

Part number	Supplier Name	Info of material		Info of inner packing				
		Packing type	Tray Matrix	STC Qty	Length (MM)	Width (MM)	Height (MM)	Material
AFE7921IABJ	TI	Tray	6*15	90	341	159	123.5	BOX

Marking picture	vendor Name	Part No.	Marking Rule
AFE7921I	TI	AFE7921IABJ	the marking " AFE7921I " represents the device name, by identifying units marking AFE7921I correctly to determine device

TI Part	Component	Homogeneous Material Name.	Substance Name	*CAS No.	Substance Mass. (mg)	Content Rate(%)
AFE7921IABJ	Lid	Copper and Its Alloys	Copper	7440-50-8	1,115.44	98.45
		Nickel and Its Alloys	Nickel	7440-02-0	17.5615	1.55
	Lid Attach Adhesive	Other Inorganic Materials	Aluminum Oxide	1344-28-1	20.063481	69.999999
		Thermoplastics	Epoxy	85954-11-6	8.598635	30.000001
	Semiconductor Device	Ceramics / Glass	Doped Silicon	7440-21-3	74.257808	100
	Solder Ball	Copper and Its Alloys	Copper	7440-50-8	1.029885	0.5
		Other Nonferrous Metals and Alloys	Tin	7440-31-5	198.767835	96.5
		Precious Metals	Silver	7440-22-4	6.179311	3

	Solder Bump	Copper and Its Alloys	Copper	7440-50-8	0.023016	0.599992
		Other Nonferrous Metals and Alloys	Tin	7440-31-5	3.663429	95.500008
		Precious Metals	Silver	7440-22-4	0.149606	3.9
	Substrate	Ceramics / Glass	Woven Glass Fiber	65997-17-3	95.0656	16.976
		Copper and Its Alloys	Copper	7440-50-8	227.584	40.64
		Other Inorganic Materials	Inorganic Filler		92.68	16.55
		Other Inorganic Materials	Silicon Dioxide	60676-86-0	30.464	5.44
		Other Nonferrous Metals and Alloys	Barium Sulfate	7727-43-7	5.432	0.97
		Other Nonferrous Metals and Alloys	Tin	7440-31-5	0.952	0.17
		Precious Metals	Silver	7440-22-4	0.028	0.005
		Thermoplastics	Epoxy	85954-11-6	107.7944	19.249
	Underfill	Other Inorganic Materials	Silica	7631-86-9	8.414266	65.000003
		Other Plastics and Rubber	Carbon Black	1333-86-4	0.12945	1
		Thermoplastics	Epoxy	85954-11-6	4.401308	33.999999

Basic Information		Result
Device Part Number		AFE7921IABJ
Wafer fab information, process type and node		Foundry, C28
Wafer process was qualified and released to production or not.		Mature
Products have been applied with this wafer process?		Yes
Is there any part from the same wafer process family have been used in customer?		YES
Wafer Process Capability(SPC)		Meet SPC Spec
Is there any wafer process CPK<1.33? If yes, please list it and provide the improvement plan.		NO
Chip ID:Do you have chip ID or die ID for this device?		NO
Assembly Factory, Package type		TI Subcon FCBGA
Package Size (Length*Width*Height)		17x17x2.48mm
Ball/Lead pitch		0.8MM
Is there any part from the same package family have been used in customer? If yes, please list the part number.		YES
Assembly Process Capability(SPC)		Meet spc spec
Is there any assembly process CPK<1.33? If yes, please list it and provide the improvement plan.		NO
Range of Operation Temperature (Ta, Tj or Tc)		-40~85C (Ta)
Storage Temperature range		-65 ~ 150C
Storage limit		1years at customer side
Max. Junction Temperature		110°C [note: prolonged use at or above this junction temp can increase the device-in-time (FIT) rate. Refer to SBAA403 application note for additional details]
IFR, Intrinsic Failure Rate, FIT		TI has too few units to provide a meaningful FIT estimate
MSL, Moisture Sensitive Level		MSL 3
Theta ja, jc and jb	Θja	15.7°C/W
	Θjc	0.51°C/W
	Θjb	4.85°C/W
ESD (HBM、CDM, for all pin)	HBM	1000V
	CDM	150V

Latch-Up (At max. Ambient Temperature)	Meet qual test requirement
Test Factory	TI TAI
If the chip is new process or new design, And some Lifetime limit test(Test to fail or beyond JEDEC standard) had been down. Please specify the test condition and result details.	NO
Wafer reliability Qualification Report, including: TDDb, HCI, NBTI, PBTI, EM, SM .etc	YES
Package Qualification Report, including: PC, THB, HAST, UHAST, HTSL, TC, BLTC, DT, Bend, PDT, PVT .etc	See TI.com qual report
Device Qualification Report, including: ELFR, HTOL, LTOL, ASER, SSER, ESD-HBM, ESD-CDM, LU .etc	See TI.com qual report
The device should be done reliability monitoring. Please provide the latest Reliability Monitoring Report, including: PC, THB, HAST, UHAST, TC, HTSL, HTOL .etc	ORT test based on package
Characterization report, follow JESD86	Refer to datasheet

