



Product Features

- Excellent Insertion Loss and Isolation performance
- High Linearity
- GPIO Control Interface
- Broadband frequency range: 0.1 to 5.0 GHz
- Small package: QFN-9 1.15mm x 1.15mm x 0.55mm
- No DC blocking capacitors required
- 1.5kV HBM ESD Protection on all pins

Product Applications

- 3G/4G multimode cellular tablets and Multi-Mode GSM, EDGE, WCDMA, LTE
- Diversity antenna switching

Product Description

The FM8636 is a Silicon On Insulator (SOI) Single Pole, Three Throw (SP3T) antenna switch which require very low insertion loss, high isolation and high linearity performance.

The high linearity performance and low insertion loss for UMTS, CDMA2000, and LTE applications.

The FM8636 is manufactured in a compact 1.15mm x 1.15mm x 0.55mm, 9-pin surface mount QFN package.

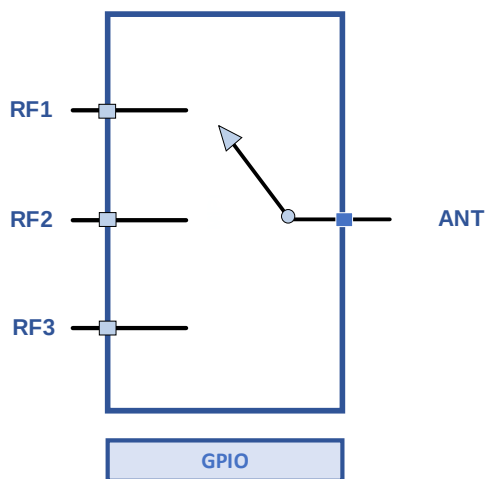


Figure 1 Functional Block Diagram



Absolute Maximum Conditions

Parameters	Symbol	Minimum	Maximum	Units
Supply voltage	V _{DD}	1.7	3.3	V
Control voltage	V _{CTL}		3.0	V
RF input power	P _{in}		+36.5	dBm
Storage temperature	T _{STG}	-55	+150	°C
Operating temperature	T _{OP}	-40	+90	°C
Human Body Model, Class 1C	ESD	1500		V

1: Test condition 25% duty cycle, VSWR=1:1, +25 °C

Note: Exposure to maximum rating conditions for extended periods may reduce device reliability. There is no damage to device with only one parameter set at the limit and all other parameters set at or below their nominal value. Exceeding any of the limits listed here may result in permanent damage to the device.

General Electrical Specifications

Parameters	Symbol	Test Condition	Min.	Typ.	Max.	Units
Supply voltage	V _{DD}		1.7	2.8/1.8	3.0	V
Supply current, active mode	I _{DD}			35	50	μA
Control signal: High Low	V _{CTL}		1.35	1.8	2.70 0.3	V
Control current: High Low	I _{CTL}			1		μA
Turn-on time (PIN = 0 dBm)	T _{ON}	Measured from 50% of final VDD supply voltage to 90% of RF power		5	10	μs
Switching time (PIN = 0 dBm)	T _{SW}	Measured from 50% of final VC supply voltage to 90%/10% of RF power		0.3	0.5	μs

(VDD = 2.8 V, VCT = 1.8 V, TOP = +25 °C, Characteristic Impedance [ZO] = 50 Ω, Unless Otherwise Noted)



