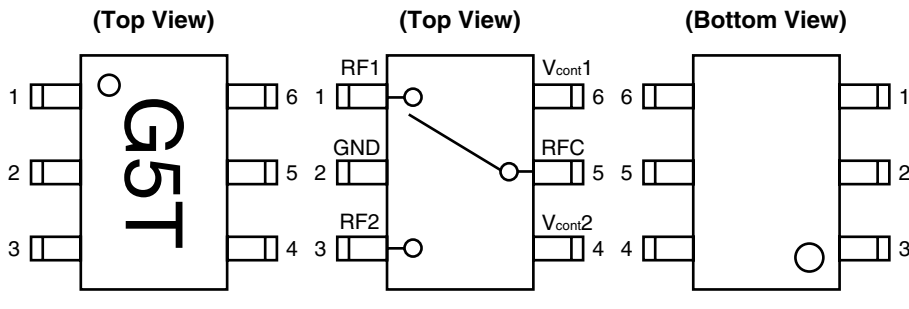


PIN CONNECTIONS AND INTERNAL BLOCK DIAGRAM



Pin No.	Pin Name
1	RF1
2	GND
3	RF2
4	V _{cont2}
5	RFC
6	V _{cont1}

SW TRUTH TABLE

On Path	V _{cont1}	V _{cont2}
RFC-RF1	High	Low
RFC-RF2	Low	High

ABSOLUTE MAXIMUM RATINGS (T_A = +25°C, unless otherwise specified)

Parameter	Symbol	Ratings	Unit	
Switch Control Voltage	V _{cont}	+6.0 ^{Note}	V	
Input Power	V _{cont} = 3 V	P _{in}	+35	dBm
	V _{cont} = 5 V	P _{in}	+37	
Power Dissipation (average)	P _D	150	mW	
Operating Ambient Temperature	T _A	-45 to +85	°C	
Storage Temperature	T _{stg}	-55 to +150	°C	

Note |V_{cont1} - V_{cont2}| ≤ 6.0 V

RECOMMENDED OPERATING RANGE (T_A = +25°C, unless otherwise specified)

Parameter	Symbol	MIN.	TYP.	MAX.	Unit
Operating Frequency	f	0.5	-	3.8	GHz
Switch Control Voltage (H)	V _{cont (H)}	2.7	3.0	5.3	V
Switch Control Voltage (L)	V _{cont (L)}	-0.2	0	0.2	V
Control Voltage Difference	ΔV _{cont (H)} , ΔV _{cont (L)} ^{Note}	-0.1	0	0.1	V

Note ΔV_{cont (H)} = V_{cont1 (H)} - V_{cont2 (H)}

ΔV_{cont (L)} = V_{cont1 (L)} - V_{cont2 (L)}

ELECTRICAL CHARACTERISTICS

(T_A = +25°C, V_{cont} (H) = 3.0 V, V_{cont} (L) = 0 V, Z_o = 50 Ω, DC blocking capacitors = 8 pF, unless otherwise specified)

