

PJW1NA80 / PJU1NA80 / PJD1NA80 / PJP1NA80

800V N-Channel MOSFET

Voltage

800 V

Current

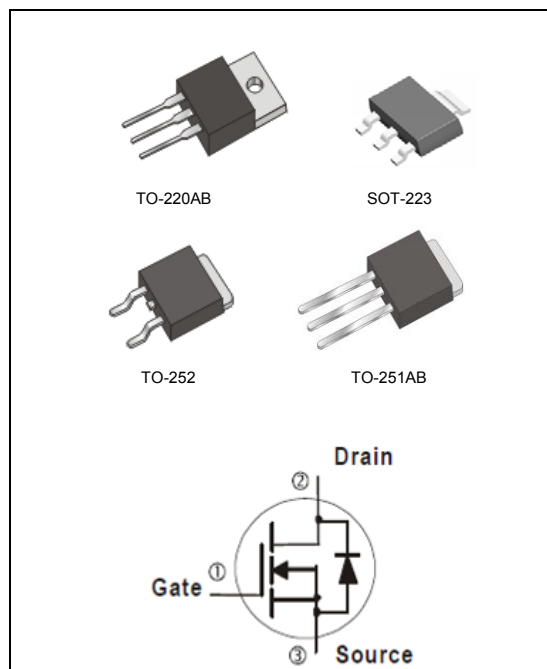
1 A

Features

- $R_{DS(ON)}$, $V_{GS}@10V$, $I_D@0.5A < 16\Omega$
- 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-251AB , TO-220AB, SOT-223, TO-252 Package
- Terminals : Solderable per MIL-STD-750, Method 2026
- TO-251AB Approx. Weight : 0.0104 ounces, 0.297grams
- TO-220AB Approx. Weight : 0.067 ounces, 1.89 grams
- SOT-223 Approx. Weight : 0.043 ounces, 0.123grams
- TO-252 Approx. Weight : 0.0104 ounces, 0.297grams



Maximum Ratings and Thermal Characteristics ($T_A=25^\circ\text{C}$ unless otherwise noted)

PARAMETER		SYMBOL	TO-251AB	TO-220AB	TO-252	SOT-223	UNITS
Drain-Source Voltage		V_{DS}	800				V
Gate-Source Voltage		V_{GS}	+30				V
Continuous Drain Current		I_D	1			0.3	A
Pulsed Drain Current		I_{DM}	4			1.2	A
Single Pulse Avalanche Energy ^(Note 1)		E_{AS}	23				mJ
Power Dissipation	$T_C=25^\circ\text{C}$	P_D	34	45	34	3.3	W
	Derate above 25°C		0.27	0.36	0.27	0.026	W/ $^\circ\text{C}$
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55~150				$^\circ\text{C}$
Typical Thermal resistance							
- Junction to Case		$R_{\theta JC}$	3.68	2.78	3.68	-	$^\circ\text{C/W}$
- Junction to Ambient		$R_{\theta JA}$	110	62.5	110	37.9 ^(Note 4)	

- Limited only By Maximum Junction Temperature



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Electrical Characteristics ($T_A=25^{\circ}\text{C}$ unless otherwise noted)

