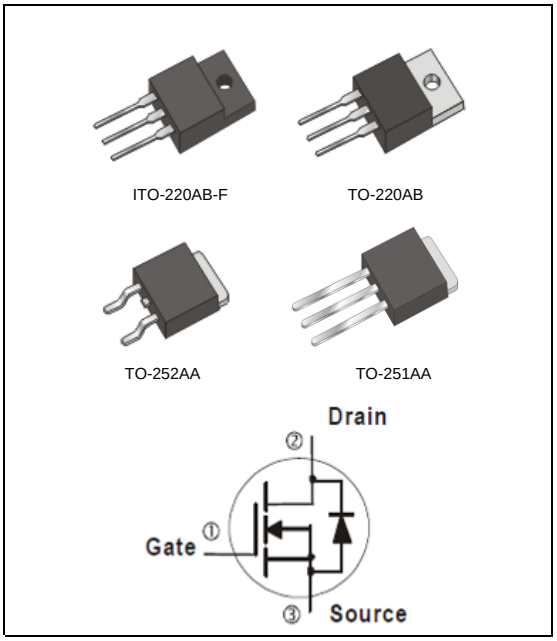
PJU6NA40 / PJD6NA40 / PJP6NA40 / PJF6NA40

400V N-Channel MOSFET

Voltage	400 V	Current	6 A



Features

- $R_{DS(ON)}$, V_{GS}@10V,I_D@3A<0.95 Ω
- 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-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 : 0.0104 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°C unless otherwise noted)

PARAMETER		SYMBOL	TO-251AA	TO-220AB	ITO-220AB-F	TO-252AA	UNITS
Drain-Source Voltage		V_{DS}	400				V
Gate-Source Voltage		V_{GS}	±30				V
Continuous Drain Current		I_D	6				A
Pulsed Drain Current		I_{DM}	24				A
Single Pulse Avalanche Energy (Note 1)		E_{AS}	266				mJ
Power Dissipation	T_C=25°C	P_D	77	100	33	77	W
	Derate above 25°C		0.62	0.8	0.26	0.62	W/°C
Operating Junction and Storage Temperature Range		T_J,T_{STG}	-55~150				°C
Typical Thermal resistance							
- Junction to Case		$R_{\theta JC}$	1.6	1.25	3.8	1.6	°C/W
- Junction to Ambient		$R_{\theta JA}$	110	62.5	120	110	

- Limited only By Maximum Junction Temperature

PJU6NA40 / PJD6NA40 / PJP6NA40 / PJF6NA40

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	400	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=250uA	2	2.67	4	V
Drain-Source On-State Resistance	$R_{DS(on)}$	V_{GS}=10V,I_D=3A	-	0.8	0.95	Ω
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=400V,V_{GS}=0V	-	0.01	1.0	uA
Gate-Source Leakage Current	I_{GSS}	V_{GS}=±30V,V_{DS}=0V	-	±10	±100	nA
Diode Forward Voltage	V_{SD}	I_S=6A,V_{GS}=0V	-	0.92	1.4	V
Dynamic (Note 4)						
Total Gate Charge	Q_g	V_{DS}=320V, I_D=6A, V_{GS}=10V (Note 2,3)	-	11.4	-	nC
Gate-Source Charge	Q_{gs}		-	4.2	-	
Gate-Drain Charge	Q_{gd}		-	3.5	-	
Input Capacitance	Ciss	V_{DS}=25V, V_{GS}=0V, f=1.0MHZ	-	553	-	pF
Output Capacitance	Coss		-	78	-	
Reverse Transfer Capacitance	Crss		-	1.4	-	
Turn-On Delay Time	$td_{(on)}$	V_{DD}=220V, I_D=6A, R_G=12Ω (Note 2,3)	-	11	-	ns
Turn-On Rise Time	t_r		-	26	-	
Turn-Off Delay Time	$td_{(off)}$		-	22	-	
Turn-Off Fall Time	t_f		-	25	-	
Drain-Source Diode						
Maximum Continuous Drain-Source Diode Forward Current	I_S	---	-	-	6	A
Maximum Pulsed Drain-Source Diode Forward Current	I_{SM}	---	-	-	24	A
Reverse Recovery Time	trr	V_{GS}=0V, I_S=6A	-	255	330	ns
Reverse Recovery Charge	Qrr	dI_F/ dt=100A/us (Note 2)	-	1.5	2	uC