RF Specifications

Parameters	Symbol	Test Condition	Min.	Typ.	Max.	Units
Operating frequency	f		0.1		5.0	GHz
Insertion loss	IL	Up to 1.0 GHz Up to 2.0 GHz Up to 2.7 GHz Up to 3.8 GHz Up to 4.2 GHz Up to 5.0 GHz		0.30 0.40 0.55 0.70 0.85 1.10	0.40 0.55 0.70 0.85 1.00 1.25	dB
Isolation (ANT port to any receive port)	Iso	Up to 1.0 GHz Up to 2.0 GHz Up to 2.7 GHz Up to 3.8 GHz Up to 4.2 GHz Up to 5.0 GHz	32 22 20 15 13 10	40 27 25 20 18 15		dB
2Fo (LTE)	2fo	Fo = 824~915MHz, Pin = 26dBm		-78	-73	dBm
3Fo (LTE)	3fo			-70	-65	dBm
2Fo (GSM 850/900)	2fo	Fo = 824~915MHz, Pin = 35dBm		-55	-50	dBm
3Fo (GSM 850/900)	3fo			-40	-35	dBm
2Fo (LTE)	2fo	Fo = 1710~1980MHz, Pin=26dBm		-66	-61	dBm
3Fo (LTE)	3fo			-61	-56	dBm
2Fo (GSM DCS/PCS)	2fo	Fo = 1710~1980MHz, Pin = 33dBm		-50	-45	dBm
3Fo (GSM DCS/PCS)	3fo			-37	-32	dBm
2Fo (LTE)	2fo	Fo = 2300~2690MHz, Pin = 26dBm		-70	-65	dBm
3Fo (LTE)	3fo			-60	-55	dBm
0.1 dB Compression Point 25% duty cycle, VSWR=1:1	P0.1dB	900M, 50Ω		+36		dBm



Truth Table

VC1	VC2	ANT-RFX
0	0	OFF
1	0	ANT-RF1 on
0	1	ANT-RF2 on
1	1	ANT-RF3 on



Pin-out Information

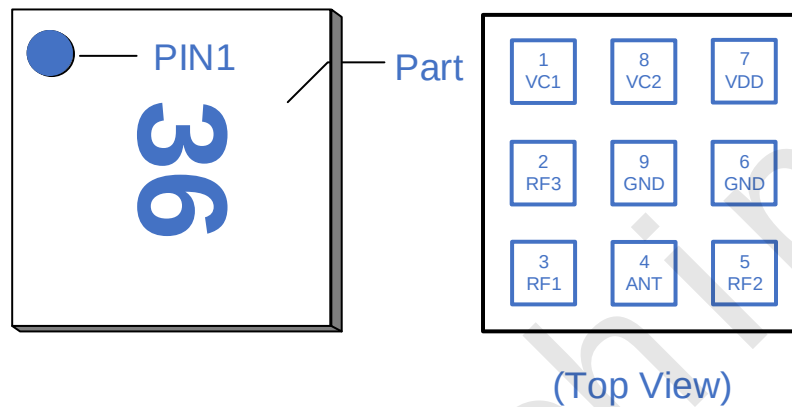


Table 1. Pin Description

Pin #	Name	Description	Pin #	Name	Description
1	VC1	Control Pin 1	6	GND	Ground
2	RF3	RF Port 3	7	VDD	Power Supply
3	RF1	RF Port 1	8	VC2	Control Pin 2
4	ANT	Antenna	9	GND	Ground
5	RF2	RF Port 2			