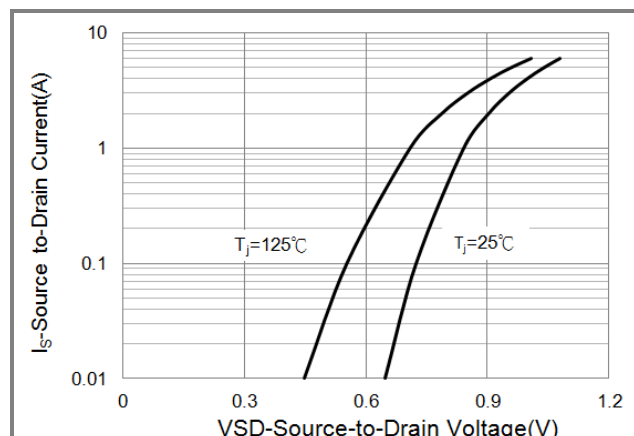
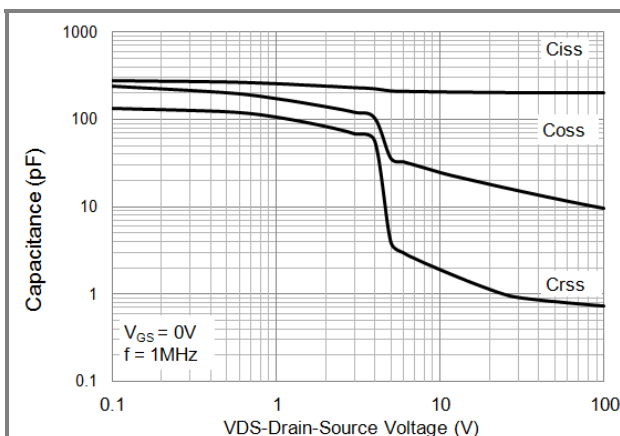
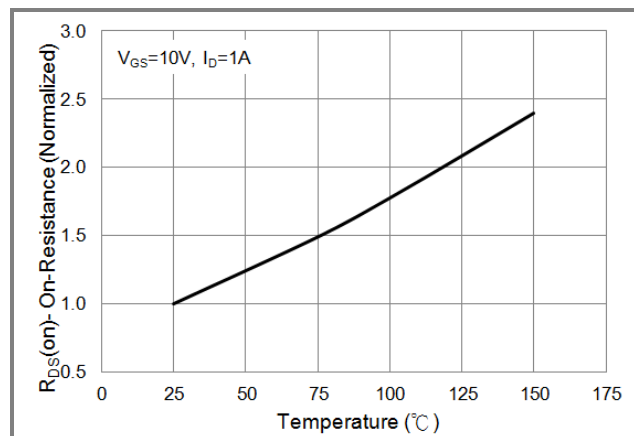
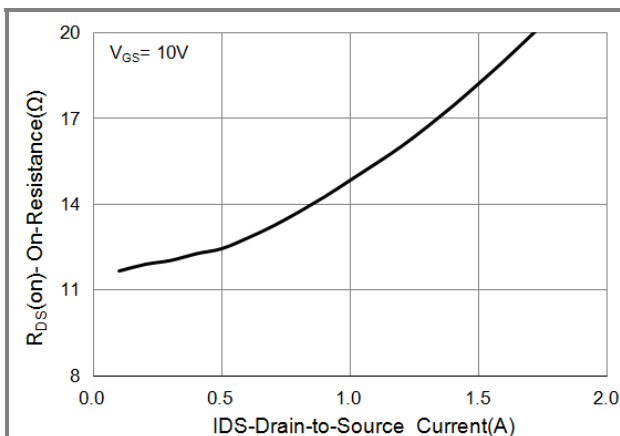
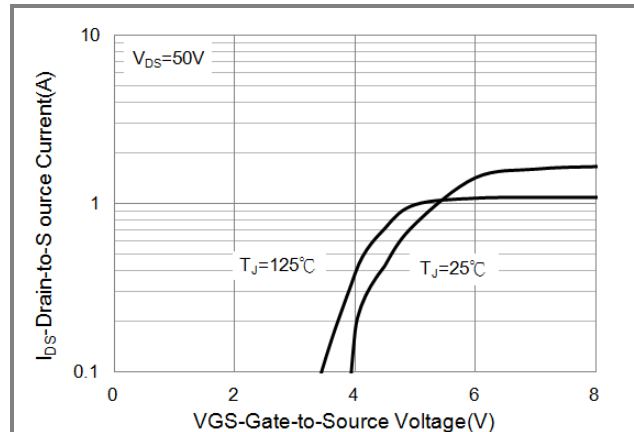
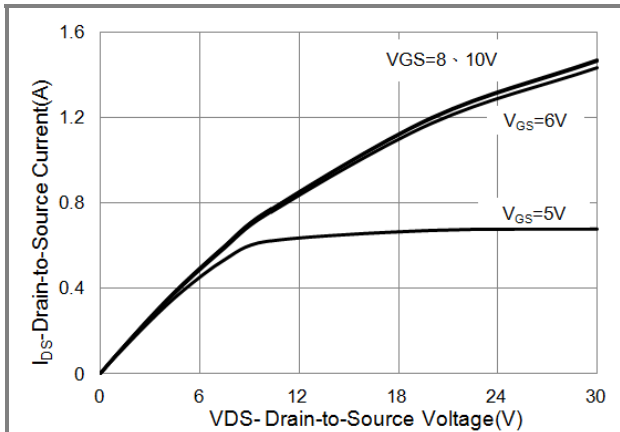
PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNITS
Static						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250uA	800	-	-	V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250uA	3.1	3.5	4.4	V
Drain-Source On-State Resistance	R _{DS(on)}	V _{GS} =10V, I _D =0.5A	-	12.5	16	Ω
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =800V, 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 =1A, V _{GS} =0V	-	-	1.4	V
Dynamic (Note 5)						
Total Gate Charge	Q _g	V _{DS} =640V, I _D =1A, V _{GS} =10V (Note 2,3)	-	6	-	nC
Gate-Source Charge	Q _{gs}		-	1.3	-	
Gate-Drain Charge	Q _{gd}		-	2.6	-	
Input Capacitance	C _{iss}	V _{DS} =25V, V _{GS} =0V, f=1.0MHZ	-	203	-	pF
Output Capacitance	C _{oss}		-	17	-	
Reverse Transfer Capacitance	C _{rss}		-	1	-	
Turn-On Delay Time	td _(on)	V _{DD} =400V, I _D =1A, R _G =25Ω (Note 2,3)	-	8	-	ns
Turn-On Rise Time	t _r		-	15	-	
Turn-Off Delay Time	td _(off)		-	13	-	
Turn-Off Fall Time	t _f		-	21	-	
Drain-Source Diode						
Maximum Continuous Drain-Source Diode Forward Current	I _S	---	-	-	1	A
Maximum Pulsed Drain-Source Diode Forward Current	I _{SM}	---	-	-	4	A
Reverse Recovery Time	trr	V _{GS} =0V, I _S =1A	-	160	-	ns
Reverse Recovery Charge	Qrr	dl _F / dt=100A/us (Note 2)	-	0.3	-	uC

