



Continental Device India Pvt. Limited

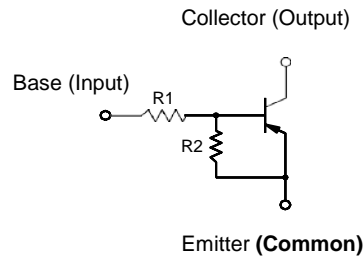
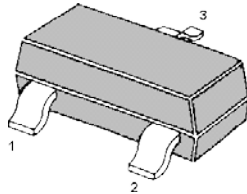
An ISO/TS 16949, ISO9001 and ISO 14001 Certified Company



## PNP Silicon Epitaxial Planar Transistor

**CMBTRA101\_106SS**  
**SOT-23 Plastic Package**

**RoHS compliant**



1. Base    2. Emitter    3. Collector

### Features

- 1) With built-in bias resistors
- 2) Simplify circuit design
- 3) Reduce a quantity of parts and manufacturing process

### Resistor Values

Type	R1 (K $\Omega$ )	R2 (K $\Omega$ )
CMBTRA101SS	4.7	4.7
CMBTRA102SS	10	10
CMBTRA103SS	22	22
CMBTRA104SS	47	47
CMBTRA105SS	2.2	47
CMBTRA106SS	4.7	47

### Absolute Maximum Ratings ( $T_a = 25^\circ\text{C}$ )

Parameter		Symbol	Value	Unit
Output Voltage		$-V_O$	50	V
Input Voltage	CMBTRA101SS	$-V_I$	20, -10	
	CMBTRA102SS		30, -10	
	CMBTRA103SS		40, -10	
	CMBTRA104SS		40, -10	
	CMBTRA105SS		12, -5	
	CMBTRA106SS		20, -5	
Output Current		$-I_O$	100	mA
Total Power Dissipation		$P_{tot}$	200	mW
Junction Temperature		$T_j$	150	$^\circ\text{C}$
Storage Temperature Range		$T_{stg}$	- 55 to + 150	$^\circ\text{C}$

**Note:** For AECQ compliant products, please suffix -AH in the part number while ordering



Continental Device India Pvt. Limited

An ISO/TS 16949, ISO9001 and ISO 14001 Certified Company



## Electrical Characteristics at $T_a = 25^\circ\text{C}$

Parameter		Symbol	Test Conditions	Value			Unit
				Min.	Typ.	Max.	
DC Current Gain	CMBTRA101SS	$G_I$	at $-V_O = 5\text{ V}$ , $-I_O = 10\text{ mA}$	30	-	-	-
	CMBTRA102SS			50	-	-	-
	CMBTRA103SS			70	-	-	-
	CMBTRA104SS			80	-	-	-
	CMBTRA105SS			80	-	-	-
	CMBTRA106SS			80	-	-	-
Output Cutoff Current		$-I_O(\text{OFF})$	at $-V_O = 50\text{ V}$	-	-	500	nA
Input Current	CMBTRA101SS	$-I_I$	at $-V_I = 5\text{ V}$	-	-	1.8	mA
	CMBTRA102SS			-	-	0.88	
	CMBTRA103SS			-	-	0.36	
	CMBTRA104SS			-	-	0.18	
	CMBTRA105SS			-	-	3.6	
	CMBTRA106SS			-	-	1.8	
Output Voltage		$-V_O(\text{ON})$	at $I_O = 10\text{ mA}$ , $I_I = 0.5\text{ mA}$	-	-	0.3	V
Input Voltage (ON)	CMBTRA101SS	$-V_I(\text{ON})$	at $-V_O = 0.2\text{ V}$ , $-I_O = 5\text{ mA}$	-	-	2	V
	CMBTRA102SS			-	-	2.4	
	CMBTRA103SS			-	-	3	
	CMBTRA104SS			-	-	5	
	CMBTRA105SS			-	-	1.1	
	CMBTRA106SS			-	-	1.3	
Input Voltage (OFF)	CMBTRA101SS~104SS	$-V_I(\text{OFF})$	at $-V_O = 5\text{ V}$ , $-I_O = 0.1\text{ mA}$	1	-	-	V
	CMBTRA105SS~106SS			0.5	-	-	
Transition Frequency		$f_T$ <sup>1)</sup>	at $-V_O = 10\text{ V}$ , $-I_O = 5\text{ mA}$	-	200	-	MHz

