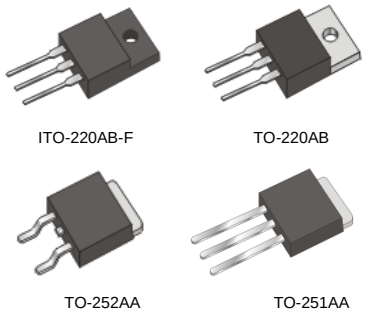
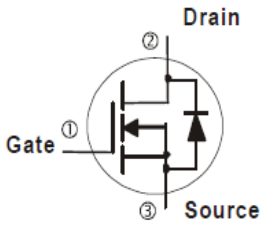
PJU18N20 / PJD18N20 / PJP18N20 / PJF18N20

200V N-Channel Enhancement Mode MOSFET

Voltage	200 V	Current	18 A





Features

- $R_{DS(ON)}$, V_{GS}@10V,I_D@9A<160mΩ
- 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-251AA,TO-252AA,TO-220AB,ITO-220AB-F Package
- Terminals : Solderable per MIL-STD-750, Method 2026
- TO-251AA Approx. Weight : 0.0104 ounces, 0.297grams
- TO-252AA Approx. Weight : 0.0105 ounces, 0.297grams
- TO-220AB Approx. Weight : 0.067 ounces, 1.89 grams
- ITO-220AB-F Approx. Weight : 0.068 ounces, 2 grams

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

PARAMETER		SYMBOL	TO-251AA TO-252AA	TO-220AB	ITO-220AB-F	UNITS
Drain-Source Voltage		V_{DS}	200			V
Gate-Source Voltage		V_{GS}	±20			V
Continuous Drain Current	T_C=25°C	I_D	18			A
	T_C=100°C		11			A
Pulsed Drain Current (Note 1)		I_{DM}	72			A
Power Dissipation	T_C=25°C	P_D	83	89	50	W
	T_C=100°C		33	35.6	20	W
Single Pulse Avalanche Energy (Note 6)		E_{AS}	72			mJ
Operating Junction and Storage Temperature Range		T_J,T_{STG}	-55~150			°C
Typical Thermal Resistance (Note 4,5) - Junction to Case		$R_{\theta JC}$	1.5	1.4	2.5	°C/W
- Junction to Ambient		$R_{\theta JA}$	110	62.5	120	°C/W

- Limited only By Maximum Junction Temperature

PJU18N20 / PJD18N20 / PJP18N20 / PJF18N20

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	200	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=250uA	1	1.83	3	
Drain-Source On-State Resistance	$R_{DS(on)}$	V_{GS}=10V,I_D=9A	-	126	160	mΩ
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=200V,V_{GS}=0V	-	-	1.0	uA
Gate-Source Leakage Current	I_{GSS}	V_{GS}=±20V,V_{DS}=0V	-	-	±100	nA
Dynamic (Note 7)						
Total Gate Charge	Q_g	V_{DS}=160V, I_D=18A, V_{GS}=10V (Note 2,3)	-	24	-	nC
Gate-Source Charge	Q_{gs}		-	3.7	-	
Gate-Drain Charge	Q_{gd}		-	6.1	-	
Input Capacitance	Ciss	V_{DS}=25V, V_{GS}=0V, f=1.0MHZ	-	1017	-	pF
Output Capacitance	Coss		-	148	-	
Reverse Transfer Capacitance	Crss		-	36	-	
Turn-On Delay Time	$td_{(on)}$	V_{DD}=100V, I_D=18A, V_{GS}=10VR_G=25Ω (Note 2,3)	-	15	-	ns
Turn-On Rise Time	t_r		-	61	-	
Turn-Off Delay Time	$td_{(off)}$		-	104	-	
Turn-Off Fall Time	t_f		-	99	-	
Drain-Source Diode						
Maximum Continuous Drain-Source Diode Forward Current	I_S	---	-	-	18	A
Maximum Pulsed Drain-Source Diode Forward Current	I_{SM}	---	-	-	72	
Diode Forward Voltage	V_{SD}	I_S=1A,V_{GS}=0V	-	0.73	1.0	V

