

PJU18N20 / PJD18N20 / PJP18N20 / PJF18N20

200V N-Channel Enhancement Mode MOSFET

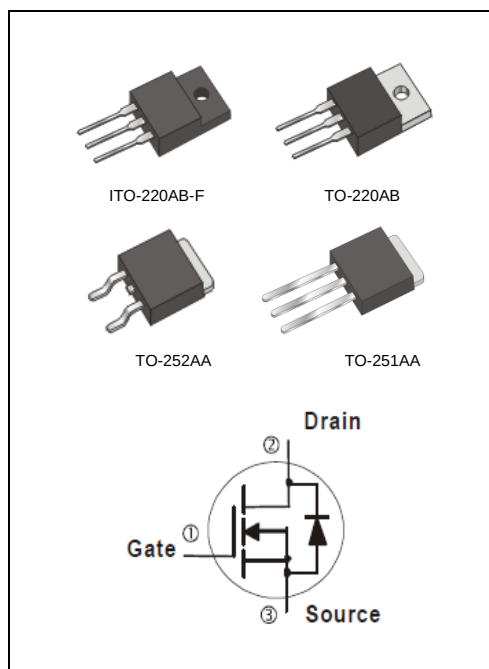
Voltage	200 V	Current	18 A
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Features

- $R_{DS(ON)}$, $V_{GS}@10V, I_D@9A < 160m\Omega$
- 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-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 ($T_A = 25^\circ\text{C}$ 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			
Continuous Drain Current	T _C =25°C	I _D	18			A
	T _C =100°C		11			
Pulsed Drain Current ^(Note 1)		I _{DM}	72			
Power Dissipation	T _C =25°C	P _D	83	89	50	W
	T _C =100°C		33	35.6	20	
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)						°C/W
- Junction to Case		R _{θJC}	1.5	1.4	2.5	
- Junction to Ambient		R _{θJA}	110	62.5	120	

- 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
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	C _{iss}	V _{DS} =25V, V _{GS} =0V, f=1.0MHZ	-	1017	-	pF
Output Capacitance	C _{oss}		-	148	-	
Reverse Transfer Capacitance	C _{rss}		-	36	-	
Turn-On Delay Time	td _(on)	V _{DD} =100V, I _D =18A, V _{GS} =10V R _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 $\leq 300\mu s$, Duty cycle $\leq 2\%$
2. Essentially independent of operating temperature typical characteristics.
3. Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}=150^\circ\text{C}$. Ratings are based on low frequency and duty cycles to keep initial $T_J=25^\circ\text{C}$.
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 inch² with 2oz.square pad of copper.
6. The test condition is $L=1mH, I_{AS}=12A, V_{DD}=50V, R_G=25\text{ ohm}$, Starting $T_J=25^\circ\text{C}$
7. Guaranteed by design, not subject to production testing.

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TYPICAL CHARACTERISTIC CURVES