### Notes:

<sup>1)</sup> Characteristic of transistor only

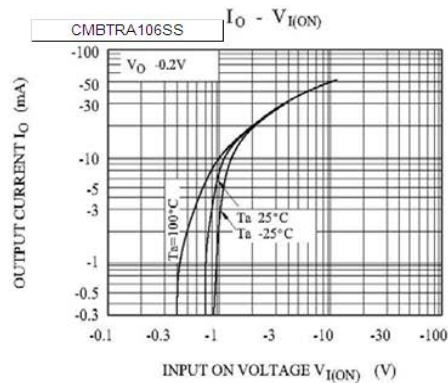
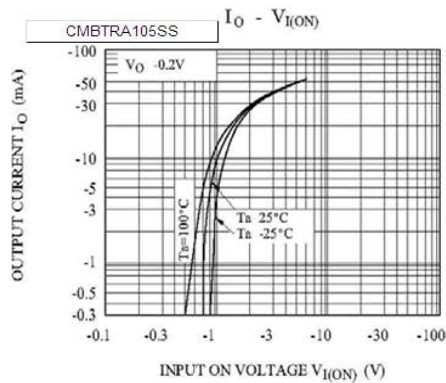
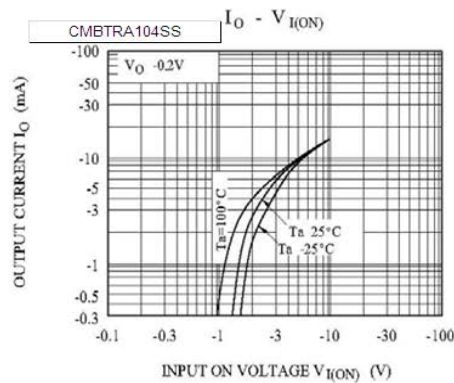
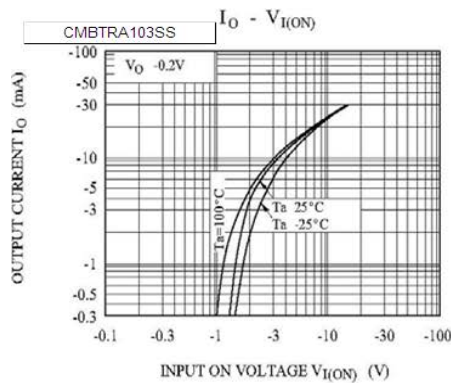
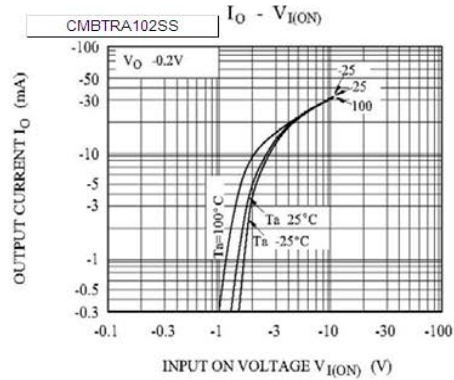
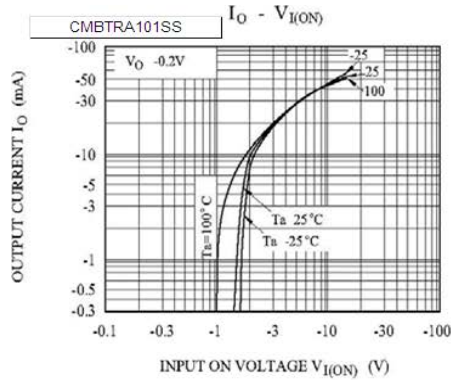


