



SAW Components

SAW Rx 2in1 Filter

iDEN

Series/Type:	B4231
Ordering code:	B39941B4231H410
Date:	Apr 10, 2006
Version:	1.1

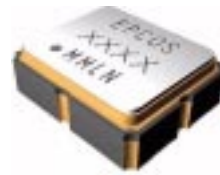


Preliminary Data



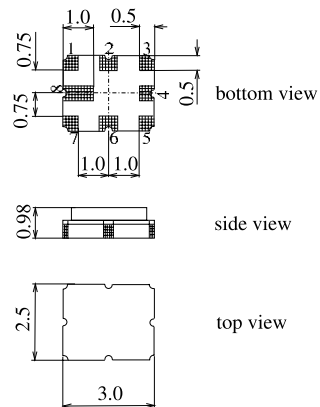
Application

- Low-loss 2in1 RF filter for iDEN
- Device with two integrated Rx filters
- Low amplitude ripple
- Usable passband Filter 1: 19.0 MHz
- Usable passband Filter 2: 6.0 MHz
- No matching network required for operation at 50 Ω
- Unbalanced to unbalanced operation for both filters



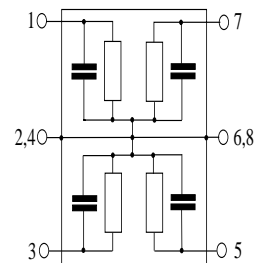
Features

- Package size 2.5 x 3.0 x 0.98 mm³
- Package code QCC8E
- Approx. weight 0.027 g
- Ceramic package for **Surface Mount Technology (SMT)**
- RoHS compliant
- Ni, gold-plated terminals



Pin configuration

- 1 Input [Filter 1]
- 7 Output [Filter 1]
- 3 Input [Filter 2]
- 5 Output [Filter 2]
- 2,6 To be grounded
- 4,8 Case ground





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SAW Rx 2in1 Filter

860.5 / 938.0 MHz

Preliminary Data



Characteristics of Filter 1

Operating temperature range: $T = -30 \dots +70 \text{ }^\circ\text{C}$
 Terminating source impedance: $Z_S = 50 \text{ } \Omega$
 Terminating load impedance: $Z_L = 50 \text{ } \Omega$

		B4231 ¹⁾			DGL ²⁾	
		min.	typ. @ 25 °C	max.	min./ max.	
Center frequency	f_C	—	860.5	—		MHz
Maximum insertion attenuation	α_{\max}					
851.0 ... 870.0 MHz		—	2.1	3.0 ³⁾		dB
Amplitude ripple (p-p)	$\Delta\alpha$					
851.0 ... 870.0 MHz		—	0.6	1.0		dB
Group delay ripple (p-p)	$\Delta\tau$					
851.0 ... 870.0 MHz		—	12	50		ns
Input return loss						
851.0 ... 870.0 MHz		12.0	14.0	—		dB
Output return loss						
851.0 ... 870.0 MHz		12.0	13.5	—		dB
Attenuation	α					
0.1 ... 688.0 MHz		50	58	—		dB
688.0 ... 705.0 MHz		49	57	—		dB
769.0 ... 788.0 MHz		42	51	—		dB
806.0 ... 825.0 MHz		25	45	—		dB
896.0 ... 902.0 MHz		25	38	—		dB
925.0 ... 960.0 MHz		42	51	—		dB
1013.0 ... 1036.0 MHz		45	50	—		dB
1702.0 ... 1740.0 MHz		33	40	—		dB
1740.0 ... 3500.0 MHz		30	35	—		dB
3500.0 ... 3600.0 MHz		28	32	—		dB
3600.0 ... 4000.0 MHz		20	25	—		dB

¹⁾ Values in columns min, typ and max indicate the development status of the current version.

²⁾ Values in column DesignGoal (DGL) indicate the target performance.

³⁾ 2.5 dB max at 25 °C.



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SAW Rx 2in1 Filter

860.5 / 938.0 MHz

Preliminary Data



Maximum ratings of Filter 1

Operable temperature range	T	-40/+85	°C	
Storage temperature range	T _{stg}	-40/+85	°C	
DC voltage	V _{DC}	5	V	
ESD voltage	V _{ESD}	100 ¹⁾	V	machine model, 10 pulses
Input Power at 851.0 ... 870.0 MHz	P _{IN}	10	dBm	continuous wave, 10000 hours, 85 °C

¹⁾ acc. to JESD22-A115A (machine model), 10 negative & 10 positive pulses.



