

# 600mA / 15V Digital transistors (with built-in resistors)

## DTC323TU / DTC323TK / DTC323TS

●Applications

Muting, Inverter, Interface

●Features

- In addition to the features of regular digital transistors,
- 1) Low  $V_{CE(sat)}$  makes these transistors ideal for muting circuits. (Typ. 0.04V at  $I_C/I_B=50mA/2.5mA$ )
  - 2) They can be used at high current. ( $I_{Cmax.}=600mA$ )

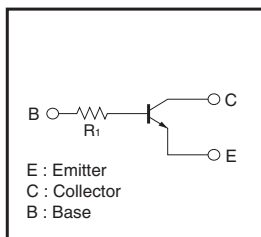
●Structure

NPN epitaxial planar silicon transistor  
(Resistor built-in type)

●Packaging specifications

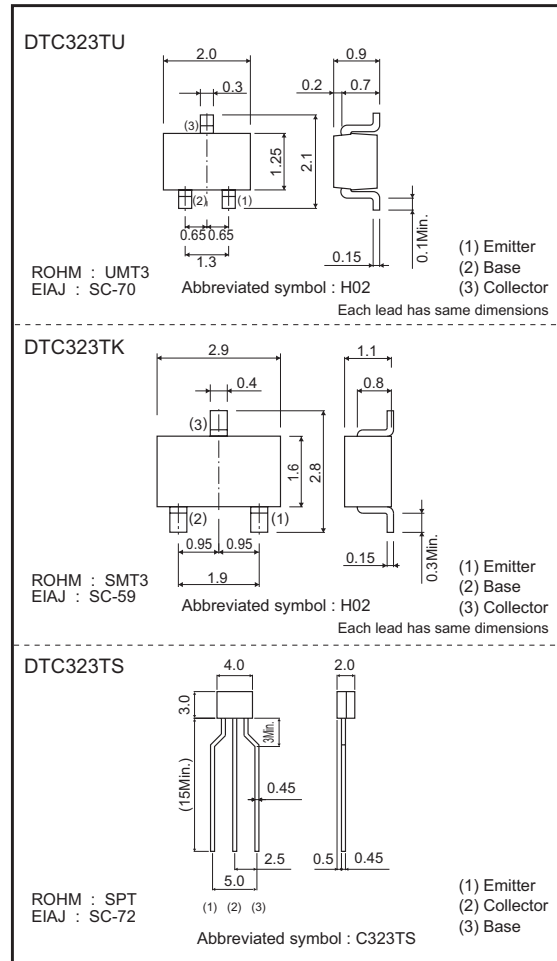
Part No.	Package	UMT3	SMT3	SPT
	Packaging type	Taping	Taping	Taping
	Code	T106	T146	TP
	Basic ordering unit (pieces)	3000	3000	5000
DTC323TU		○	-	-
DTC323TK		-	○	-
DTC323TS		-	-	○

●Equivalent circuit



$R_1=2.2k\Omega$

●External dimensions (Unit : mm)



# DTC323TU / DTC323TK / DTC323TS

## Transistors

### ●Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit	
Collector-base voltage	V <sub>CB0</sub>	30	V	
Collector-emitter voltage	V <sub>CE0</sub>	15	V	
Emitter-base voltage	V <sub>EB0</sub>	5	V	
Collector current	I <sub>c</sub>	600	mA	
Collector power dissipation	DTC323TU / DTC323TK DTC323TS	P <sub>c</sub>	200	mW
			300	
Junction temperature	T <sub>j</sub>	150	°C	
Storage temperature	T <sub>stg</sub>	-55 to +150	°C	

### ●External characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV <sub>CB0</sub>	30	–	–	V	I <sub>c</sub> =50μA
Collector-emitter breakdown voltage	BV <sub>CE0</sub>	15	–	–	V	I <sub>c</sub> =1mA
Emitter-base breakdown voltage	BV <sub>EB0</sub>	5	–	–	V	I <sub>E</sub> =50μA
Collector cutoff current	I <sub>CB0</sub>	–	–	0.5	μA	V <sub>CB</sub> =20V
Emitter cutoff current	I <sub>EB0</sub>	–	–	0.5	μA	V <sub>EB</sub> =4V
Collector-emitter saturation voltage	V <sub>CE(sat)</sub>	–	40	80	mV	I <sub>c</sub> /I <sub>B</sub> =50mA/2.5mA
DC current transfer ratio	h <sub>FE</sub>	100	250	600	–	I <sub>c</sub> =50mA, V <sub>CE</sub> =5V
Input resistance	R <sub>1</sub>	1.54	2.2	2.86	kΩ	–
Transition frequency	f <sub>T</sub> *	–	200	–	MHz	V <sub>CE</sub> =10V, I <sub>E</sub> =-50mA, f=100MHz
Output on resistance	R <sub>on</sub>	–	0.65	–	Ω	V <sub>I</sub> =7V, R <sub>L</sub> =1kΩ, f=1kHz

\* Characteristics of built-in transistor

### ●Electrical characteristics curves

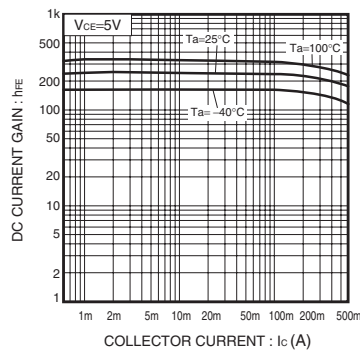


Fig.1 DC current gain vs. Collector current

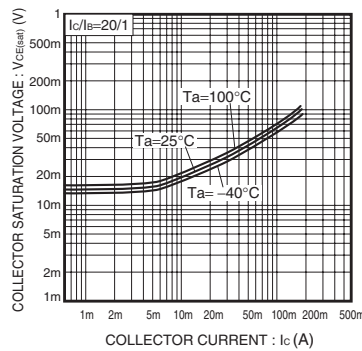


Fig.2 Collector-emitter saturation voltage vs. Collector current

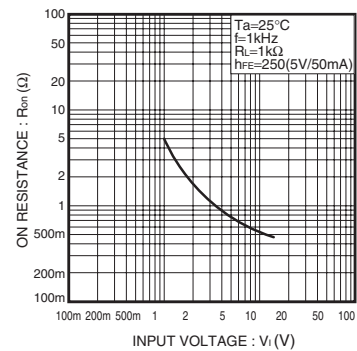


Fig.3 ON resistance vs. Input voltage

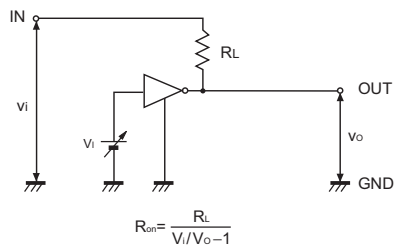


Fig.4 Output "ON" resistance (R<sub>on</sub>) measurement circuit

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