Continental Device India Pvt. Limited

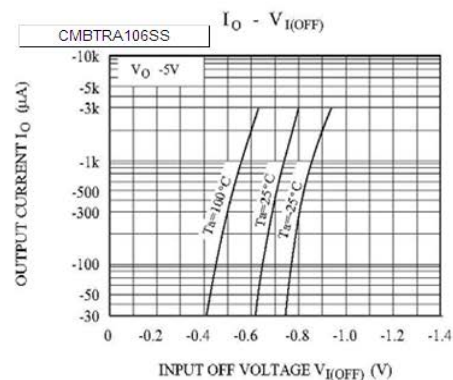
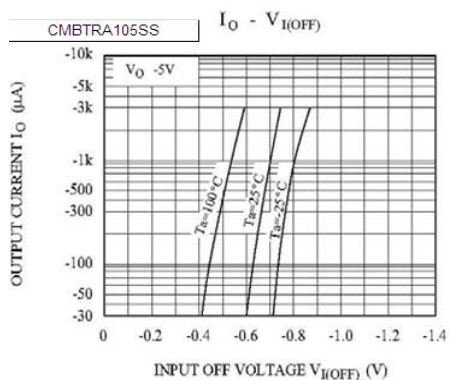
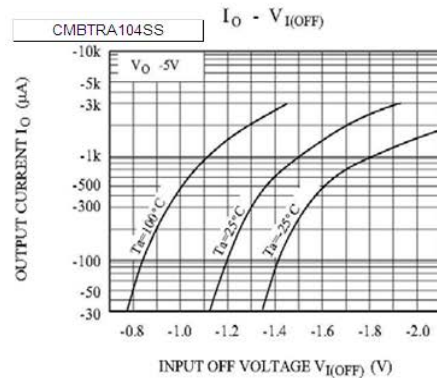
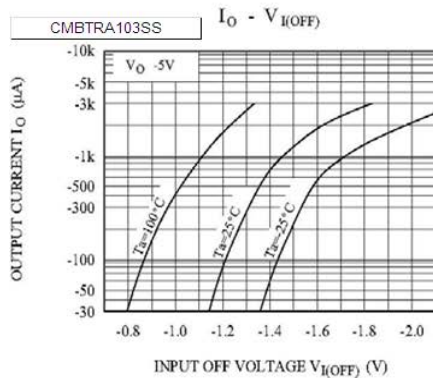
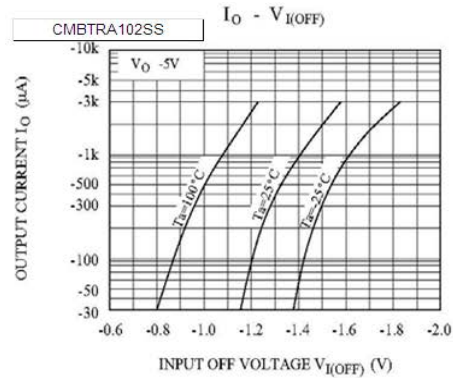
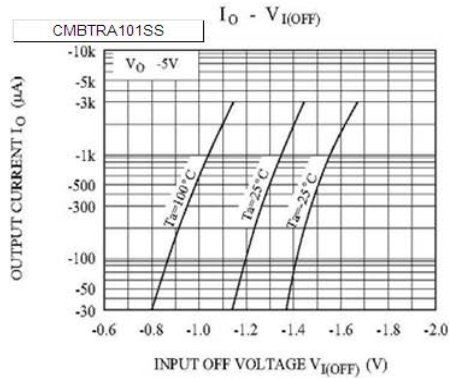
An ISO/TS 16949, ISO9001 and ISO 14001 Certified Company