NOTES :

1. $L=30\text{mH}, I_{AS}=1.17A, V_{DD}=110V, R_G=25\Omega$, Starting $T_J=25^{\circ}\text{C}$
2. Pulse width $\leq 300\mu s$, Duty cycle $\leq 2\%$
3. Essentially independent of operating temperature typical characteristics.
4. $R_{\theta JA}$ 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 FR-4 with 2oz. square pad of copper.
5. Guaranteed by design, not subject to production testing

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TYPICAL CHARACTERISTIC CURVES



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TYPICAL CHARACTERISTIC CURVES

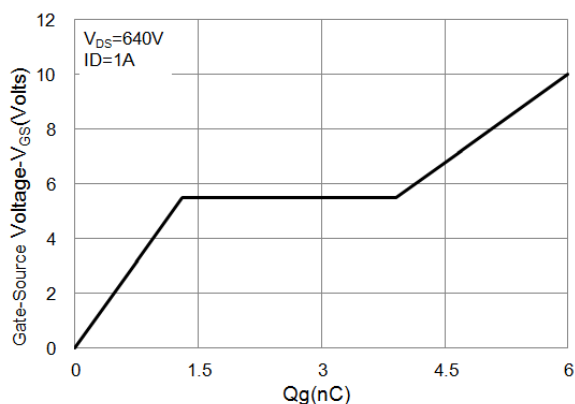


Fig.7 Gate Charge

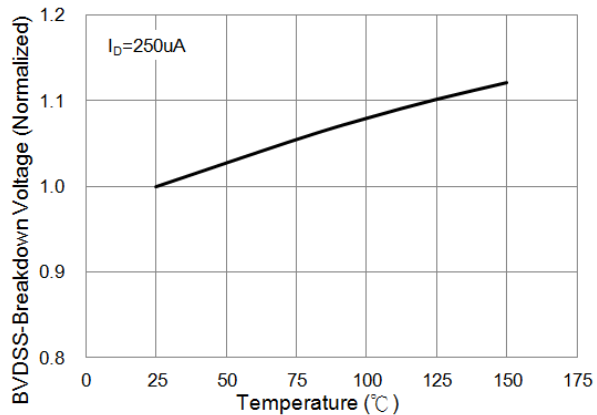


Fig.8 BV_{DS} vs. Junction Temperature

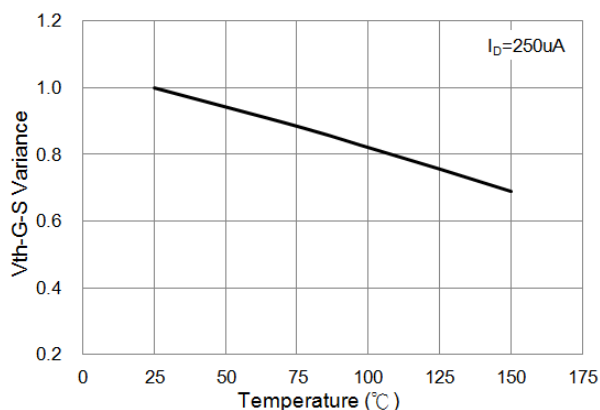


Fig.9 Threshold Voltage Variation with Temperature

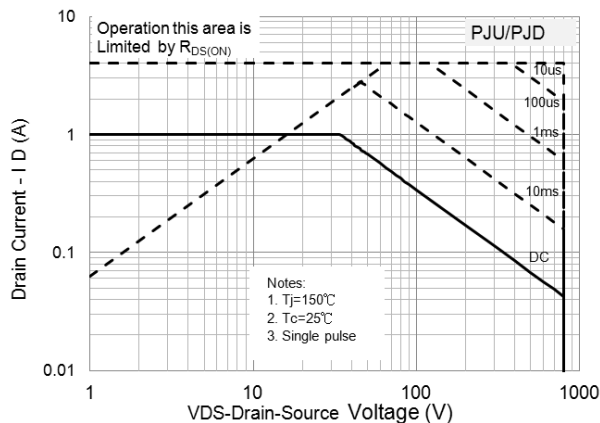


Fig.10 Maximum Safe Operating Area

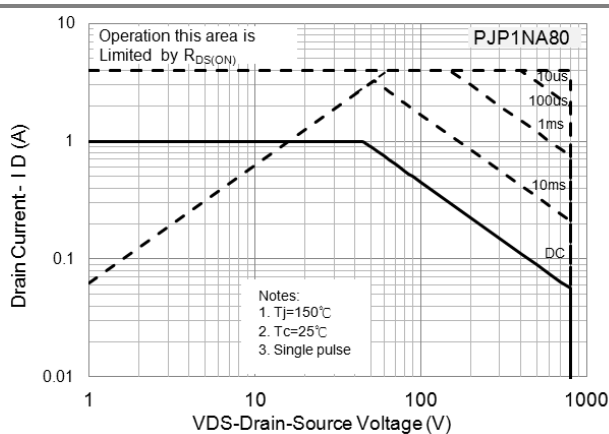


Fig.11 Maximum Safe Operating Area

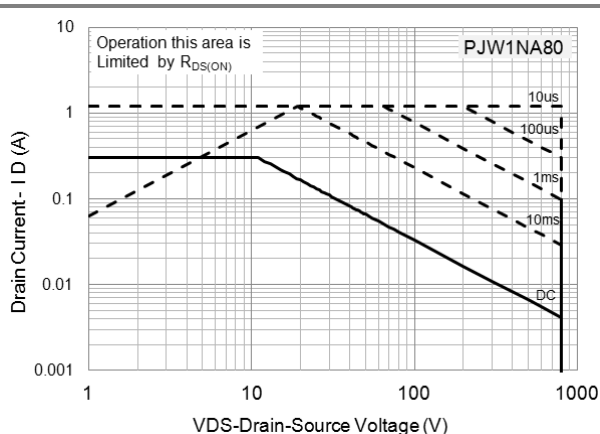


Fig.12 Maximum Safe Operating Area

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TYPICAL CHARACTERISTIC CURVES