NOTES :

1. L=30mH, I_{AS}=4A, V_{DD}=50V, R_G=25ohm, Starting T_J=25°C
2. Pulse width≤300us, Duty cycle≤2%
3. Essentially independent of operating temperature typical characteristics.
4. Guaranteed by design, not subject to production testing

PJU6NA40 / PJD6NA40 / PJP6NA40 / PJF6NA40

TYPICAL CHARACTERISTIC CURVES

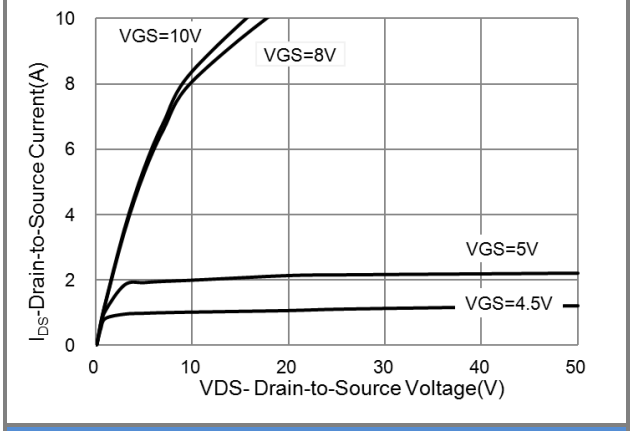


Fig.1 Output Characteristics

