

Transistors

# Dual digital transistors

## US6H23

●Features

In addition to the features of regular digital transistors.

- 1) Low saturation voltage, typically  
 $V_{CE(sat)}=40\text{mV}$  at  $I_c / I_B=50\text{mA} / 2.5\text{mA}$ , makes these transistors ideal for muting circuits.
- 2) These transistors can be used at high current levels,  
 $I_c=600\text{mA}$ .

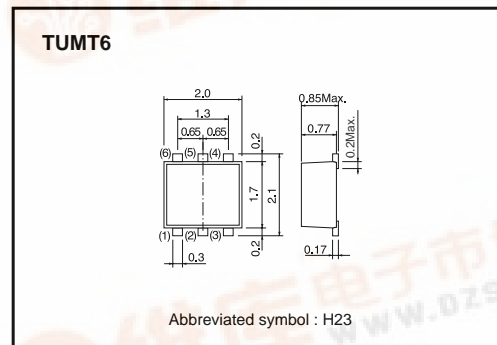
●Structure

NPN silicon epitaxial planar transistor

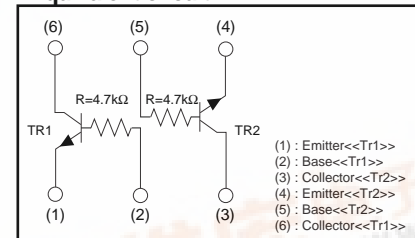
●Packaging specifications and hFE

Type	Package	TUMT6
	Packaging type	Taping
	Code	TR
	Basic ordering unit (pieces)	3000
US6H23		○

●Dimensions (Unit : mm)



●Equivalent circuit



●Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Collector-base voltage	$V_{CBO}$	20	V
Collector-emitter voltage	$V_{CEO}$	20	V
Emitter-base voltage	$V_{EBO}$	12	V
Collector current	$I_c$	600	mA
	$I_{CP}$	1	A *1
Power dissipation	$P_D$	0.4(TOTAL)	W *2
		1.0(TOTAL)	W *3
		0.7(ELEMENT)	W *3
Junction temperature	$T_j$	150	°C
Range of storage temperature	$T_{stg}$	-55 to +150	°C

\*1  $P_w=10\text{ms}$  1 Pulse

\*2 Each terminal mounted on a recommended land

\*3 Mounted on a ceramic board



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●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-emitter breakdown voltage	$BV_{CEO}$	20	–	–	V	$I_C=1mA$
Collector-base breakdown voltage	$BV_{CBO}$	20	–	–	V	$I_C=50\mu A$
Emitter-base breakdown voltage	$BV_{EBO}$	12	–	–	V	$I_E=50\mu A$
Collector cutoff current	$I_{CBO}$	–	–	500	nA	$V_{CB}=20V$
Emitter cutoff current	$I_{EBO}$	–	–	500	nA	$V_{EB}=12V$
Collector-emitter saturation voltage	$V_{CE(sat)}$	–	40	150	mV	$I_C / I_B=50mA / 2.5mA$
DC current gain	$h_{FE}$	820	–	2700	–	$V_{CE}=5V, I_C=50mA$
Transition frequency	$f_T$ *	–	150	–	MHz	$V_{CE}=10V, I_E=50mA, f=100MHz$
Collector output capacitance	$C_{ob}$ *	–	6	–	pF	$V_{CB}=10V, I_E=0mA, f=1MHz$
Input resistance	R	3.29	4.7	6.11	kΩ	–
Output ON resistance	$R_{on}$	–	0.55	–	Ω	$V_I=5V, R_L=1k\Omega, f=1kHz$

\*Characteristics of built-in transistor.

● $R_{on}$  measurement circuit

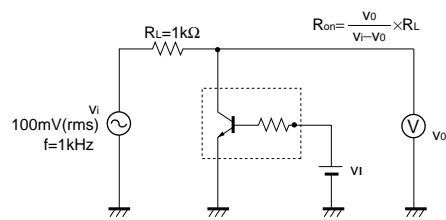


Fig.1 Output "ON" resistance ( $R_{on}$ ) measurement circuit

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●Electrical characteristic curves

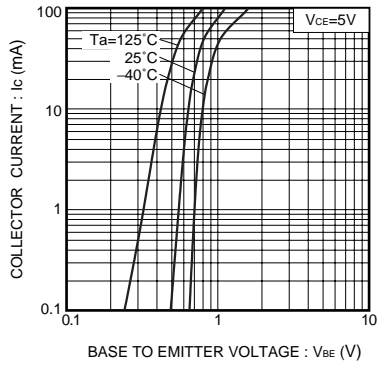


Fig.1 Grounded emitter propagation characteristics

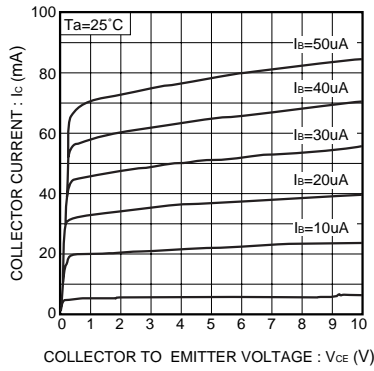


Fig.2 Typical output characteristics

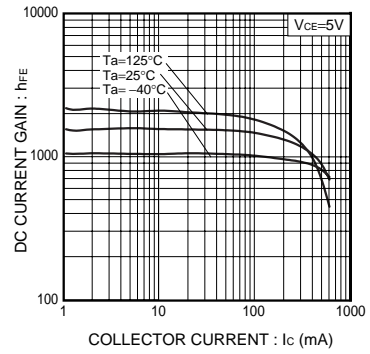


Fig.3 DC current gain vs. collector current

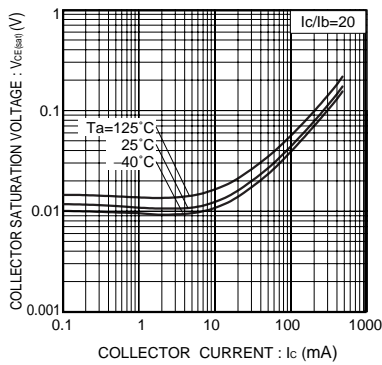


Fig.4 Collector-emitter saturation voltage vs. collector current

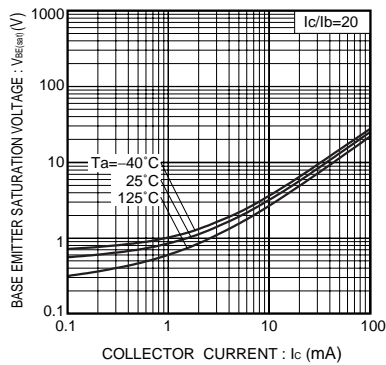


Fig.5 Base-emitter saturation voltage vs. collector current

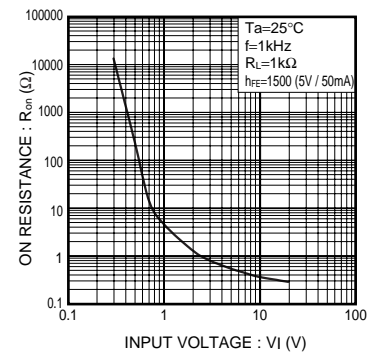


Fig.6 "ON" resistance vs. input voltage

## Appendix

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