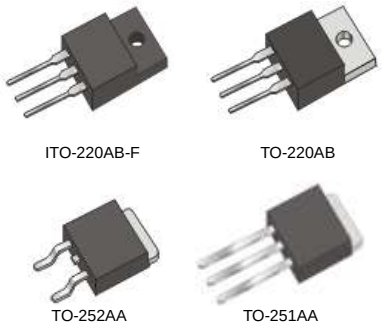
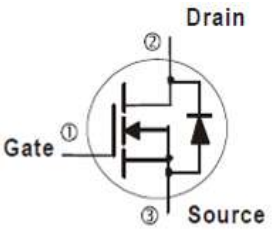
PJU4NA50A / PJD4NA50A / PJP4NA50A / PJF4NA50A

500V N-Channel MOSFET

Voltage	500 V	Current	4 A





Features

- $R_{DS(ON)}$, V_{GS}@10V,I_D@2A<2.3Ω
- 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-251AA,TO-252AA,TO-220AB, ITO-220AB-F
- Terminals : Solderable per MIL-STD-750, Method 2026

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

PARAMETER		SYMBOL	TO-251AA	TO-220AB	ITO-220AB-F	TO-252AA	UNITS
Drain-Source Voltage		V_{DS}	500				V
Gate-Source Voltage		V_{GS}	±30				V
Continuous Drain Current		I_D	4				A
Pulsed Drain Current		I_{DM}	16				A
Single Pulse Avalanche Energy (Note 1)		E_{AS}	125				mJ
Power Dissipation	T_C=25°C	P_D	78	90	42	78	W
	Derate above 25°C		0.62	0.72	0.34	0.62	W/°C
Operating Junction and Storage Temperature Range		T_J,T_{STG}	-55~150				°C
Typical Thermal Resistance							
- Junction to Case		$R_{\theta JC}$	1.6	1.39	3.0	1.6	°C/W
- Junction to Ambient		$R_{\theta JA}$	110	62.5	120	110	

- Limited only By Maximum Junction Temperature

PJU4NA50A / PJD4NA50A / PJP4NA50A / PJF4NA50A

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	3.0	4	V
Drain-Source On-State Resistance	$R_{DS(on)}$	V_{GS}=10V,I_D=2A	-	2.0	2.3	Ω
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=500V,V_{GS}=0V	-	-	1.0	uA
Gate-Source Leakage Current	I_{GSS}	V_{GS}=±30V,V_{DS}=0V	-	-	±100	nA
Diode Forward Voltage	V_{SD}	I_S=4A,V_{GS}=0V	-	0.8	1.4	V
Dynamic (Note 4)						
Total Gate Charge	Q_g	V_{DS}=400V, I_D=4A, V_{GS}=10V (Note 2,3)	-	9.8	-	nC
Gate-Source Charge	Q_{gs}		-	2.2	-	
Gate-Drain Charge	Q_{gd}		-	3.9	-	
Input Capacitance	Ciss	V_{DS}=25V, V_{GS}=0V, f=1.0MHZ	-	449	-	pF
Output Capacitance	Coss		-	45	-	
Reverse Transfer Capacitance	Crss		-	13	-	
Turn-On Delay Time	$td_{(on)}$	V_{DD}=250V, I_D=4A, R_G=10Ω (Note 2,3)	-	12	-	ns
Turn-On Rise Time	t_r		-	11	-	
Turn-Off Delay Time	$td_{(off)}$		-	31	-	
Turn-Off Fall Time	t_f		-	7.6	-	
Drain-Source Diode						
Maximum Continuous Drain-Source Diode Forward Current	I_S	---	-	-	4	A
Maximum Pulsed Drain-Source Diode Forward Current	I_{SM}	---	-	-	16	A
Reverse Recovery Time	trr	V_{GS}=0V, I_S=4A	-	402	-	ns
Reverse Recovery Charge	Qrr	dI_F/ dt=100A/us (Note 2)	-	1.3	-	uC

