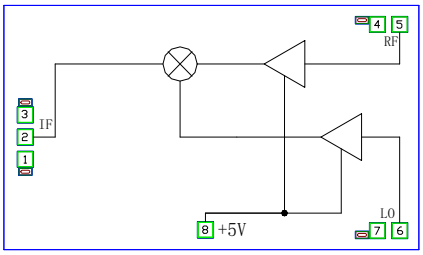
Features

·RF/LO Freq: 1.5-5.0GHz
·IF Freq: DC-1.0GHz
·Conversion Gain: 15dB
·LO Power: 0dBm
·RF Power: -15dBm
·RF-IF Isolation: 15dBc
·LO-IF Isolation: 45dBc
·LO-RF Isolation: 60dBc
·Input P-1dB: -11dBm
·Working Current: 88mA
·Die Size: 2.8×1.65×0.1mm^3

Functional Diagram



General Description

The MC19133 is a down-conversion multifunctional chip which integrates a RF amplifier, a LO drive amplifier, and a double-balanced mixer. The Chip covers 1.5-5.0 GHz RF/LO frequency, and DC-1.0GHz IF frequency. The conversion gain is 15dB, and typical LO-RF isolation is 60dBc. The power supply current is 88mA @ 5V voltage .

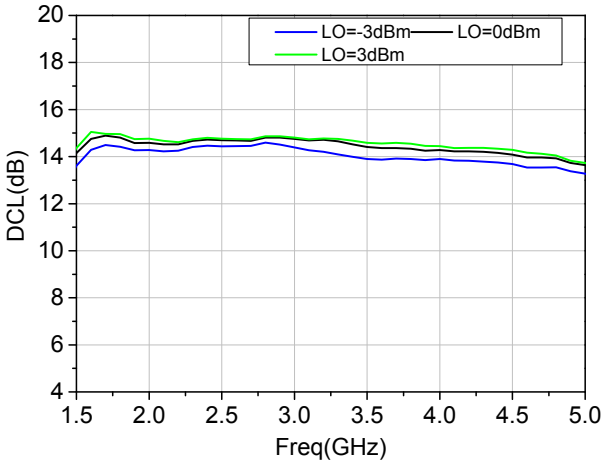
The Chip applies the on-chip metallization through-hole technology thus no need for additional grounding measures which makes it easy and convenient to use. The backside of the chip is metallized, suitable for conductive adhesive bonding or eutectic mounting process.

Electrical Specifications (T_A=+25℃, IF=100MHz, LO=0dBm, VD=+5V, Idd=88mA, 50Ωsystem)

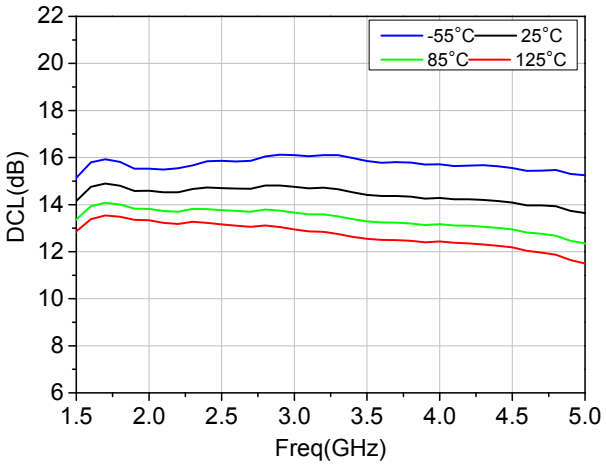
Parameter		Min.	Typ.	Max.	Unit
LO/RF Frequency	LO/RF Freq	1.5	-	5.0	GHz
IF Frequency	IF Freq	DC	-	1.0	GHz
Conversion Gain	Gain	-	15	-	dB
RF-IF Isolation	RF-IF ISO	-	15	-	dBc
LO-IF Isolation	LO-IF ISO	-	45	-	dBc
LO-RF Isolation	LO-RF ISO	-	60	-	dBc
RF Return Loss	RFRL	-	-20	-	dB
LO Return Loss	LORL	-	-20	-	dB
IF Return Loss	IFRL	-	-15	-	dB
RF input 1dB compression point	P-1dB	-	-11	-	dBm

[1] The chips are 100% RF tested. All tests are performed in high LO mode.