NOTES :

1. Pulse width≤300us, Duty cycle≤2%
2. Essentially independent of operating temperature typical characteristics.
3. Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}$=150°C. Ratings are based on low frequency and duty cycles to keep initial T_J =25°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 $inch^2$ with 2oz.square pad of copper.
6. The test condition is L=1mH, I_{AS}=12A, V_{DD}=50V, R_G=25 ohm, Starting T_J=25°C
7. Guaranteed by design, not subject to production testing.

PJU18N20 / PJD18N20 / PJP18N20 / PJF18N20

TYPICAL CHARACTERISTIC CURVES

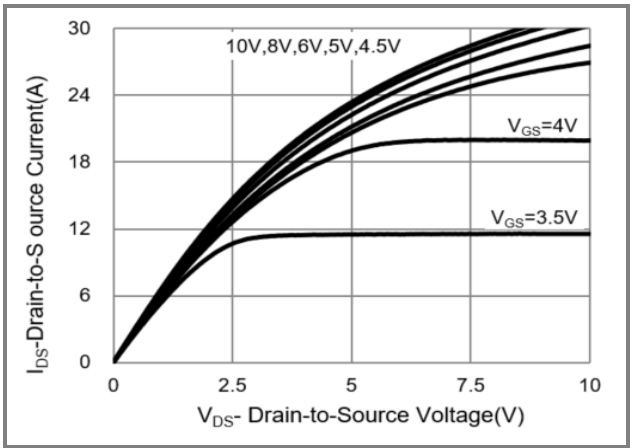


Fig.1 Output Characteristics

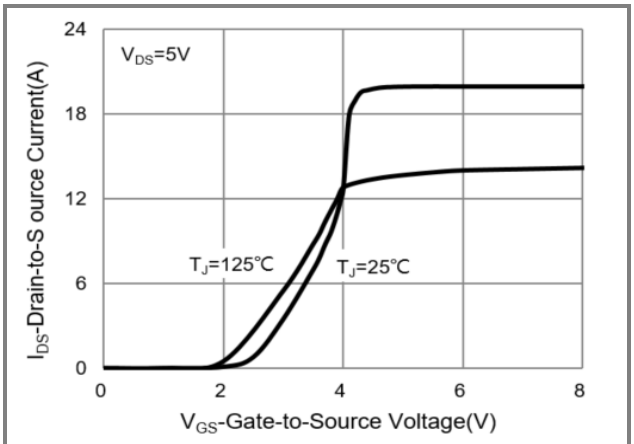


Fig.2 Transfer Characteristics

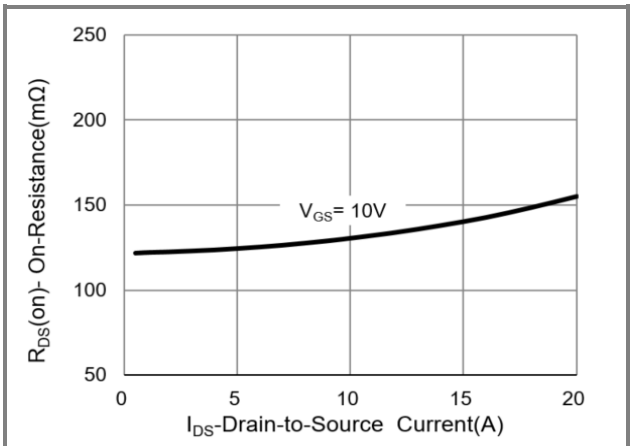


Fig.3 On-Resistance vs. Drain Current

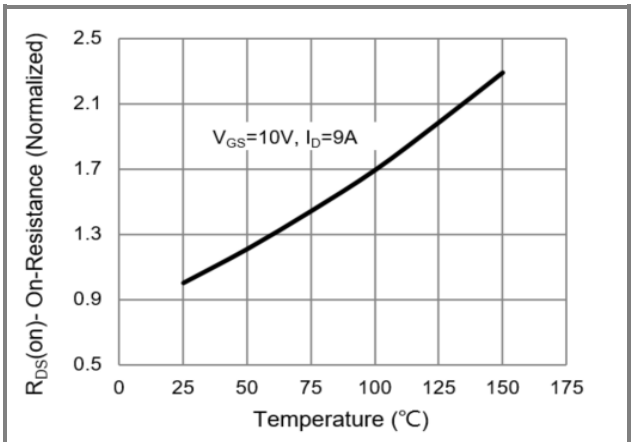


Fig.4 On-Resistance vs. Junction temperature

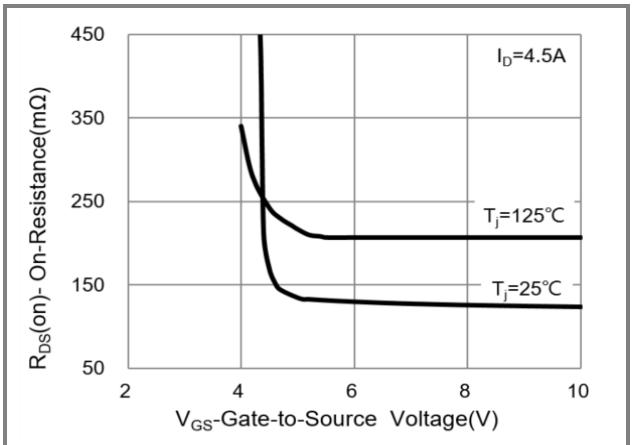