SAW Components

B4231

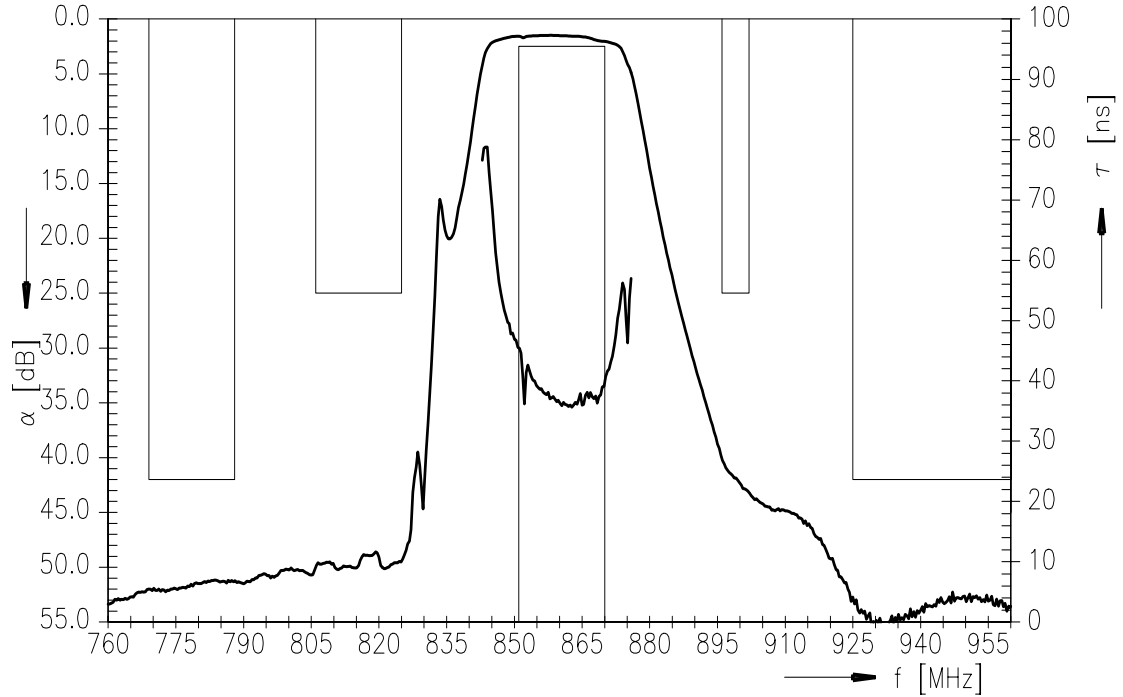
SAW Rx 2in1 Filter

860.5 / 938.0 MHz

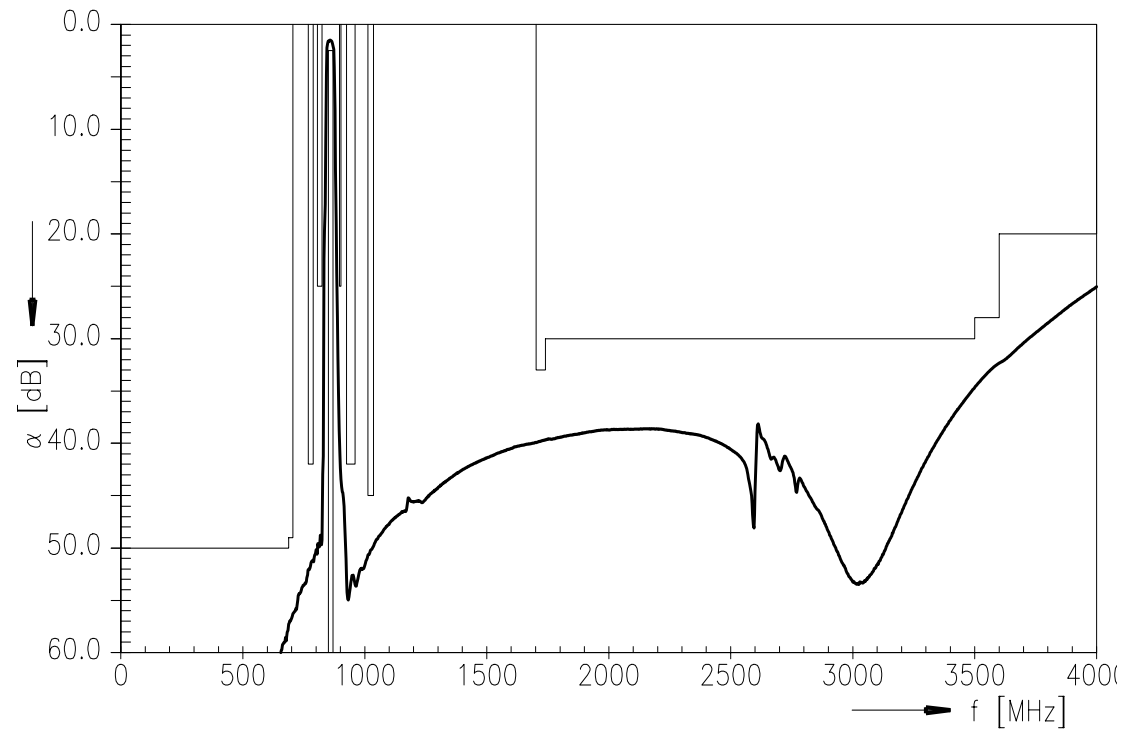
Preliminary Data



Transfer Function Filter 1 (narrowband)



Transfer Function Filter 1 (wideband)



