

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. ($I_{CMax.} = 600mA$)

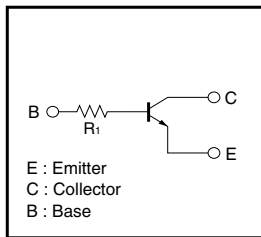
●Structure

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

●Packaging specifications

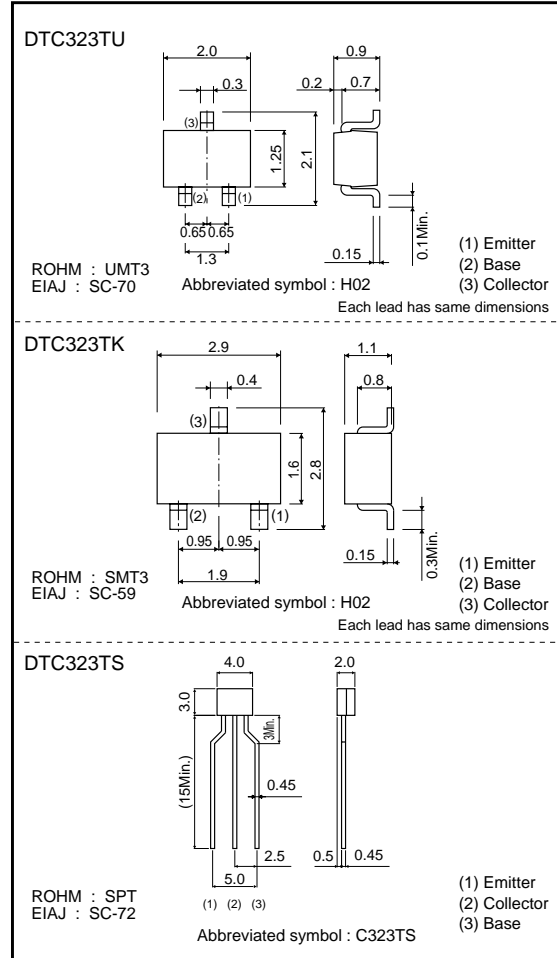
	Package	UMT3	SMT3	SPT
	Packaging type	Taping	Taping	Taping
	Code	T106	T146	TP
Part No.	Basic ordering unit (pieces)	3000	3000	5000
DTC323TU		○	-	-
DTC323TK		-	○	-
DTC323TS		-	-	○

●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 _{CB0}	30	V	
Collector-emitter voltage	V _{CE0}	15	V	
Emitter-base voltage	V _{EBO}	5	V	
Collector current	I _C	600	mA	
Collector power dissipation	DTC323TU / DTC323TK DTC323TS	P _C	200	mW
			300	
Junction temperature	T _J	150	°C	
Storage temperature	T _{stg}	-55 to +150	°C	

●External characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV _{CB0}	30	–	–	V	I _C =50μA
Collector-emitter breakdown voltage	BV _{CE0}	15	–	–	V	I _C =1mA
Emitter-base breakdown voltage	BV _{EBO}	5	–	–	V	I _E =50μA
Collector cutoff current	I _{CB0}	–	–	0.5	μA	V _{CB} =20V
Emitter cutoff current	I _{EBO}	–	–	0.5	μA	V _{EB} =4V
Collector-emitter saturation voltage	V _{CE(sat)}	–	40	80	mV	I _C /I _B =50mA/2.5mA
DC current transfer ratio	h _{FE}	100	250	600	–	I _C =50mA, V _{CE} =5V
Input resistance	R ₁	1.54	2.2	2.86	kΩ	–
Transition frequency	f _T *	–	200	–	MHz	V _{CE} =10V, I _E =-50mA, f=100MHz
Output on resistance	R _{on}	–	0.65	–	Ω	V _I =7V, R _L =1kΩ, f=1kHz

* Characteristics of built-in transistor

●Electrical characteristics curves

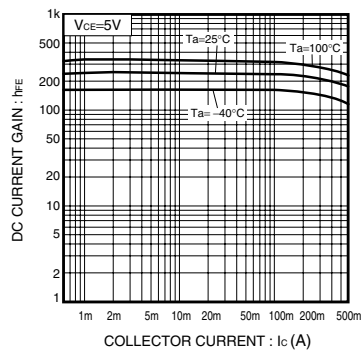


Fig.1 DC current gain vs. Collector current

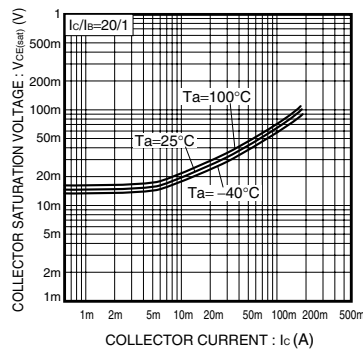


Fig.2 Collector-emitter saturation voltage vs. Collector current

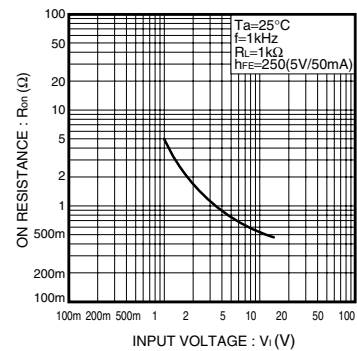


Fig.3 ON resistance vs. Input voltage

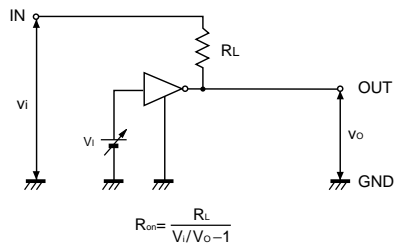


Fig.4 Output "ON" resistance (R_{on}) measurement circuit

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