



PJU35N06A / PJD35N06A / PJP35N06A

60V N-Channel Enhancement Mode MOSFET

Voltage

60 V

Current

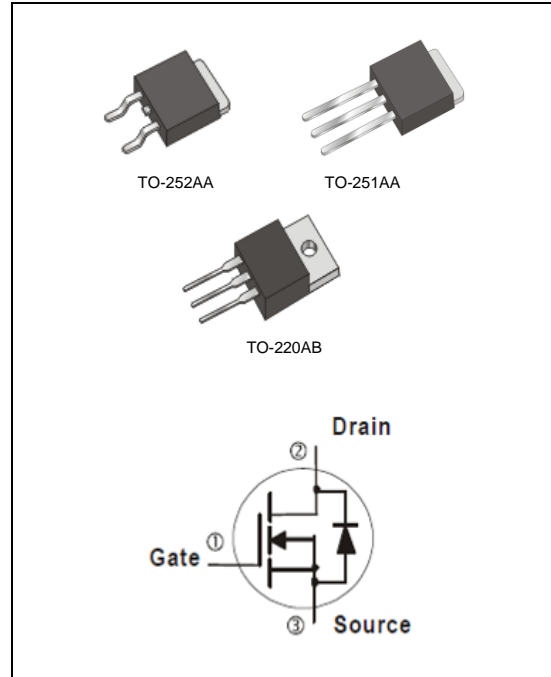
35 A

Features

- $R_{DS(ON)}$, $V_{GS}@10V$, $I_D@20A < 21m\Omega$
- $R_{DS(ON)}$, $V_{GS}@4.5V$, $I_D@12A < 24m\Omega$
- High switching speed
- Improved dv/dt capability
- 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 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, 2 grams



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

PARAMETER		SYMBOL	TO-251AA	TO-220AB	TO-252AA	UNITS
Drain-Source Voltage		V_{DS}	60			V
Gate-Source Voltage		V_{GS}	± 20			
Continuous Drain Current	$T_C=25^\circ C$	I_D	35			A
	$T_C=100^\circ C$		22			
Pulsed Drain Current (Note 1)		I_{DM}	140			
Power Dissipation	$T_C=25^\circ C$	P_D	63	104	63	W
	$T_C=100^\circ C$		25	42	25	
Continuous Drain Current	$T_A=25^\circ C$	I_D	4.7			A
	$T_A=70^\circ C$		3.8			
Power Dissipation		P_D	1.1	2.0	1.1	W
Power Dissipation			$T_A=70^\circ C$	0.7	1.3	
Single Pulse Avalanche Energy (Note 6)		E_{AS}	42			mJ
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55~150			$^\circ C$
Typical Thermal Resistance (Note 4,5)						$^\circ C/W$
- Junction to Case		$R_{\theta JC}$	2	1.2	2	$^\circ C/W$
- Junction to Ambient		$R_{\theta JA}$	110	62	110	

- Limited only By Maximum Junction Temperature



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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	60	-	-	V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250uA	1	1.73	2.5	
Drain-Source On-State Resistance	R _{DS(on)}	V _{GS} =10V, I _D =20A	-	17	21	mΩ
		V _{GS} =4.5V, I _D =12A	-	20	24	
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =60V, V _{GS} =0V	-	-	1	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} =30V, I _D =15A, V _{GS} =10V (Note 1,2)	-	28	-	nC
Gate-Source Charge	Q _{gs}		-	3.5	-	
Gate-Drain Charge	Q _{gd}		-	6.5	-	
Input Capacitance	C _{iss}	V _{DS} =20V, V _{GS} =0V, f=1.0MHZ	-	1680	-	pF
Output Capacitance	C _{oss}		-	115	-	
Reverse Transfer Capacitance	C _{rss}		-	85	-	
Turn-On Delay Time	t _{d(on)}	V _{DD} =30V, I _D =1A, V _{GS} =10V, R _G =6Ω (Note 1,2)	-	7.2	-	ns
Turn-On Rise Time	t _r		-	38	-	
Turn-Off Delay Time	t _{d(off)}		-	34	-	
Turn-Off Fall Time	t _f		-	8.2	-	
Drain-Source Diode						
Maximum Continuous Drain-Source Diode Forward Current	I _S	---	-	-	35	A
Diode Forward Voltage	V _{SD}	I _S =1A, V _{GS} =0V	-	0.67	1	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_{θJA} 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=0.1mH, I_{AS}=29A, V_{DD}=25V, V_{GS}=10V, R_G=25ohm, Starting T_J=25°C
7. Guaranteed by design, not subject to production testing.