Please read *cautions and warnings* and *important notes* at the end of this document.

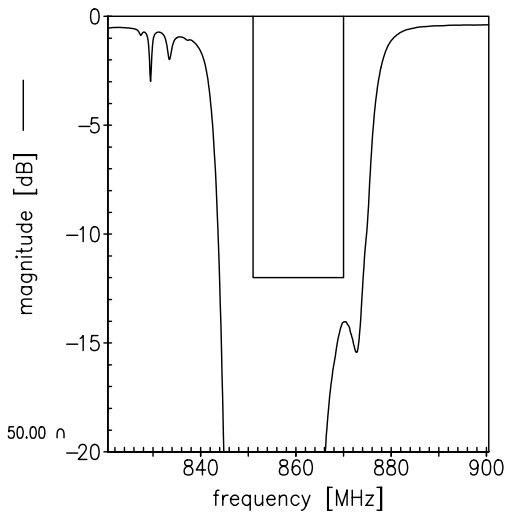
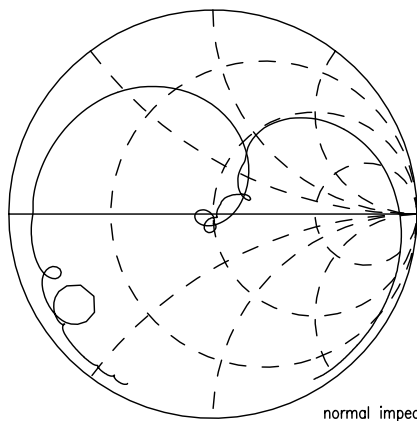


Preliminary Data

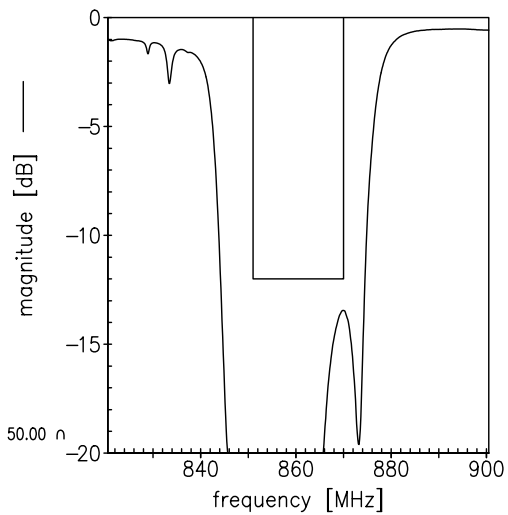
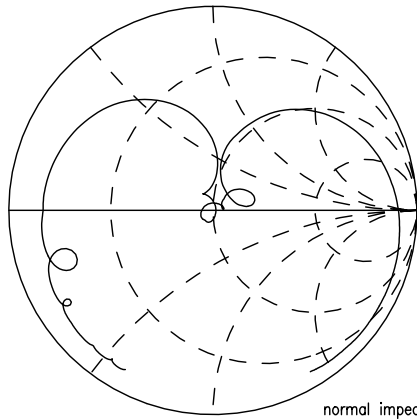