NOTES :

1. L=10mH, I_{AS}=5A, 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

PJU4NA50A / PJD4NA50A / PJP4NA50A / PJF4NA50A

TYPICAL CHARACTERISTIC CURVES

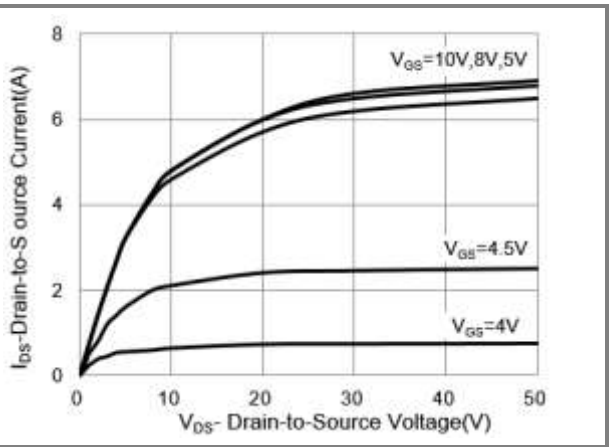


Fig.1 Output Characteristics

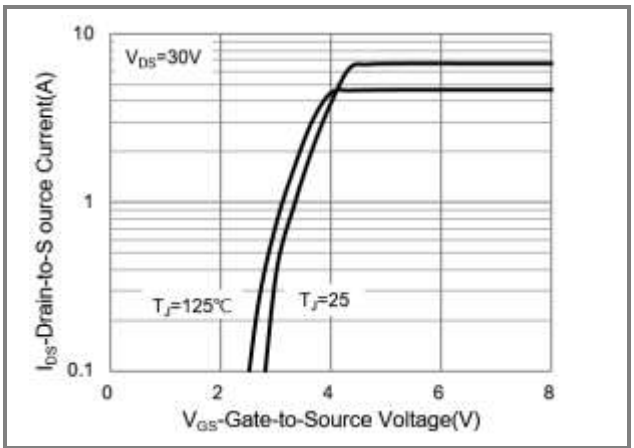


Fig.2 Transfer Characteristics

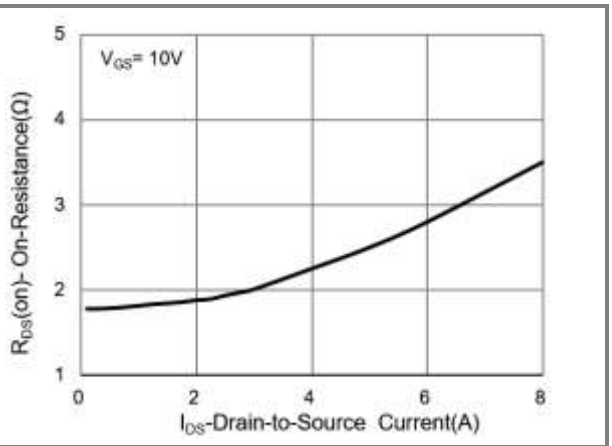