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TYPICAL CHARACTERISTIC CURVES

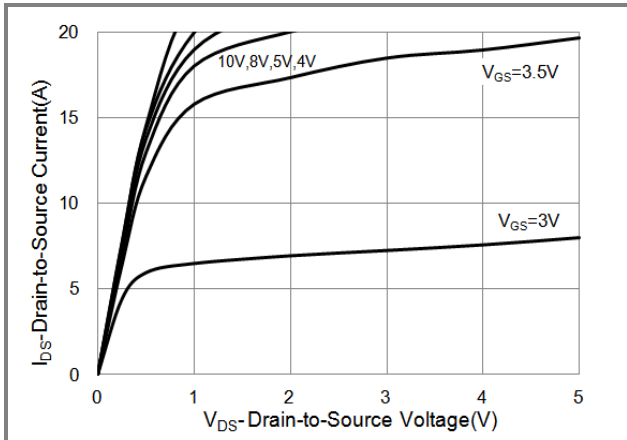


Fig.1 Output Characteristics

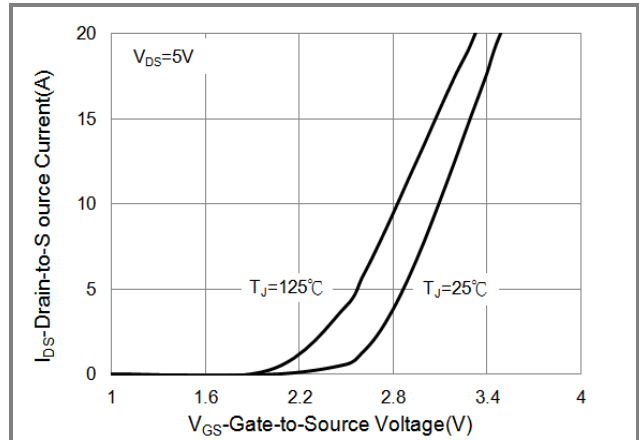


Fig.2 Transfer Characteristics

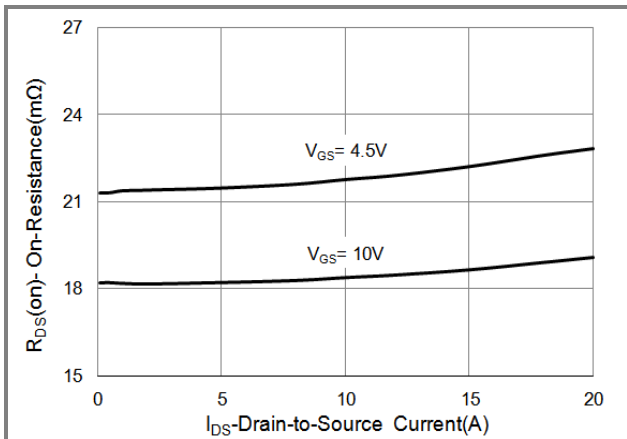


Fig.3 On-Resistance vs. Drain Current

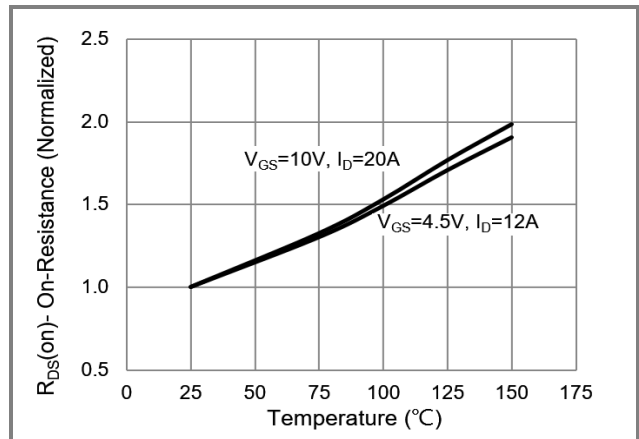


Fig.4 On-Resistance vs. Junction temperature

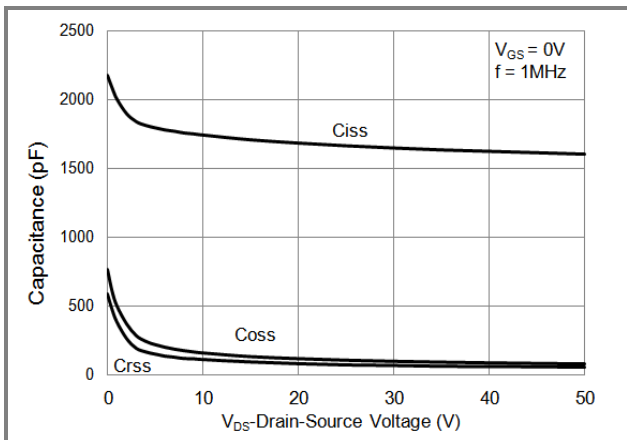


Fig.5 Capacitance vs. Drain-Source Voltage

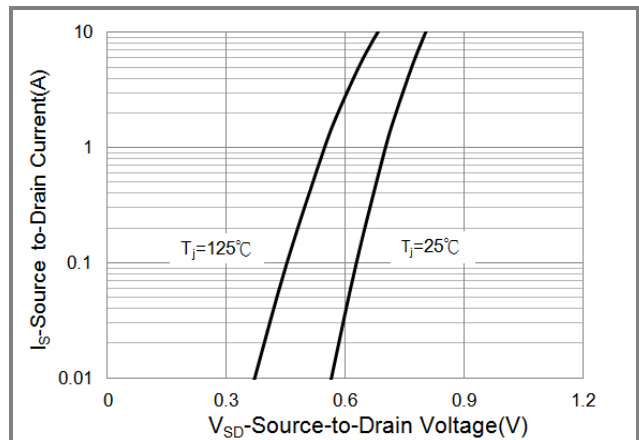


Fig.6 Source-Drain Diode Forward Voltage



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TYPICAL CHARACTERISTIC CURVES

