



**PJU10N10 / PJD10N10 / PJP10N10 / PJF10N10**

**100V N-Channel Enhancement Mode MOSFET**

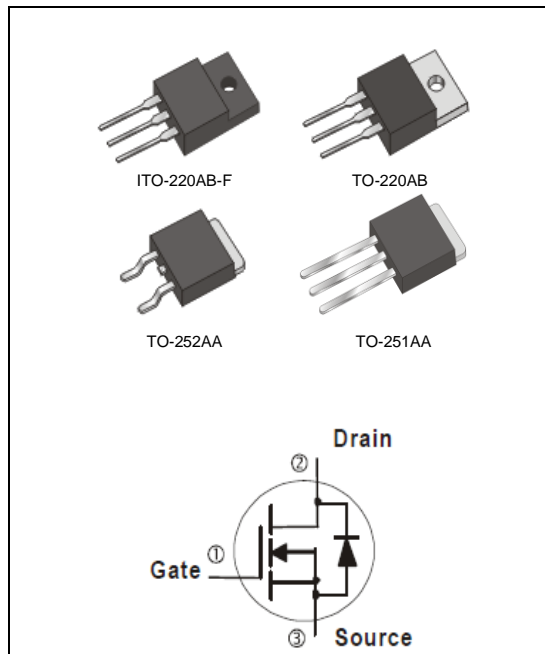
<b>Voltage</b>	<b>100 V</b>	<b>Current</b>	<b>10 A</b>
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**Features**

- $R_{DS(ON)}$ ,  $V_{GS}@10V, I_D@5A < 130m\Omega$
- $R_{DS(ON)}$ ,  $V_{GS}@6V, I_D@2A < 135m\Omega$
- High switching speed
- Improved dv/dt capability
- 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-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-251AA Approx. Weight : 0.0104 ounces, 0.297grams
- TO-220AB Approx. Weight : 0.067 ounces, 1.9 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-220AB	ITO-220AB-F	TO-252AA	UNITS
Drain-Source Voltage		$V_{DS}$	100				V
Gate-Source Voltage		$V_{GS}$	+20				V
Continuous Drain Current	$T_C=25^\circ\text{C}$	$I_D$	10				A
	$T_C=100^\circ\text{C}$		6.5				
Pulsed Drain Current <sup>(Note 1)</sup>	$T_C=25^\circ\text{C}$	$I_{DM}$	40				
Power Dissipation	$T_C=25^\circ\text{C}$	$P_D$	34.7	42	15	104	W
	$T_C=100^\circ\text{C}$		14	17	6	42	
Continuous Drain Current	$T_A=25^\circ\text{C}$	$I_D$	2.6				A
	$T_A=70^\circ\text{C}$		2.1				
Power Dissipation	$T_A=25^\circ\text{C}$	$P_D$	1.1	2.0	1.0	1.1	W
Power Dissipation	$T_A=70^\circ\text{C}$		0.7	1.3	0.7	0.7	
Single Pulse Avalanche Energy <sup>(Note 6)</sup>		$E_{AS}$	6				mJ
Operating Junction and Storage Temperature Range		$T_J, T_{STG}$	-55~150				$^\circ\text{C}$
Typical Thermal resistance <sup>(Note 4,5)</sup>							
-	Junction to Case	$R_{\theta JC}$	3.6	3	8.4	3.6	$^\circ\text{C/W}$
-	Junction to Ambient	$R_{\theta JA}$	110	62.5	120	110	

