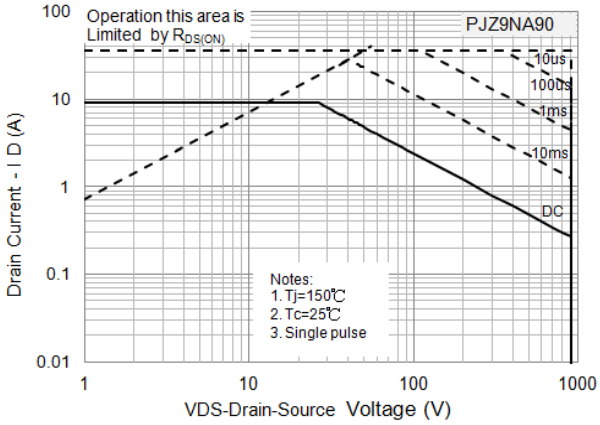

Fig.12 Maximum Safe Operating Area

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TYPICAL CHARACTERISTIC CURVES

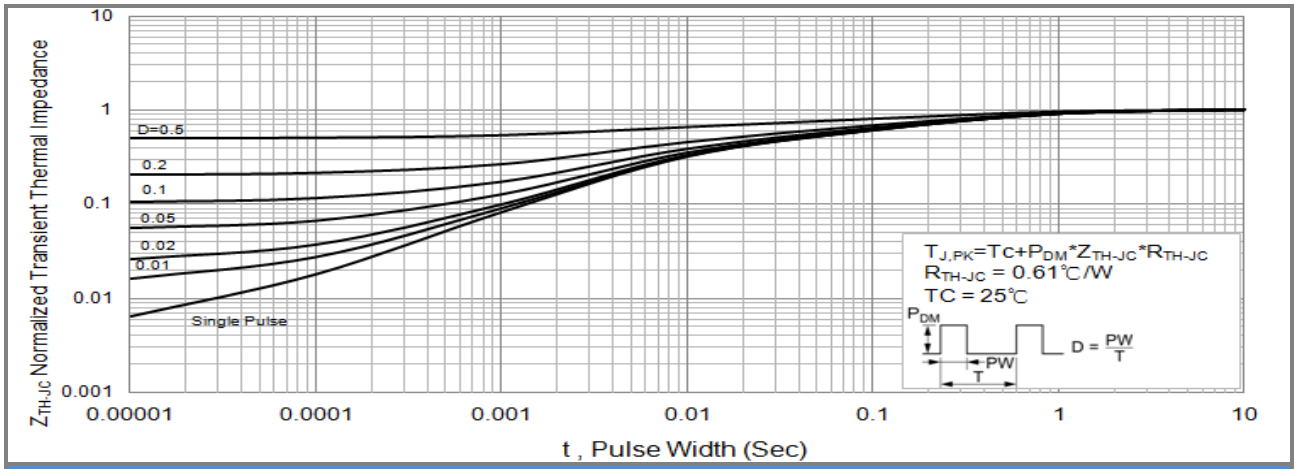


Fig.13 PJP9NA90 Normalized Transient Thermal Impedance vs. Pulse Width

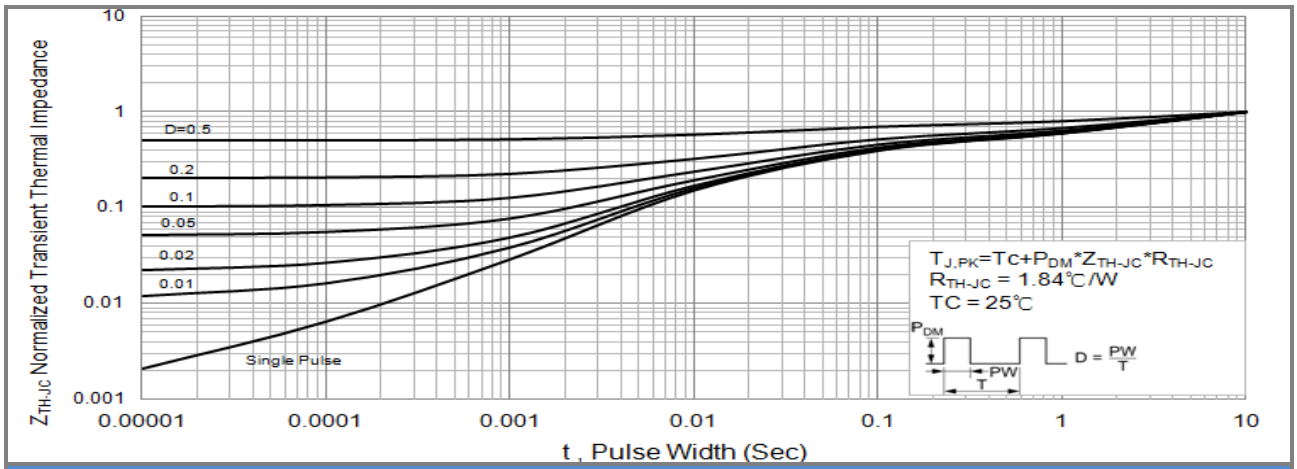


Fig.14 PJF9NA90 Normalized Transient Thermal Impedance vs. Pulse Width