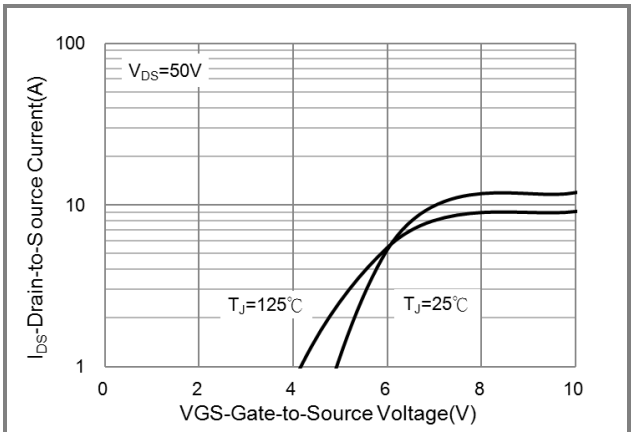


Fig.2 Transfer Characteristics

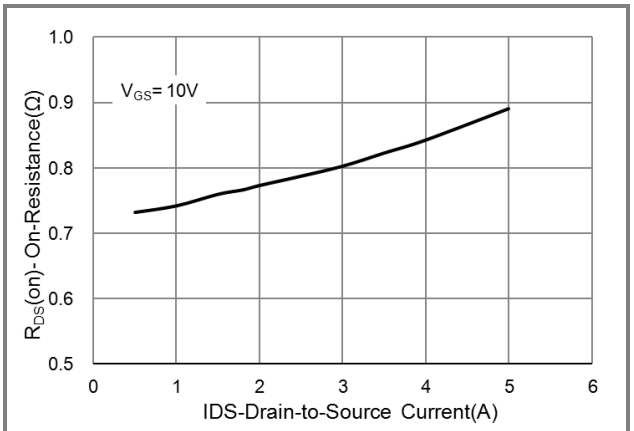


Fig.3 On-Resistance vs. Drain Current

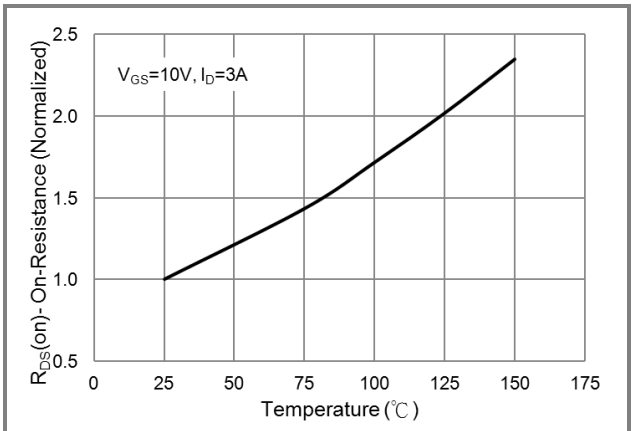


Fig.4 On-Resistsnce vs. Junction temperature

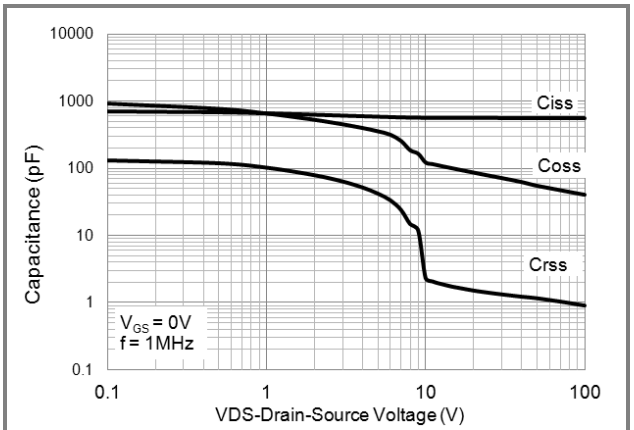


Fig.5 Capacitance vs. Drain-Source Voltage

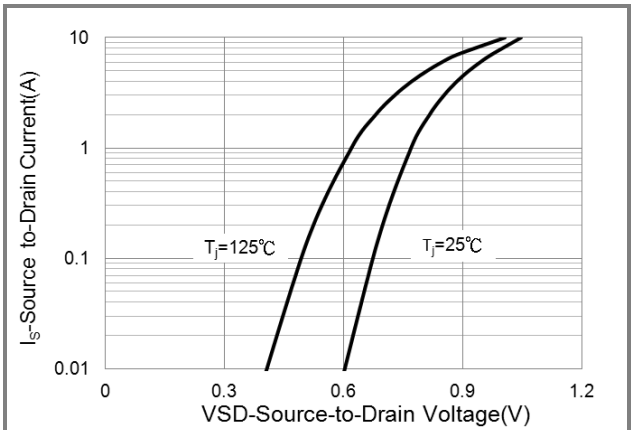