- 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
<b>Static</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V, I_D=250\mu A$	100	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	2	2.76	3.5	V
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=5A$	-	110	130	mΩ
		$V_{GS}=6V, I_D=2A$	-	120	135	
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=100V, V_{GS}=0V$	-	-	1.0	μA
Gate-Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	$\pm 100$	nA
<b>Dynamic</b> (Note 7)						
Total Gate Charge	$Q_g$	$V_{DS}=37.5V, I_D=5A,$ $V_{GS}=10V$ (Note 2,3)	-	12	-	nC
Gate-Source Charge	$Q_{gs}$		-	3	-	
Gate-Drain Charge	$Q_{gd}$		-	2	-	
Input Capacitance	$C_{iss}$	$V_{DS}=30V, V_{GS}=0V,$ $f=1.0\text{MHz}$	-	707	-	pF
Output Capacitance	$C_{oss}$		-	40	-	
Reverse Transfer Capacitance	$C_{rss}$		-	16	-	
Turn-On Delay Time	$t_{d(on)}$	$V_{DS}=37.5V, I_D=5A,$ $V_{GS}=10V, R_G=3\Omega$ (Note 2,3)	-	6	-	ns
Turn-On Rise Time	$t_r$		-	27	-	
Turn-Off Delay Time	$t_{d(off)}$		-	17	-	
Turn-Off Fall Time	$t_f$		-	7	-	
<b>Drain-Source Diode</b>						
Maximum Continuous Drain-Source Diode Forward Current	$I_S$	---	-	-	10	A
Diode Forward Voltage	$V_{SD}$	$I_S=1A, V_{GS}=0V$	-	0.7	1.2	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  $T_J(\text{MAX})=150^\circ\text{C}$ . 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 inch<sup>2</sup> with 2oz. square pad of copper.
6. The test condition is  $L=0.1\text{mH}$ ,  $I_{AS}=11A$ ,  $V_{DD}=25V$ ,  $V_{GS}=10V$ ,  $R_G=25\text{ohm}$ , Starting  $T_J=25^\circ\text{C}$
7. Guaranteed by design, not subject to production testing.



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TYPICAL CHARACTERISTIC CURVES