Parameter	Symbol	Test Conditions	MIN.	TYP.	MAX.	Unit
Insertion Loss 1	L _{ins1}	f = 0.5 to 1.0 GHz ^{Note 1}	–	0.35	0.60	dB
Insertion Loss 2	L _{ins2}	f = 1.0 to 2.0 GHz ^{Note 1}	–	0.40	0.65	dB
Insertion Loss 3	L _{ins3}	f = 2.0 to 2.5 GHz	–	0.45	0.70	dB
Insertion Loss 4	L _{ins4}	f = 2.5 to 3.0 GHz	–	0.50	0.75	dB
Insertion Loss 5	L _{ins5}	f = 3.0 to 3.8 GHz	–	0.60	0.85	dB
Isolation 1	ISL1	f = 0.5 to 1.0 GHz ^{Note 1}	29	32	–	dB
Isolation 2	ISL2	f = 1.0 to 2.0 GHz ^{Note 1}	25	28	–	dB
Isolation 3	ISL3	f = 2.0 to 2.5 GHz	23	26	–	dB
Isolation 4	ISL4	f = 2.5 to 3.0 GHz	20	23	–	dB
Isolation 5	ISL5	f = 3.0 to 3.8 GHz	16	19	–	dB
Return Loss	RL	f = 0.5 to 3.8 GHz ^{Note 1}	15	20	–	dB
0.1 dB Loss Compression Input Power ^{Note 2}	P _{in (0.1 dB)}	f = 2.5 GHz	–	+33.5	–	dBm
1 dB Loss Compression Input Power 1 ^{Note 3}	P _{in (1 dB) 1}	f = 0.5 to 3.8 GHz ^{Note 1} V _{cont} = 3 V	–	+35	–	dBm
1 dB Loss Compression Input Power 2 ^{Note 3}	P _{in (1 dB) 2}	f = 0.5 to 3.8 GHz ^{Note 1} V _{cont} = 5 V	–	+37	–	dBm
2nd Harmonics	2f _o	f = 2.5 GHz, P _{in} = +26 dBm	–	75	–	dBc
3rd Harmonics	3f _o	f = 2.5 GHz, P _{in} = +26 dBm	–	80	–	dBc
Input 3rd Order Intercept Point	IIP ₃	f = 2.5 GHz	–	+60	–	dBm
Switch Control Current	I _{cont}	No RF input	–	0.1	10	μA
Switch Control Speed	t _{sw}	50% CTL to 90/10% RF	–	100	250	ns

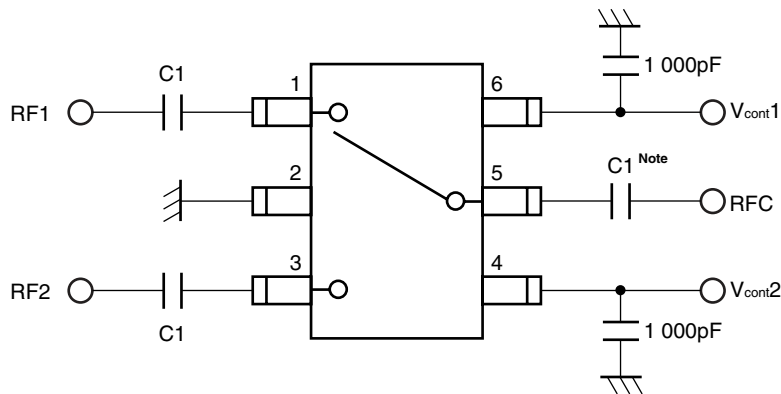
Notes 1. DC blocking capacitors = 56 pF at f = 0.5 to 2.0 GHz

2. P_{in (0.1 dB)} is the measured input power level when the insertion loss increases 0.1 dB more than that of the linear range.

3. P_{in (1 dB)} is the measured input power level when the insertion loss increases 1 dB more than that of the linear range.

Caution It is necessary to use DC blocking capacitors with this device.

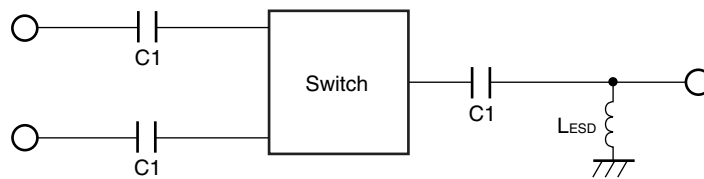
EVALUATION CIRCUIT



Note C1 : 0.5 to 2.0 GHz 56 pF
 : 2.0 to 3.8 GHz 8 pF

The application circuits and their parameters are for reference only and are not intended for use in actual design-ins.