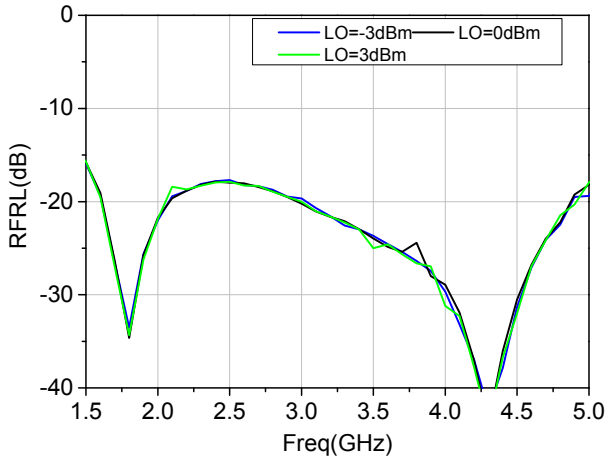
Typical Testing Characteristics



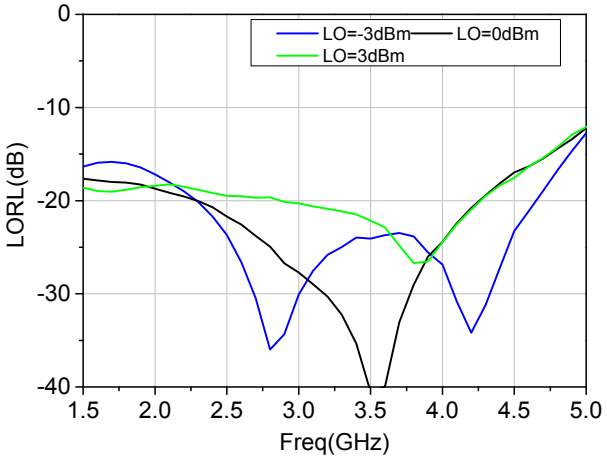
DCL vs RF Frequency (TA=25℃,IF=100MHz)



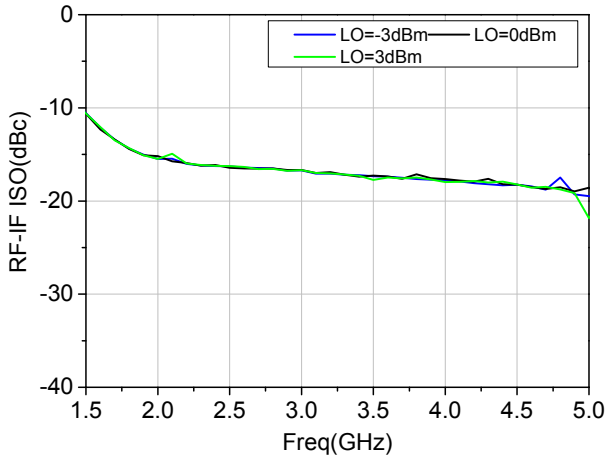
DCL vs RF Frequency (LO=0dBm,IF=100MHz)



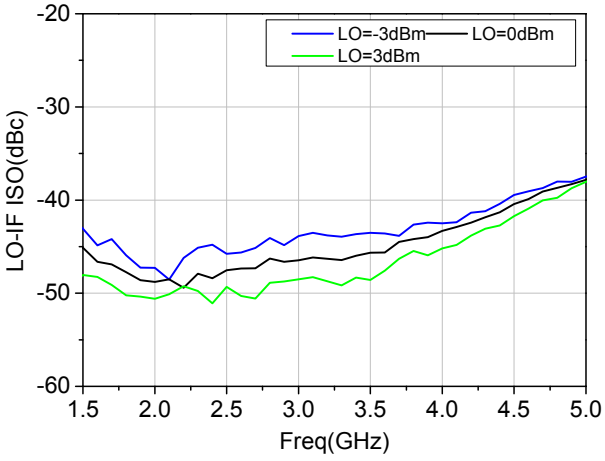
RF Return Loss vs RF Frequency
(T_A=25℃,IF=100MHz)