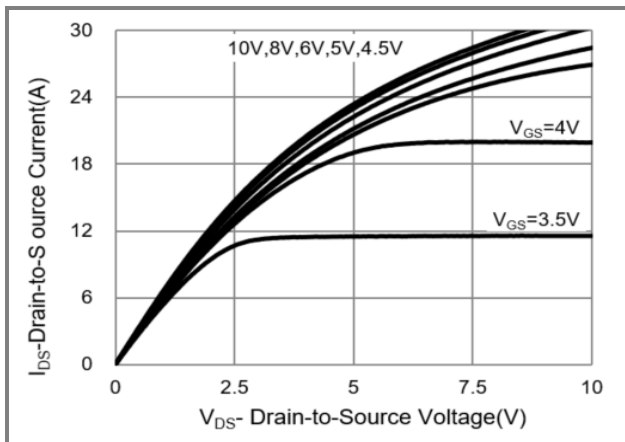


Fig.1 Output Characteristics

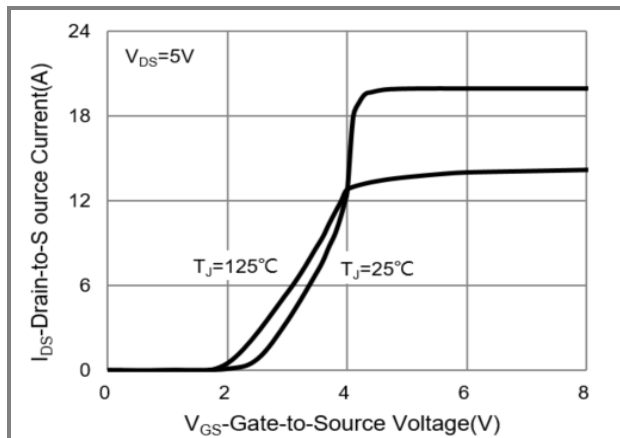


Fig.2 Transfer Characteristics

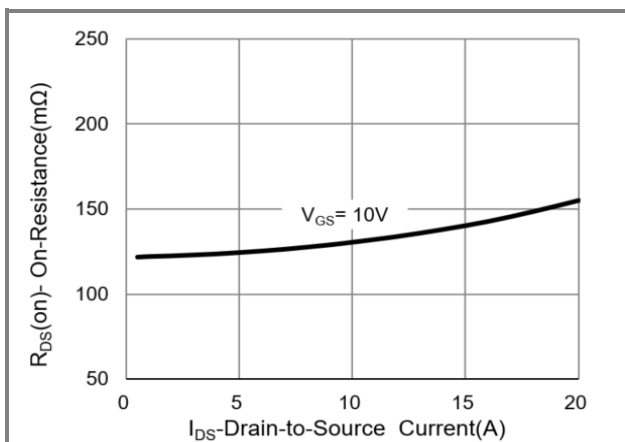


Fig.3 On-Resistance vs. Drain Current

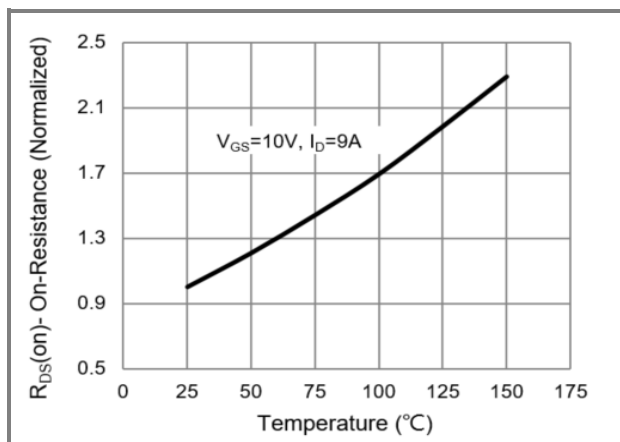


Fig.4 On-Resistance vs. Junction temperature

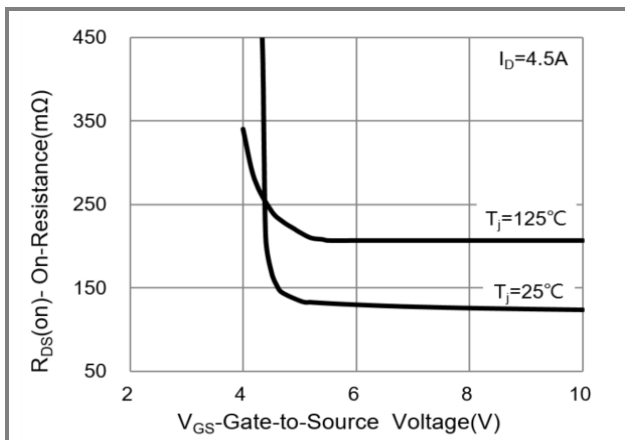


Fig.5 On-Resistance Variation with V_{GS}

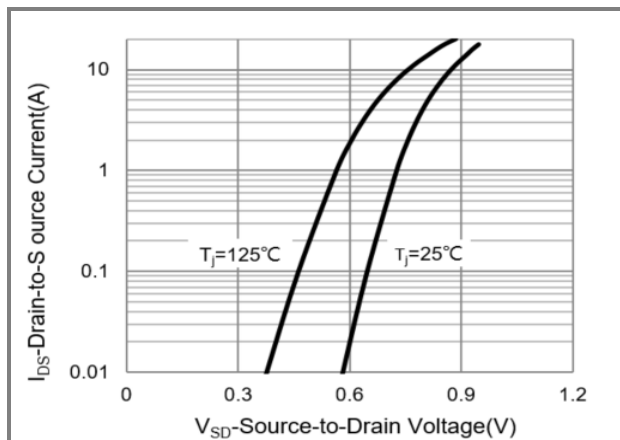


Fig.6 Source-Drain Diode Forward Voltage

PJU18N20 / PJD18N20 / PJP18N20 / PJF18N20

TYPICAL CHARACTERISTIC CURVES