Application circuit

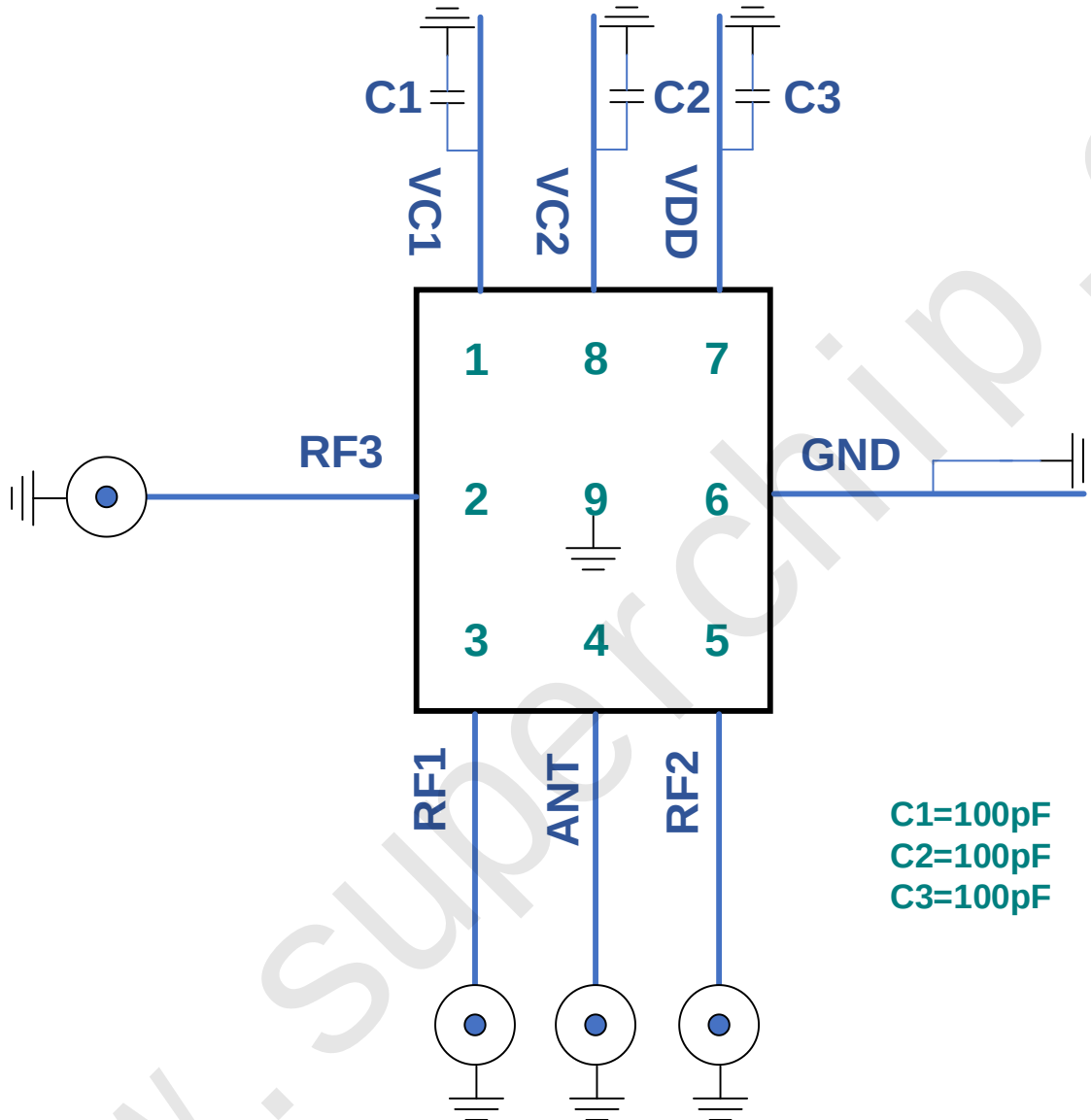


Figure 3 Application circuit



Evaluation Board

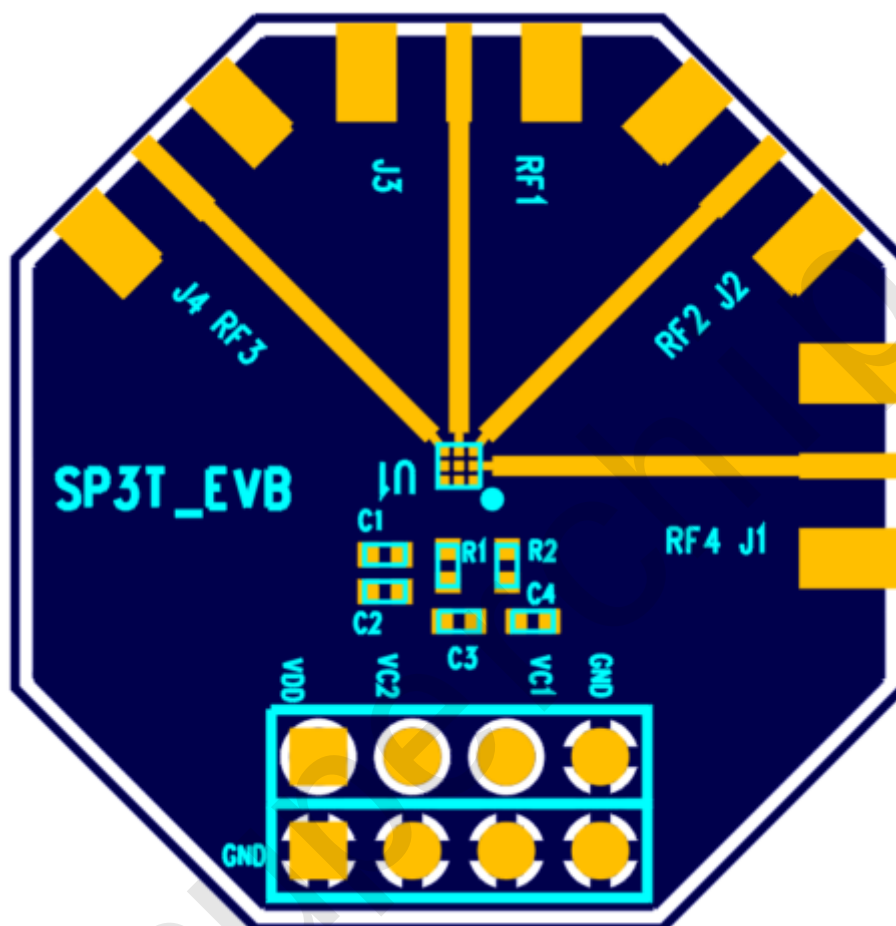


Figure 4 Evaluation Board Assembly Diagram

Package Outline Dimension

