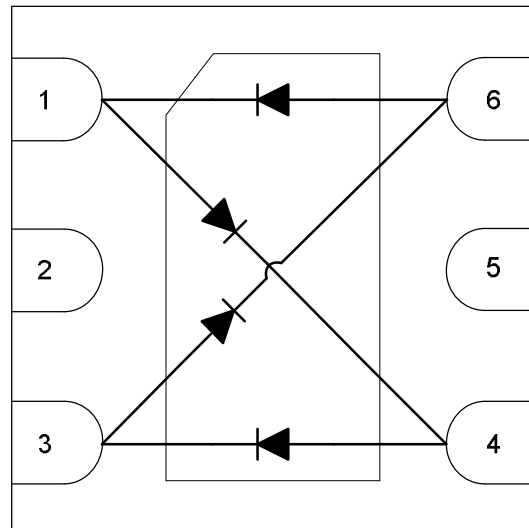


## Features

- 1.4V Turn-On Voltage
- High Power Capacity
- Broad RF Input Dynamic Range
- Thermal Compensation Technology
- Harmonic Suppression Technology
- Designed for Low-Junction Capacitance
- Cross-Over Quad Version
- Small Size DFN Package
- Advanced GaAs Schottky Technology



**Functional Block Diagram**

## Applications

- Mixers
- Detectors
- Clamping
- Wave Shaping

## Product Description

The YX18 is specially designed for high-volume designs. It is made of GaAs Schottky diodes which are arranged into the shape of cross-over quad version, typical turn-on voltage is 1.4V. Typical application of YX18 are mixing, detecting, clamping and wave shaping. It can provide extremely large RF input dynamic range when be applied to mixers. The YX18 is manufactured on an advanced GaAs Schottky Diode process. It is assembled in a smart 6-pin, 2mm×2mm, DFN package, and have a better thermal conductivity .

## Ordering Information

- YX18                      Double-Balanced GaAs Schottky Diodes
- YX18-EVB-A            YX18 Mixing Evaluation Board

**Absolute Maximum Ratings<sup>[1]</sup> (T<sub>C</sub>=25°C)**

Parameter	Symbol	Minimum	Maximum	Unit
Forward Current	I <sub>F</sub>		150	mA
Peak Inverse Voltage	P <sub>IV</sub>	8		V
Operating Temperature	T <sub>OP</sub>	-40	+125	°C
Junction Temperature	T <sub>J</sub>	-65	+150	°C
Storage Temperature	T <sub>STG</sub>	-65	+150	°C

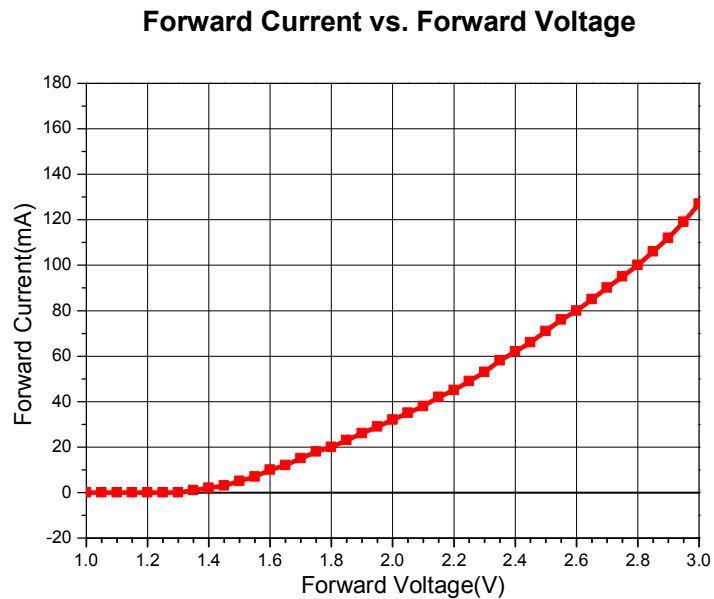
Notes:

1. Operation in excess of any one of these conditions may result in permanent damage to the device.
2. T<sub>C</sub> = +25°C, where TC is defined to be the temperature at the package pins where contact is made to the circuit board.