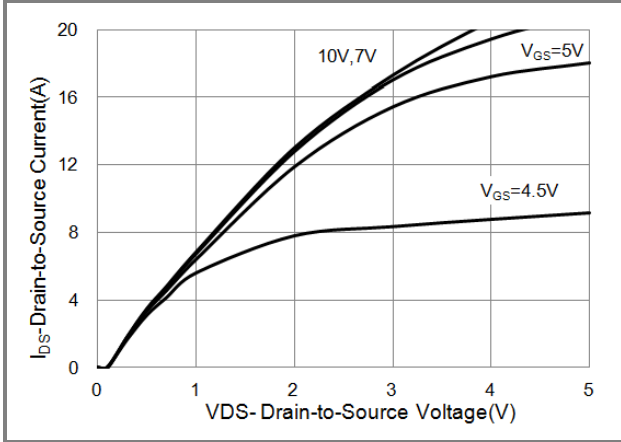


Fig.1 On-Region Characteristics

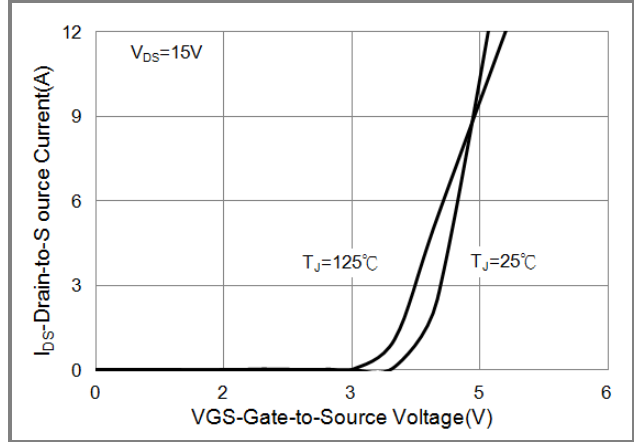


Fig.2 Transfer Characteristics

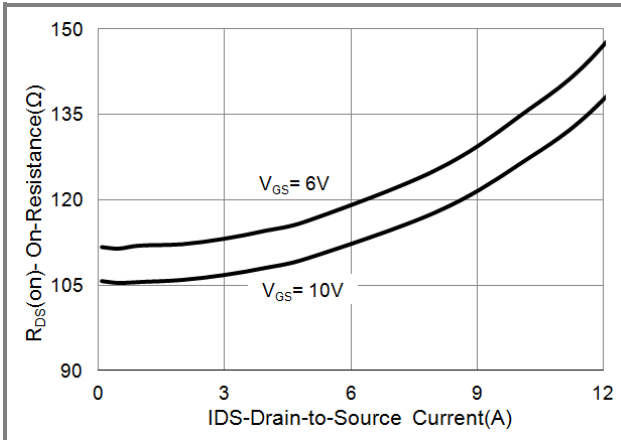


Fig.3 On-Resistance vs. Drain Current

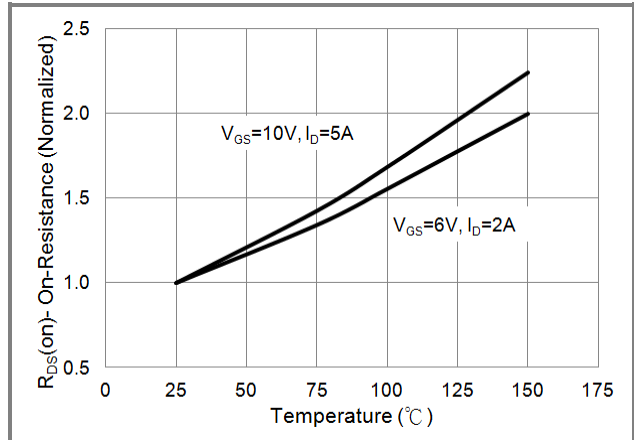


Fig.4 On-Resistance vs. Junction temperature

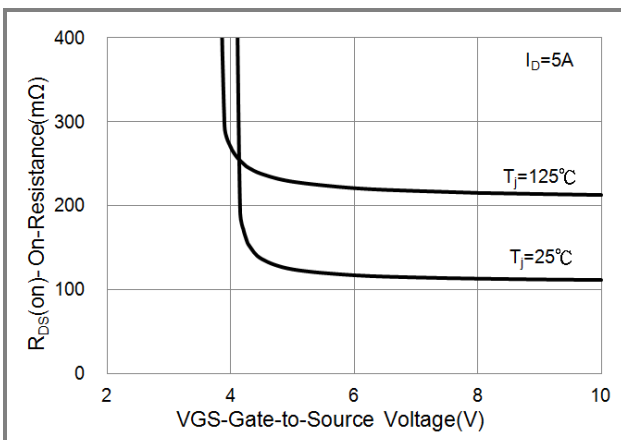


Fig.5 On-Resistance Variation with VGS.

