Digital transistors (built-in resistors)

DTC363EU / DTC363EK / DTC363ES

●Features

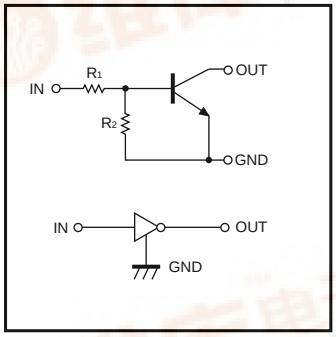
In addition to the features of regular digital transistors,

1) Low $V_{O(on)}$ makes these transistors optimal for muting circuits.
   $V_{O(on)}$=40mV (typ.)
   (I_O / I_I=50mA / 2.5mA)
2) They can be used at high current (I_C=600mA).

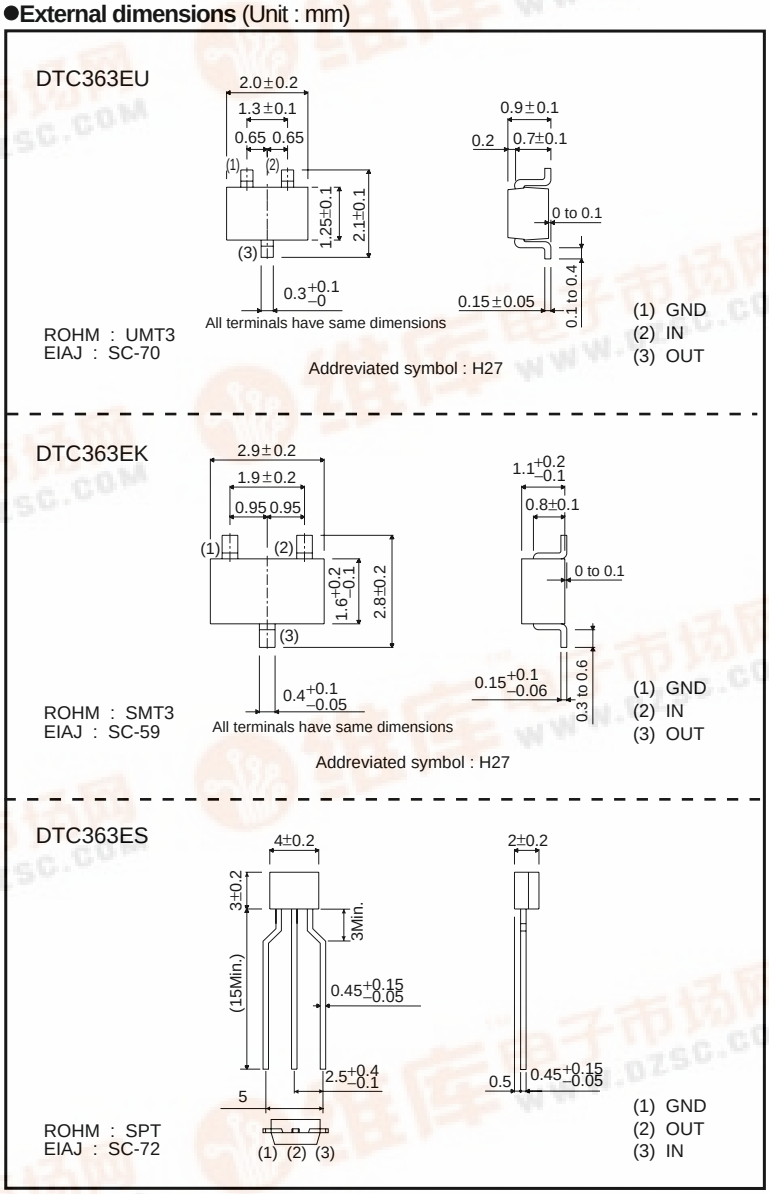
●Structure

NPN digital transistor
(Built-in resistor type)

●Equivalent circuit



●External dimensions (Unit : mm)



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

Parameter	Symbol	Limits(DTC363E□)			Unit
		U	K	S	
Supply voltage	V_{CC}	20			V
Input voltage	V_{IN}	−10 to +10			V
Output current	I_C	600			mA
Power dissipation	Pd	200		300	mW
Junction temperature	Tj	150			℃
Storage temperature	Tstg	−55 to +150			℃