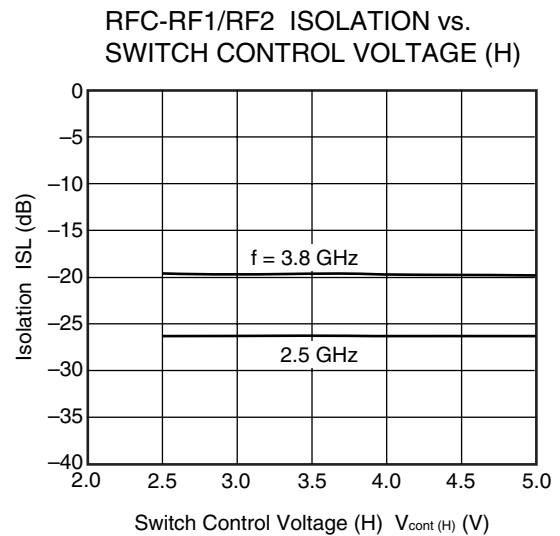
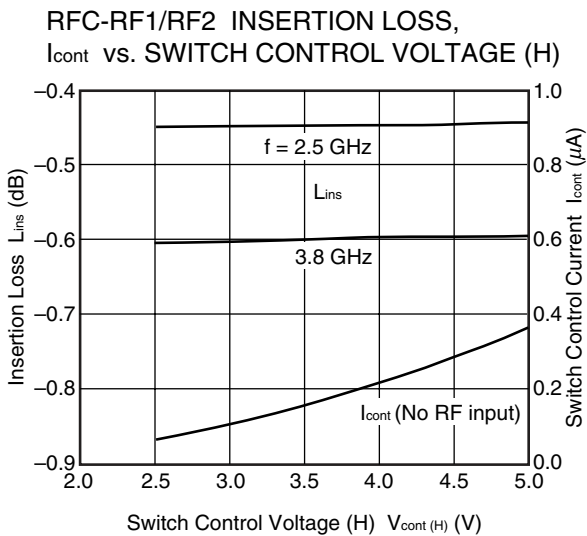
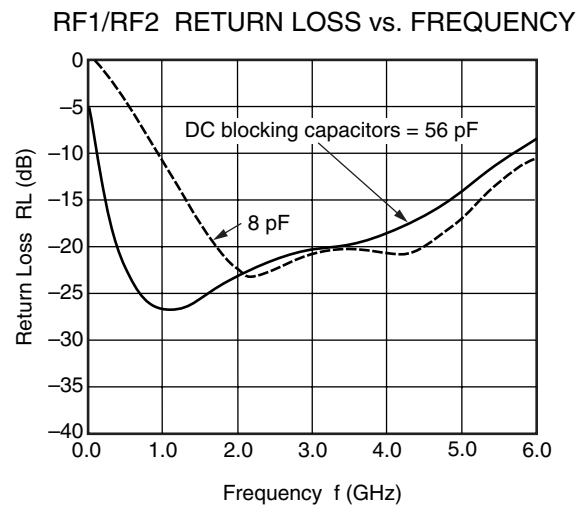
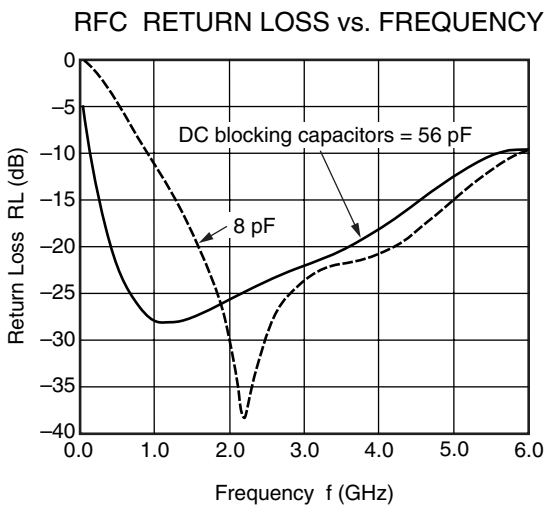
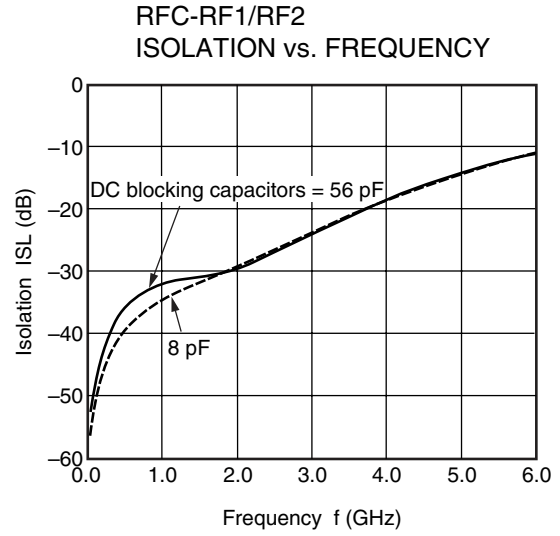
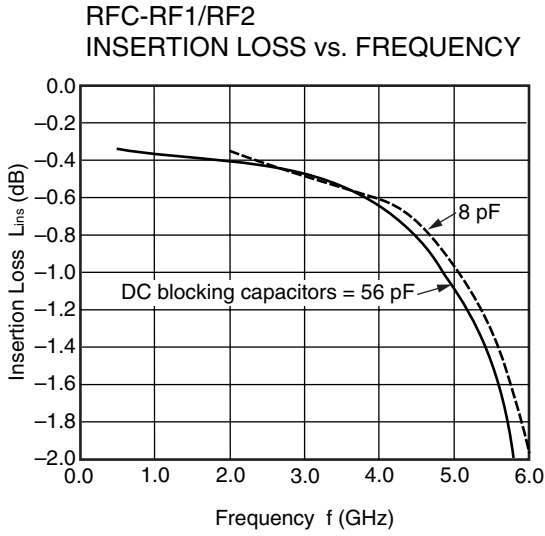
APPLICATION INFORMATION



