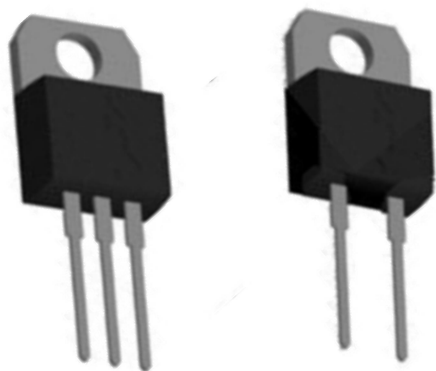


Inner Isolation TO-220



IITO-220AB

IITO-220AC

1: Certification

- System:
 - IATF 16949
 - ISO9001
 - ISO14001
 - ISO45001
- ROHS/REACH/ELV:
 - Lead frame、Wire, Molding compound、Post plating.
- UL 94: V-0
- Whisker Test: JESD 201 class 1A
- AEC-Q101 (Rev E): Qualified Available
- Solder bath temperature : 275°C maximum, 10 s

2: Product advantage

2.1 Comparison for applications

(TO-220, ITO and IITO-220)

Comparison item	TO-220		ITO	IITO-220
	Ceramics gasket insulator Screw	Silicone tape insulator Screw	Screw	Screw
Coating silicone grease	Twice coated device back and gasket	Zero	Once coated on device back	Once coated on device back
Isolation Testing	High risk gasket break	Middle risk silicone tape pierced	No risk molding compound isolation	No risk inner ceramics isolation
Isolation reliability	Risk	Risk	No risk Molding compound isolation	No risk
Working hours	Long working hours	Middle working hours	Short working hours	Short working hours
Production yield	Low	Middle	High	High
Thermal resistance level	Low	Low	High	Low

2.2 Void Performance/Thermal characteristics

Single void < 3%, and Total void < 6%, thermal resistance capacity is 3 times than similar product in the industry.

Data comparison: IITO-220、ITO and TO-220 (Die size: 150mil):

Package	Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
IITO-220	Rth (j-c)	Thermal resistance from junction to case	Full cycle	-	1.9	-	K/W
ITO				-	5.5	-	
TO-220				-	2	-	

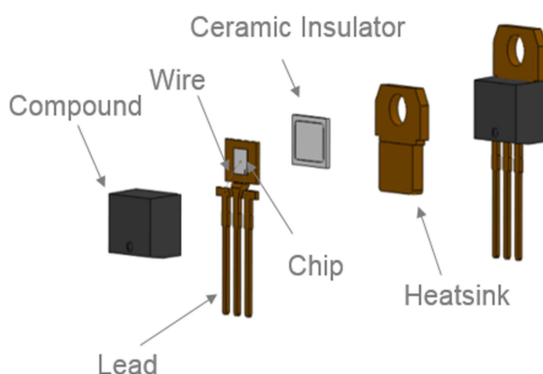
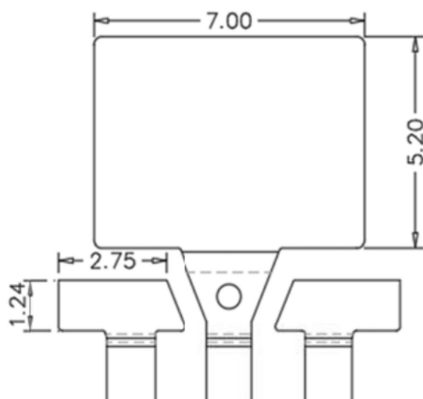
Inner Isolation TO-220

2.3 Isolation Characteristics

The isolation voltage test value of the similar type of product is 2500V in the industry.