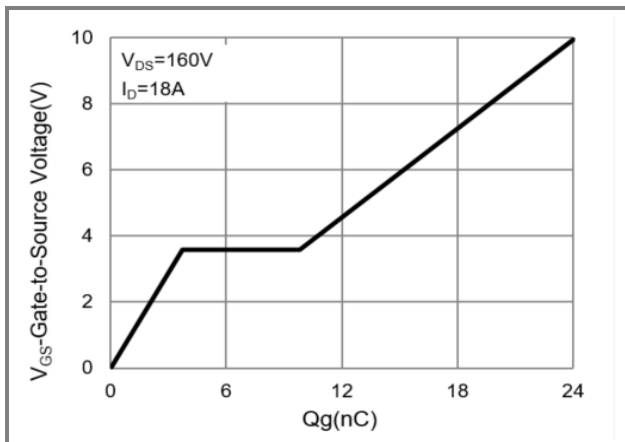


Fig.7 Gate-Charge Characteristics

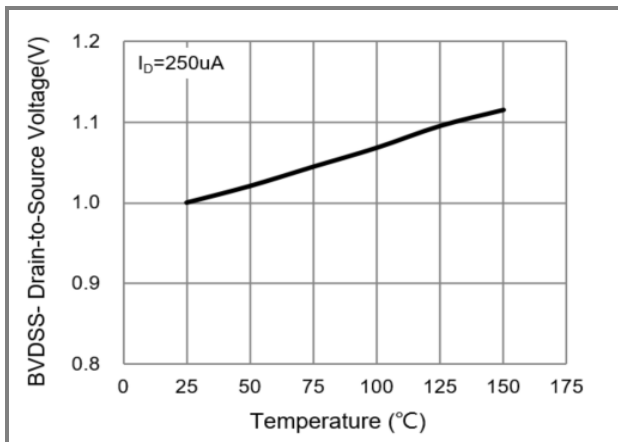


Fig.8 Breakdown Voltage Variation vs. Temperature

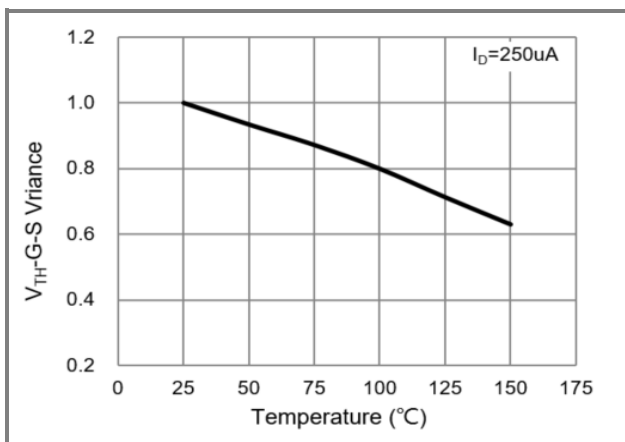


Fig.9 Threshold Voltage Variation with Temperature

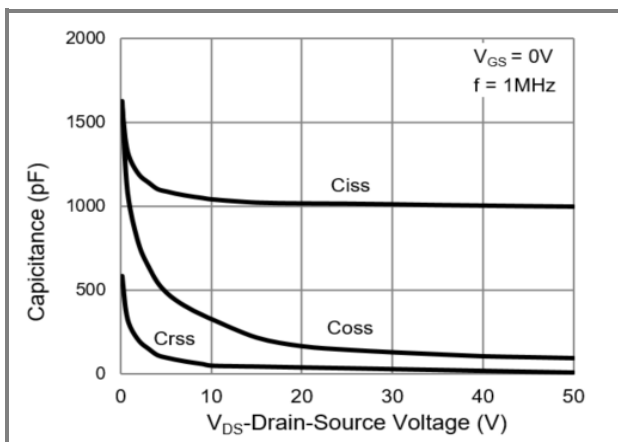


Fig.10 Capacitance vs. Drain-Source Voltage

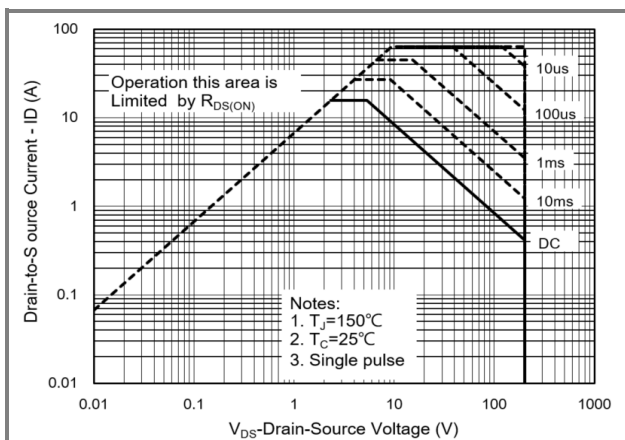


Fig.11 PJU/PJD Maximum Safe Operating Area

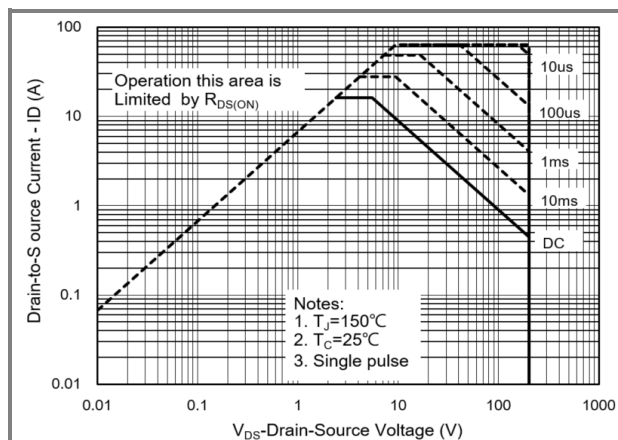


Fig.12 PJP18N20 Maximum Safe Operating Area

PJU18N20 / PJD18N20 / PJP18N20 / PJF18N20

