Dual NPN Digital Transistors

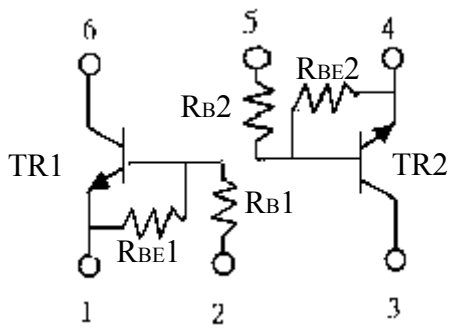
HBC143ES6R

Features

- Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors (see equivalent circuit).
- The bias resistors consist of thin-film resistors with complete isolation to allow negative biasing of the input. They also have the advantage of almost completely eliminating parasitic effects.
- Only the on/off conditions need to be set for operation, making device design easy.
- Two DTC143E chips in a SOT-363 package.
- Mounting by SOT-323 automatic mounting machines is possible.
- Mounting cost and area can be cut in half.
- Transistor elements are independent, eliminating interference
- Complements the HBA143ES6R

Equivalent Circuit

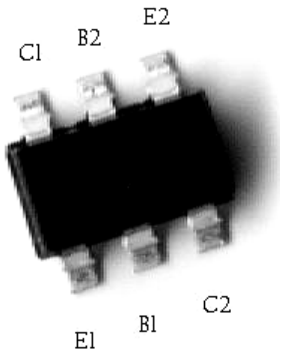
HBC143ES6R



R_{B1}=4.7kΩ , R_{B2}=4.7 kΩ

R_{BE1}=4.7kΩ , R_{BE2}=4.7 kΩ

SOT-363R



Absolute Maximum Ratings (Each Transistor, Ta=25℃)

Parameter	Symbol	Limits	Unit
Supply Voltage	V_{CC}	50	V
Input Voltage	V_{IN}	-10~+30	V
Output Current	I_O	100	mA
	$I_{O(max.)}$	100	mA
Power Dissipation	Pd	200 (Note)	mW
Junction Temperature	Tj	150	°C
Storage Temperature	Tstg	-55~+150	°C

Note : 150mW per element must not be exceeded.

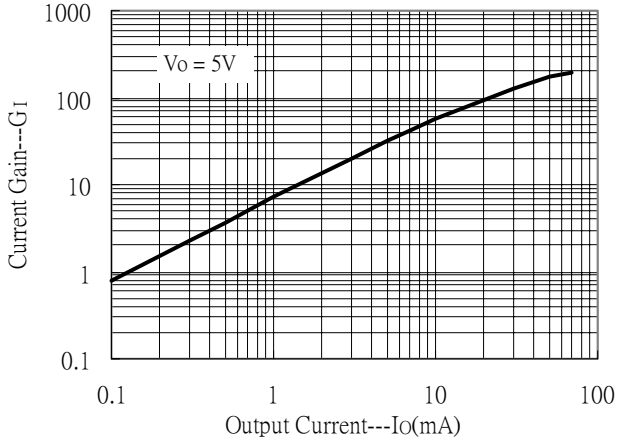
Characteristics (Each Transistor, Ta=25℃)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Input Voltage	$V_{I(off)}$	-	-	0.5	V	V_{CC}=5V, I_O=100μA
	$V_{I(on)}$	3	-	-	V	V_O=0.3V, I_O=20mA
Output Voltage	$V_{O(on)}$	-	0.1	0.3	V	I_O/I_I=10mA/0.5mA
Input Current	I_I	-	-	1.8	mA	V_I=5V
Output Current	$I_{O(off)}$	-	-	0.5	μA	V_{CC}=50V, V_I=0V
DC Current Gain	G_I	20	-	-	-	V_O=5V, I_O=10mA
Input Resistance	R_1	3.29	4.7	6.11	kΩ	-
Resistance Ratio	R_2/R_1	0.8	1	1.2	-	-
Transition Frequency	f_T	-	250	-	MHz	V_{CE}=10V, I_C=5mA, f=100MHz *

