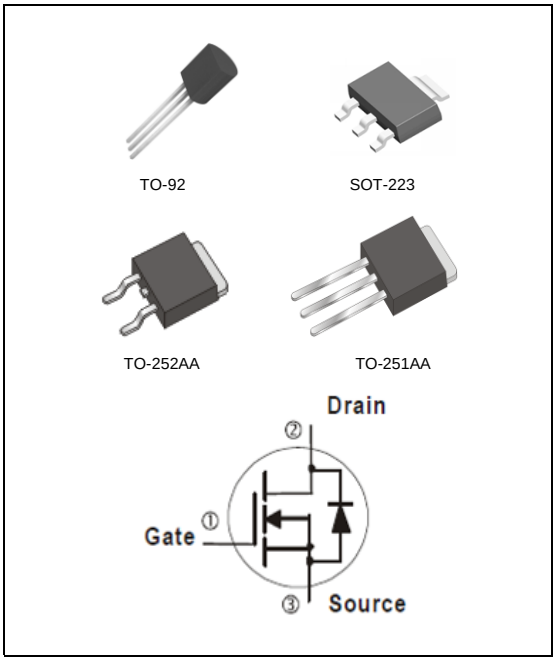
PJN1NA60B / PJW1NA60B / PJU1NA60B / PJD1NA60B

600V N-Channel MOSFET

Voltage	600 V	Current	1 A



Features

- $R_{DS(ON)}$, V_{GS}@10V,I_D@0.5A<10Ω
- 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, SOT-223, TO-92 Package
- 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-252AA	SOT-223	TO-92	UNITS
Drain-Source Voltage		V_{DS}	600				V
Gate-Source Voltage		V_{GS}	±30				V
Continuous Drain Current		I_D	1		0.4		A
Pulsed Drain Current(Note 1)		I_{DM}	4		1.6		A
Single Pulse Avalanche Energy		E_{AS}	48.6				mJ
Power Dissipation	T_C=25°C	P_D	28		3.3	3	W
	Derate above 25°C		0.22		0.026	0.024	W/°C
Operating Junction and Storage Temperature Range		T_J,T_{STG}	-55~150				°C
Typical Thermal Resistance							
- Junction to Case		$R_{\theta JC}$	4.46		-	-	°C/W
- Junction to Ambient (Note 4)		$R_{\theta JA}$	110		38	140	

- Limited only By Maximum Junction Temperature

PJN1NA60B / PJW1NA60B / PJU1NA60B / PJD1NA60B

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	600	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=250uA	1.5	2.5	3.5	V
Drain-Source On-State Resistance	$R_{DS(on)}$	V_{GS}=10V,I_D=0.5A	-	8.1	10	Ω
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=600V,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	-	0.86	1.5	V
Dynamic (Note 5)						
Total Gate Charge	Q_g	V_{DS}=480V, I_D=1A, V_{GS}=10V (Note 2,3)	-	6.1	-	nC
Gate-Source Charge	Q_{gs}		-	1.2	-	
Gate-Drain Charge	Q_{gd}		-	2.4	-	
Input Capacitance	Ciss	V_{DS}=25V, V_{GS}=0V, f=1.0MHZ	-	210	-	pF
Output Capacitance	Coss		-	19	-	
Reverse Transfer Capacitance	Crss		-	18	-	
Turn-On Delay Time	$td_{(on)}$	V_{DD}=300V, I_D=1A, R_G=25Ω (Note 2,3)	-	5.9	-	ns
Turn-On Rise Time	t_r		-	7.3	-	
Turn-Off Delay Time	$td_{(off)}$		-	17	-	
Turn-Off Fall Time	t_f		-	25	-	
Drain-Source Diode						
Maximum Continuous Drain-Source Diode Forward Current	I_S	---	-	0.85	1	A
Maximum Pulsed Drain-Source Diode Forward Current	I_{SM}	---	-	-	4	A
Reverse Recovery Time	trr	V_{GS}=0V, I_S=1A	-	168	-	ns
Reverse Recovery Charge	Qrr	dI_F/ dt=100A/us (Note 2)	-	0.51	-	uC

NOTES :

