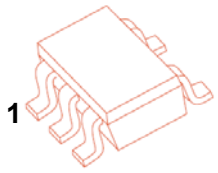
Digital transistors (built-in resistors)

UMC4N DIGITAL TRANSISTOR (NPN+PNP)

SOT-353



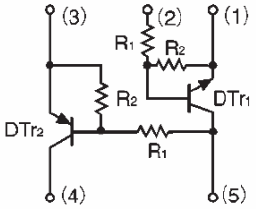
FEATURES

DTC144E and DTA114Y transistors are built-in a package

MARKING: C4

NPN DTC144E Absolute maximum ratings (T_a=25℃)

Parameter	Symbol	Value	Unit
Supply voltage	V_{CC}	50	V
Input voltage	V_{IN}	-10~40	V
Output current	I_O	100	mA
	$I_{C(MAX)}$	100	
Power dissipation	P_C	150	mW
Junction temperature	Tj	150	℃
Storage temperature	Tstg	-55~150	℃



Electrical characteristics (T_a=25℃)

Parameter	Symbol	Min.	Typ	Max.	Unit	Conditions
Input voltage	$V_{I(off)}$	0.5			V	V_{CC}=5V ,I_O=100μA
	$V_{I(on)}$			3		V_O=0.3V ,I_O=2mA
Output voltage	$V_{O(on)}$			0.3	V	I_O/I_I=10mA/0.5mA
Input current	I_I			0.18	mA	V_I=5V
Output current	$I_{O(off)}$			0.5	μA	V_{CC}=50V, V_I=0
DC current gain	G_I	68				V_O=5V,I_O=5mA
Input resistance	R_1	32.9	47	61.1	KΩ	
Resistance ratio	R_2/R_1	0.8	1	1.2		
Transition frequency	f_T		250		MHz	V_{CE}=10V ,I_E=-5mA,f=100MHz

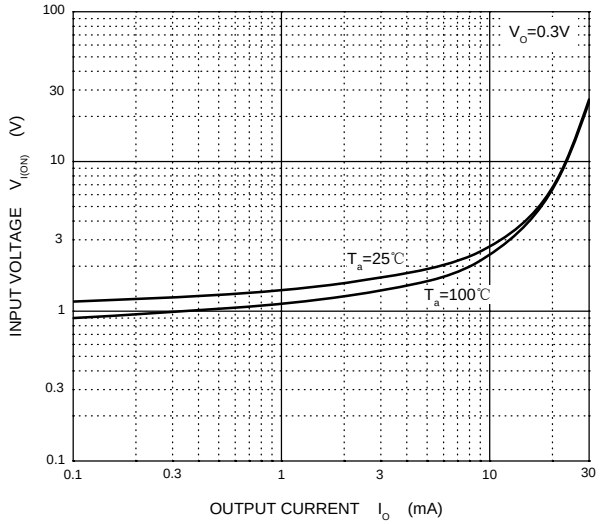
PNP DTA114Y Absolute maximum ratings (T_a=25℃)

Parameter	Symbol	Value	Unit
Supply voltage	V_{CC}	-50	V
Input voltage	V_{IN}	-40~ +6	V
Output current	I_O	-70	mA
	$I_{C(MAX)}$	-100	
Power dissipation	P_C	150	mW
Junction temperature	Tj	150	℃
Storage temperature	Tstg	-55~150	℃

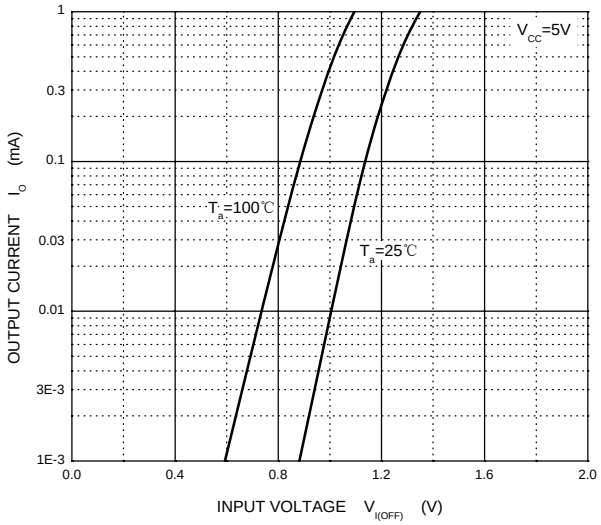
Electrical characteristics (T_a=25℃)

Parameter	Symbol	Min.	Typ	Max.	Unit	Conditions
Input voltage	$V_{I(off)}$	-0.3			V	V_{CC}=-5V ,I_O=-100μA
	$V_{I(on)}$			-1.4		V_O=-0.3V ,I_O=-1mA
Output voltage	$V_{O(on)}$			-0.3	V	I_O/I_I=-5mA/-0.25mA
Input current	I_I			-0.88	mA	V_I=-5V
Output current	$I_{O(off)}$			-0.5	μA	V_{CC}=-50V, V_I=0
DC current gain	G_I	68				V_O=-5V,I_O=-5mA
Input resistance	R_1	7	10	13	KΩ	
Resistance ratio	R_2/R_1	3.7	4.7	5.7		
Transition frequency	f_T		250		MHz	V_{CE}=-10V ,I_E=5mA,f=100MHz