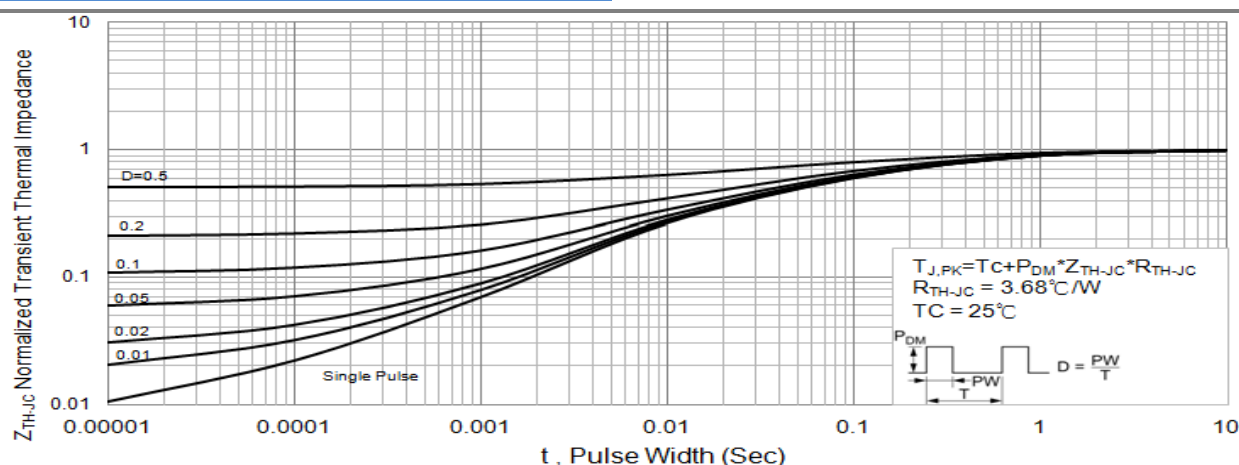


Fig.13 PJU/PJD Normalized Transient Thermal Impedance vs. Pulse Width

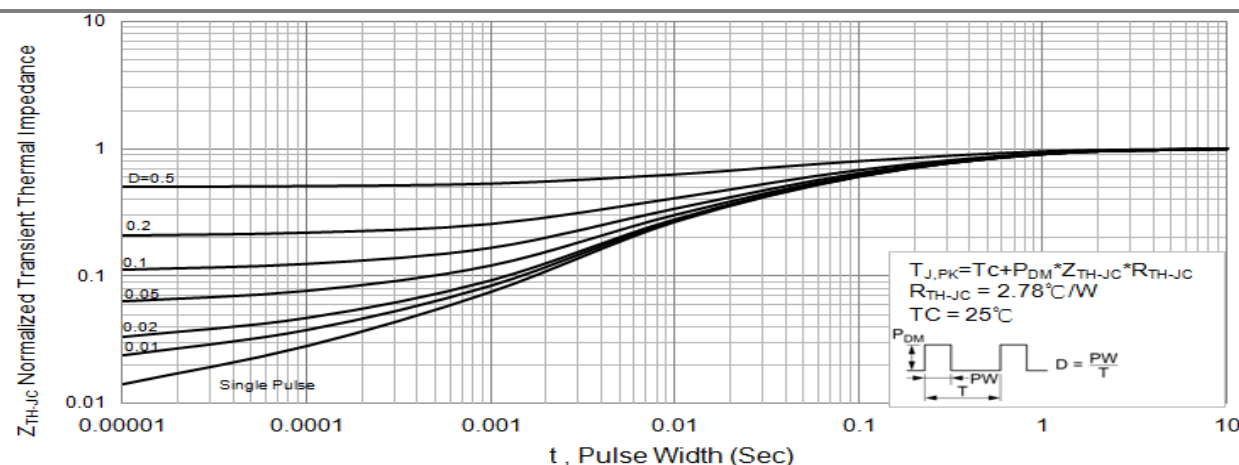


Fig.14 PJP1NA80 Normalized Transient