## Typical Characteristic curves



## Typical Characteristic curves (continued\_\_\_\_\_)



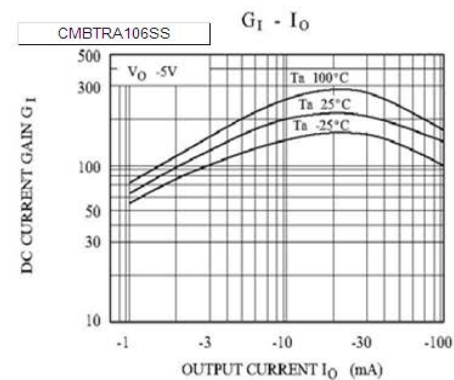
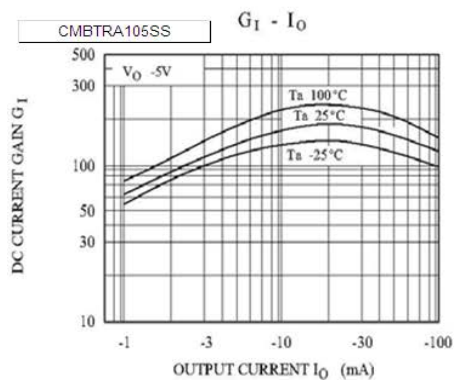
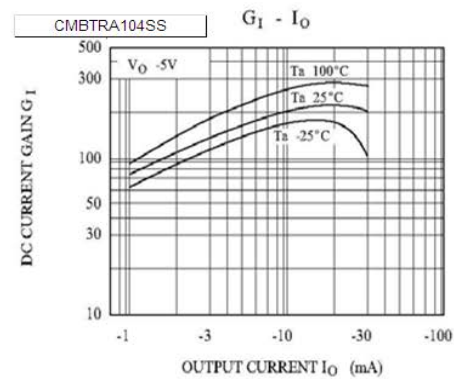
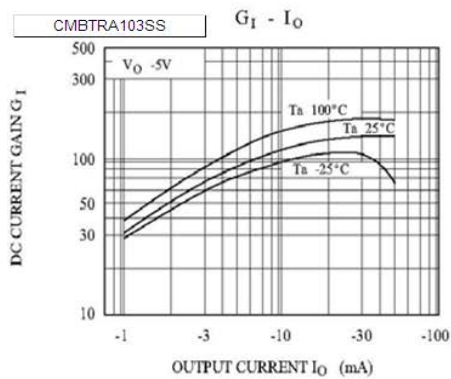
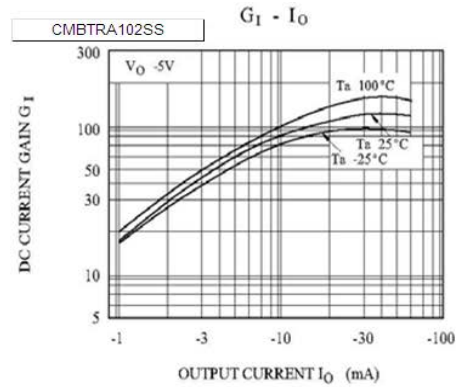
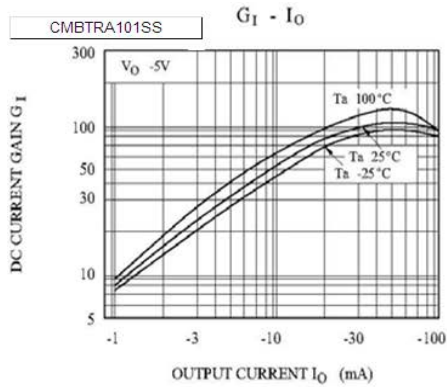


Continental Device India Pvt. Limited

An ISO/TS 16949, ISO9001 and ISO 14001 Certified Company



## Typical Characteristic curves (continued )



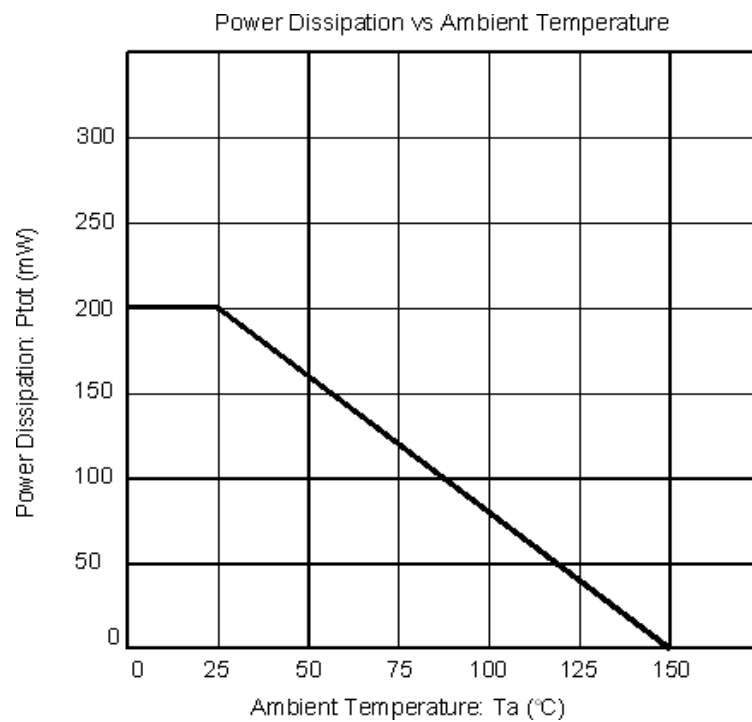


Continental Device India Pvt. Limited

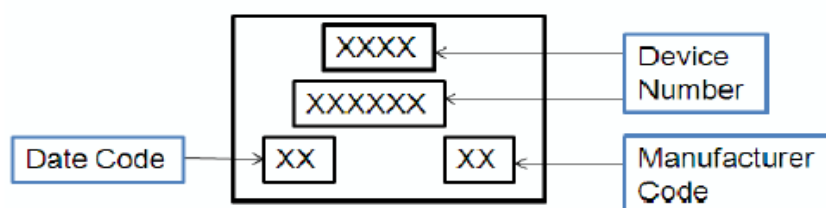
An ISO/TS 16949, ISO9001 and ISO 14001 Certified Company