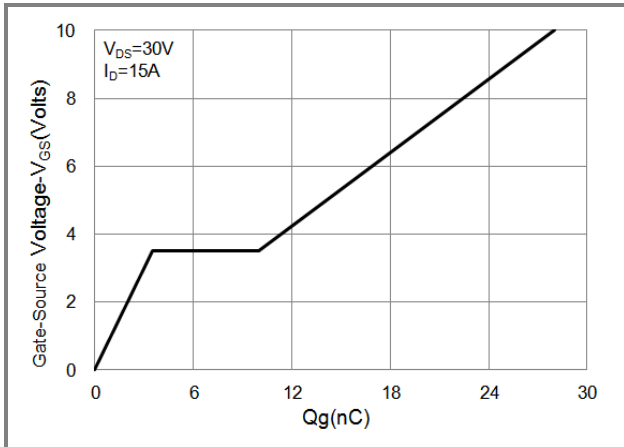


Fig.7 Gate-Charge Characteristics

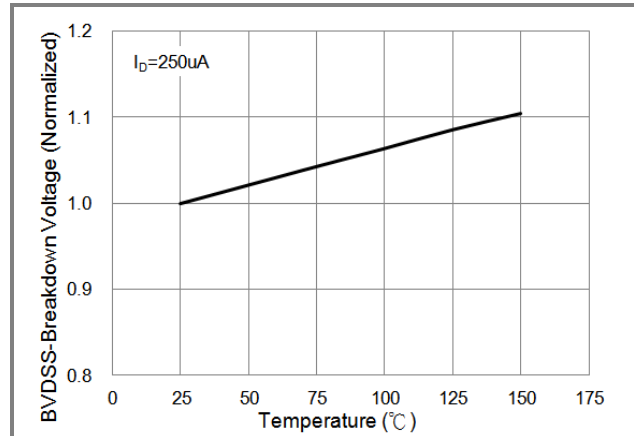


Fig.8 Breakdown Voltage Variation vs. Temperature

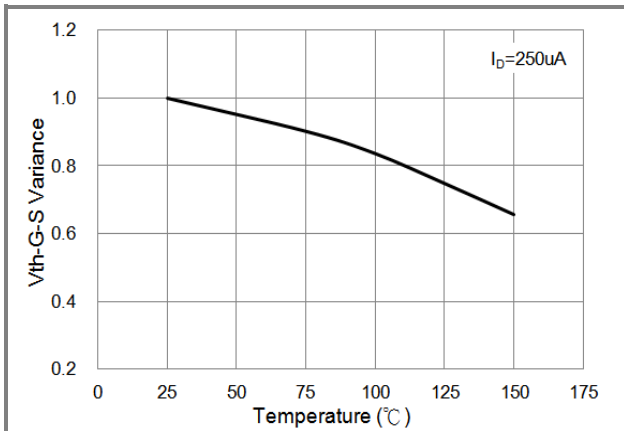


Fig.9 Threshold Voltage Variation with Temperature

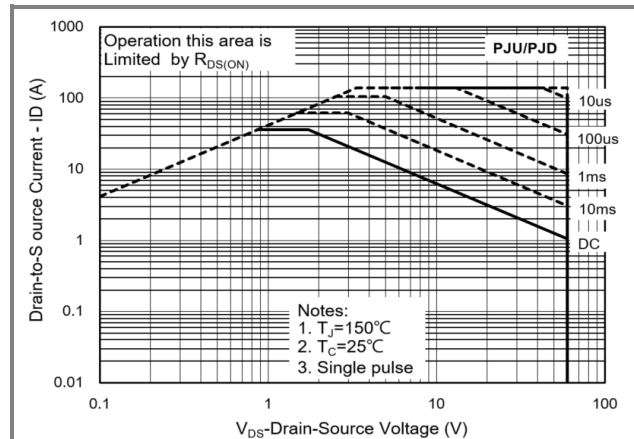


Fig.10 Maximum Safe Operating Area

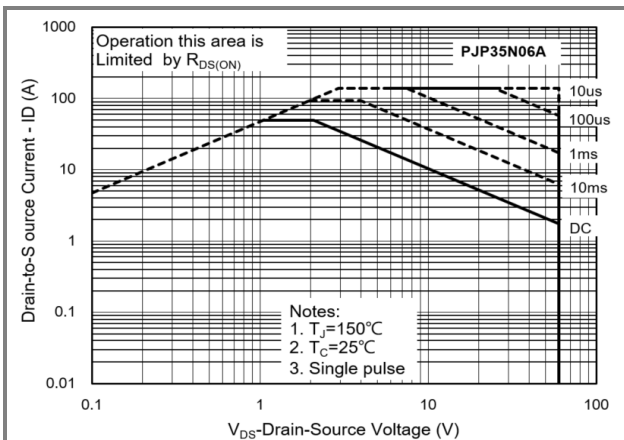


Fig.11 Maximum Safe Operating Area



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TYPICAL CHARACTERISTIC CURVES