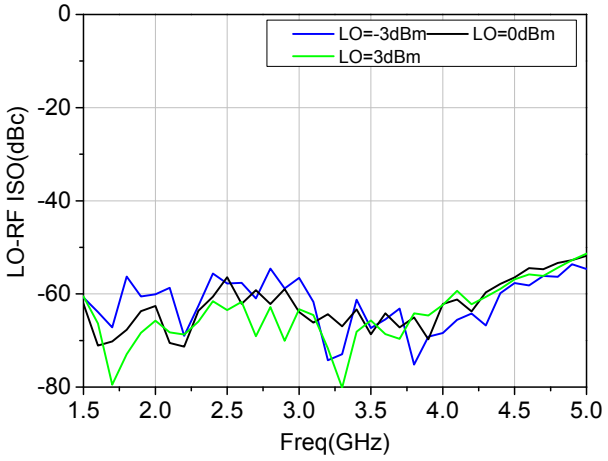
LO Return Loss vs LO Frequency
(T_A=25℃,IF=100MHz)



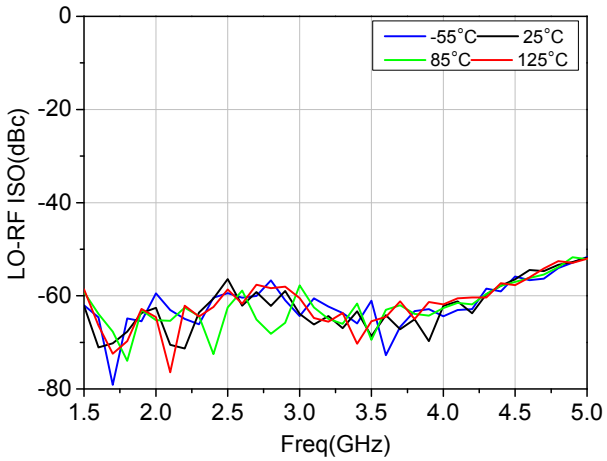
RF-IF Isolation vs RF Frequency
(T_A=25℃,IF=100MHz)



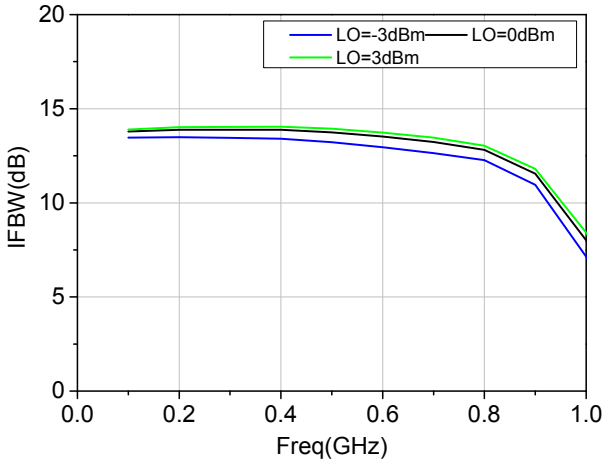
LO-IF Isolation vs LO Frequency
(T_A=25℃,IF=100MHz)



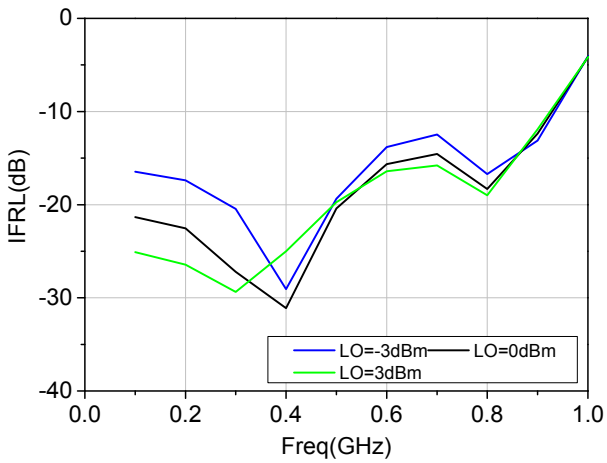
LO-RF Isolation vs LO Frequency
(TA=25℃, IF=100MHz)