- C1 are DC blocking capacitors external to the device.
 The value may be tailored to provide specific electrical responses.
- The RF ground connections should be kept as short as possible and connected to directly to a good RF ground for best performance.
- L_{ESD} provides a means to increase the ESD protection on a specific RF port, typically the port attached to the antenna.

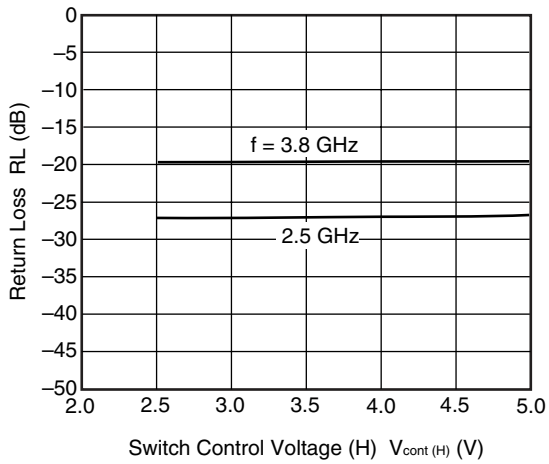
TYPICAL CHARACTERISTICS

($T_A = +25^\circ\text{C}$, $V_{\text{cont}}(\text{H}) = 2.7$ to 5.3 V, $V_{\text{cont}}(\text{L}) = -0.2$ to 0.2 V, unless otherwise specified)

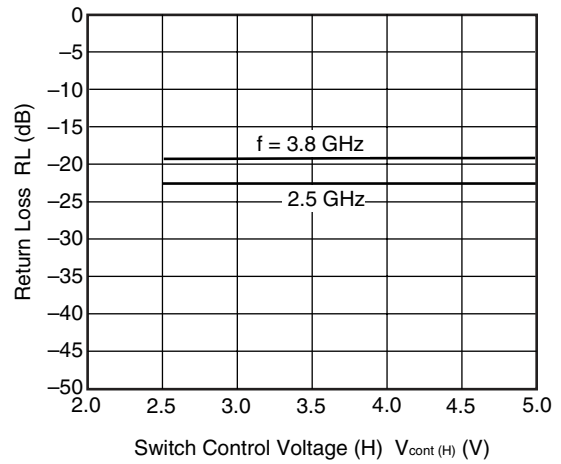


Remark The graphs indicate nominal characteristics.