Fig.5 On-Resistance Variation with V_{GS}

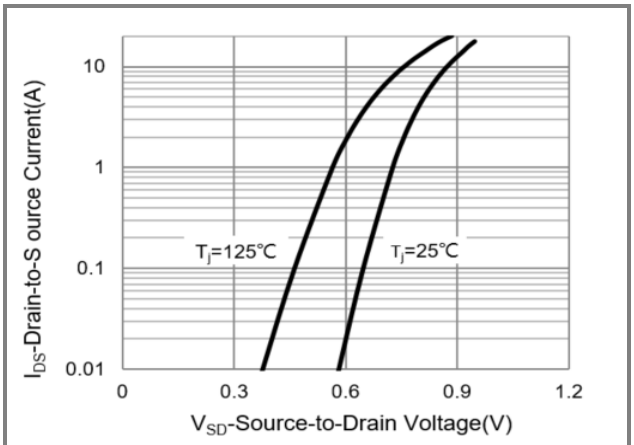


Fig.6 Source-Drain Diode Forward Voltage

PJU18N20 / PJD18N20 / PJP18N20 / PJF18N20

TYPICAL CHARACTERISTIC CURVES

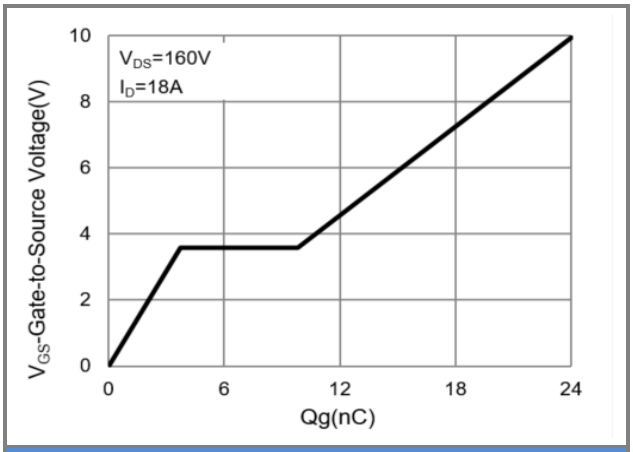


Fig.7 Gate-Charge Characteristics

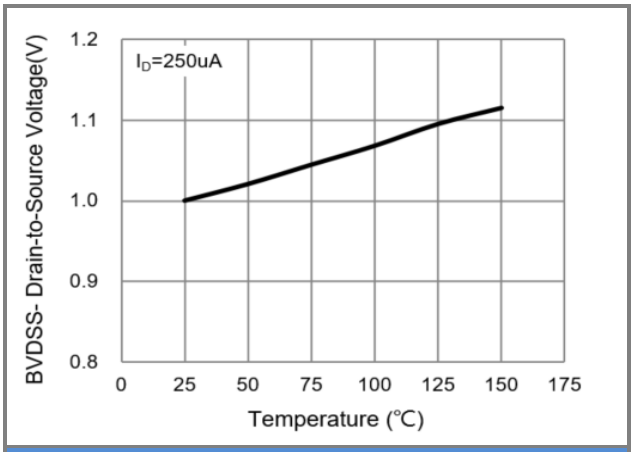


Fig.8 Breakdown Voltage Variation vs. Temperature

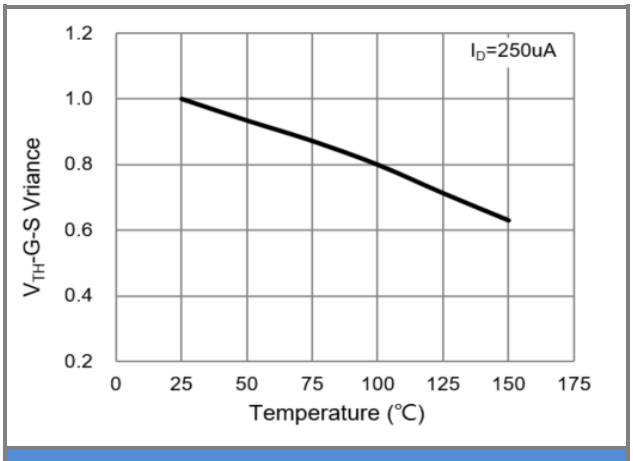


Fig.9 Threshold Voltage Variation with Temperature