1. Pulse width≤300us, Duty cycle≤2%
2. L=30mH, I_{AS}=1.8A, V_{DD}=50V, R_G=25 ohm, Starting T_J=25°C
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

PJN1NA60B / PJW1NA60B / PJU1NA60B / PJD1NA60B

TYPICAL CHARACTERISTIC CURVES

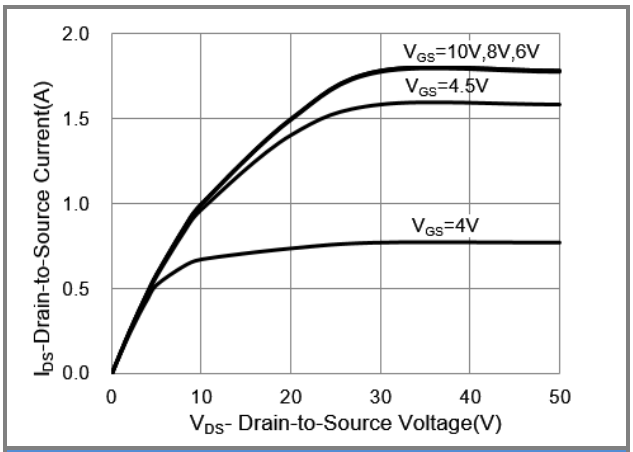


Fig.1 Output Characteristics

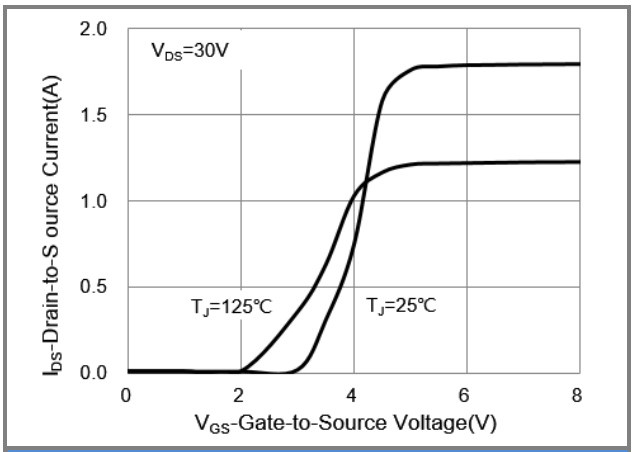