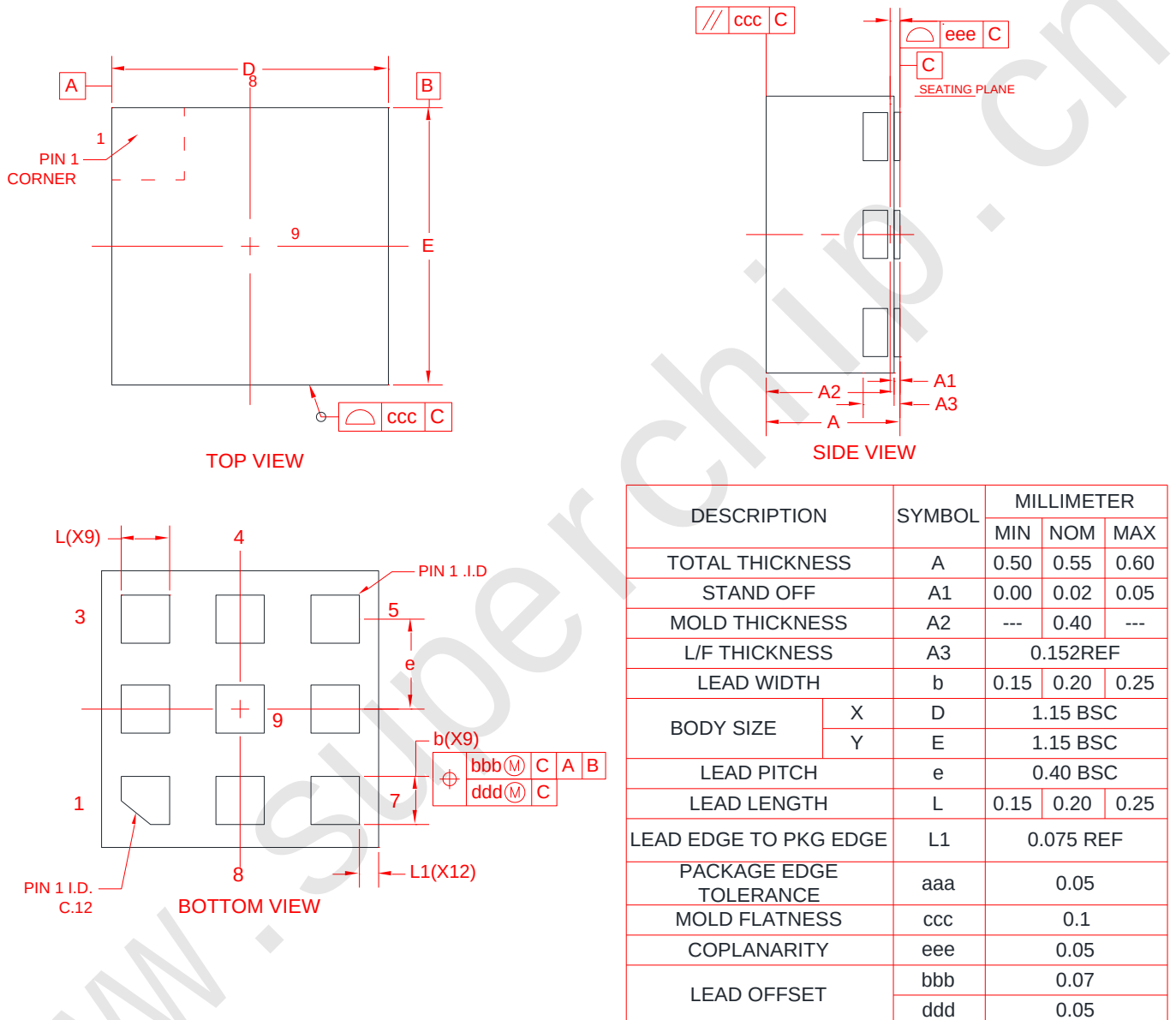
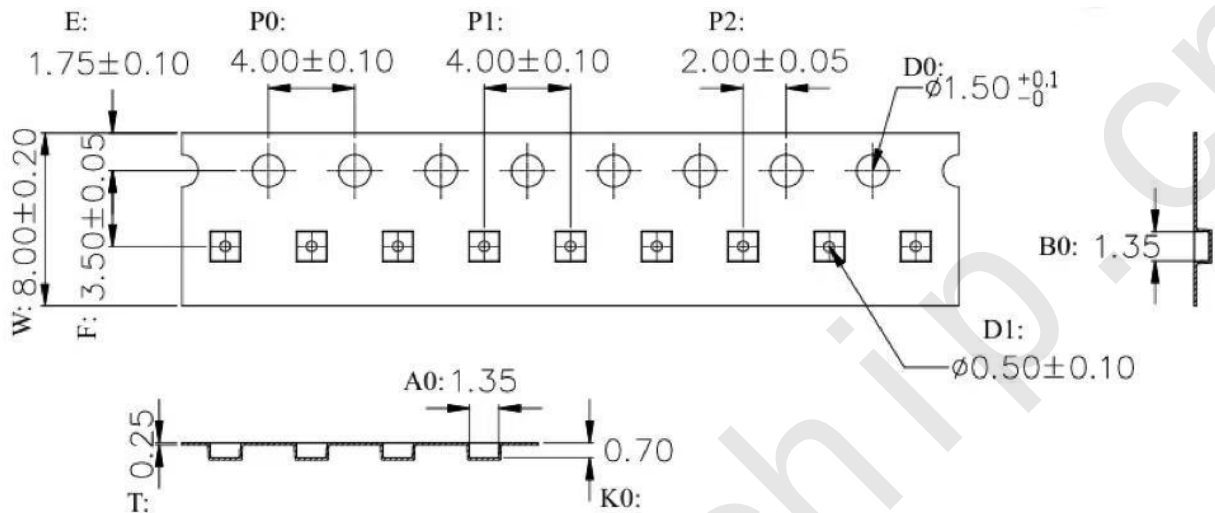


Figure 5 Package Outline Dimension



Package Dimensions (3000pcs)



1. 10 sprocket hole pitch cumulative tolerance ± 0.20 .
2. Carrier camber is within 1 mm in 250 mm.
3. Material : Black Conductive Polystyrene Alloy.
4. All dimensions meet EIA-481 requirements.
5. Thickness : 0.25 ± 0.05 mm.
6. Packing length per 15" reel : 500 Meters.
7. Component load per 13" reel : 10000 pcs.