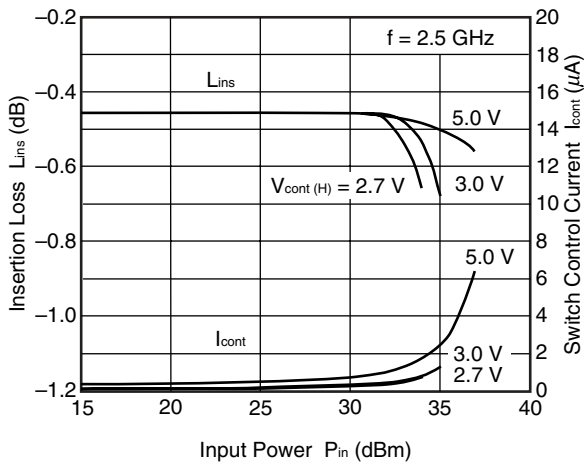
RFC RETURN LOSS vs. SWITCH CONTROL VOLTAGE (H)



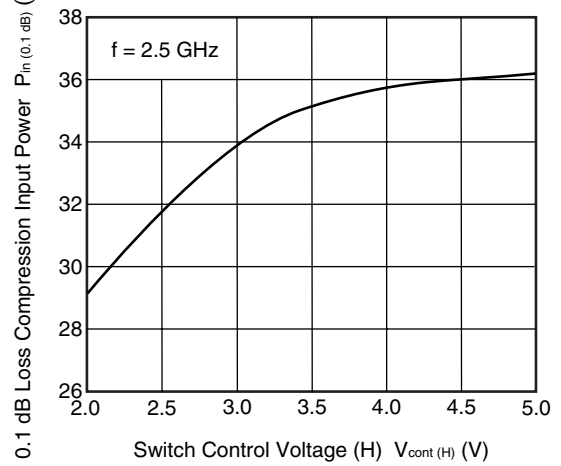
RF1/RF2 RETURN LOSS vs. SWITCH CONTROL VOLTAGE (H)



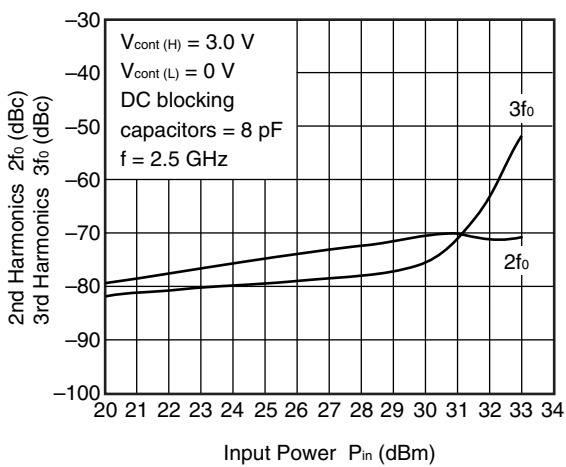
RFC-RF1/RF2 INSERTION LOSS, Icont vs. INPUT POWER



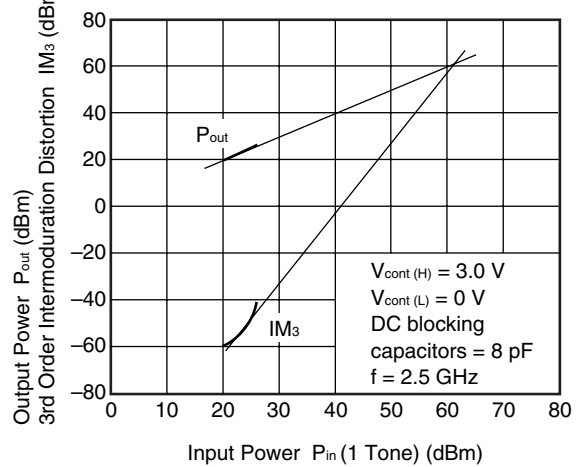
RFC-RF1/RF2 Pin (0.1 dB) vs. SWITCH CONTROL VOLTAGE (H)