Smith Charts Filter 1

S_{11} Function



S_{22} Function





SAW Components	B4231
SAW Rx 2in1 Filter	860.5 / 938.0 MHz

Preliminary Data



Characteristics of Filter 2

Operating temperature range: $T = -30 \dots +70 \text{ }^\circ\text{C}$
 Terminating source impedance: $Z_S = 50 \text{ } \Omega$
 Terminating load impedance: $Z_L = 50 \text{ } \Omega$

		B4231 ¹⁾			DGL ²⁾	
		min.	typ. @ 25 °C	max.	min./ max.	
Center frequency	f_C	—	938.0	—		MHz
Maximum insertion attenuation	α_{\max}					
935.0 ... 941.0 MHz		—	1.8	3.0 ³⁾		dB
Amplitude ripple (p-p)	$\Delta\alpha$					
935.0 ... 941.0 MHz		—	0.1	1.0		dB
Group delay ripple (p-p)	$\Delta\tau$					
935.0 ... 941.0 MHz		—	2	50		ns
Input return loss						
935.0 ... 941.0 MHz		12.0	21.0	—		dB
Output return loss						
935.0 ... 941.0 MHz		12.0	21.0	—		dB
Attenuation	α					
0.1 ... 756.0 MHz		50	54	—		dB
756.0 ... 762.0 MHz		49	53	—		dB
806.0 ... 824.0 MHz		25	51	—		dB
824.0 ... 845.0 MHz		35	50	—		dB
845.0 ... 852.0 MHz		42	50	—		dB
852.0 ... 894.0 MHz		35	47	—		dB
896.0 ... 902.0 MHz		25	47	—		dB
1024.0 ... 1031.0 MHz		42	48	—		dB
1113.0 ... 1121.0 MHz		43	47	—	45	dB
1870.0 ... 1882.0 MHz		33	39	—		dB
1882.0 ... 3600.0 MHz		30	36	—		dB
3600.0 ... 4000.0 MHz		24	28	—	25	dB

1) Values in columns min, typ and max indicate the development status of the current version.
 2) Values in column DesignGoal (DGL) indicate the target performance.
 3) 2.5 dB max at 25 °C.



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SAW Rx 2in1 Filter

860.5 / 938.0 MHz

Preliminary Data



Maximum ratings of Filter 2

Operable temperature range	T	-40/+85	°C	
Storage temperature range	T _{stg}	-40/+85	°C	
DC voltage	V _{DC}	5	V	
ESD voltage	V _{ESD}	100 ¹⁾	V	machine model, 10 pulses
Input Power at 935.0 ... 941.0 MHz	P _{IN}	10	dBm	continuous wave, 10000 hours, 85 °C

¹⁾ acc. to JESD22-A115A (machine model), 10 negative & 10 positive pulses.



