

Digital transistors (built-in resistor)

DTC314TU / DTC314TK / DTC314TS

●Features

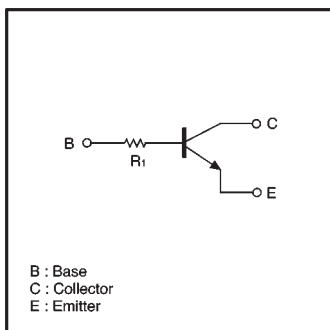
In addition to the features of regular digital transistors,

- 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, $I_C = 600\text{mA}$.

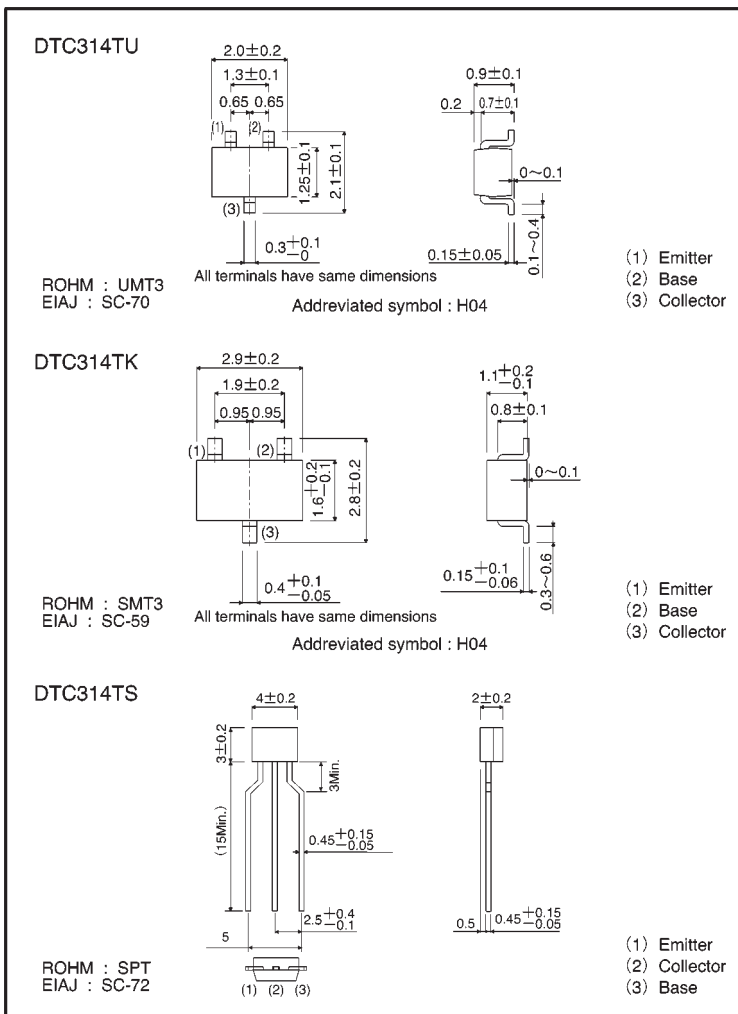
●Structure

NPN digital transistor
(Built-in resistor type)

●Equivalent circuit



●External dimensions (Units: mm)



● Absolute maximum ratings (Ta = 25°C)

Parameter	Symbol	Limits(DTC314T□)			Unit
		U	K	S	
Collector-base voltage	V _{CB0}	30			V
Collector-emitter voltage	V _{CE0}	15			V
Emitter-base voltage	V _{EB0}	5			V
Collector current	I _c	600			mA
Collector power dissipation	P _c	200	300		mW
Junction temperature	T _J	150			°C
Storage temperature	T _{stg}	-55~+150			°C

● Electrical characteristics (Ta = 25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV _{CB0}	30	—	—	V	I _c =50 μA
Collector-emitter breakdown voltage	BV _{CE0}	15	—	—	V	I _c =1mA
Emitter-base breakdown voltage	BV _{EB0}	5	—	—	V	I _E =50 μA
Collector cutoff current	I _{CB0}	—	—	0.5	μA	V _{CB} =20V
Emitter cutoff current	I _{EB0}	—	—	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	—	V _{CE} =5V, I _c =50mA
Input resistance	R _i	7	10	13	kΩ	—
Transition frequency	f _T	—	200	—	MHz	V _{CE} =10V, I _E =-50mA, f=100MHz *
Output "ON" resistance	R _{on}	—	1.5	—	Ω	V _i =7V, R _L =1kΩ, f=1kHz

* Transition frequency of the device

● Packaging specifications

Part No.	Package	UMT3	SMT3	SPT
	Packaging type	Taping	Taping	Taping
	Code	T106	T146	TP
	Basic ordering unit (pieces)	3000	3000	5000
DTC314TU		○	—	—
DTC314TK		—	○	—
DTC314TS		—	—	○

● R_{on} measurement circuit

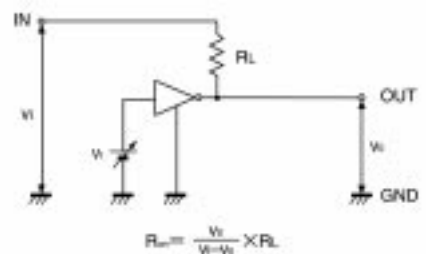


Fig.1 Output "ON" resistance (R_{on}) measurement circuit

●Electrical characteristic curves

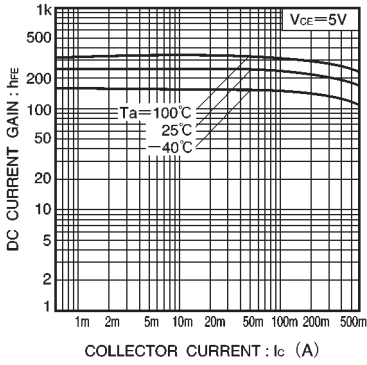


Fig.2 DC current gain vs. collector current

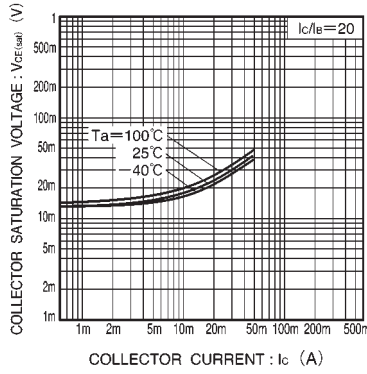


Fig.3 Collector-emitter saturation voltage vs. collector current

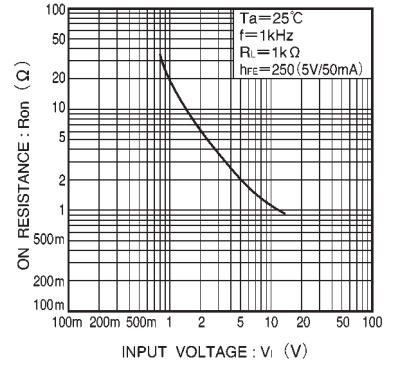


Fig.4 "ON" resistance vs. input voltage