Fig.2 Transfer Characteristics

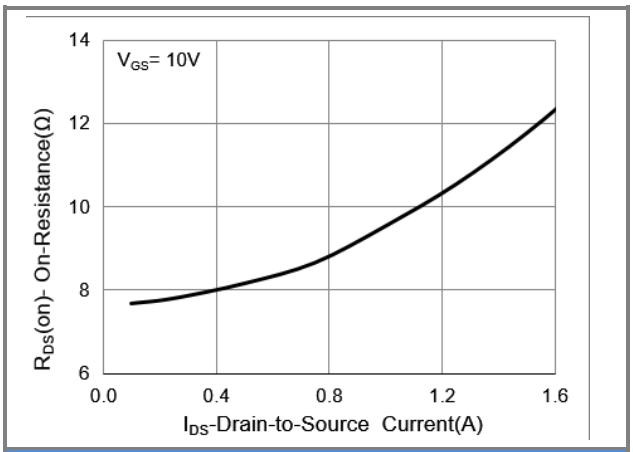


Fig.3 On-Resistance vs. Drain Current

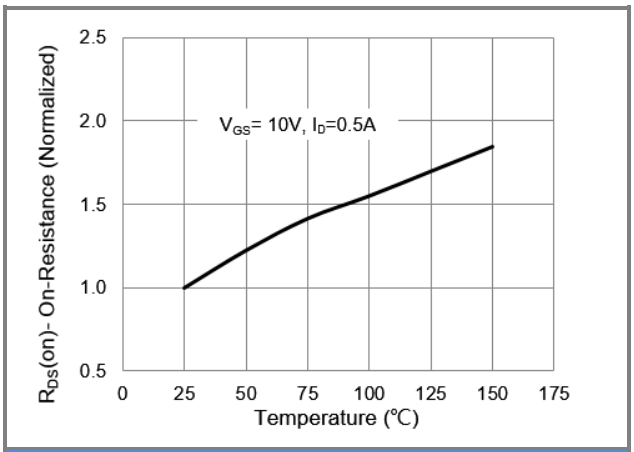


Fig.4 On-Resistance vs. Junction Temperature

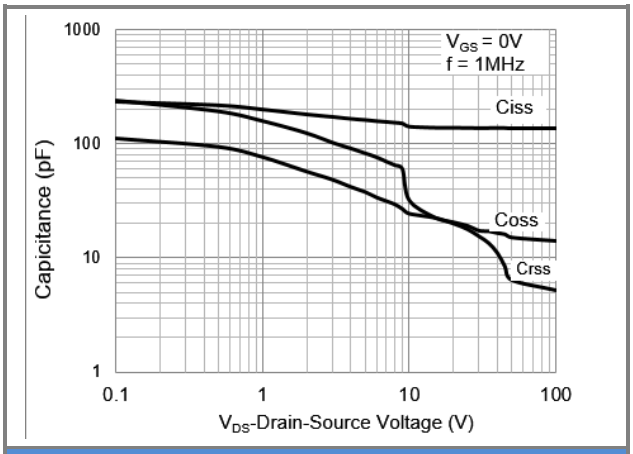


Fig.5 Capacitance vs. Drain-Source Voltage

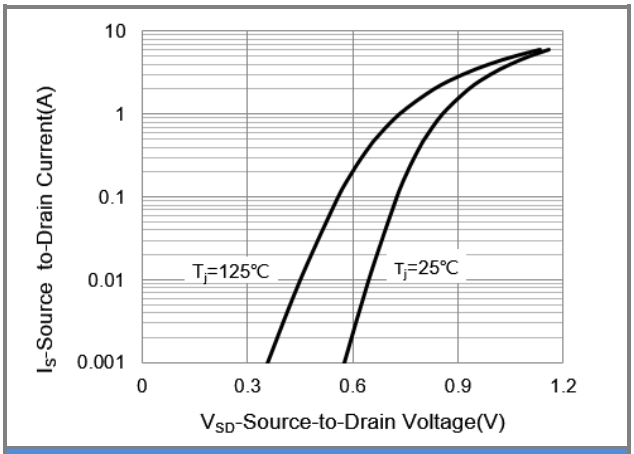


Fig.6 Source-Drain Diode Forward Voltage