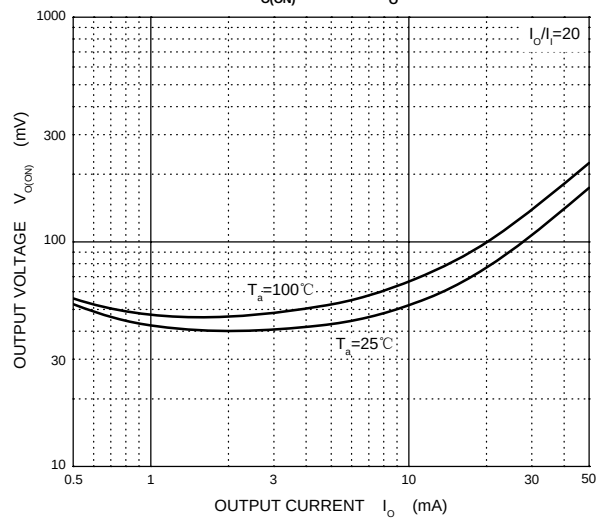
ON Characteristics



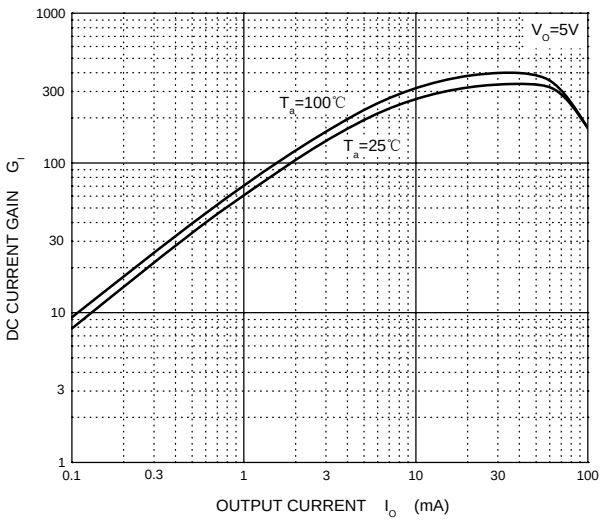
OFF Characteristics



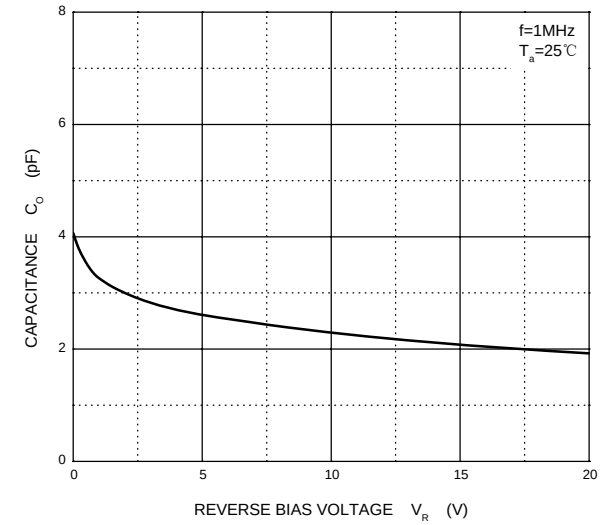
$V_{O(ON)}$ —— I_O



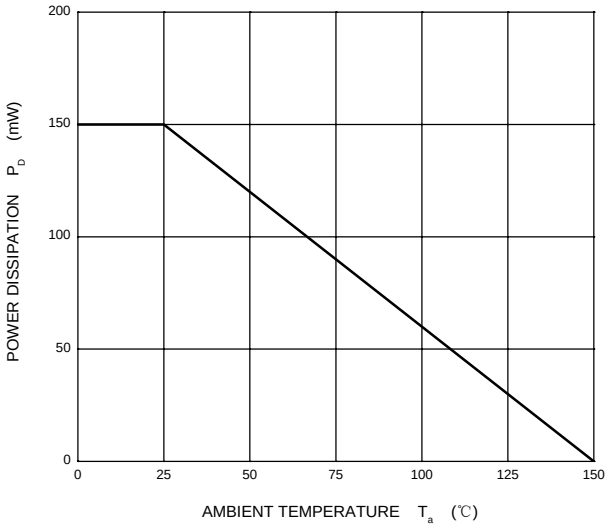
G_I —— I_O



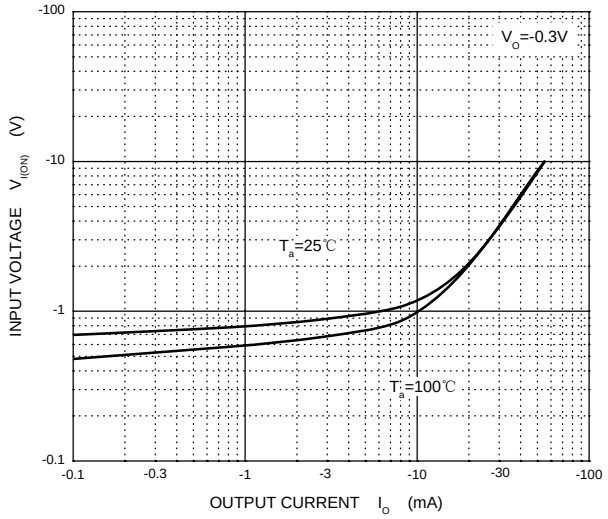