## Typical Characteristic curves (continued\_\_\_\_\_)



### Device Marking Details





Continental Device India Pvt. Limited

An ISO/TS 16949, ISO9001 and ISO 14001 Certified Company



## **Recommended Product Storage Environment for Diode and Transistors**

This storage environment assumes that the Diodes and transistors are packed properly inside the original packing supplied by CDIL.

- Temperature 5 °C to 30 °C
- Humidity between 40 to 70 %RH
- Air should be clean.
- Avoid harmful gas or dust.
- Avoid outdoor exposure or storage in areas subject to rain or water spraying .
- Avoid storage in areas subject to corrosive gas or dust. Product shall not be stored in areas exposed to direct sunlight.
- Avoid rapid change of temperature.
- Avoid condensation.
- Mechanical stress such as vibration and impact shall be avoided.
- The product shall not be placed directly on the floor.
- The product shall be stored on a plane area. They should not be turned upside down. They should not be placed against the wall.

### **Shelf Life of CDIL Products**

The shelf life of products is the period from product manufacture to shipment to customers. The product can be unconditionally shipped within this period. The period is defined as 2 years.

If products are stored longer than the shelf life of 2 years, the products shall be subjected to quality check as per CDIL quality procedure.

The products are further warranted for another one year after the date of shipment subject to the above conditions in CDIL original packing.

### **Floor Life of CDIL Products and MSL Level**

When the products are opened from the original packing, the floor life will start. For this the following JEDEC table may be referred:

JEDEC MSL Level		
Level	Time	Condition
1	Unlimited	≤ 30 °C / 85% RH
2	1 Year	≤ 30 °C / 60% RH
2a	4 Weeks	≤ 30 °C / 60% RH
3	168 Hours	≤ 30 °C / 60% RH
4	72 Hours	≤ 30 °C / 60% RH
5	48 Hours	≤ 30 °C / 60% RH
5a	24 Hours	≤ 30 °C / 60% RH
6	Time on Label(TOL)	≤ 30 °C / 60% RH

Figure 1 Floor Life according to JEDEC MSL Level





Continental Device India Pvt. Limited

An ISO/TS 16949, ISO9001 and ISO 14001 Certified Company



## Customer Notes

### Component Disposal Instructions

1. CDIL Semiconductor Devices are RoHS compliant, customers are requested to please dispose as per prevailing Environmental Legislation of their Country.
2. In Europe, please dispose as per EU Directive 2002/96/EC on Waste Electrical and Electronic Equipment (WEEE).

### Disclaimer

The product information and the selection guides facilitate selection of the CDIL's Semiconductor Device(s) best suited for application in your product(s) as per your requirement. It is recommended that you completely review our Data Sheet(s) so as to confirm that the Device(s) meet functionality parameters for your application. The information furnished in the Data Sheet and on the CDIL Web Site/CD are believed to be accurate and reliable. CDIL however, does not assume responsibility for inaccuracies or incomplete information. Furthermore, CDIL does not assume liability whatsoever, arising out of the application or use of any CDIL product; neither does it convey any license under its patent rights nor rights of others. These products are not designed for use in life saving/support appliances or systems. CDIL customers selling these products (either as individual Semiconductor Devices or incorporated in their end products), in any life saving/support appliances or systems or applications do so at their own risk and CDIL will not be responsible for any damages resulting from such sale(s).

CDIL strives for continuous improvement and reserves the right to change the specifications of its products without prior notice.



CDIL is a registered Trademark of  
**Continental Device India Pvt.Limited**

C-120 Naraina Industrial Area, New Delhi 110 028, India.

Telephone + 91-11-2579 6150, 4141 1112 Fax + 91-11-2579 5290, 4141 1119

email@cdil.com www.cdil.com

CIN No. - U32109DL1964PTC004291