**Electrical Specifications (T<sub>C</sub>=25°C)**

Parameter	Specification			Unit	Condition
	Min.	Typ.	Max.		
Turn-On Voltage		1.4		V	I <sub>F</sub> =1mA
Minimum Breakdown Voltage		8.0		V	
Maximum Forward Voltage		3.0		V	
Maximum Junction Capacitance		*TBD*		pF	
Typical Dynamic Resistance		*TBD*		Ω	

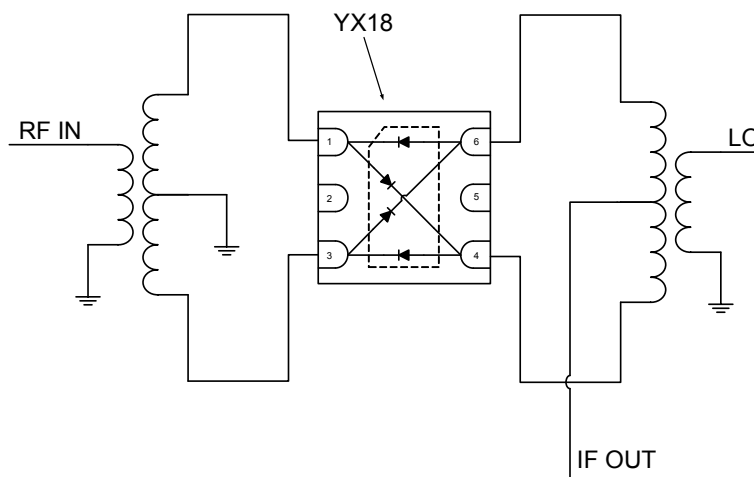
## Typical Performance ( $T_c=25^\circ\text{C}$ , Single Branch Diodes)



## Application Information

### Mixer Application

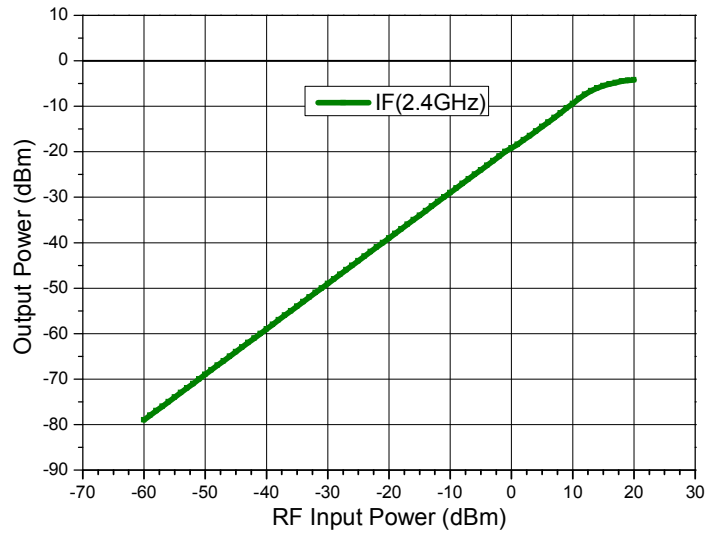
The YX18 can be used to make excellent mixers at frequencies up to 6 GHz. A planar mixer can be made using the YX18 as shown in Figure 1. Take advantage of its' cross-over quad shape, the need for via holes in the RF portion of the circuit can be eliminated. Distortion in double balanced mixers can be reduced if LO drive is increased, up to the point where the Schottky diodes are driven into saturation. Above this point, increased LO drive will not result in improvements in distortion. The use of excellent high barrier GaAs diodes can take advantage of higher LO drive power, YX18 is specially designed for this low distortion double balanced mixer application.



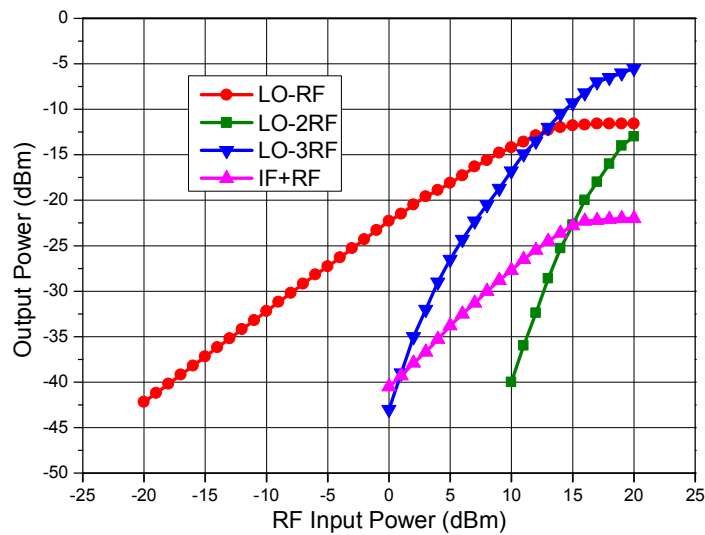
**Fig1. Low Distortion Planar Double Balanced Mixer.**