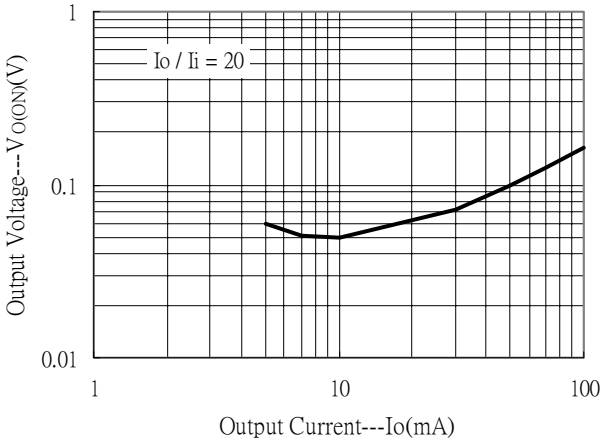
* Transition frequency of the device

Characteristic Curves

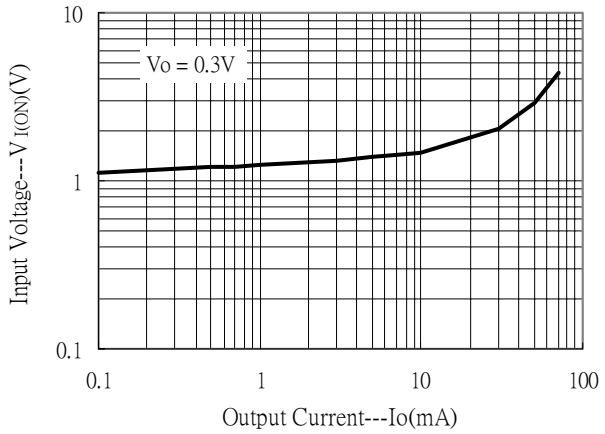
Current Gain vs Output Current



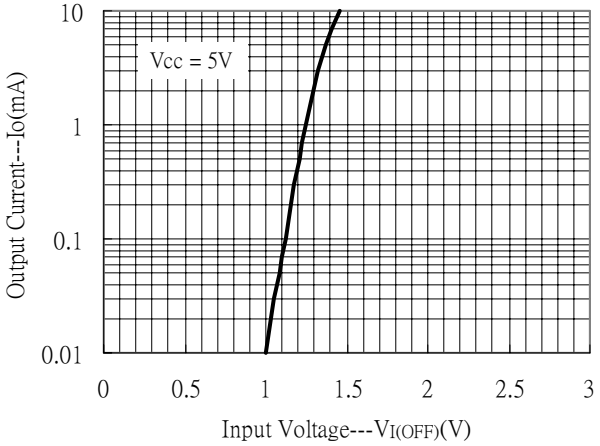
Output Voltage vs Output Current



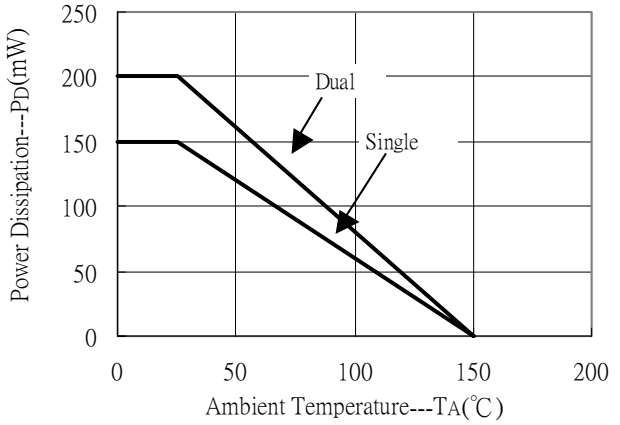
Input Voltage vs Output Current(ON characteristics)



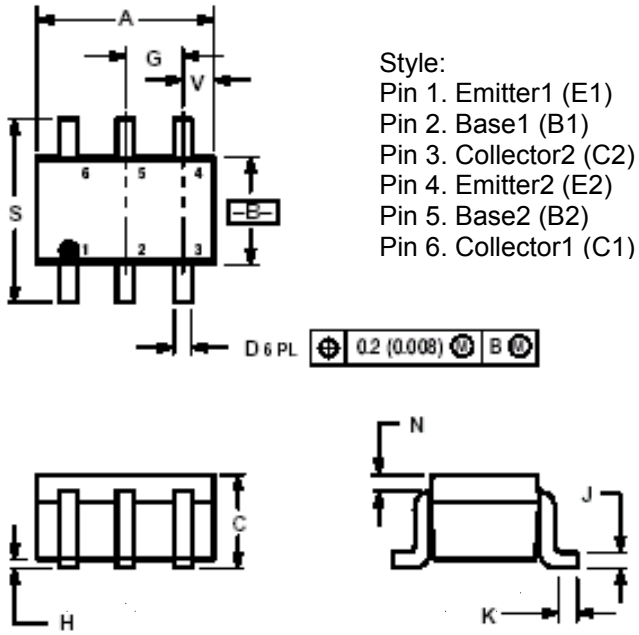
Output Current vs Input Voltage(OFF characteristics)



Power Derating Curves

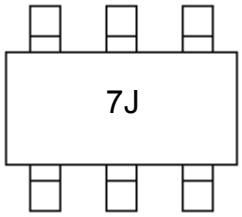


SOT-363R Dimension



Style:
Pin 1. Emitter1 (E1)
Pin 2. Base1 (B1)
Pin 3. Collector2 (C2)
Pin 4. Emitter2 (E2)
Pin 5. Base2 (B2)
Pin 6. Collector1 (C1)

Marking:



6-Lead SOT-363R Plastic
Surface Mounted Package
CYStek Package Code: S6R

*:Typical

DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.071	0.087	1.8	2.2	J	0.004	0.010	0.1	0.25
B	0.045	0.053	1.15	1.35	K	0.004	0.012	0.1	0.30
C	0.031	0.043	0.8	1.1	N	0.008 REF		0.20 REF	
D	0.004	0.012	0.1	0.3	S	0.079	0.087	2.00	2.20
G	0.026BSC		0.65BSC		Y	0.012	0.016	0.30	0.40
H	-	0.004	-	0.1					

Notes : 1.Controlling dimension : millimeters.
2.Maximum lead thickness includes lead finish thickness, and minimum lead thickness is the minimum thickness of base material.
3.If there is any question with packing specification or packing method, please contact your local CYStek sales office.

Material :

- Lead : 42 Alloy ; solder plating
- Mold Compound : Epoxy resin family, flammability solid burning class:UL94V-0

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