Check Items for TL431BQDBZRQ1		Result
Ball/column alloy element		SNAGCU 305
Interconnect between die and substrate		Flip chip with lead-free bump
BGA substrate finish		OSP
Package standard		JEDEC
Weight of component (g)		2.0187
Weight/ available P&P area≤0.06g/mm ²		Yes
coplanarity	coplanarity during reflow process	refer to datasheet
Pin1 Mark point	Is there any pin1 Mark point in the top side of component?	Yes
	Is the pin1 mark point sole? (if not, pls. give the relationship between mark and terminals)	Yes
	Is there any specific location number of terminals in the component specification?	Yes

	Component orientation can be Identified by mounting machine or AOI?	Yes
seal	Is there any hole or gap in package body, flux enter package inside form the hole or gap, resulting in function fail	NO
exposed Non-insulator on component body	Whether there exists non-insulator at no soldering position. Are non-insulator and adjacent soldering pin the same circuit?	NO
	Have Dimension and Position of non-insulator been indicated in component spec.	Yes
Are matters RoHS compliant listed below? (please refer to "sheet7 RoHS Compliant" in this file) Lead, Cd, Hg, Cr VI, PBB, PBDE Lead-free		Yes
Is it Halogen-free		Yes
Relative humidity (%)		$\geq 20\% \& \leq 70\%$
Temperature (°C)		$\geq -10^{\circ}\text{C} \& \leq 35^{\circ}\text{C}$
Maximum storage time (month)		Follow MSL rating rules Allowed 1 year stored at customer side
Packaging type		Tray
ESD packaging		Yes
Rollover rate $\leq 0.05\%$ in packing		Yes
Maximum component rotation for punched $\leq 10^{\circ}$		Yes
tray packing Baking conditions: $125^{\circ}\text{C}@24\text{h}$		Yes
MSL		3
Baking requirement if moisture meets J-STD-033?		Yes
Moisture sensitive level at level 2 and level 2 above, moisture sensitive protection must include: moisture sensitive indicator card, desiccant, moisture sensitive grade logo		Yes
Manual soldering conditions: soldering iron tip temperature 400°C time $\geq 5\text{s}$. Or hot gun temperature 340°C time $\geq 10\text{s}$		Yes
Maximum soldering times ≥ 3		Yes

Can heat resistance of SMT components meet JSTD020D. (should focus on the classification of temperature and reflow profiles, that is table 4-1, 4-2 and 5-2, please refer to sheet6 J-STD-020D in this file)	Yes
Maximum pick-and-place pressure (N)	Can meet SMT pick-and-place request
Whether the welding process and design requirements of component have all written to the component specifications	Yes
Whether Pad & stencil design as Mandatory requirements in component spec?	recommended
Whether the device has special requirements for the reflow temperature ramp-up rate and ramp-down rate? Customer follow J-STD-002 standard	No
Are there other mandatory requirements in component spec?	No
Solder ability test report	Yes
Board level reliability test report	No

Type	Test Name / Condition	Duration	Qual Device: AFE79XXIABJ	QBS Product Reference: AFE7798
ED	Electrical Characterization	Per Datasheet Parameters	3 / 30 / 0	3 / 30 / 0
ELFR	Early Life Failure Rate, 125C	168 Hours	-	1 / 94 / 0
HTOL	High Temperature Operating Life	1000 Hours	3 / 231 / 0	3 / 231 / 0
FLAM	Flammability (UL 94V-0)	--	-	1 / 5 / 0
HAST	Biased HAST, 110C/85%RH	264 Hours	1 / 77 / 0	3 / 231 / 0
HBM	ESD - HBM	1000V	1 / 3 / 0	1 / 3 / 0
CDM	ESD - CDM	150 V	1 / 3 / 0	1 / 3 / 0
HTSL	High Temp. Storage Bake, 150C	1000 Hours	3 / 231 / 0	3 / 231 / 0
LU	Latch-up	(per JESD78)	1 / 3 / 0	3 / 18 / 0
PD	Physical Dimensions	--	1 / 5 / 0	3 / 15 / 0
SBS	Solder Ball Shear	--	1 / 4 / 0	1 / 4 / 0
SD	Surface Mount Solderability	Pb Free	1 / 22 / 0	1 / 22 / 0
SD	Surface Mount Solderability	Pb	1 / 22 / 0	1 / 22 / 0
TC	Temperature Cycle, -55/125C	700 Cycles	3 / 231 / 0	3 / 231 / 0
THB	Biased Temperature & Humidity, 85C/85%RH	1000 Hours	3 / 231 / 0	3 / 230 / 0
UHA	Unbiased HAST, 110C/85%RH	264 Hours	1 / 77 / 0	1 / 77 / 0