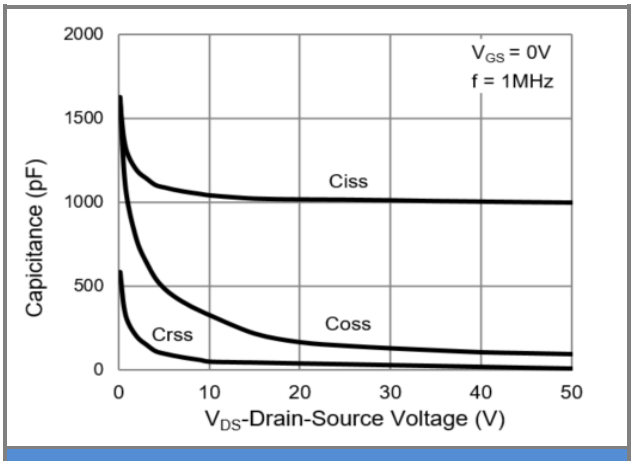


Fig.10 Capacitance vs. Drain-Source Voltage

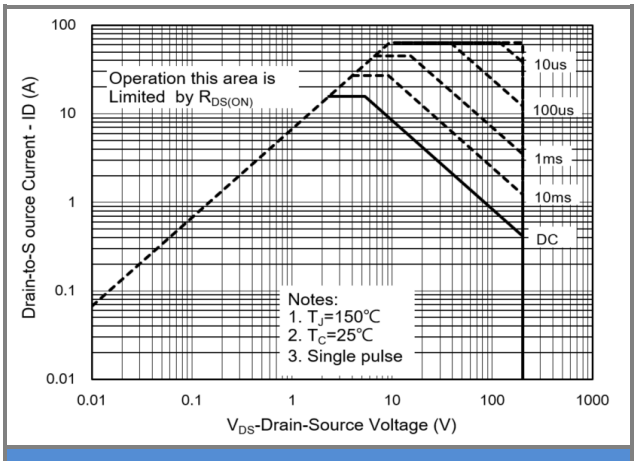


Fig.11 PJU/PJD Maximum Safe Operating Area

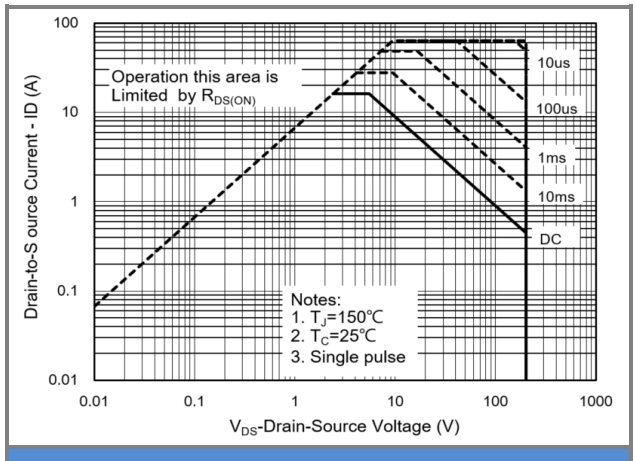


Fig.12 PJP18N20 Maximum Safe Operating Area

PJU18N20 / PJD18N20 / PJP18N20 / PJF18N20

TYPICAL CHARACTERISTIC CURVES

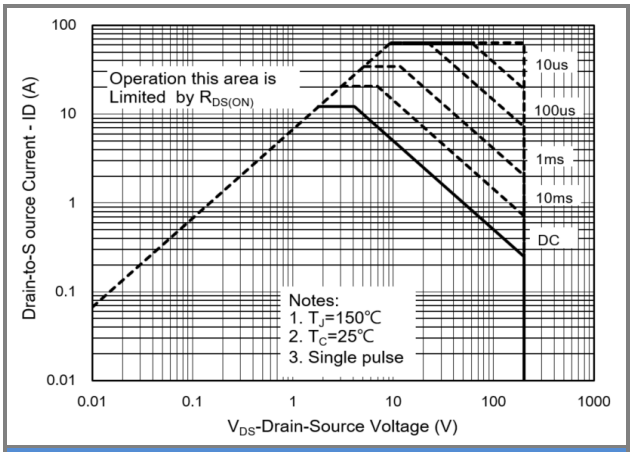


Fig.13 PJF18N20 Maximum Safe Operating Area

