

General Purpose NPN Epitaxial Planar Transistor

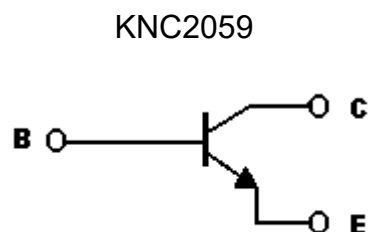
Description

The KNC2059 is designed for using in VHF & UHF oscillators and VHF mixer in tuner of a TV receiver.

Features

- High transition frequency. ($f_T = 1.0\text{GHz}$, TYP. @ $V_{CB}=10\text{V}$, $I_c=10\text{mA}$, $f=200\text{MHz}$)
- Very low capacitance. ($C_{ob} = 1.4\text{pF}$, TYP. @ $V_{CB}=10\text{V}$, $f=1\text{MHz}$)
- Small $R_{bb'}$ - C_c and high gain. ($R_{bb'}$ - $C_c = 8\text{ps}$, TYP. @ $V_{CB}=10\text{V}$, $I_c=10\text{mA}$, $f=31.8\text{MHz}$)
- Small NF. ($NF = 5.5\text{dB}$, TYP. @ $V_{CE}=12\text{V}$, $I_c=2\text{mA}$, $f=200\text{MHz}$, $R_g=50\text{ohm}$)
- Pb-free lead plating and halogen-free package

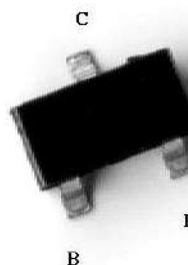
Symbol



B : Base
 C : Collector
 E : Emitter

Outline

SOT-23



Ordering Information

Device	Package	Shipping
KNC2059	SOT-23 (Pb-free lead plating and halogen-free package)	3000 pcs / Tape & Reel

Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Collector-Base Voltage	V _{CB0}	25	V
Collector-Emitter Voltage	V _{CEO}	18	V
Emitter-Base Voltage	V _{EBO}	3	V
Collector Current	I _C	50	mA
Power Dissipation	P _D	225	mW
Operating Junction Temperature Range	T _j	-55~+150	°C
Storage Temperature Range	T _{stg}	-55~+150	°C

Characteristics (Ta=25°C)

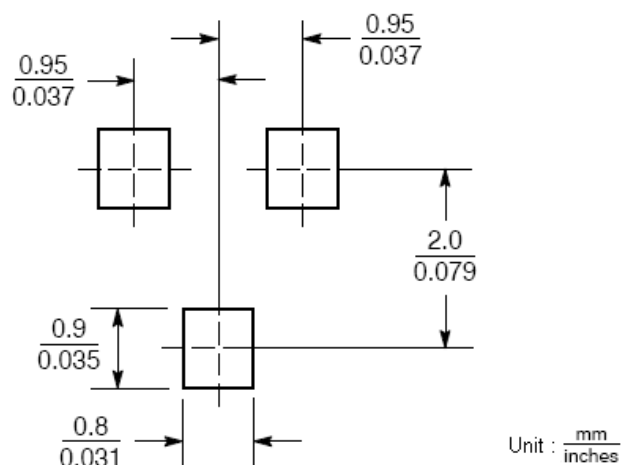
Symbol	Min.	Typ.	Max.	Unit	Test Conditions
BV _{CB0}	25	-	-	V	I _C =10μA
BV _{CEO}	18	-	-	V	I _C =1mA
BV _{EBO}	3	-	-	V	I _C =10μA
I _{CB0}	-	-	0.5	μA	V _{CB} =10V
I _{EBO}	-	-	0.5	μA	V _{EB} =2V
*V _{CE(sat)}	-	0.1	0.5	V	I _C =20mA, I _B =4mA
*h _{FE}	52	-	270	-	V _{CE} =10V, I _C =10mA
f _T	600	1000	-	MHz	V _{CE} =10V, I _C =10mA, f=200MHz
C _{ob}	-	1.4	2.0	pF	V _{CB} =10V, I _E =0A, f=1MHz
R _{bb} '-C _c	-	8	15	ps	V _{CB} =10V, I _C =10mA, f=31.8MHz
NF	-	5.5	-	dB	V _{CE} =12V, I _C =2mA, f=200MHz, R _g =50ohm