●**Electrical characteristics** (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Input voltage	$V_{I(off)}$	–	–	0.5	V	V_{CC}=5V, I_O=100μA
	$V_{I(on)}$	2	–	–		V_O=0.3V, I_O=10mA
Output voltage	$V_{O(on)}$	–	40	80	mV	I_O/I_I=50mA/2.5mA
Input current	I_I	–	–	1.3	mA	V_I=5V
Output current	$I_{O(off)}$	–	–	0.5	μA	V_{CC}=15V, V_I=0V
DC current gain	G_I	70	–	–	–	V_O=5V, I_O=50mA
Input resistance	R_1	4.76	6.8	8.84	kΩ	–
Resistance ratio	R_2/R_1	0.8	1	1.2	–	–
Transition frequency	f_T	–	200	–	MHz	V_{CE}=10V, I_E= −50mA, f=100MHz ＊
Output "ON" resistance	R_{on}	–	1.0	–	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
DTC363EU		○	–	–
DTC363EK		–	○	–
DTC363ES		–	–	○

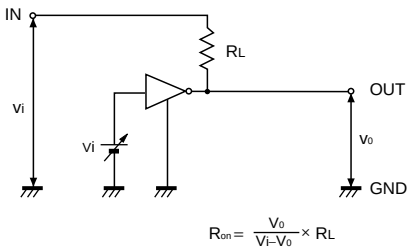


Fig.1 Input "ON" resistance (R_{on}) measurement circuit

●R_{on} **measurement circuit**

●Electrical characteristic curves

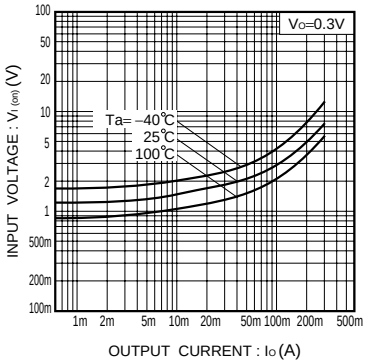


Fig.2 Input voltage vs. output current (ON characteristics)

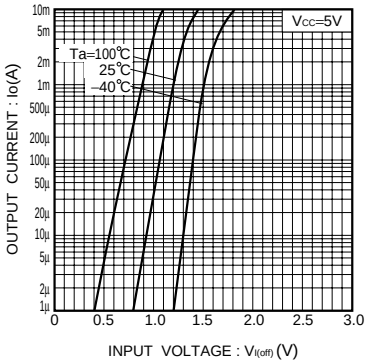


Fig.3 Output current vs. input voltage (OFF characteristics)

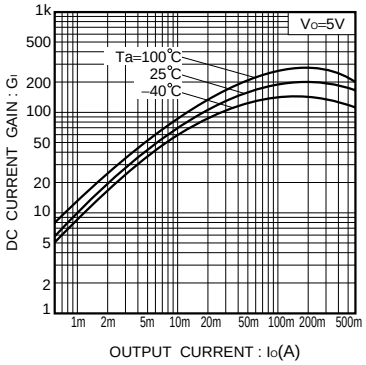


Fig.4 DC current gain vs. output current

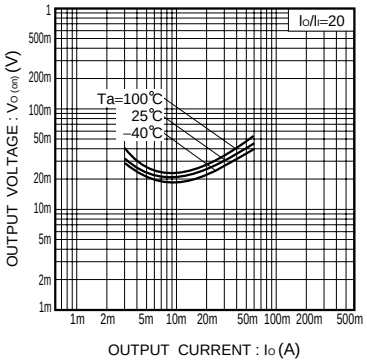


Fig.5 Output voltage vs. output current

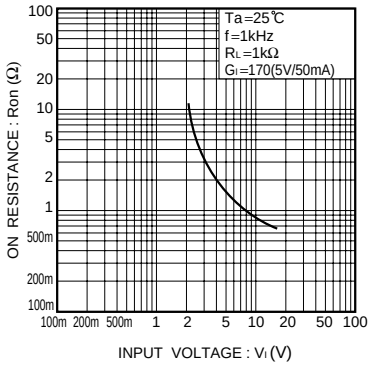


Fig.6 "ON" resistance vs. input voltage

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