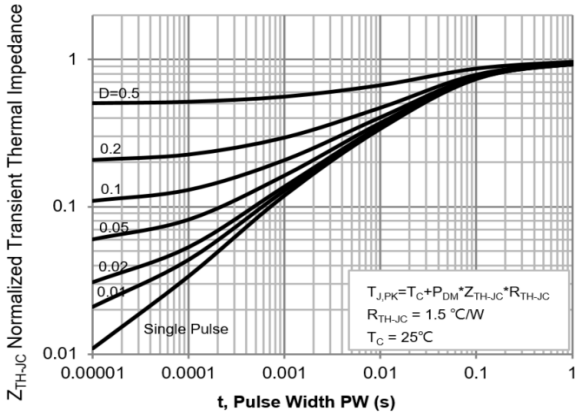


Fig.14 PJU/D Normalized Transient Thermal Impedance

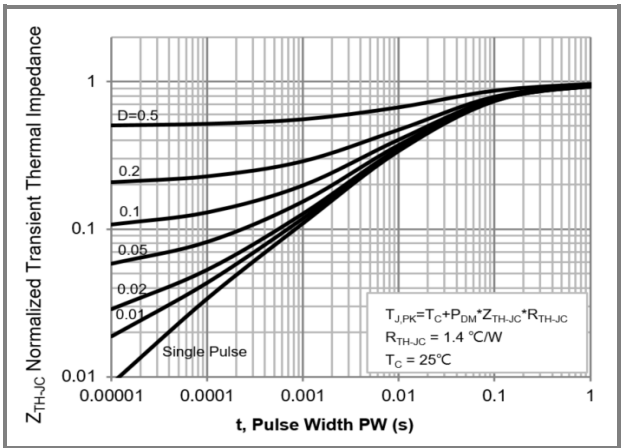


Fig.15 PJP Normalized Transient Thermal Impedance

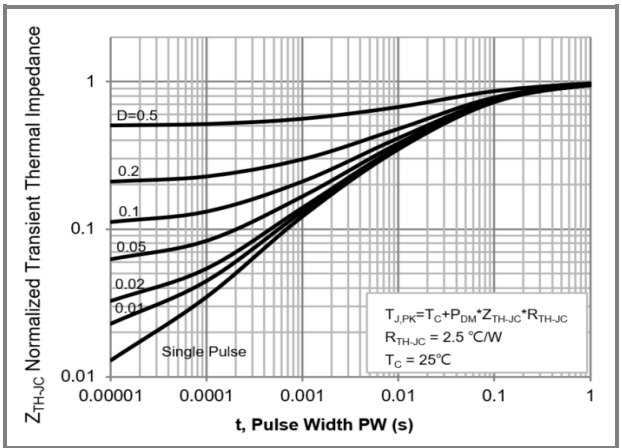


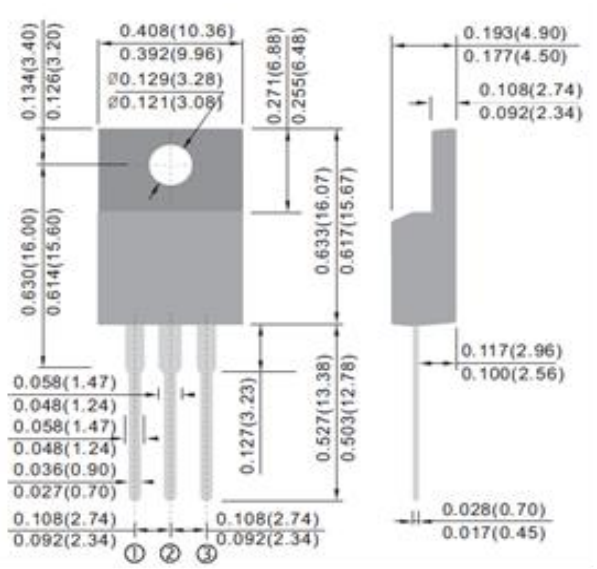
Fig.16 PJF Normalized Transient Thermal Impedance

PJU18N20 / PJD18N20 / PJP18N20 / PJF18N20

Packaging Information

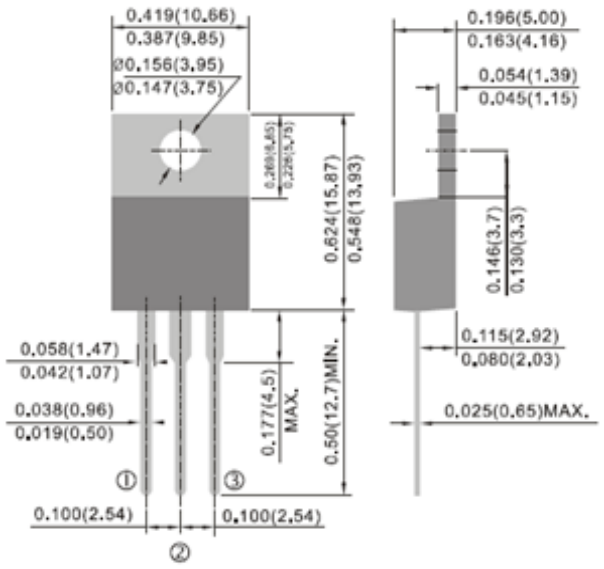
ITO-220AB-F Dimension

Unit: inch(mm)