*Pulse Test : Pulse Width ≤380μs, Duty Cycle≤2%

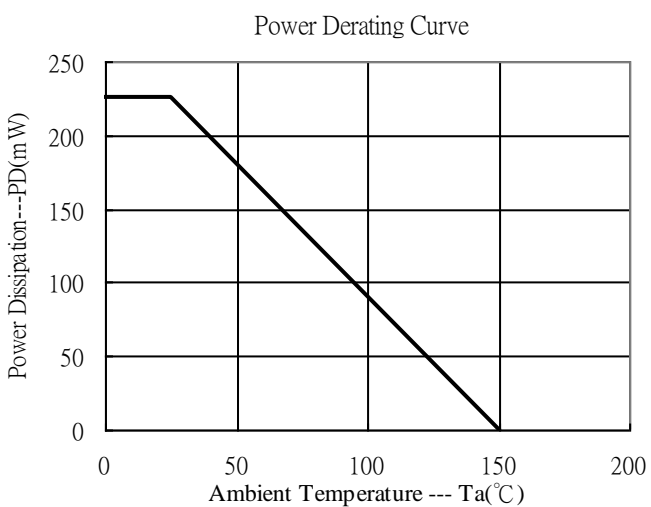
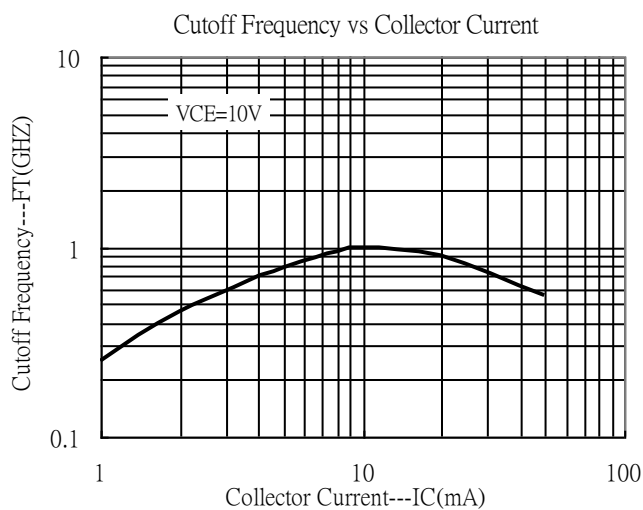
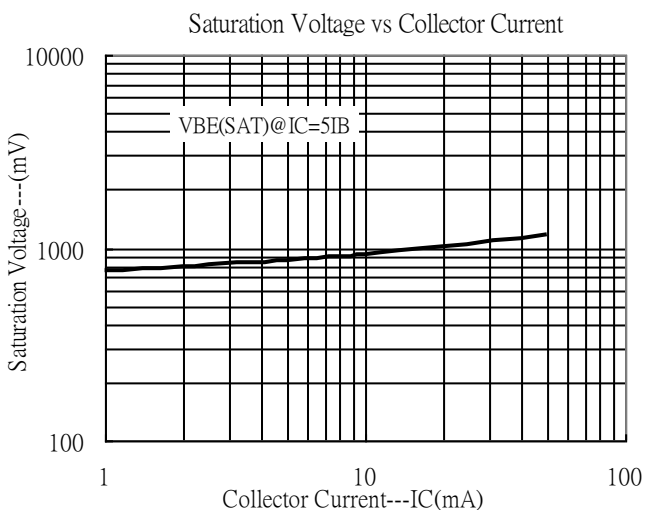
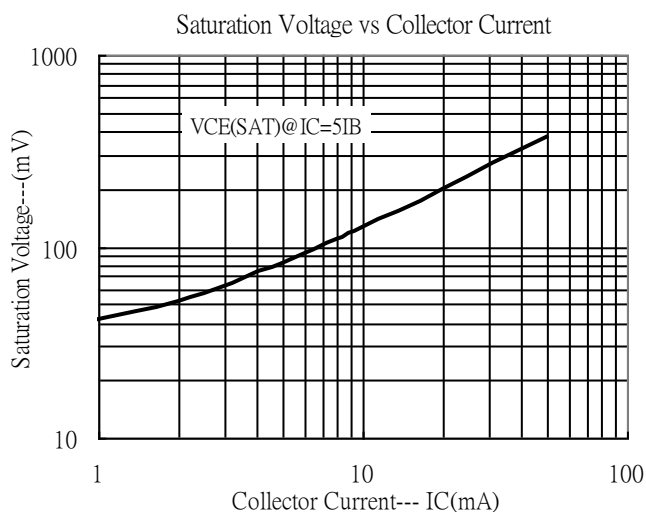
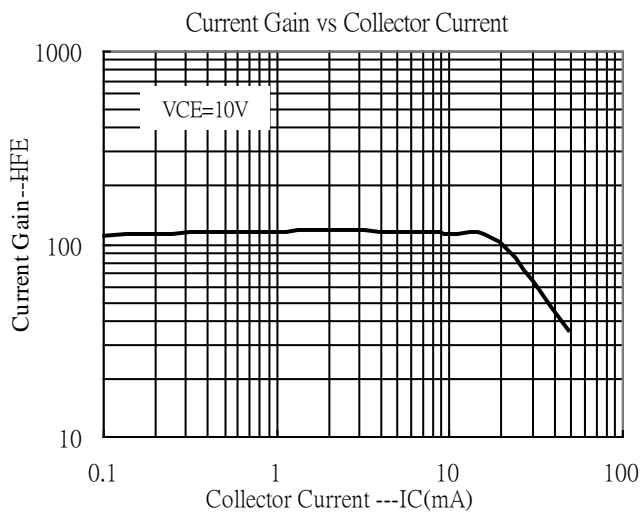
Classification of h_{FE}