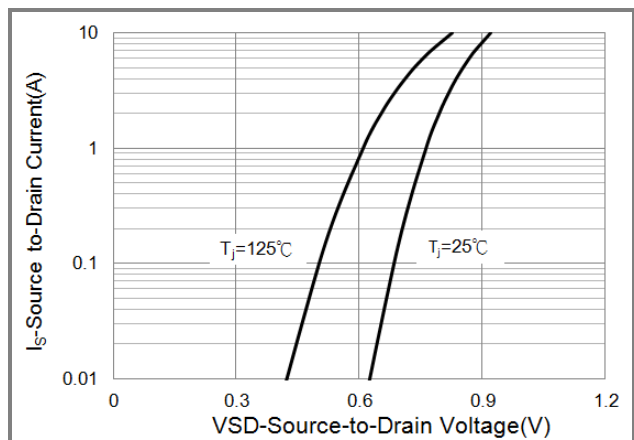


Fig.6 Body Diode Characteristics



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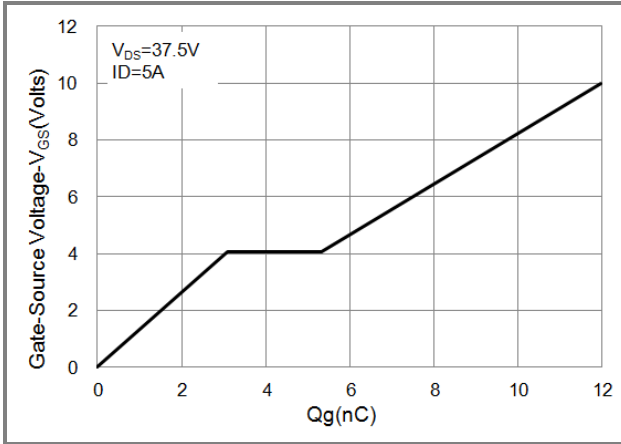


Fig.7 Gate-Charge Characteristics

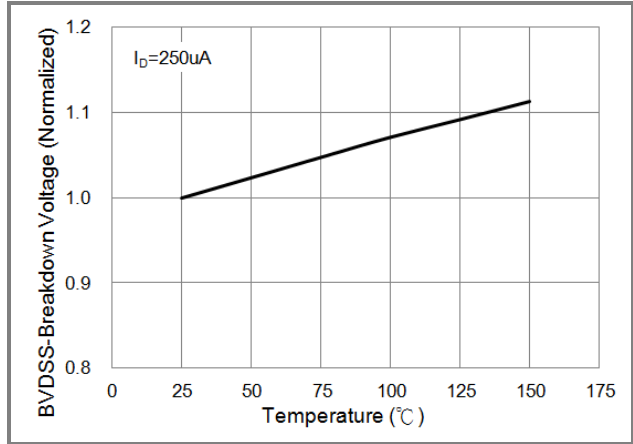


Fig.8 Breakdown Voltage Variation vs. Temperature

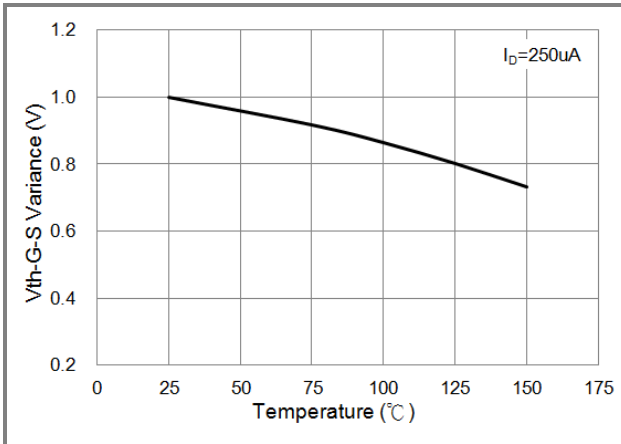


Fig.9 Threshold Voltage Variation with Temperature.

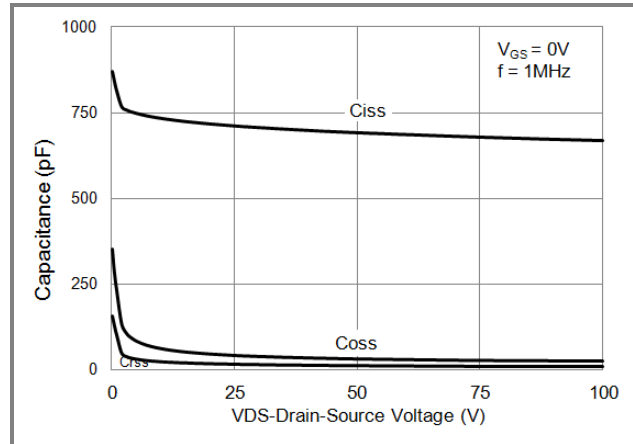


Fig.10 Capacitance vs. Drain-Source Voltage.