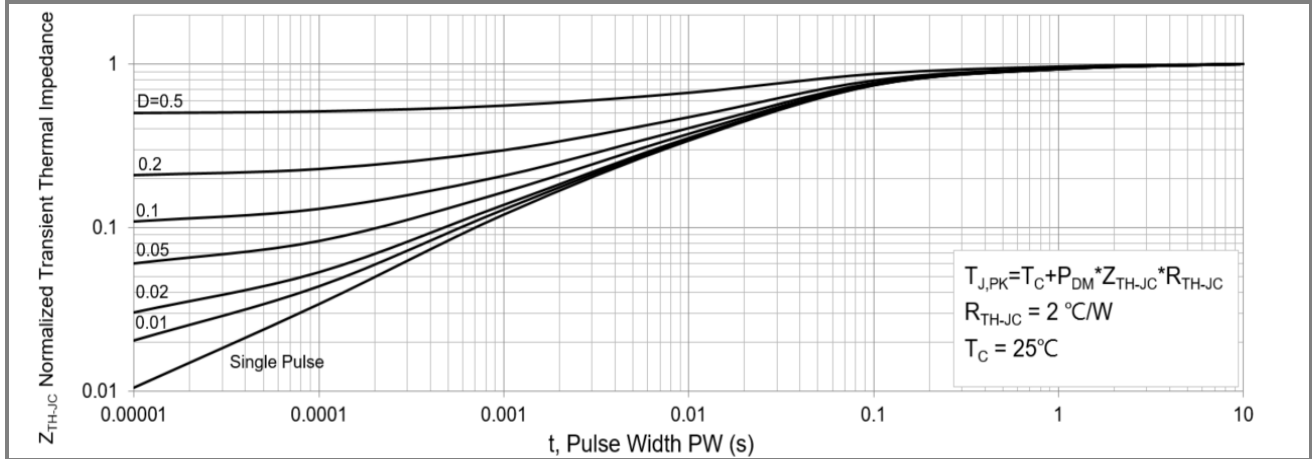


Fig.13 PJU/PJD Normalized Transient Thermal Impedance vs. Pulse Width

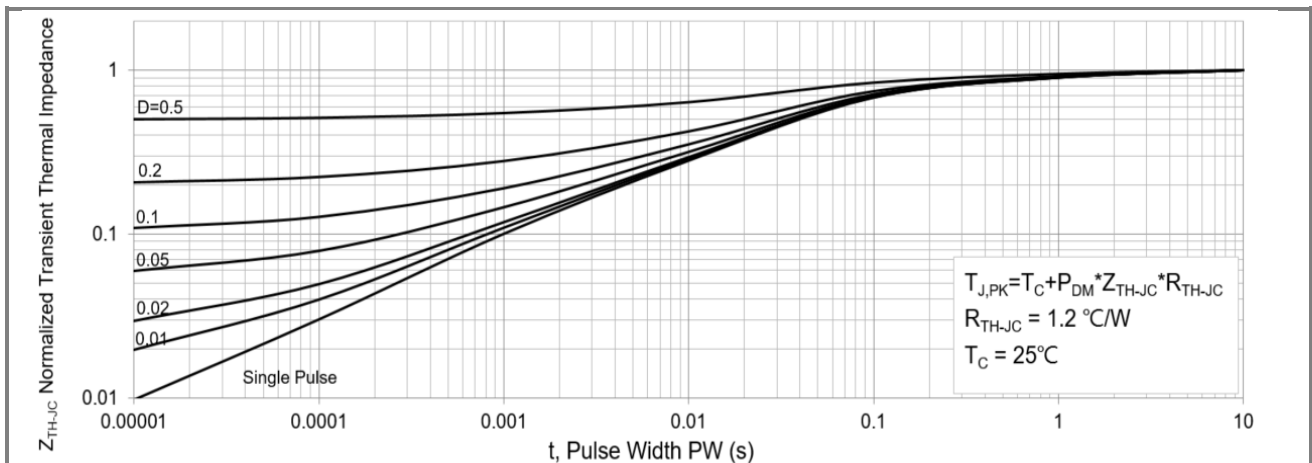