Rank	K	P	Q
Range	52~120	82~180	120~270

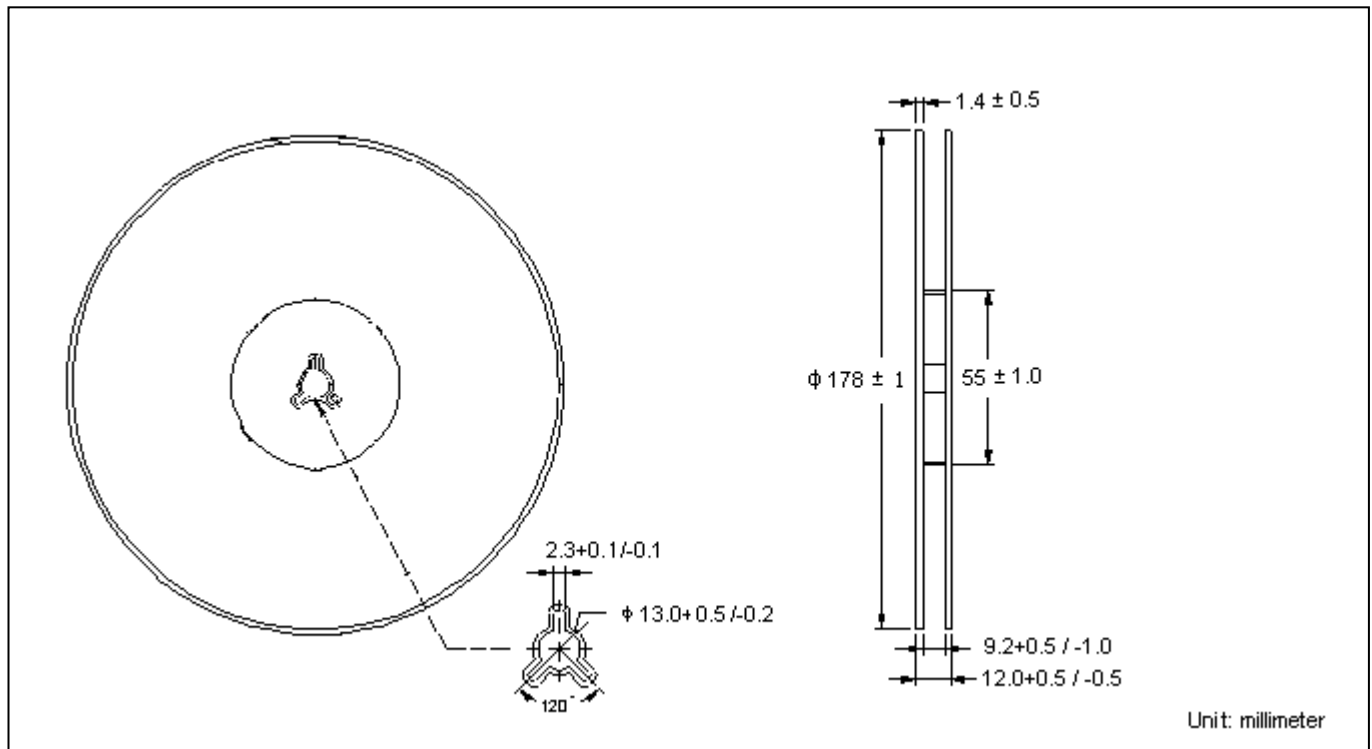
Recommended Soldering Footprint



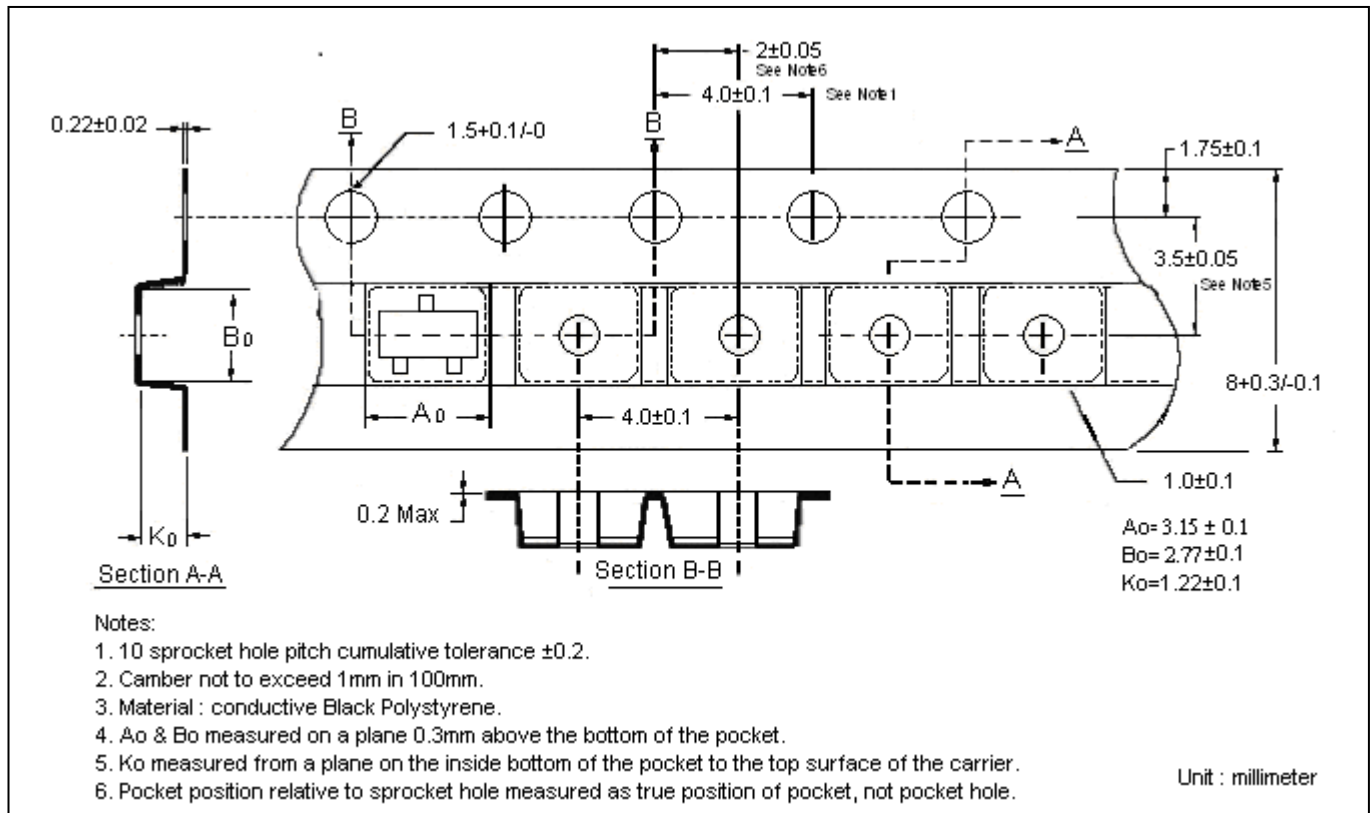
Typical Characteristics



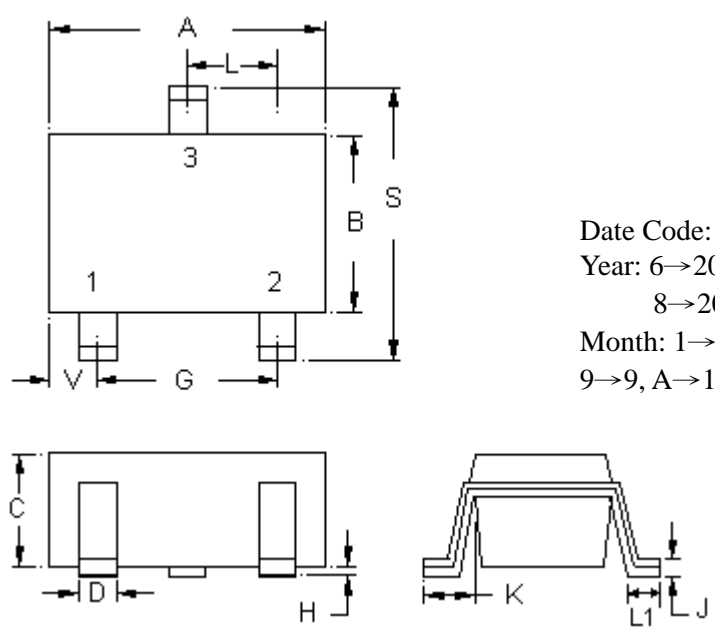
Reel Dimension



Carrier Tape Dimension



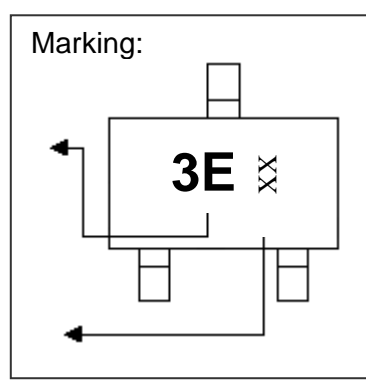
SOT-23 Dimension



Product Code

Date Code: Year+Month
 Year: 6→2016, 7→2017,
 8→2018, . . . , etc
 Month: 1→1, 2→2, . . .
 9→9, A→10, B→11, C→12

Marking:



3-Lead SOT-23 Plastic Surface Mounted Package

Style : Pin 1.Base 2.Emitter 3.Collector

*:Typical

DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.1102	0.1204	2.80	3.04	J	0.0032	0.0079	0.08	0.20
B	0.0472	0.0551	1.20	1.40	K	0.0118	0.0266	0.30	0.67
C	0.0335	0.0512	0.89	1.30	L	0.0335	0.0453	0.85	1.15
D	0.0118	0.0197	0.30	0.50	S	0.0830	0.1004	2.10	2.55
G	0.0669	0.0910	1.70	2.30	V	0.0098	0.0256	0.25	0.65
H	0.0000	0.0040	0.00	0.10	L1	0.0118	0.0197	0.30	0.50