Fig.3 On-Resistance vs. Drain Current

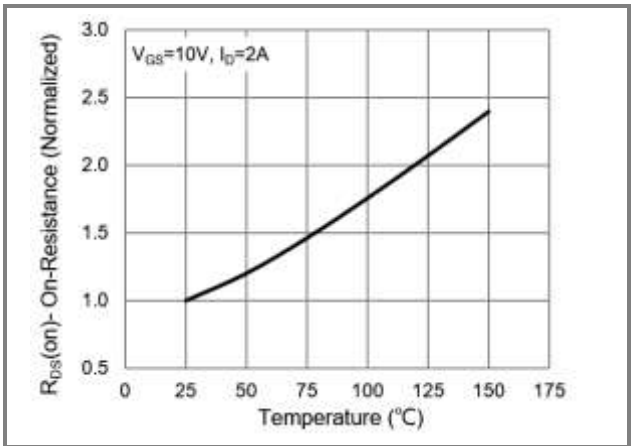


Fig.4 On-Resistance vs. Junction Temperature

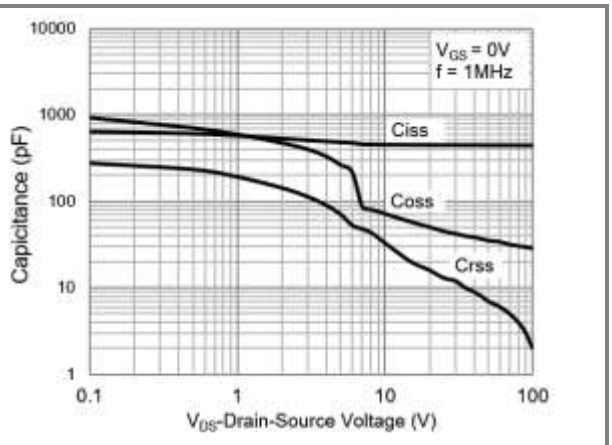


Fig.5 Capacitance vs. Drain-Source Voltage

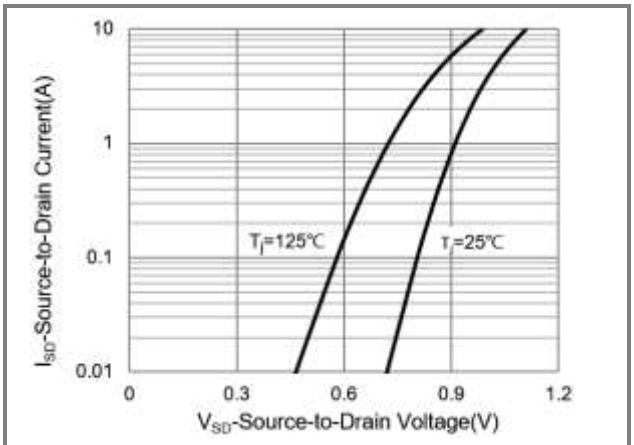


Fig.6 Source-Drain Diode Forward Voltage

PJU4NA50A / PJD4NA50A / PJP4NA50A / PJF4NA50A