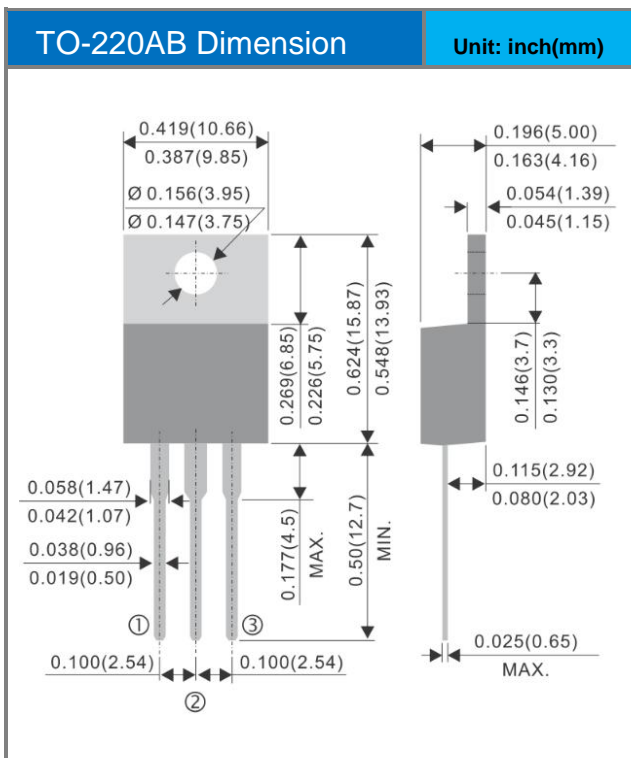
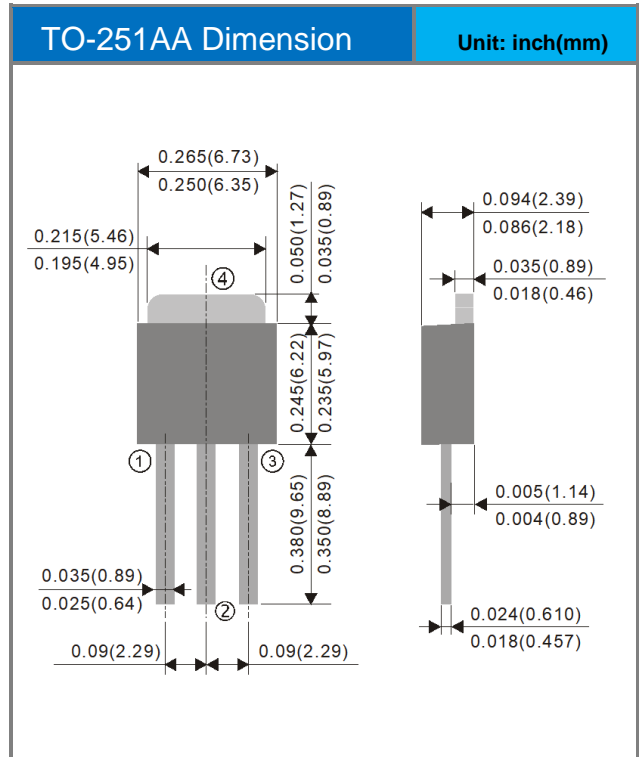
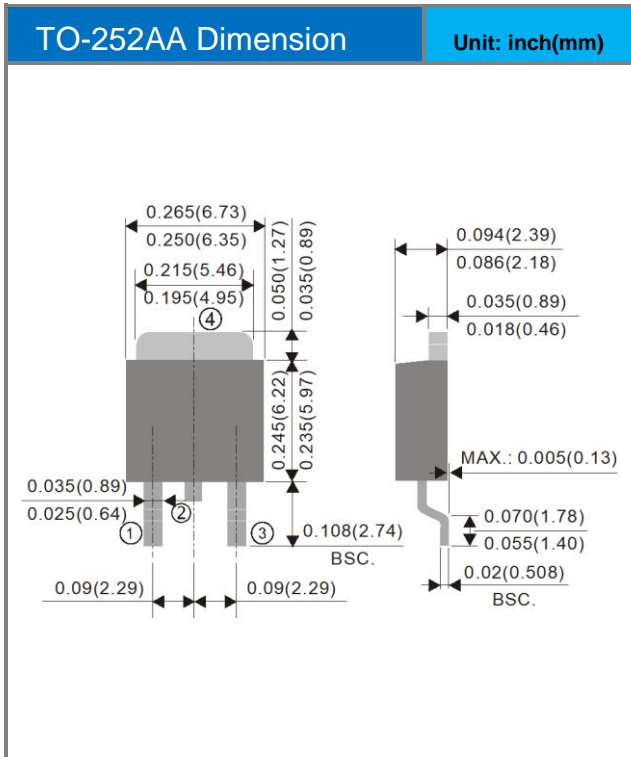