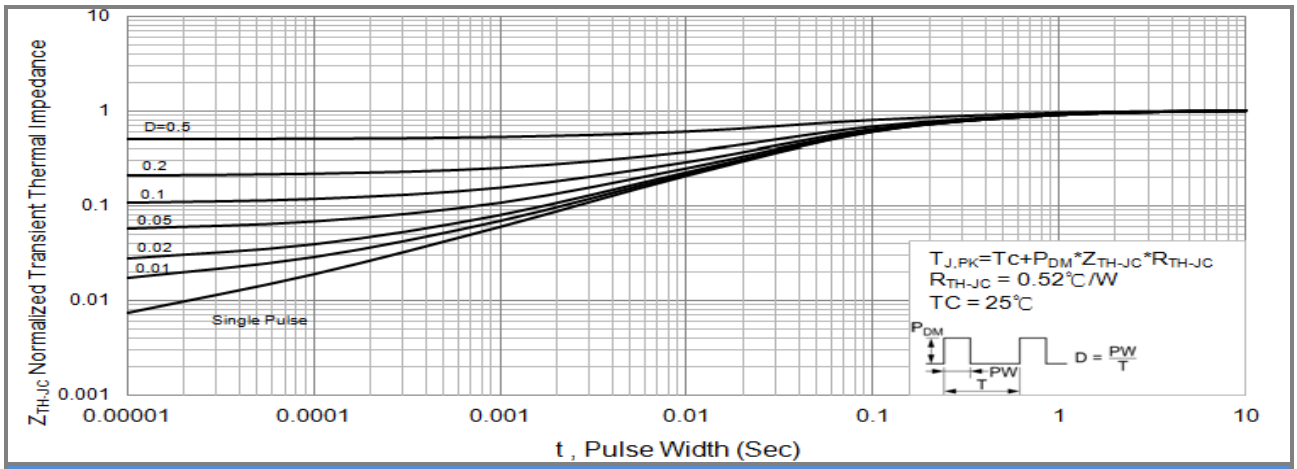


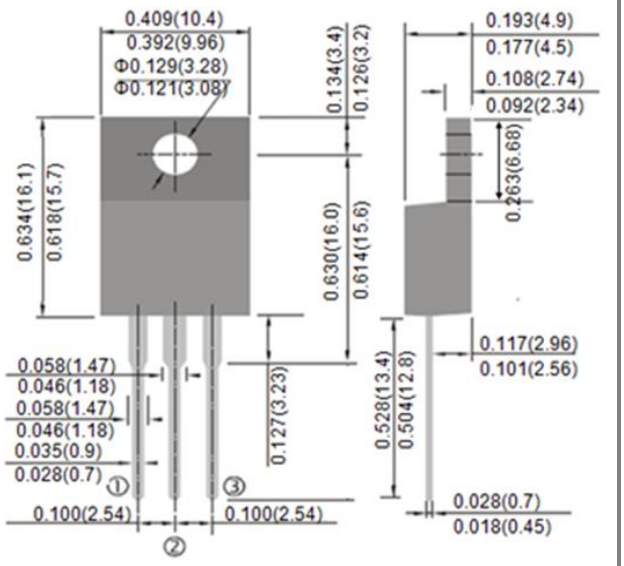
Fig.15 PJZ9NA90 Normalized Transient Thermal Impedance vs. Pulse Width

PJP9NA90 / PJF9NA90 / PJZ9NA90

Packaging Information

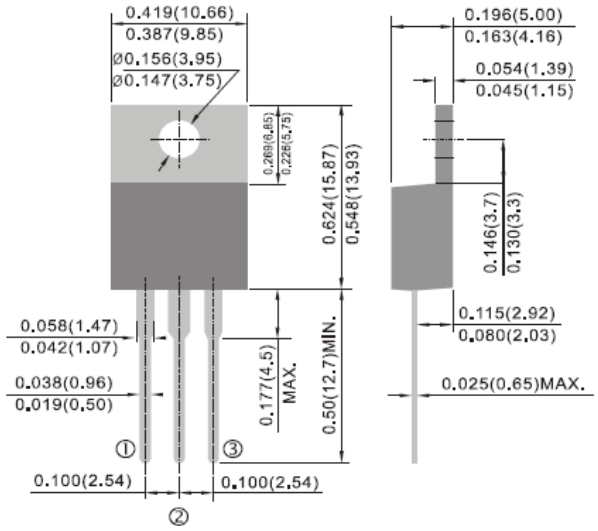
ITO-220AB-F Dimension

Unit: mm



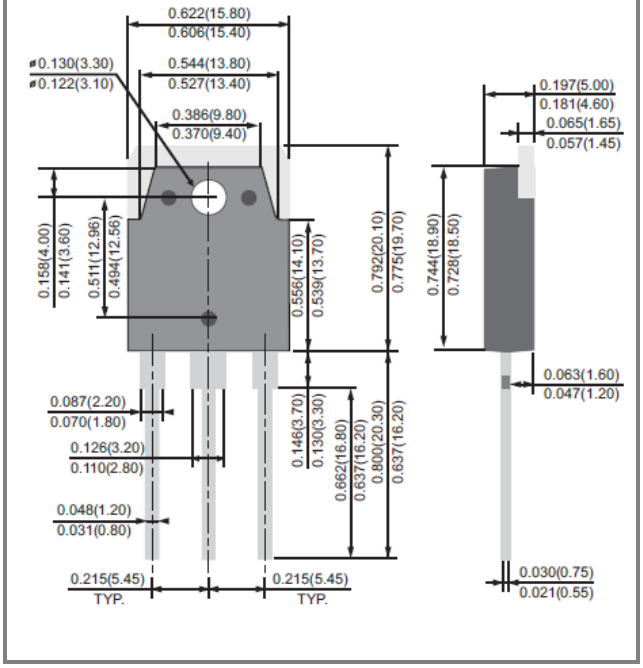
TO-220AB Dimension

Unit: mm



TO-3PL Dimension

Unit: mm



PJP9NA90 / PJF9NA90 / PJZ9NA90

PART NO PACKING CODE VERSION

Part No Packing Code	Package Type	Packing type	Marking	Version
PJP9NA90_T0_00001	TO-220AB	50pcs / Tube	P9NA90	Halogen free
PJF9NA90_T0_00001	ITO-220AB-F	50pcs / Tube	F9NA90	Halogen free
PJZ9NA90_T0_10001	TO-3PL	30pcs / Tube	Z9NA90	Rohs

PJP9NA90 / PJF9NA90 / PJZ9NA90

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