TYPICAL CHARACTERISTIC CURVES

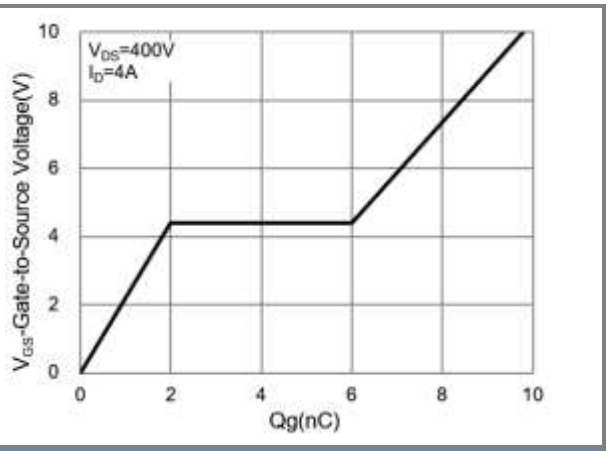


Fig.7 Gate Charge

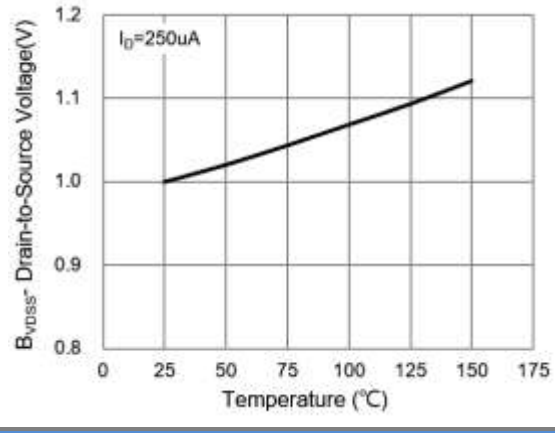


Fig.8 BV_{DSS} vs. Junction Temperature

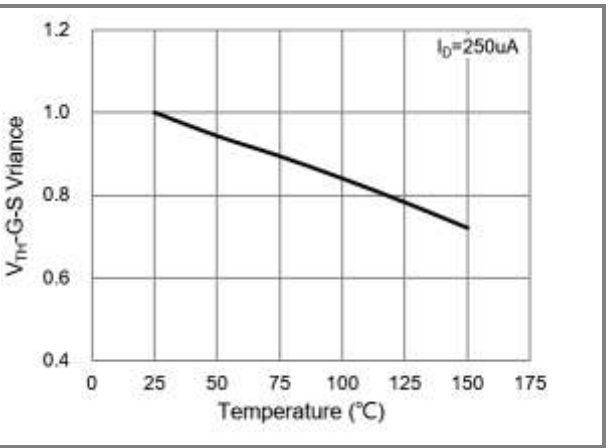


Fig.9 Threshold Voltage Variation with Temperature

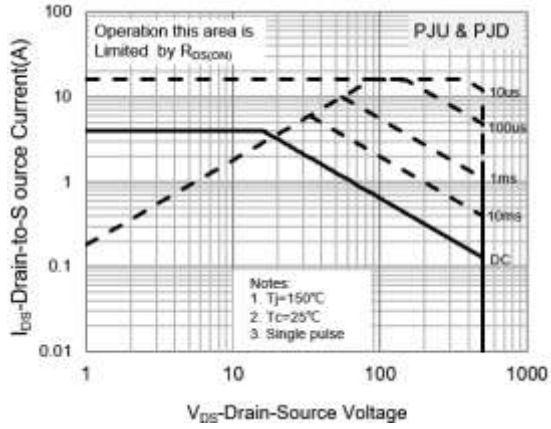


Fig.10 Maximum Safe Operating Area