PJN1NA60B / PJW1NA60B / PJU1NA60B / PJD1NA60B

TYPICAL CHARACTERISTIC CURVES

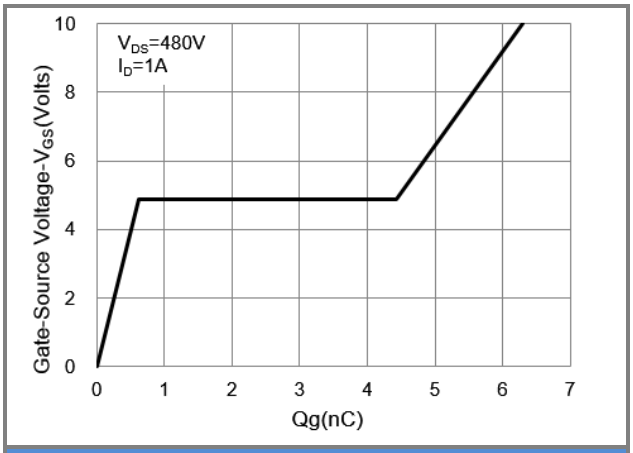


Fig.7 Gate Charge

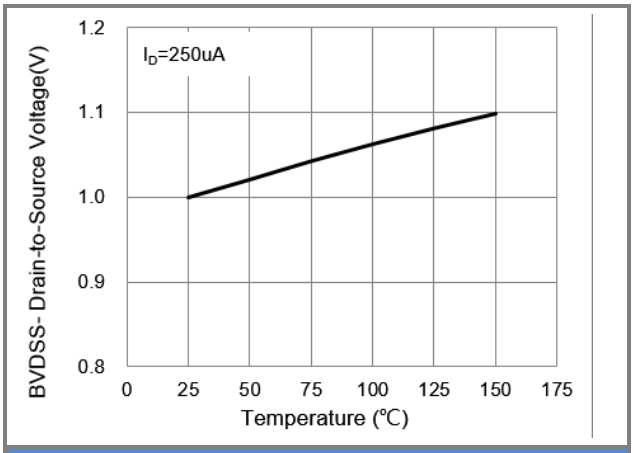


Fig.8 BV_{DSS} vs. Junction Temperature

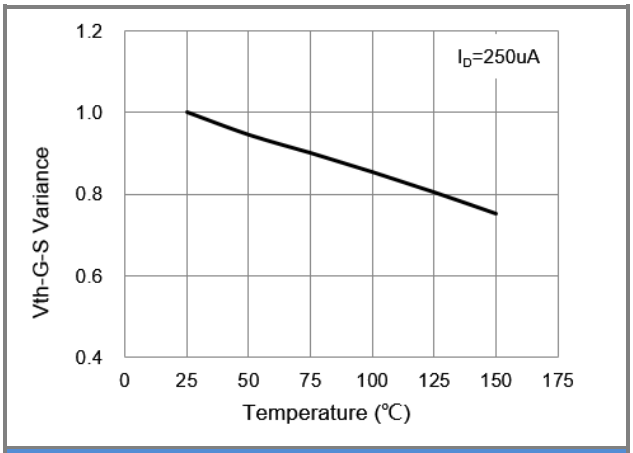


Fig.9 Threshold Voltage Variation with Temperature

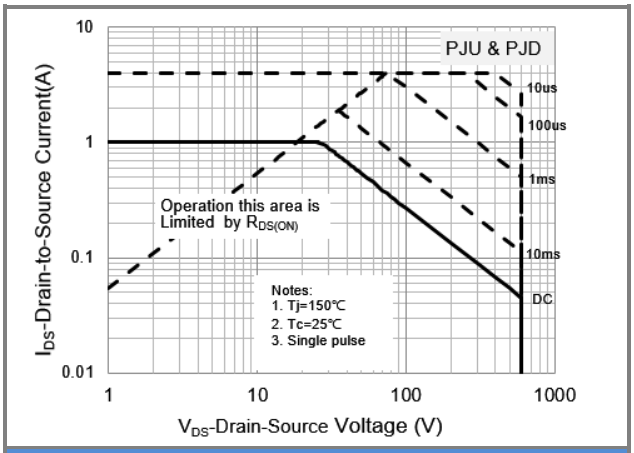