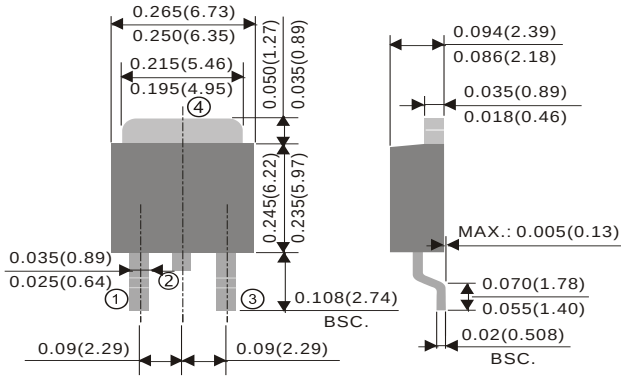
TO-220AB Dimension

Unit: inch(mm)



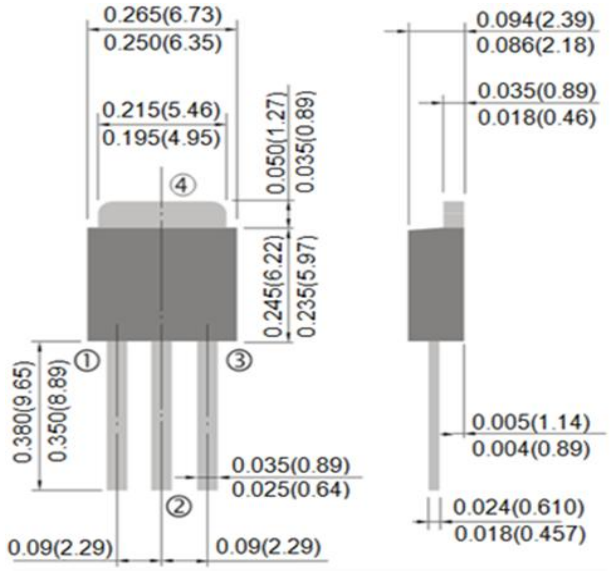
TO-252AA Dimension

Unit: inch(mm)



TO-251AA Dimension

Unit: inch(mm)



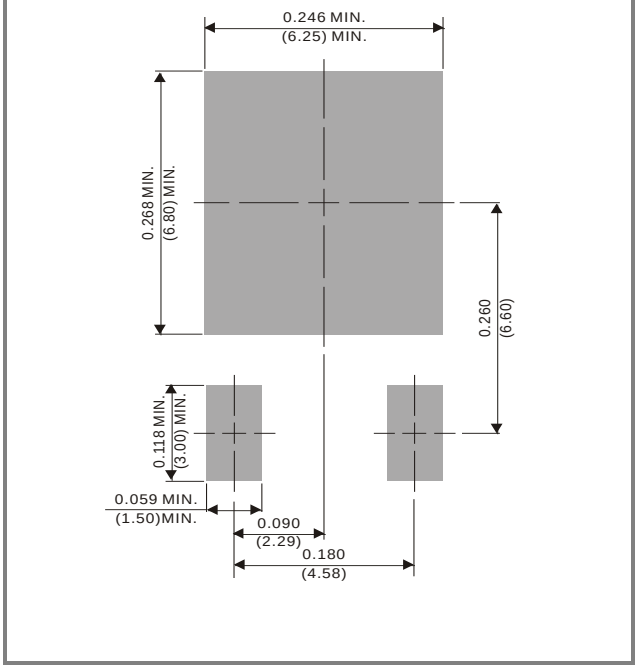
PJU18N20 / PJD18N20 / PJP18N20 / PJF18N20

Part No Packing Code Version

Part No Packing Code	Package Type	Packing Type	Marking	Version
PJU18N20_T0_00001	TO-251AA	80pcs / Tube	U18N20	Halogen free
PJD18N20_L2_00001	TO-252AA	3,000pcs / 13” reel	D18N20	Halogen free
PJP18N20_T0_00001	TO-220AB	50pcs / Tube	P18N20	Halogen free
PJF18N20_T0_00001	ITO-220AB-F	50pcs / Tube	F18N20	Halogen free

Mounting Pad Layout

TO-252AA Unit: inch(mm)



PJU18N20 / PJD18N20 / PJP18N20 / PJF18N20

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