RFC-RF1/RF2 2fo, 3fo vs. INPUT POWER



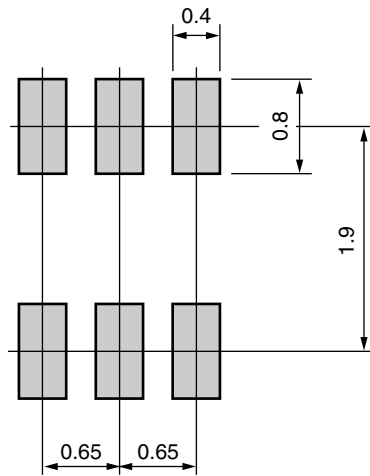
RFC-RF1/RF2 OUTPUT POWER, IM3 vs. INPUT POWER



Remark The graphs indicate nominal characteristics.

MOUNTING PAD LAYOUT DIMENSIONS

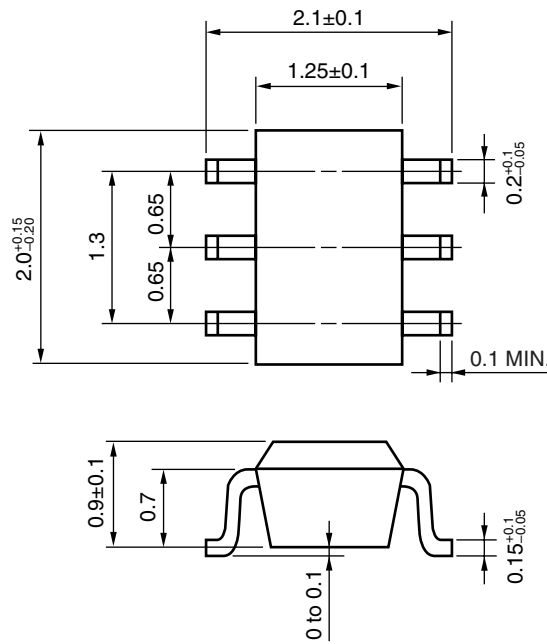
6-PIN SUPER MINIMOLD (SC-88/SOT-363 type) (UNIT: mm)



Remark The mounting pad layout in this document is for reference only.
 When designing PCB, please consider workability of mounting, solder joint reliability, prevention of solder bridge and so on, in order to optimize the design.

PACKAGE DIMENSIONS

6-PIN SUPER MINIMOLD (SC-88/SOT-363 type) (UNIT: mm)



RECOMMENDED SOLDERING CONDITIONS

This product should be soldered and mounted under the following recommended conditions. For soldering methods and conditions other than those recommended below, contact your nearby sales office.

Soldering Method	Soldering Conditions	Condition Symbol
Infrared Reflow	Peak temperature (package surface temperature) : 260°C or below Time at peak temperature : 10 seconds or less Time at temperature of 220°C or higher : 60 seconds or less Preheating time at 120 to 180°C : 120±30 seconds Maximum number of reflow processes : 3 times Maximum chlorine content of rosin flux (% mass) : 0.2%(Wt.) or below	IR260
Wave Soldering	Peak temperature (molten solder temperature) : 260°C or below Time at peak temperature : 10 seconds or less Preheating temperature (package surface temperature) : 120°C or below Maximum number of flow processes : 1 time Maximum chlorine content of rosin flux (% mass) : 0.2%(Wt.) or below	WS260
Partial Heating	Peak temperature (terminal temperature) : 350°C or below Soldering time (per side of device) : 3 seconds or less Maximum chlorine content of rosin flux (% mass) : 0.2%(Wt.) or below	HS350

Caution Do not use different soldering methods together (except for partial heating).

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M8E0904E

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April 1st, 2010
Renesas Electronics Corporation

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