TYPICAL CHARACTERISTIC CURVES

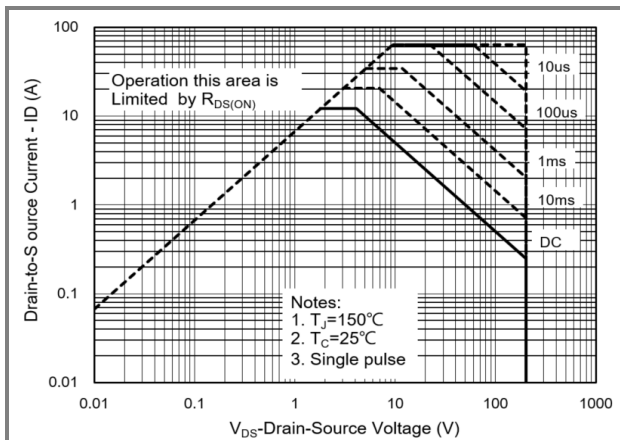


Fig.13 PJF18N20 Maximum Safe Operating Area

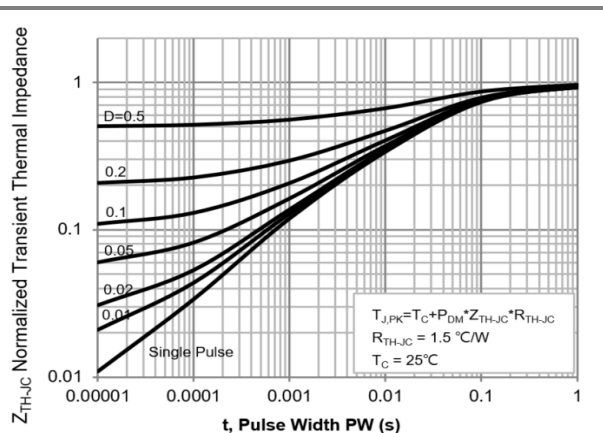


Fig.14 PJU/D Normalized Transient Thermal Impedance

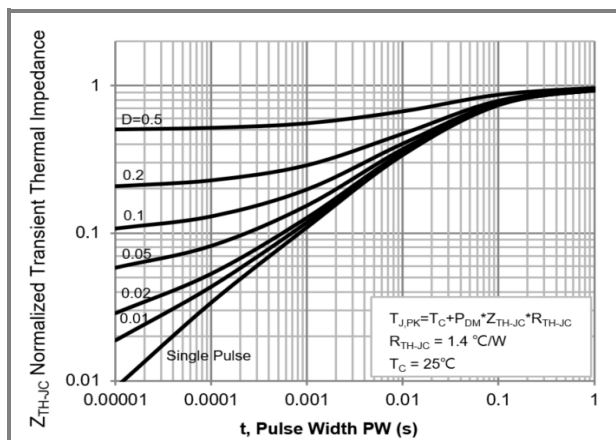


Fig.15 PJP Normalized Transient Thermal Impedance

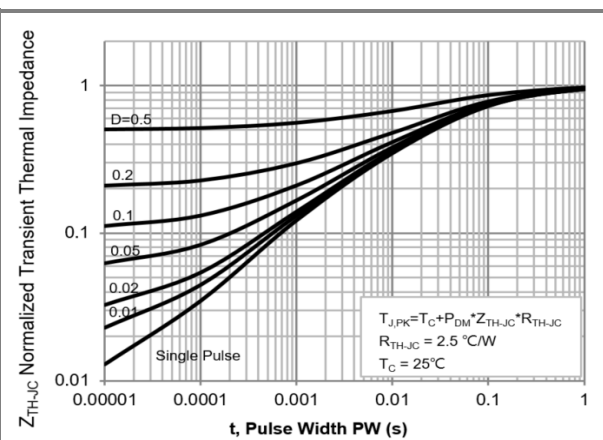


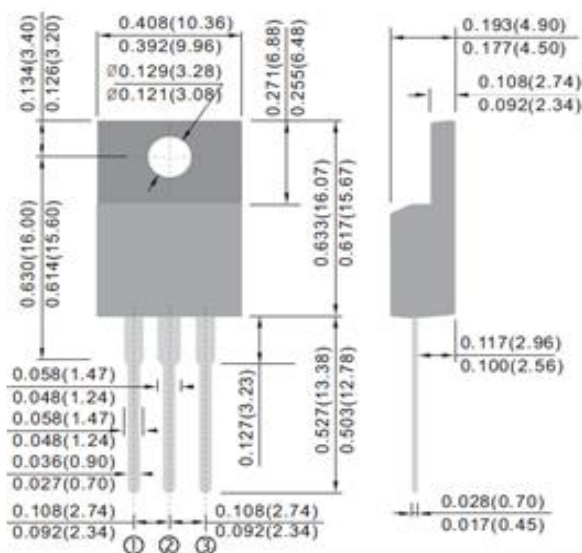
Fig.16 PJF Normalized Transient Thermal Impedance

PJU18N20 / PJD18N20 / PJP18N20 / PJF18N20

Packaging Information

ITO-220AB-F Dimension