Thermal Impedance vs. Pulse Width

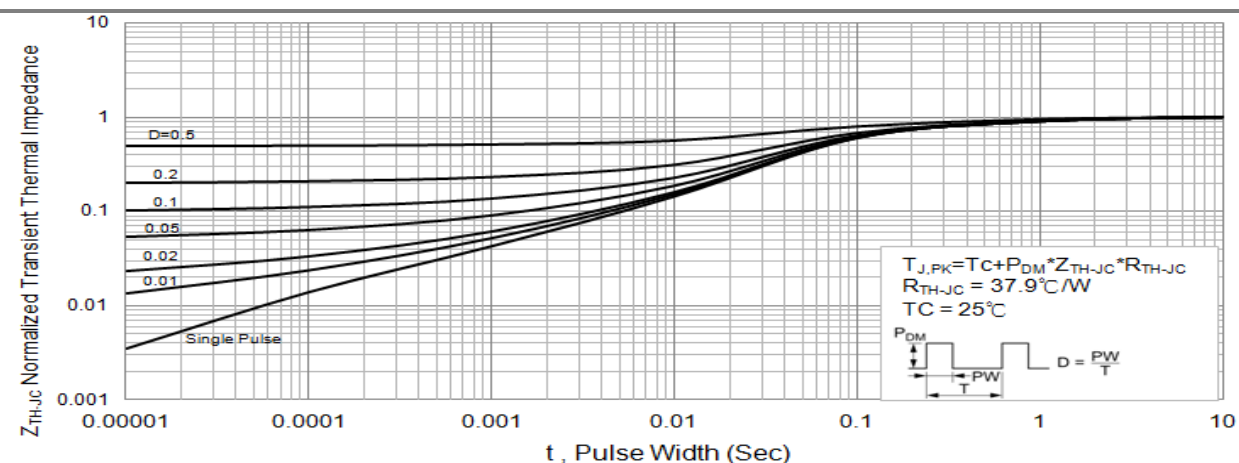


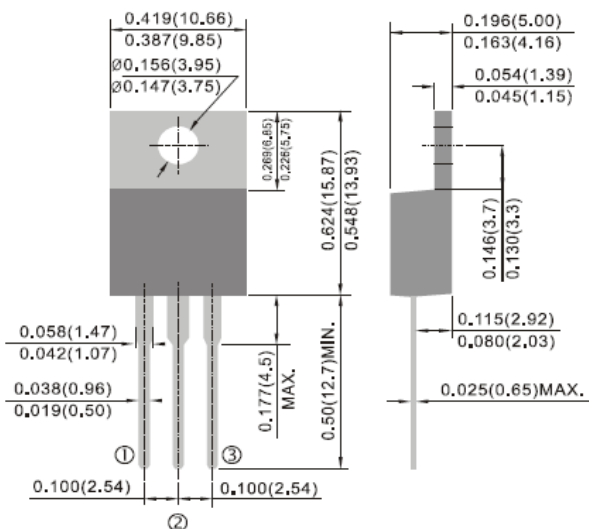
Fig.15 PJW1NA80 Normalized Transient Thermal Impedance vs. Pulse Width