Fig.6 Body Dlode CharacterIslcs

PJU6NA40 / PJD6NA40 / PJP6NA40 / PJF6NA40

TYPICAL CHARACTERISTIC CURVES

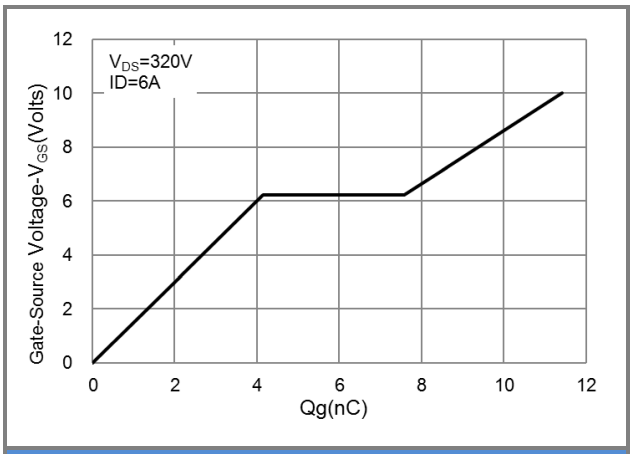


Fig.7 Gate-Charge Characteristics

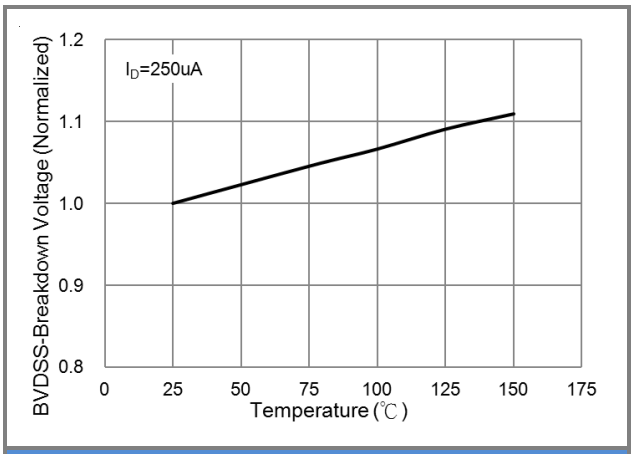


Fig.8 Breakdown Voltage Variation vs.Temperature

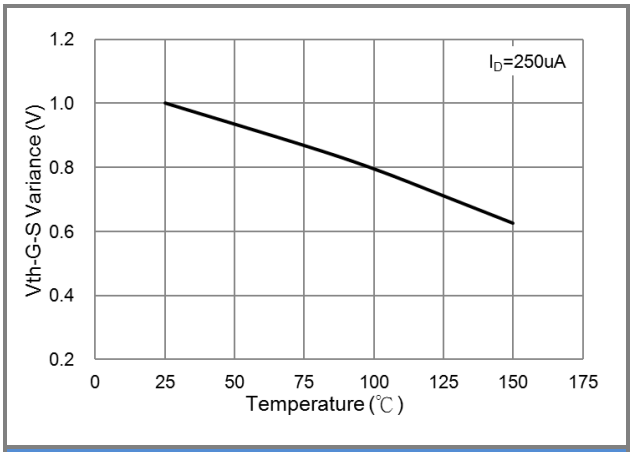


Fig.9 Threshold Voltage Variation with Temperature