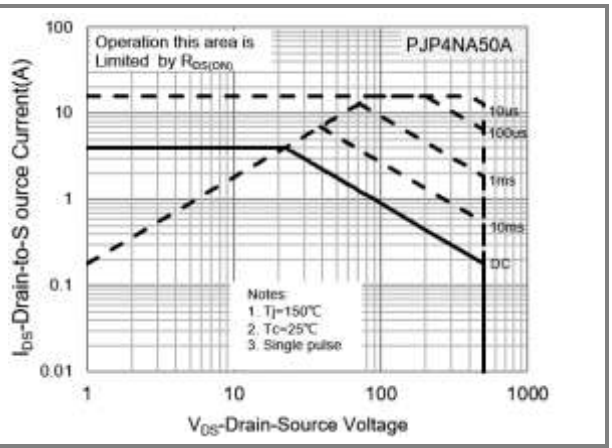


Fig.11 Maximum Safe Operating Area

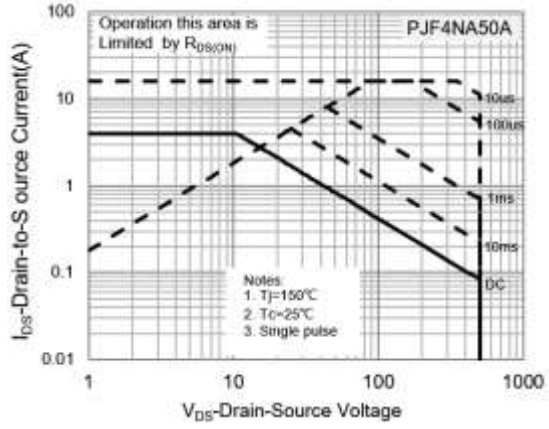


Fig.12 Maximum Safe Operating Area

PJU4NA50A / PJD4NA50A / PJP4NA50A / PJF4NA50A

TYPICAL CHARACTERISTIC CURVES

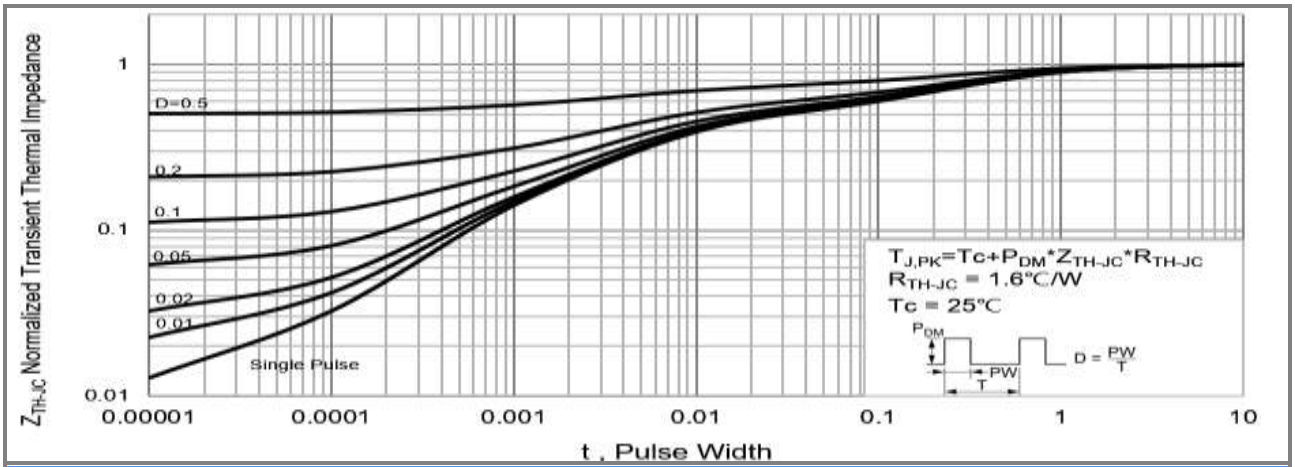


Fig.13 PJU/PJD Normalized Transient Thermal Impedance vs. Pulse Width