Fig.10 Maximum Safe Operating Area

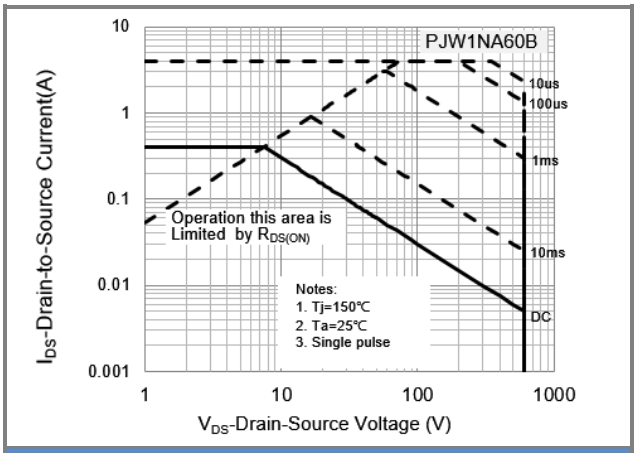


Fig.11 Maximum Safe Operating Area

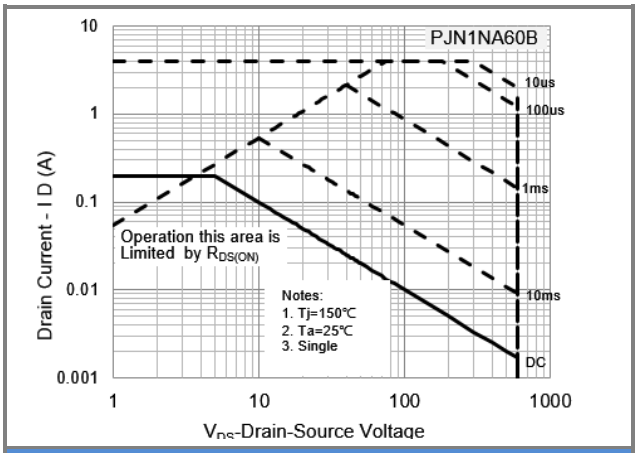


Fig.12 Maximum Safe Operating Area

PJN1NA60B / PJW1NA60B / PJU1NA60B / PJD1NA60B

TYPICAL CHARACTERISTIC CURVES

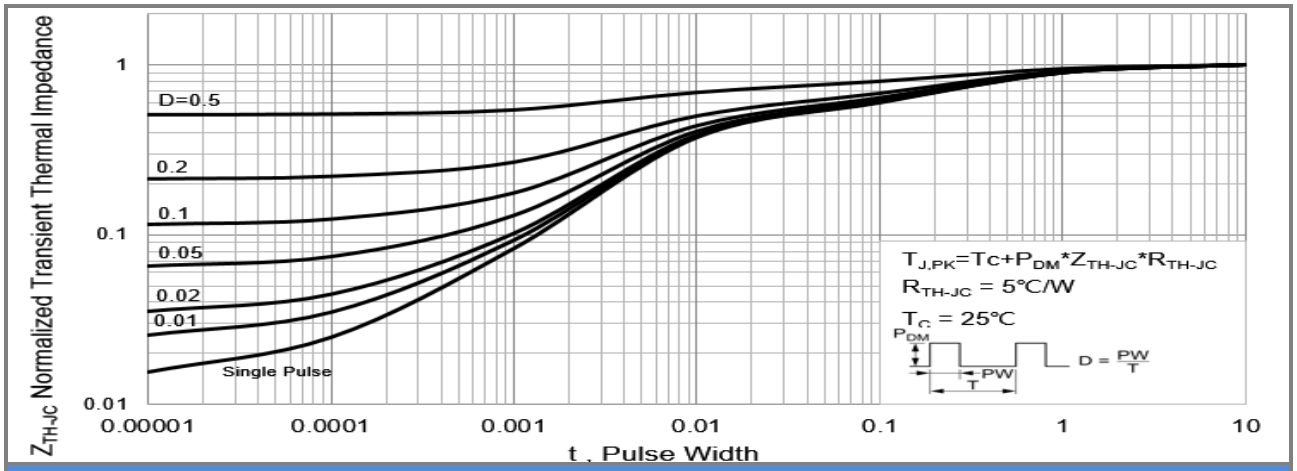


Fig.13 PJU/PJD Normalized Transient Thermal Impedance vs. Pulse Width