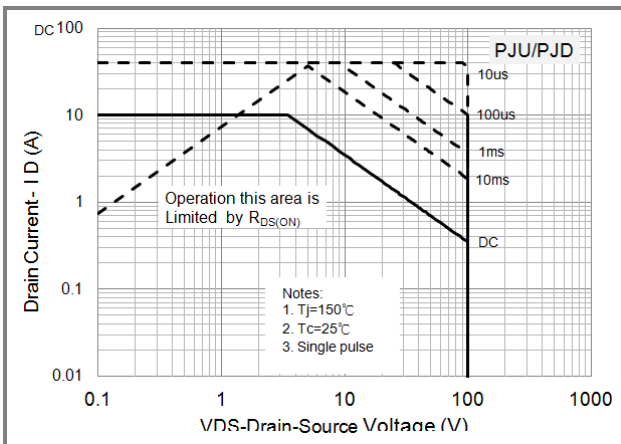


Fig.11 Maximum Safe Operating Area



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TYPICAL CHARACTERISTIC CURVES

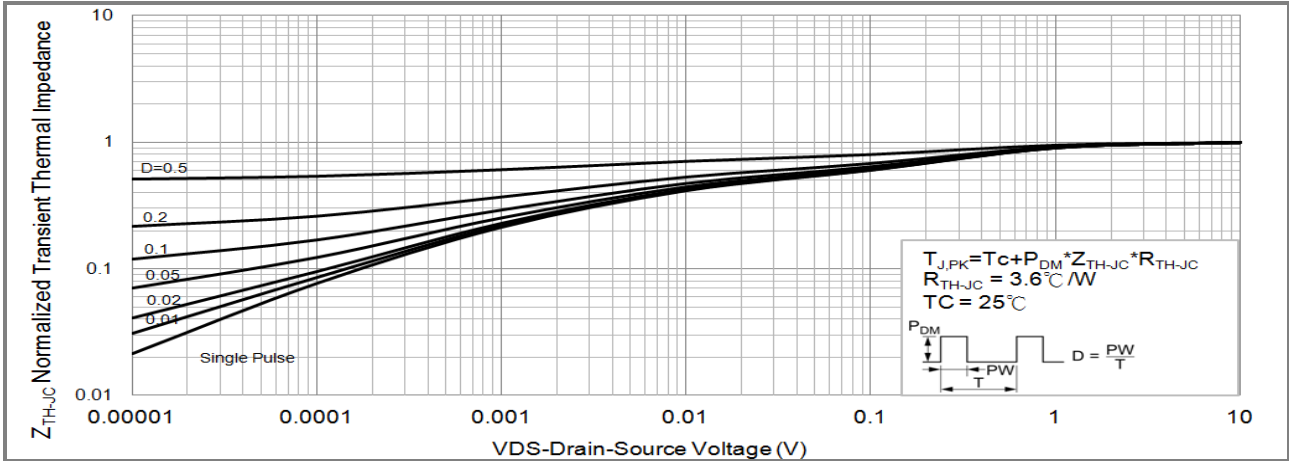