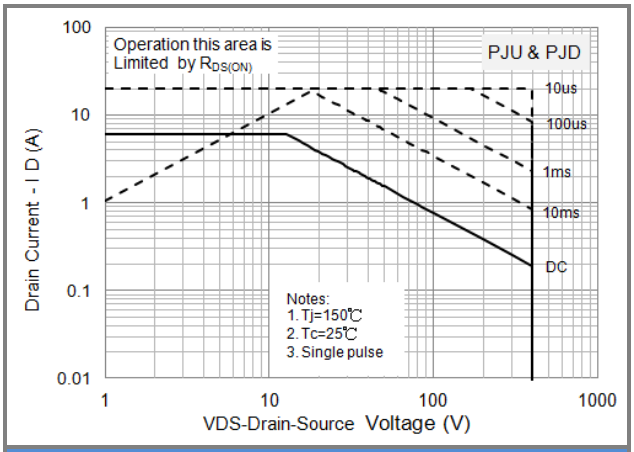


Fig.10 Maximum Safe Operating Area

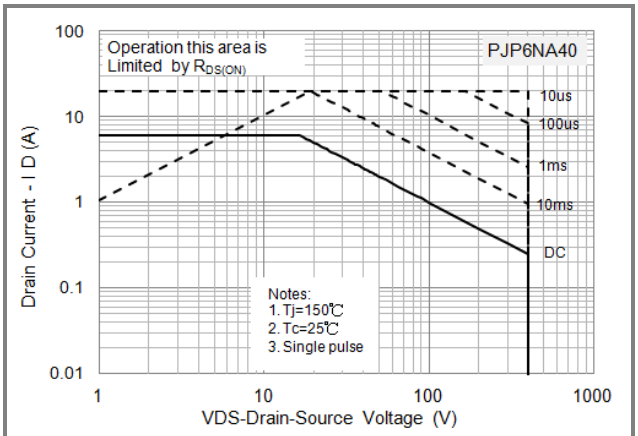


Fig.11 Maximum Safe Operating Area

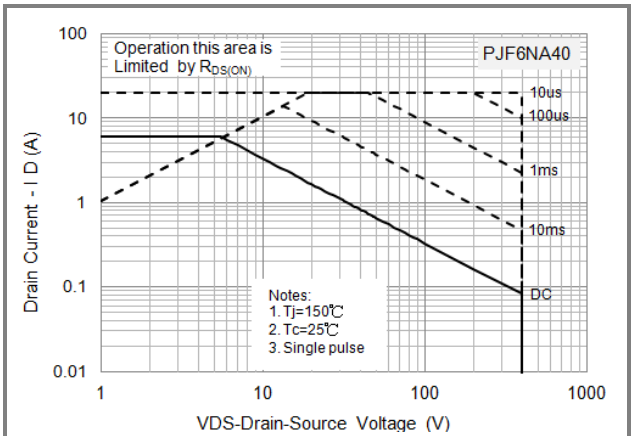


Fig.12 Maximum Safe Operating Area

PJU6NA40 / PJD6NA40 / PJP6NA40 / PJF6NA40

TYPICAL CHARACTERISTIC CURVES

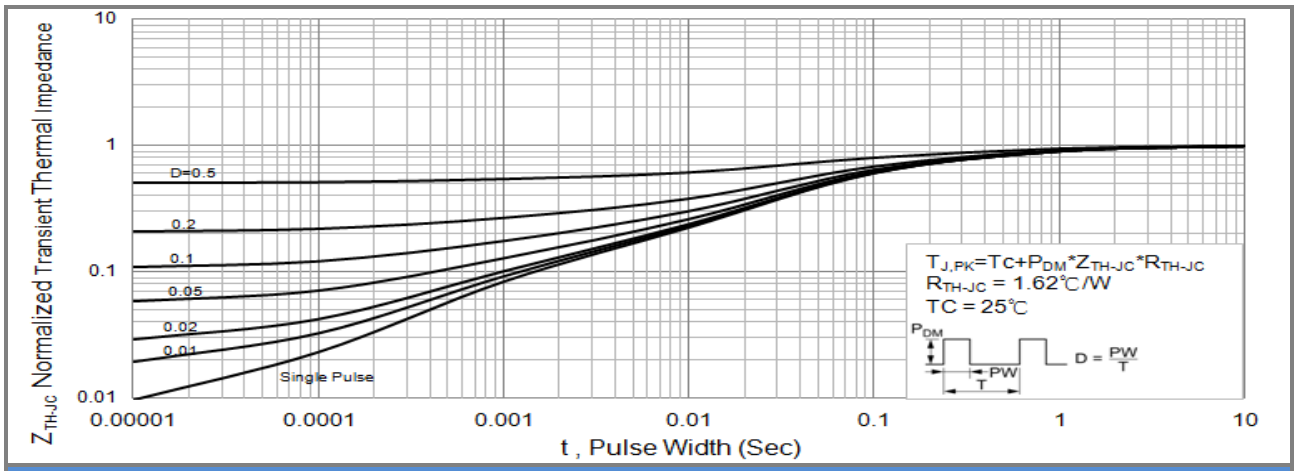