Fig.14 PJP35N06A Normalized Transient Thermal Impedance vs. Pulse Width



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Packaging Information



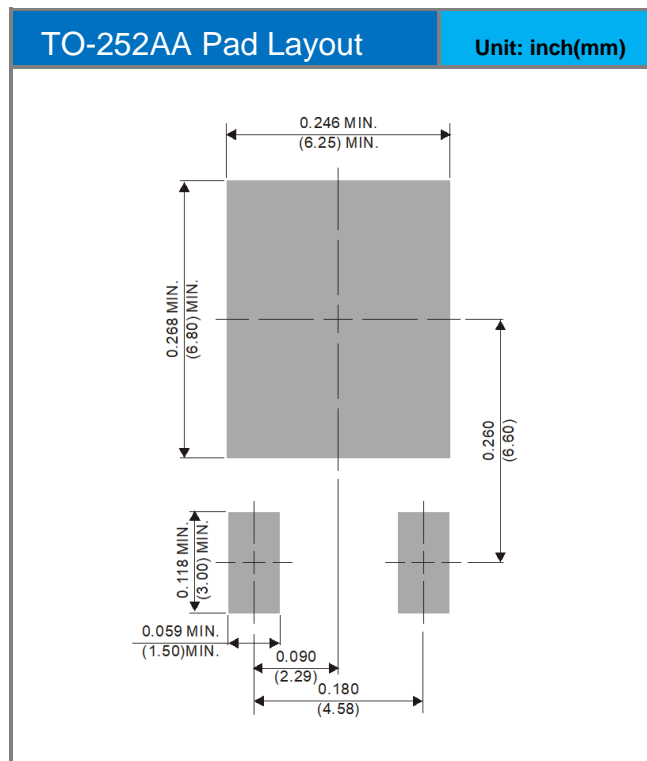


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Part No Packing Code Version

Part No Packing Code	Package Type	Packing Type	Marking	Version
PJU35N06A_T0_00001	TO-251AA	80pcs / Tube	U35N06A	Halogen free
PJD35N06A_L2_00001	TO-252AA	3,000pcs / 13" reel	D35N06A	Halogen free
PJP35N06A_T0_00001	TO-220AB	50pcs / Tube	P35N06A	Halogen free

Mounting Pad Layout





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