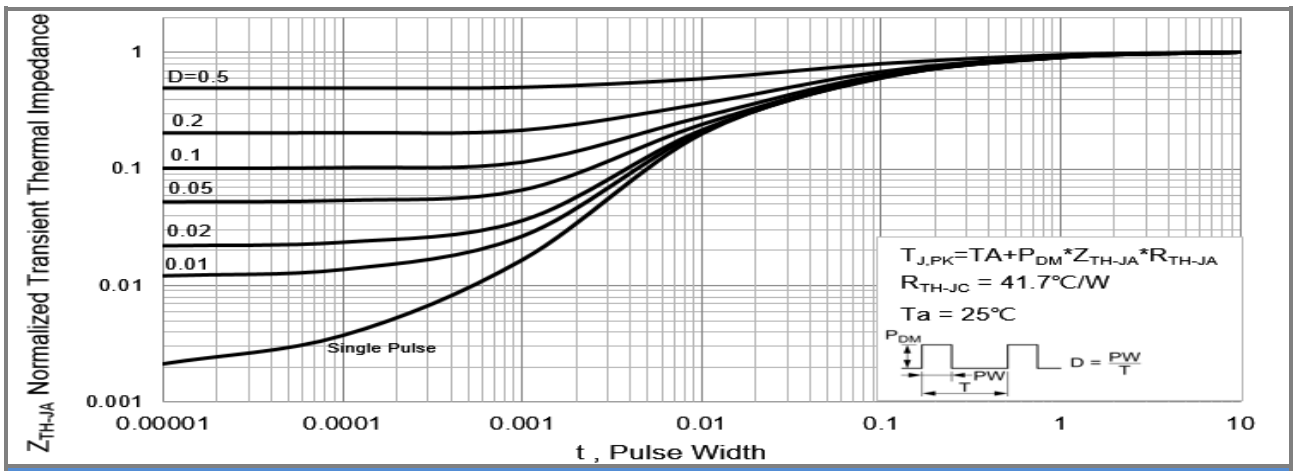


Fig.14 PJW1NA60H Normalized Transient Thermal Impedance vs. Pulse Width

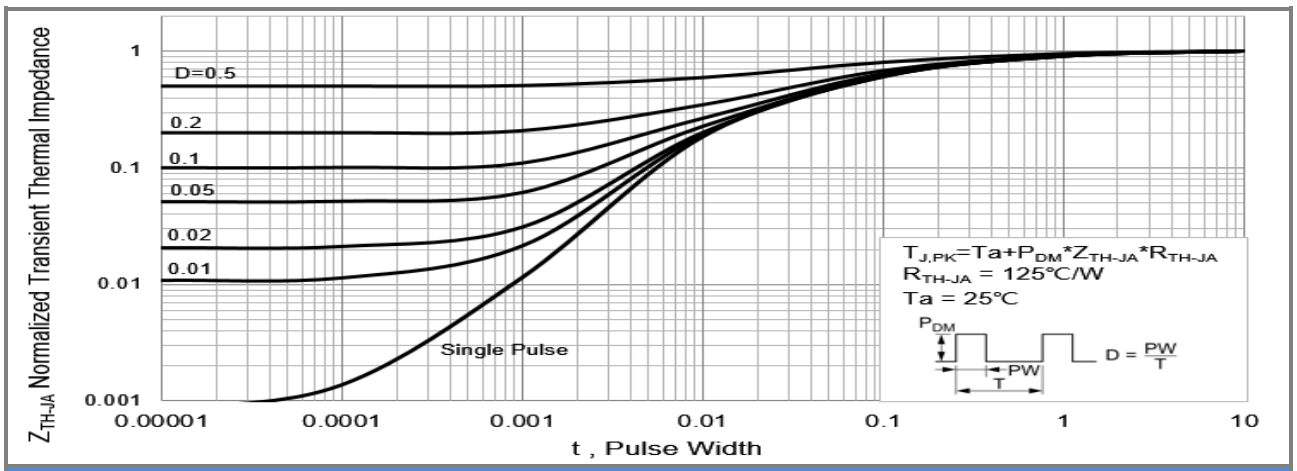


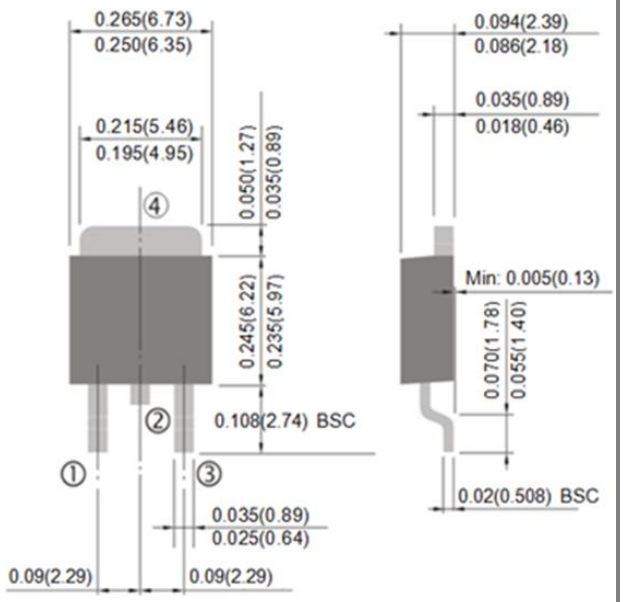
Fig.15 PJN1NA60H Normalized Transient Thermal Impedance vs. Pulse Width

PJN1NA60B / PJW1NA60B / PJU1NA60B / PJD1NA60B

Packaging Information .