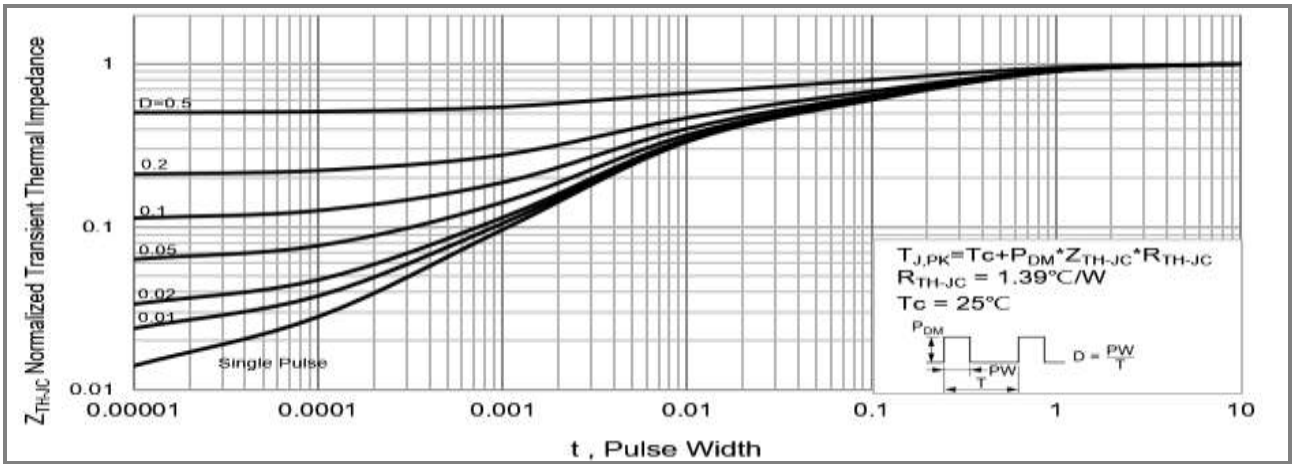


Fig.14 PJP Normalized Transient Thermal Impedance vs. Pulse Width

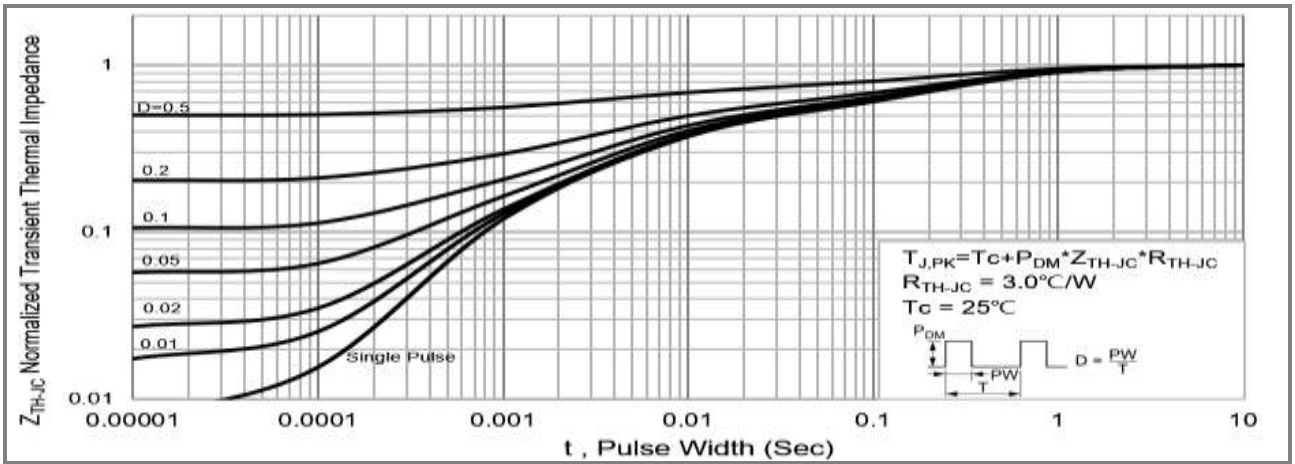


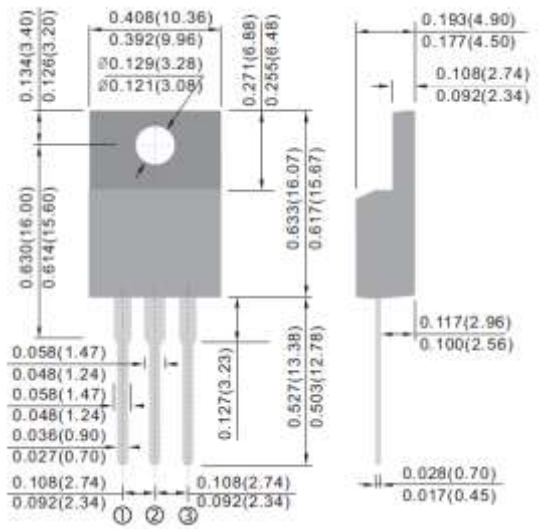
Fig.15 PJF Normalized Transient Thermal Impedance vs. Pulse Width

PJU4NA50A / PJD4NA50A / PJP4NA50A / PJF4NA50A

Packaging Information .