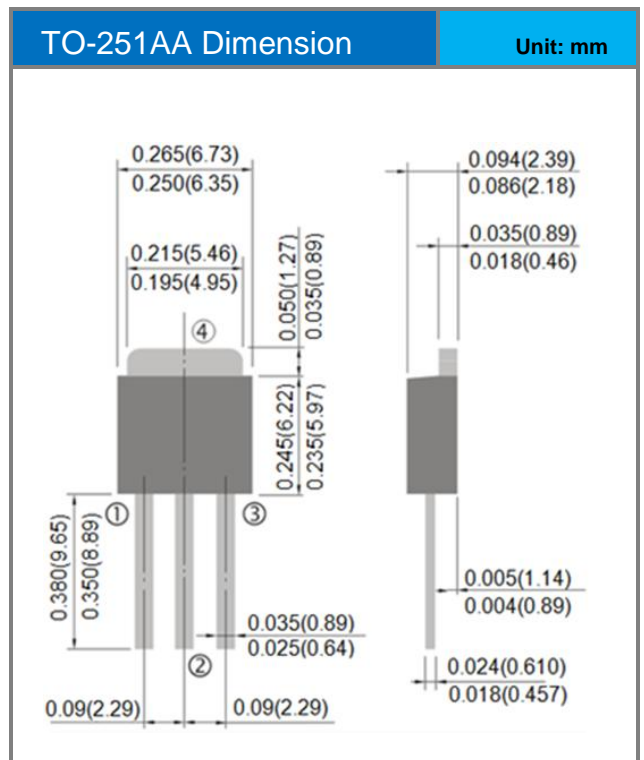
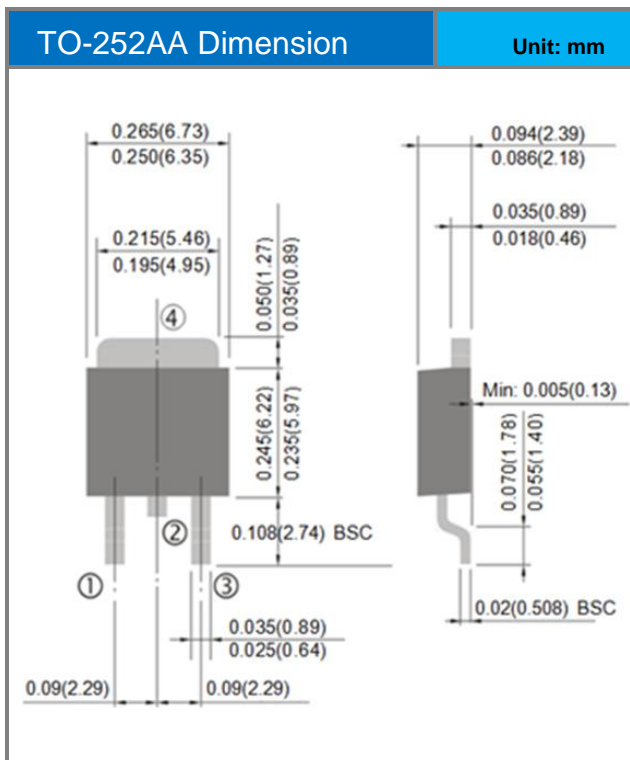
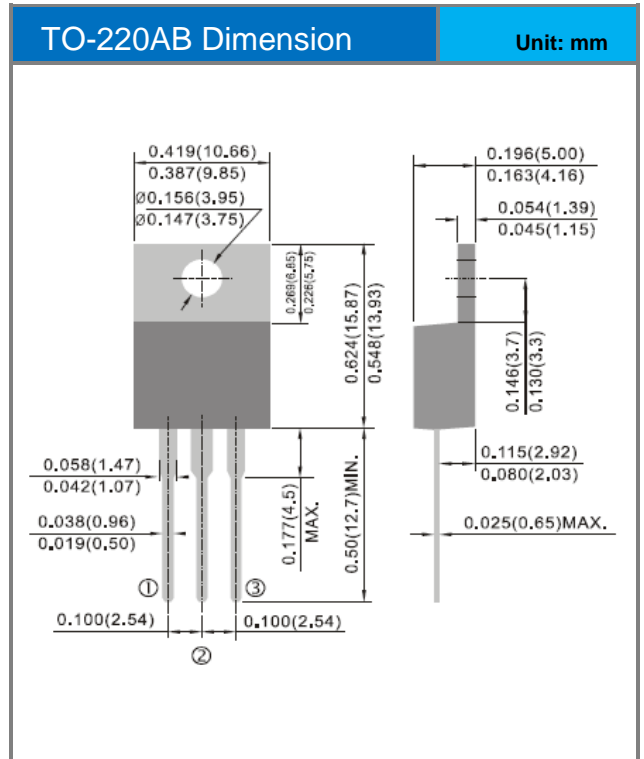
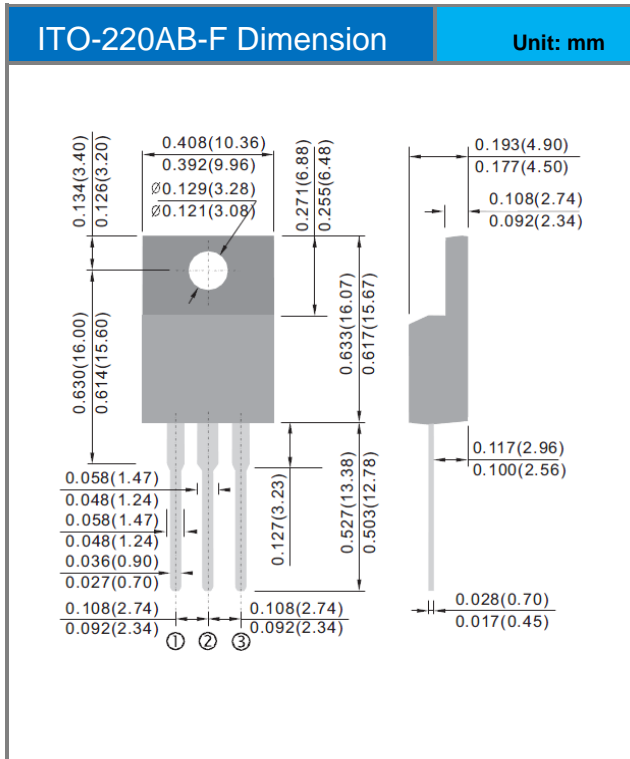