Package	Symbol	Parameter	Conditions	Min.	Typ.	Max	Unit
IITO-220 (E-tech)	V isol	RMS isolation Voltage	50Hz $\leq f \leq$ Hz; RH \leq 65% from pins to external heat sink sinusoidal waveform clean and dust free	-	3500	-	V
ITO (others)				-	2500	-	

3: Internal Structure Diagram



Meet Die Size

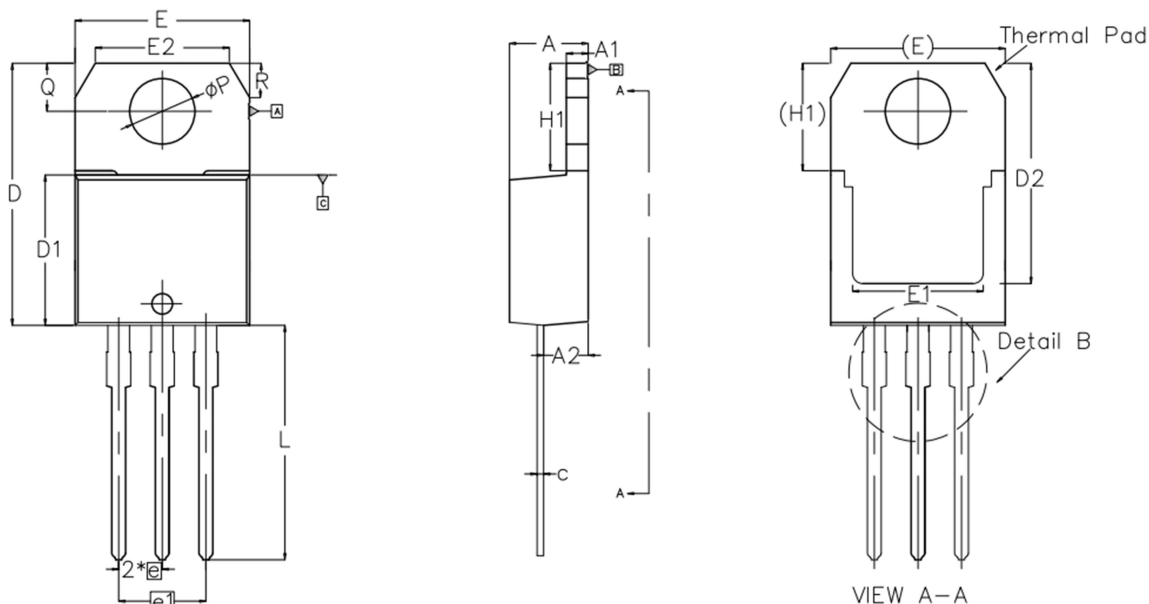
Die Pad(mm)	Die size(mm)	
X=7.00, Y=5.20	Double die (Max)	Single die(Max)
	X=3.20, Y=4.80	X=6.60, Y=4.80

4: Reliability Experiment

	Test	Test Condition
1	Temperature Cycle (TMCL)	500 cycles at -55°C to 150°C
2	Unbiased Highly Accelerated Stress Test (UHST)	96 hours at Ta = 130°C, RH = 85% ;P=2.27atm.
3	High Temperature, Humidity & Reverse Bias (THBS)	1000 hours at Tj = 85°C, RH = 85%, Reverse Bias = 80% rated voltage
4	Thermal Fatigue (TFAT)	10000 cycles, Tj = 25°C to 125°C, DTj \geq 80°C, Id=depends on device & Ton = Toff ~2.5 to 3.5 mins.
5	Static High Temperature Life (SHTL)	1000 hours – Tj = max operating temp, Reverse Bias = 80% / 100% rated voltage.
6	High Temperature Storage (HTSL)	1000 hours at Ta = 150°C or Ta=175°C

5: Package Outline Dimensions in millimeters

5.1 POD



SYMBOL	MILLIMETERS			NOTES		SYMBOL	MILLIMETERS			NOTES
	Normal	MIN.	MAX.				Normal	MIN.	MAX.	
A	4.45	4.35	4.75			E1	7.60	6.86	8.89	
A1	1.27	1.14	1.40			e	2.54	2.41	2.67	
A2	2.60	2.40	2.80			e1	5.08	4.88	5.28	
b	0.85	0.69	1.01			H1	6.20	6.00	6.40	
b1	0.83	0.38	0.97			L	13.35	13.00	13.70	
b2	1.46	1.20	1.73			L1	3.00	2.70	3.30	
b3	1.44	1.14	1.73			øP	3.80	3.70	3.95	
c	0.50	0.36	0.61			Q	2.80	2.60	3.00	
c1	0.48	0.36	0.56			E2	7.80	7.50	8.10	
D	15.50	15.20	15.80			R	2.00	1.70	2.20	
D1		8.50	9.02							
D2	12.85	12.20	12.88							
E	10.18	10.00	10.40							