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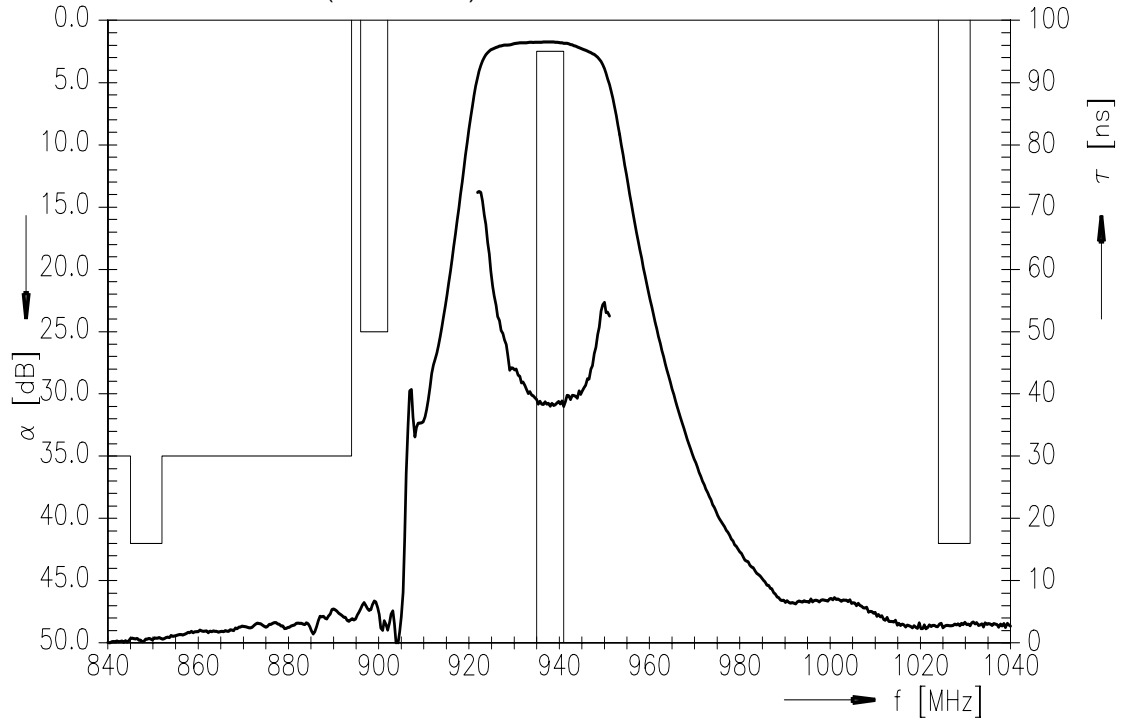
SAW Rx 2in1 Filter

860.5 / 938.0 MHz

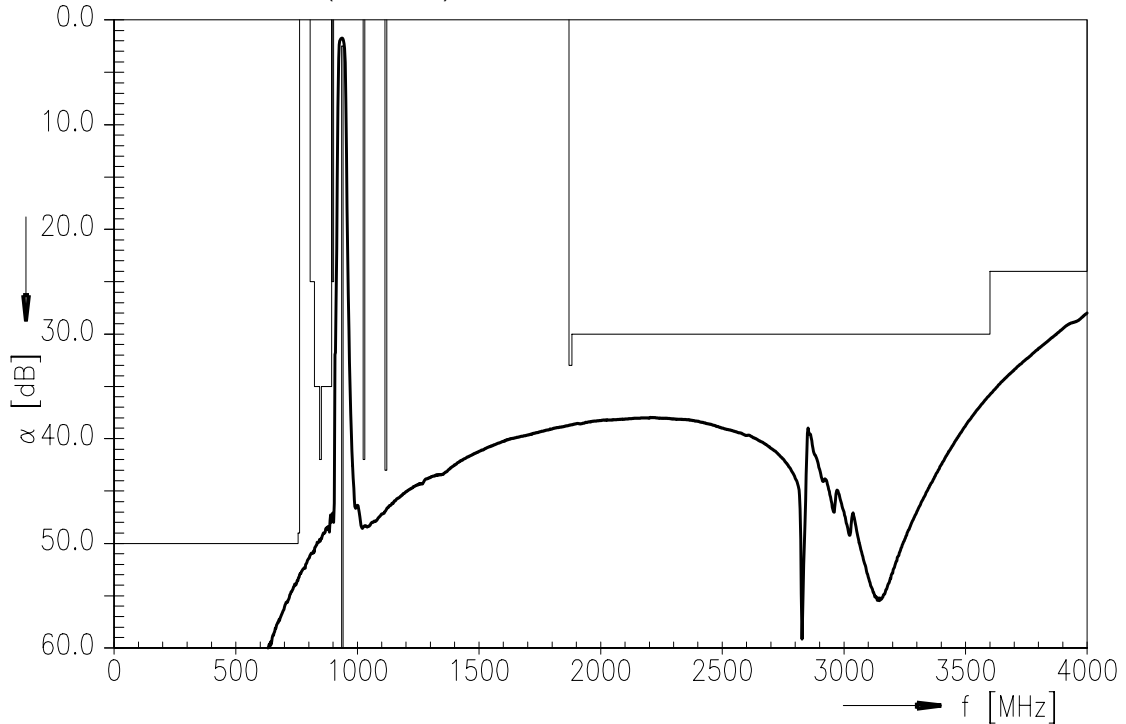
Preliminary Data



Transfer Function Filter 2 (narrowband)