#### Mixer Typical Performance ( $f_{LO}=2\text{GHz}$ , $P_{LO}=15\text{dBm}$ , $f_{RF}=400\text{MHz}$ )

IF Output Power vs. RF Input Power

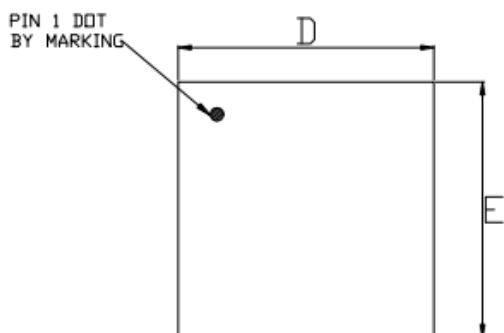


Spurious Output Power vs. RF Input Power

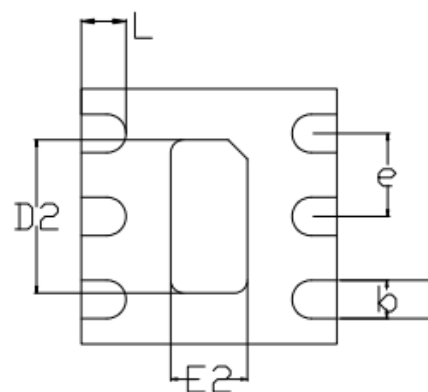


## Packaging Diagram

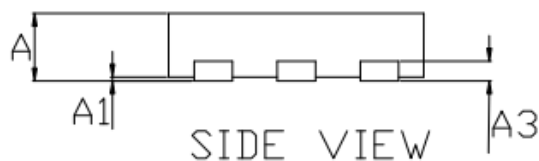
(Unit: mm)



TOP VIEW



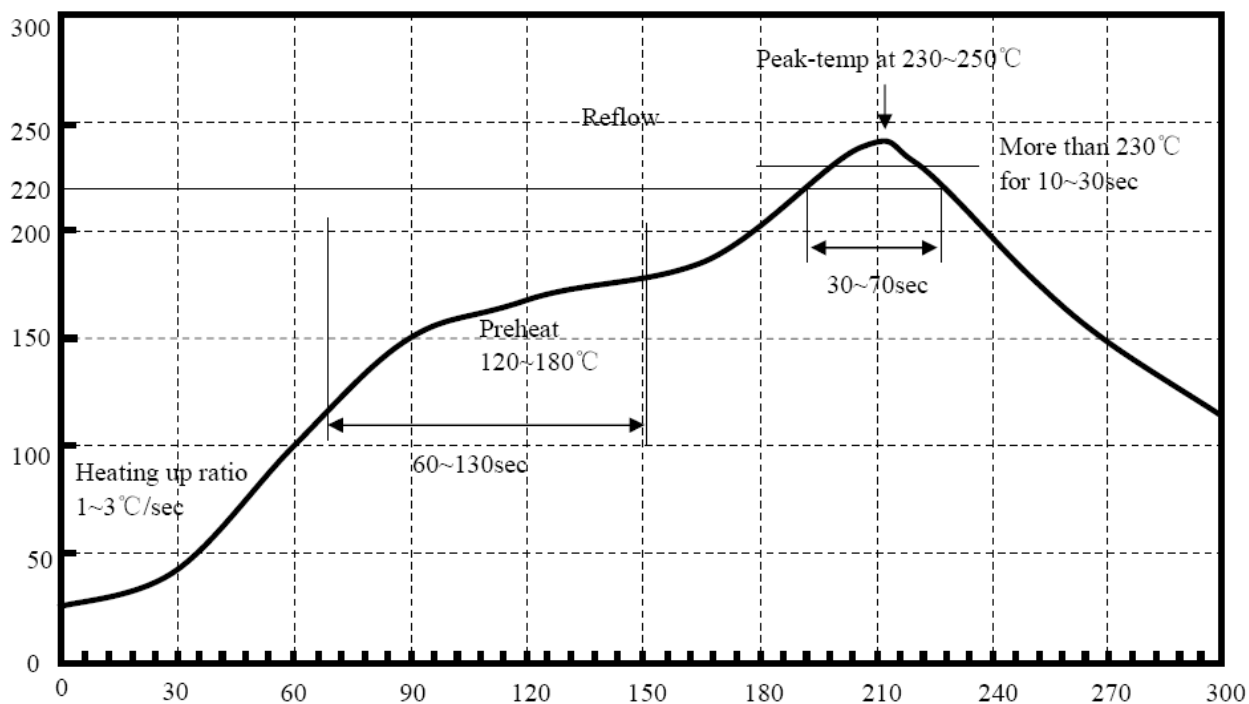
BOTTOM VIEW



SIDE VIEW

COMMON DIMENSIONS(MM)			
PKG.	W:very very THIN		
REF.	MIN.	NDM.	MAX
A	0.70	0.75	0.80
A1	0.00	-	0.05
A3	0.20 REF.		
D	1.95	2.00	2.05
E	1.95	2.00	2.05
D2	1.05	1.20	1.30
E2	0.45	0.60	0.70
b	0.25	0.30	0.35
L	0.25	0.35	0.45
e	0.65 BSC		

## Recommended Solder Temperature



Recommended Temperature

Sn95.5Ag4.0Cu0.5



**For additional product information, please contact**

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