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Packaging Information

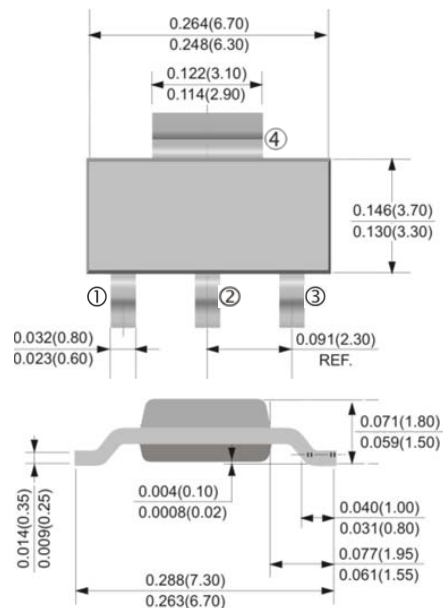
TO-220AB Dimension

Unit: mm



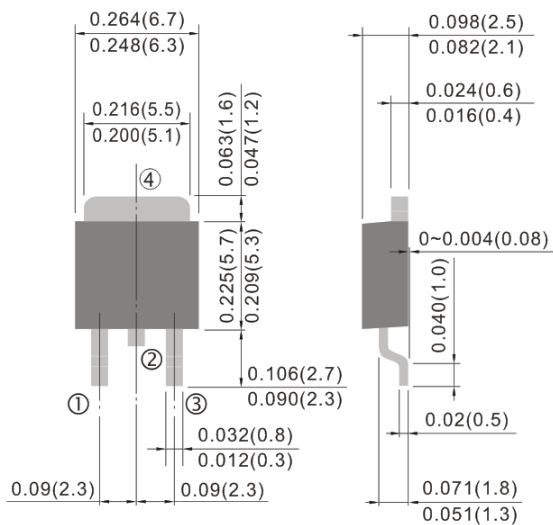
SOT-223 Dimension

Unit: mm



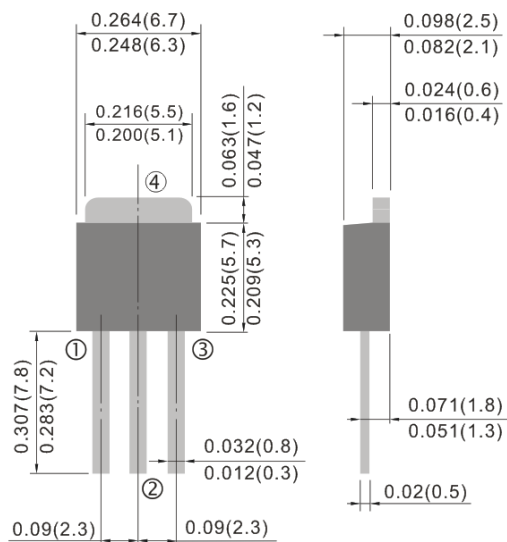
TO-252 Dimension

Unit: mm



TO-251AB Dimension

Unit: mm





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PART NO PACKING CODE VERSION

Part No Packing Code	Package Type	Packing type	Marking	Version
PJU1NA80_T0_00001	TO-251AB	80pcs / Tube	U1NA80	Halogen free
PJD1NA80_L2_00001	TO-252	3,000pcs / 13" reel	D1NA80	Halogen free
PJW1NA80_R2_00001	SOT-223	2,500pcs / 13" reel	1NA80	Halogen free
PJP1NA80_T0_00001	TO-220AB	50pcs / Tube	P1NA80	Halogen free



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