Transfer Function Filter 2 (wideband)



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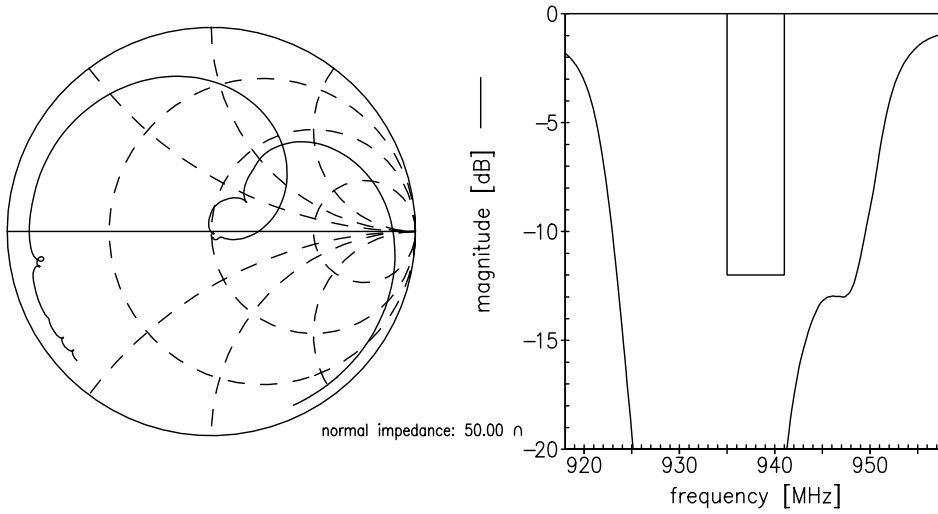


Preliminary Data

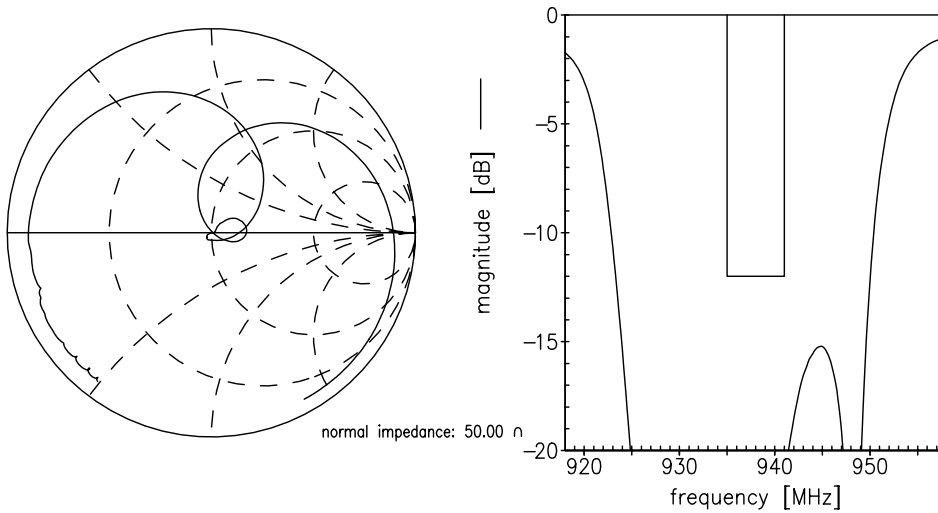


Smith Charts Filter 2

S_{11} Function



S_{22} Function





SAW Components	B4231
SAW Rx 2in1 Filter	860.5 / 938.0 MHz
Preliminary Data	SMD

References

Type	B4231
Ordering code	B39941B4231H410
Marking and package	C61157-A7-A92
Packaging	F61074-V8174-Z000
Date codes	L_1126
S-parameters	B4231_LB_NB.s2p B4231_LB_WB.s2p B4231_UB_NB.s2p B4231_UB_WB.s2p
Soldering profile	S_6001
RoHS compatible	defined as compatible with the following documents: "DIRECTIVE 2002/95/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 27 January 2003 on the restriction of the use of certain hazardous substances in electrical and electronic equipment. 2005/618/EC from April 18th, 2005, amending Directive 2002/95/EC of the European Parliament and of the Council for the purposes of establishing the maximum concentration values for certain hazardous substances in electrical and electronic equipment."

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