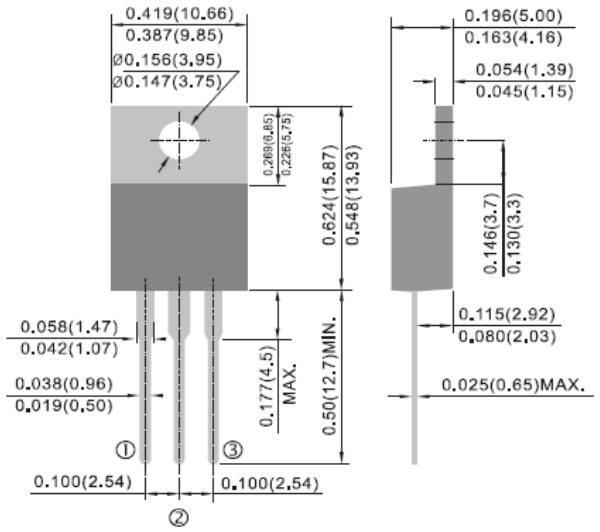
ITO-220AB-F Dimension

Unit: inch(mm)



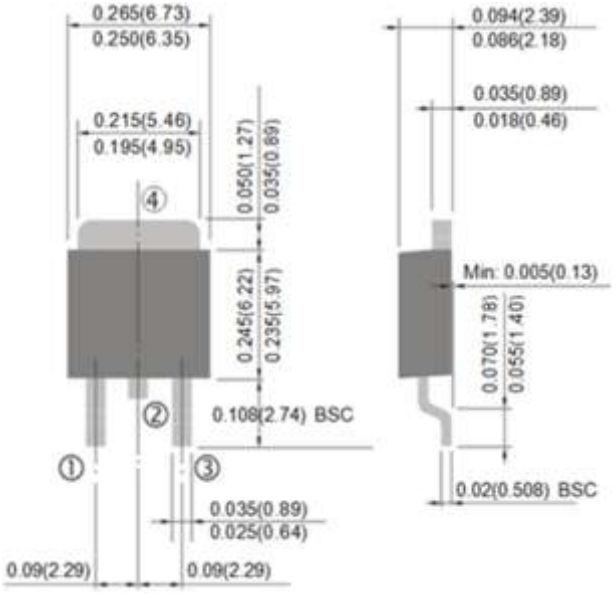
TO-220AB Dimension

Unit: inch(mm)



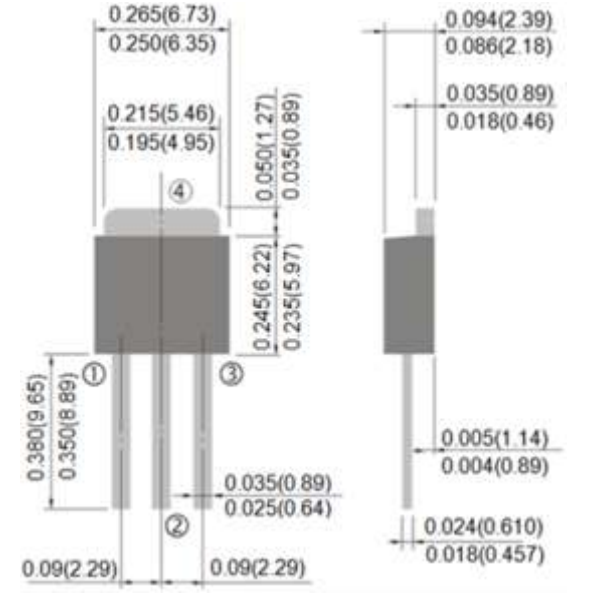
TO-252AA Dimension

Unit: inch(mm)



TO-251AA Dimension

Unit: inch(mm)



PJU4NA50A / PJD4NA50A / PJP4NA50A / PJF4NA50A

PART NO PACKING CODE VERSION

Part No Packing Code	Package Type	Packing Type	Marking	Version
PJU4NA50A_T0_00001	TO-251AA	80pcs / Tube	U4NA50A	Halogen free
PJD4NA50A_L2_00001	TO-252AA	3,000pcs / 13” reel	D4NA50A	Halogen free
PJP4NA50A_T0_00001	TO-220AB	50pcs / Tube	P4NA50A	Halogen free
PJF4NA50A_T0_00001	ITO-220AB-F	50pcs / Tube	F4NA50A	Halogen free

PJU4NA50A / PJD4NA50A / PJP4NA50A / PJF4NA50A

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