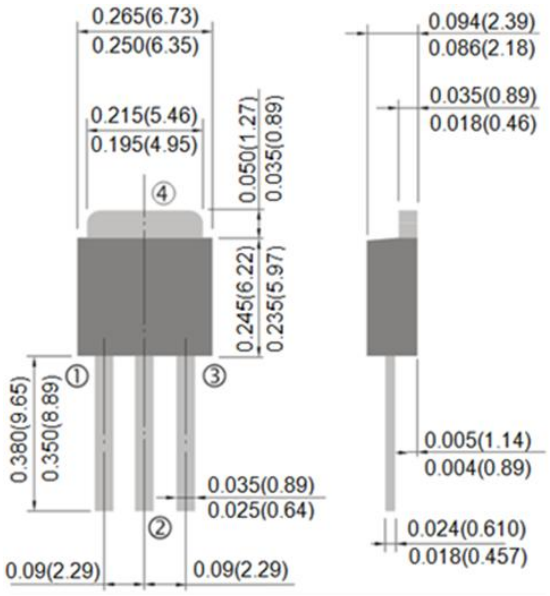
TO-252AA Dimension

Unit: mm



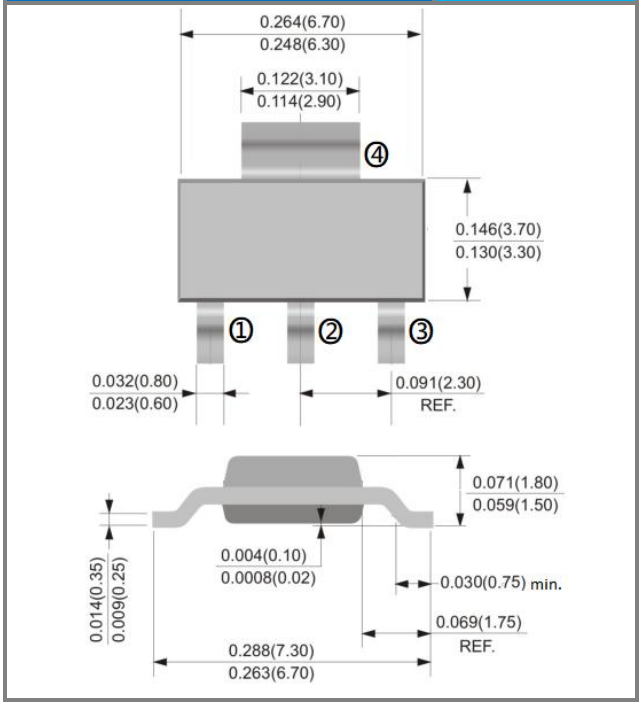
TO-251AA Dimension

Unit: mm



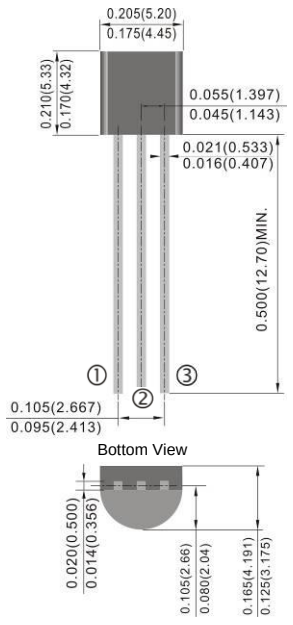
SOT-223 Dimension

Unit: mm



TO-92 Dimension

Unit: mm



PJN1NA60B / PJW1NA60B / PJU1NA60B / PJD1NA60B

PART NO PACKING CODE VERSION

Part No Packing Code	Package Type	Packing Type	Marking	Version
PJU1NA60B_T0_00001	TO-251AA	80pcs / Tube	U1NA60B	Halogen free
PJD1NA60B_L2_00001	TO-252AA	3,000pcs / 13” reel	D1NA60B	Halogen free
PJW1NA60B_R2_00001	SOT-223	2,500pcs / 13” reel	1NA60B	Halogen free
PJN1NA60B_B0_00001	TO-92	1000pcs / bag	1NA60B	Halogen free
PJN1NA60B_A0_00001	TO-92 AMMO	2000pcs / box	1NA60B	Halogen free

PJN1NA60B / PJW1NA60B / PJU1NA60B / PJD1NA60B

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