C_O —— V_R



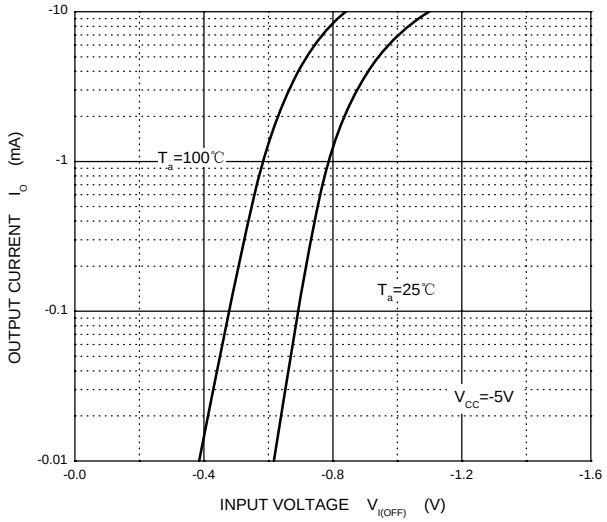
P_D —— T_a



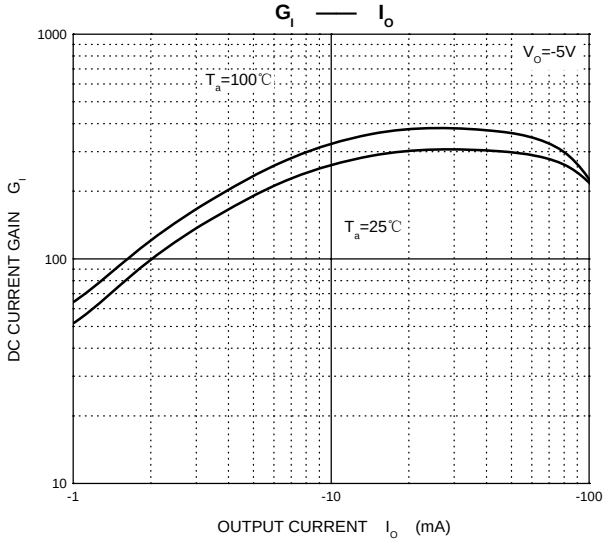
ON Characteristics



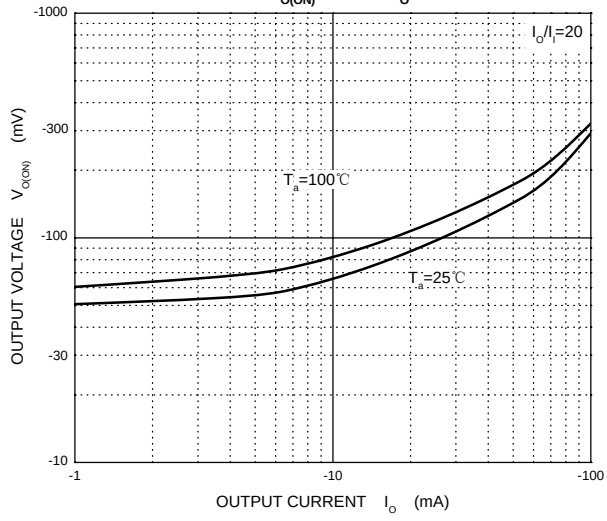
OFF Characteristics



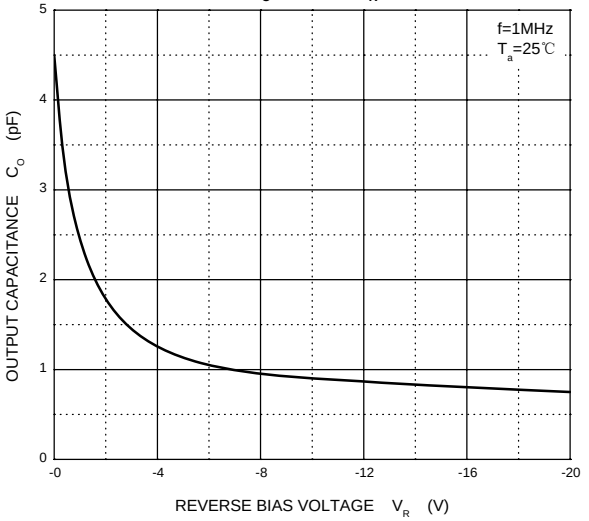
G_I —— I_O



$V_{O(ON)}$ —— I_O



C_O —— V_R



P_D —— T_a