Figure 6 Tape and Reel Dimensions

W	8.00 ± 0.20	B0	1.70 ± 0.05
A0	1.30 ± 0.05	K0	0.65 ± 0.05

Declaration of No Harmful Substances

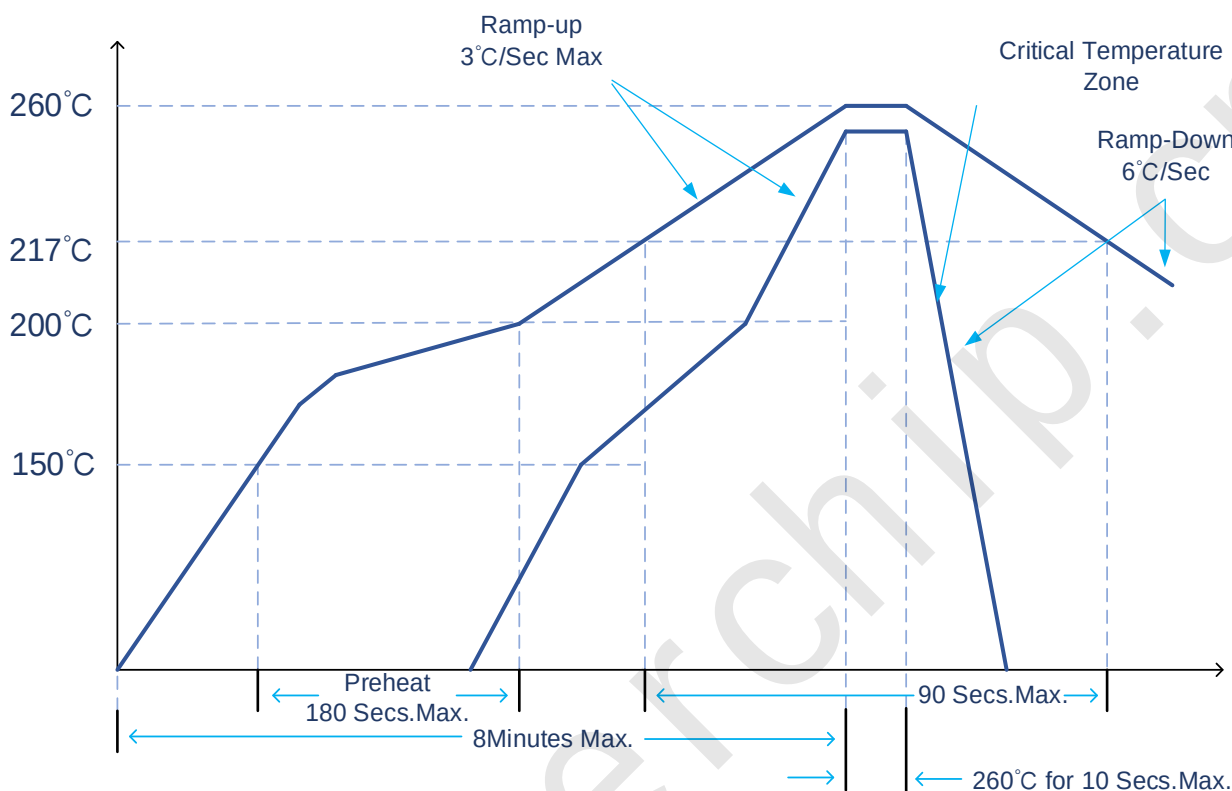
This part is compliant with 2005/20/EC packaging directive, 1907/2006/EC REACH directive and the 2011/65/EU RoHS directive (Restrictions on the Use of Certain Hazardous Substances in Electrical and Electronic Equipment), as amended by Directive 2015/863/EU.

This product also has the following attributes:

- Lead free
- Halogen Free (Chlorine, Bromine)
- SVHC Free



Reflow Chart



NOTE: Reflow Profile with 240°C peak also acceptable.