Fig.12 Normalized Thermal Transient Impedance



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**Packaging Information**



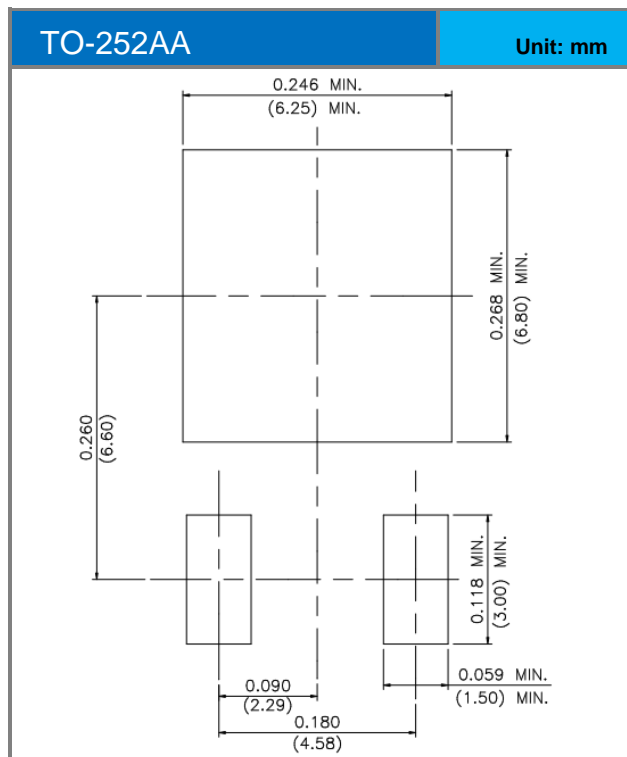


**PJU10N10 / PJD10N10 / PJP10N10 / PJF10N10**

**PART NO PACKING CODE VERSION**

Part No Packing Code	Package Type	Packing type	Marking	Version
PJD10N10_L2_00001	TO-252AA	3,000pcs / 13" reel	D10N10	Halogen free
PJU10N10_T0_00001	TO-251AA	3,000pcs / 13" reel	U10N10	Halogen free
PJP10N10_L2_00001	TO-220AB	50pcs / Tube	P10N10	Halogen free
PJF10N10_T0_00001	ITO-220AB-F	50pcs / Tube	F10N10	Halogen free

**MOUNTING PAD LAYOUT**





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