Fig.13 PJU/PJD Normalized Transient Thermal Impedance vs. Pulse Width

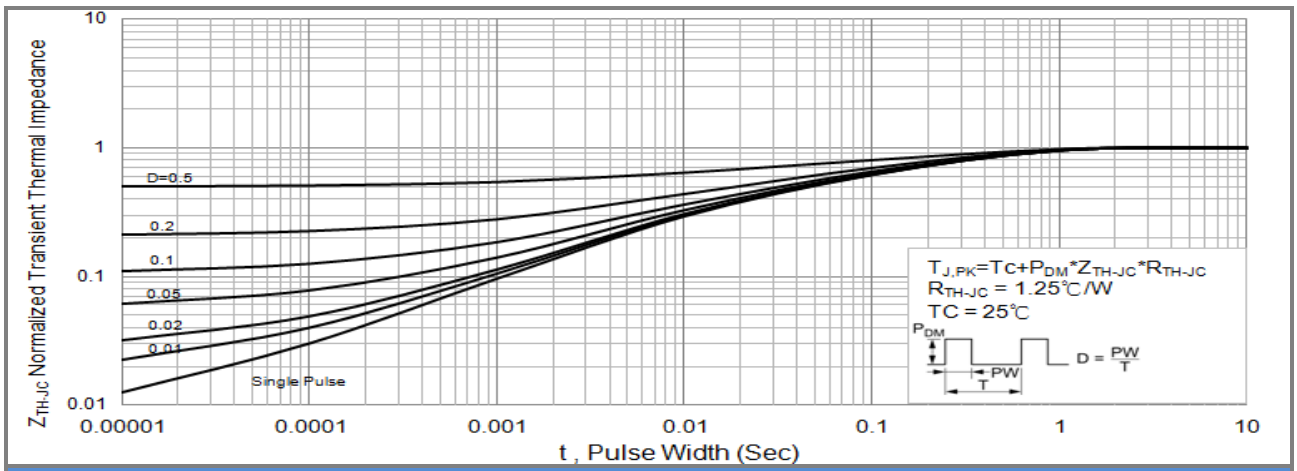


Fig.14 PJP6NA40 Normalized Transient Thermal Impedance vs. Pulse Width

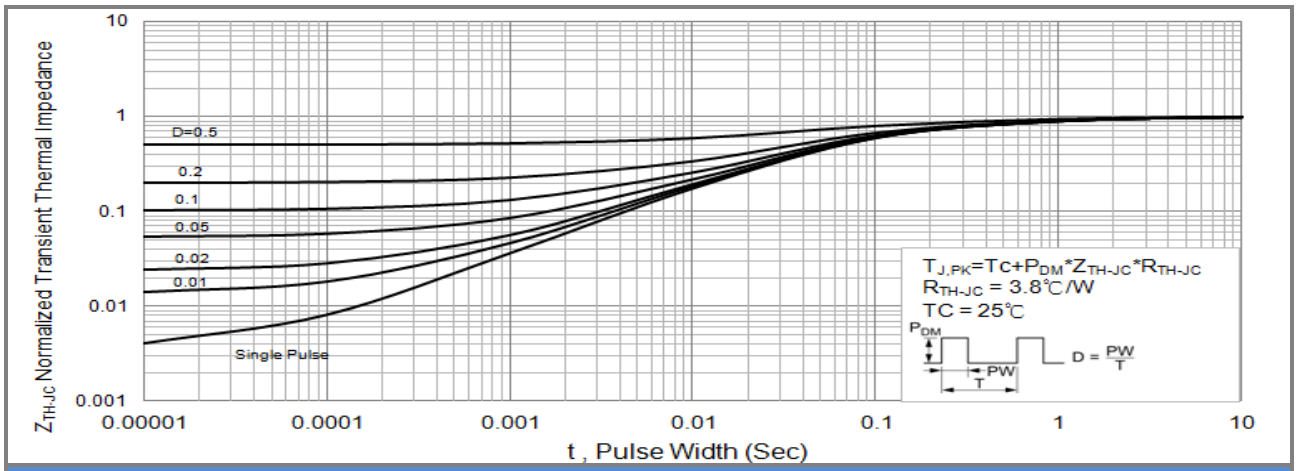


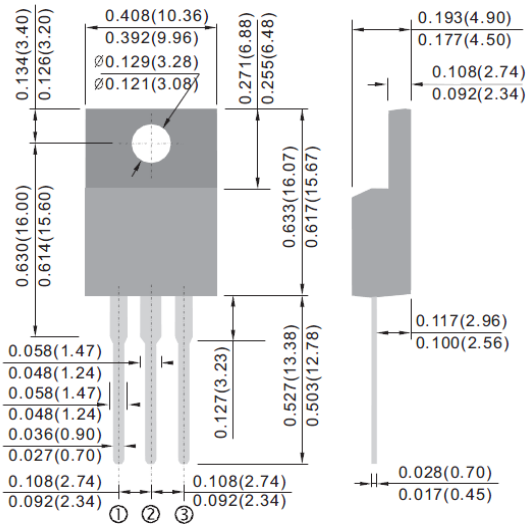
Fig.15 PJF6NA40 Normalized Transient Thermal Impedance vs. Pulse Width

PJU6NA40 / PJD6NA40 / PJP6NA40 / PJF6NA40

Packaging Information .