Unit: inch(mm)

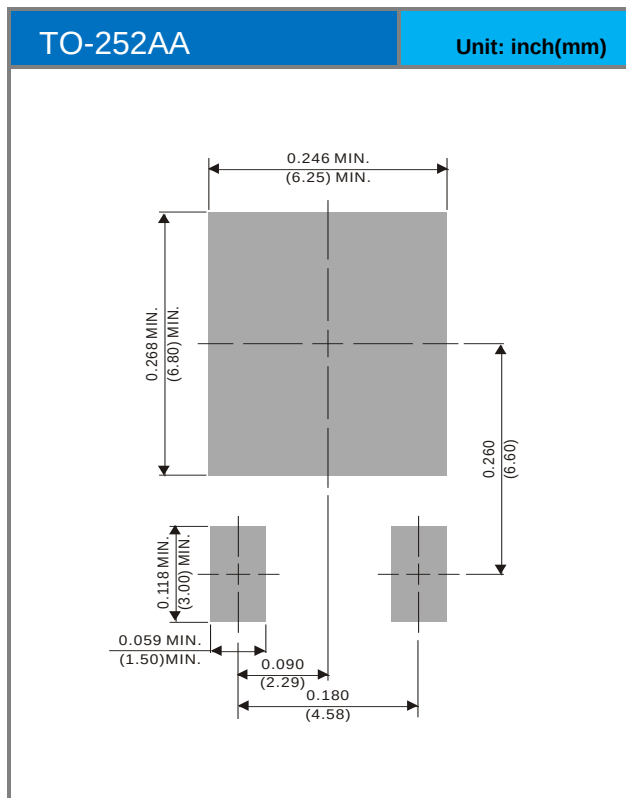


PJU18N20 / PJD18N20 / PJP18N20 / PJF18N20

Part No Packing Code Version

Part No Packing Code	Package Type	Packing Type	Marking	Version
PJU18N20_TO_00001	TO-251AA	80pcs / Tube	U18N20	Halogen free
PJD18N20_L2_00001	TO-252AA	3,000pcs / 13" reel	D18N20	Halogen free
PJP18N20_TO_00001	TO-220AB	50pcs / Tube	P18N20	Halogen free
PJF18N20_TO_00001	ITO-220AB-F	50pcs / Tube	F18N20	Halogen free

Mounting Pad Layout





PJU18N20 / PJD18N20 / PJP18N20 / PJF18N20

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