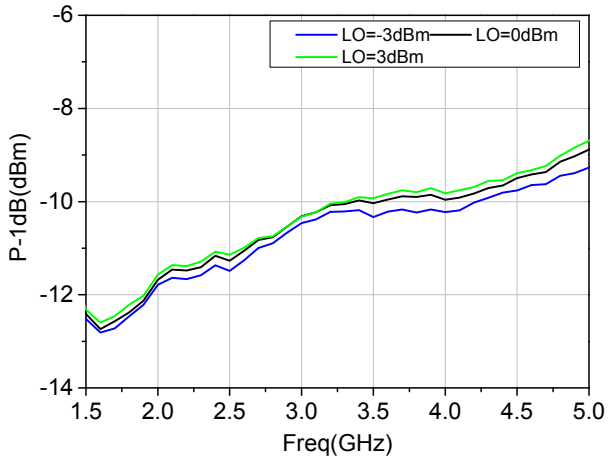
LO-RF Isolation vs LO Frequency
(LO=0dBm,IF=100MHz)



IF bandwidth: Down Conversion Gain vs IF Frequency
(LO=0dBm,LO=5.0GHz)



IF Return Loss vs IF Frequency
(LO=0dBm, LO=5.0GHz)



Input P-1dB vs RF Frequency
(T_A=25℃,IF=100MHz)

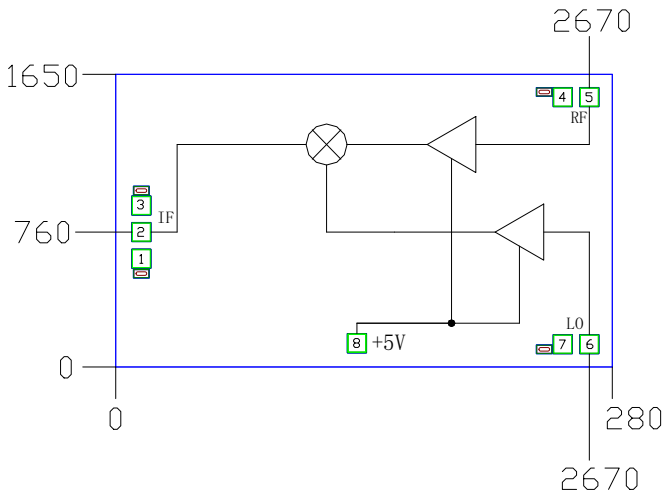
Absolute Maximum Ratings

Parameter Limits	Value
Max. RF Input Power, 50Ω	10dBm
Max. LO Input Power, 50Ω	10dBm
Suggested LO Power Range	-3~+3dBm
Storage Temperature	-65~+150℃
Operating Temperature	-55~+125℃
Mounting Temperature (30s, N_2 Protection)	300℃
Exceeding the above conditions may cause permanent damage to the chip	

This product is ESD(Electrostatic discharge) sensitive. Therefore, proper ESD precautions should be taken to avoid performance degradation or loss of functionality.

- Assembling in a clean environment.
- Avoiding rapid temperature changes during the mounting process.
- Do not touch the surface or use dry/wet chemical methods to clean the surface
- 2 bonding wires for input and output (in figure /\), the bonding wires should be as short as possible.
- Storing in a dry, N_2 protection environment.

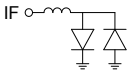
Outline Drawing



Notes:

1. Unit:μm
2. Back side metallization:Gold
3. Back side metal is ground
4. Bonding pad size: 100μm
5. Outline Dimensional Tolerance:±50 μm

Pad Descriptions

Pad No.	Function	Description	Interface Schematic
6	LO	LO signal input, 50Ω matched	
5	RF	RF Signal, 50Ω matched	
2	IF	IF Signal, 50Ω matched	
8	VD	Power supply voltage for the amplifier. External 100pF power filter capacitor required	
1, 3, 4, 6, 7	GND	Grounding pad for probe test	
Die Bottom	GND	Die bottom must be connected to RF/DC ground	

Assembly Diagram