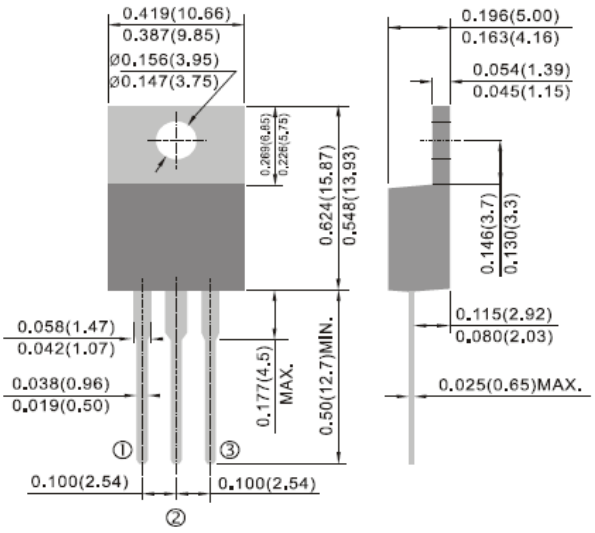
ITO-220AB-F Dimension

Unit: mm



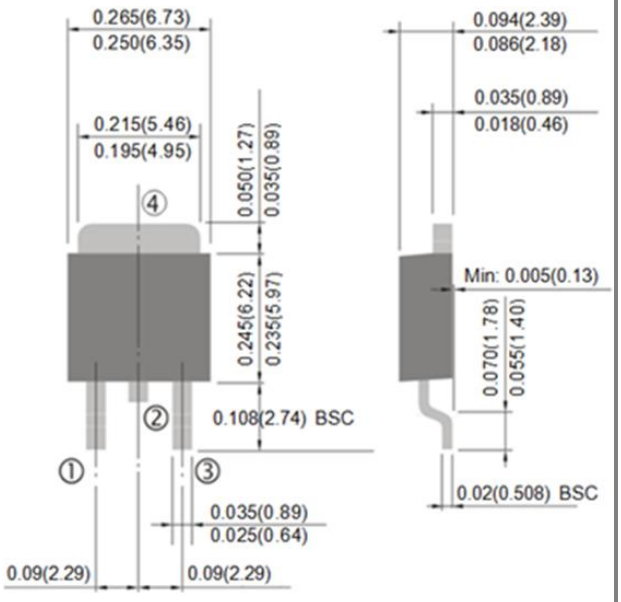
TO-220AB Dimension

Unit: mm



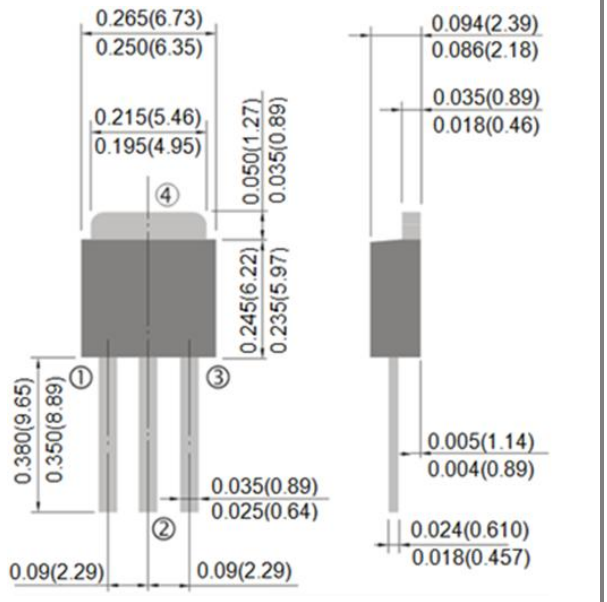
TO-252AA Dimension

Unit: mm



TO-251AA Dimension

Unit: mm



PJU6NA40 / PJD6NA40 / PJP6NA40 / PJF6NA40

PART NO PACKING CODE VERSION

Part No Packing Code	Package Type	Packing type	Marking	Version
PJU6NA40_T0_00001	TO-251AA	80pcs / Tube	U6NA40	Halogen free
PJD6NA40_L2_00001	TO-252AA	3,000pcs / 13” reel	D6NA40	Halogen free
PJP6NA40_T0_00001	TO-220AB	50pcs / Tube	P6NA40	Halogen free
PJF6NA40_T0_00001	ITO-220AB-F	50pcs / Tube	F6NA40	Halogen free

PJU6NA40 / PJD6NA40 / PJP6NA40 / PJF6NA40

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