

Digital Transistors (Built-in Resistors)

UMC3N DIGITAL TRANSISTOR (NPN+PNP)

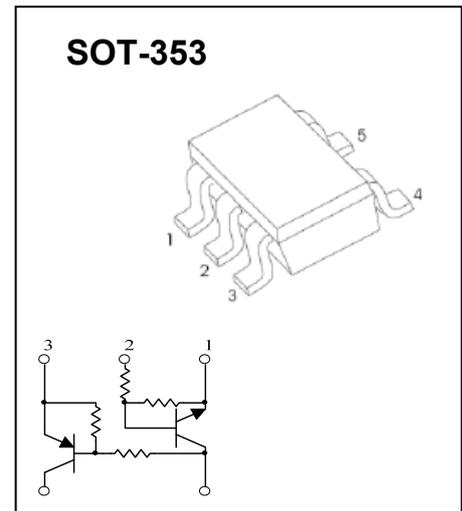
FEATURES

- DTA114E and DTC114E transistors are built-in a package
- Ideal for power switch circuits
- Mounting cost and area can be cut in half

MARKING: C3

NPN DTC114E Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Supply voltage	V_{CC}	50	V
Input voltage	V_{IN}	-10~+40	V
Output current	I_O	50	mA
	I_{CM}	100	
Power dissipation	P_D	150	mW
Operation Junction and Storage Temperature Range	T_J, T_{stg}	-55~+150	°C



Electrical characteristics (Ta=25°C)

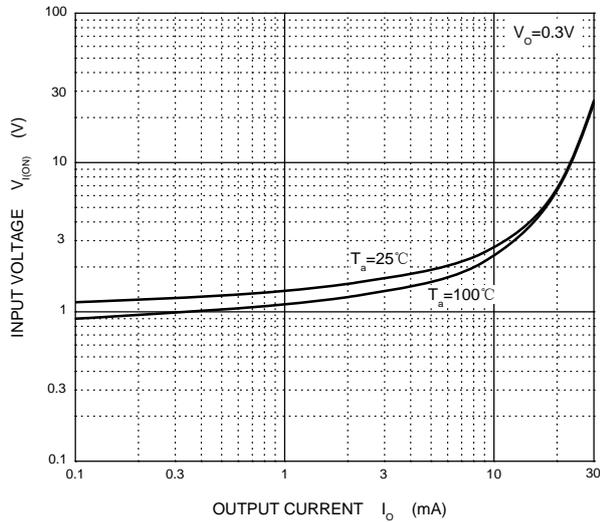
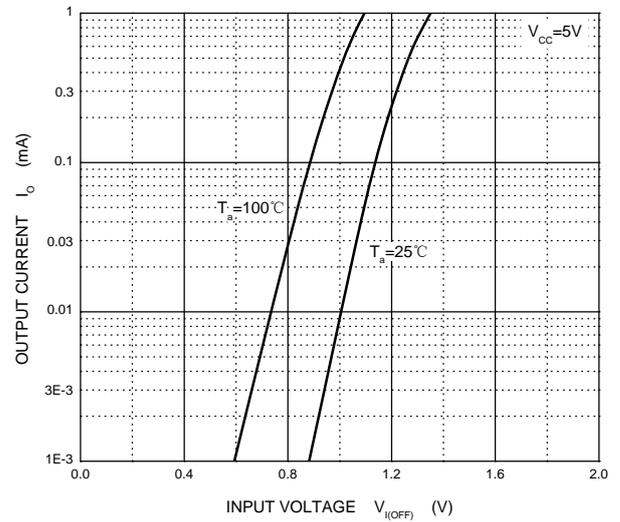
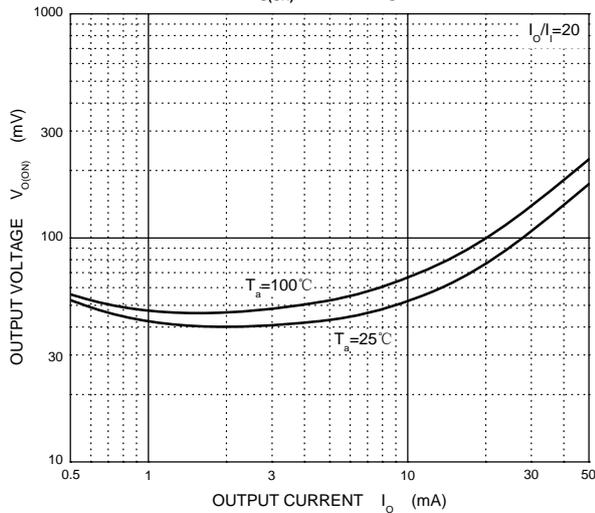
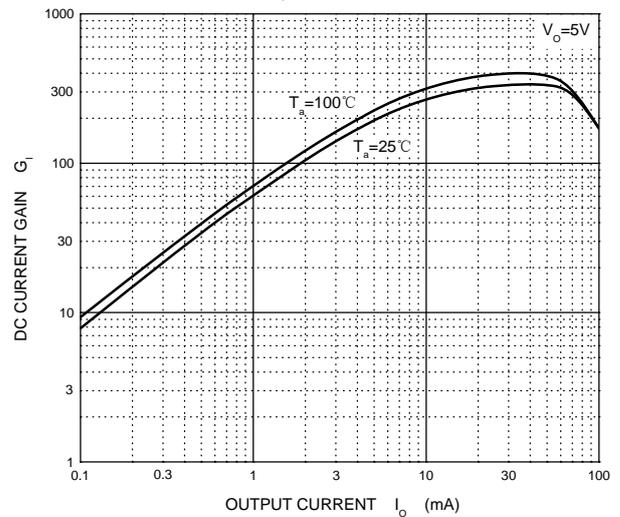
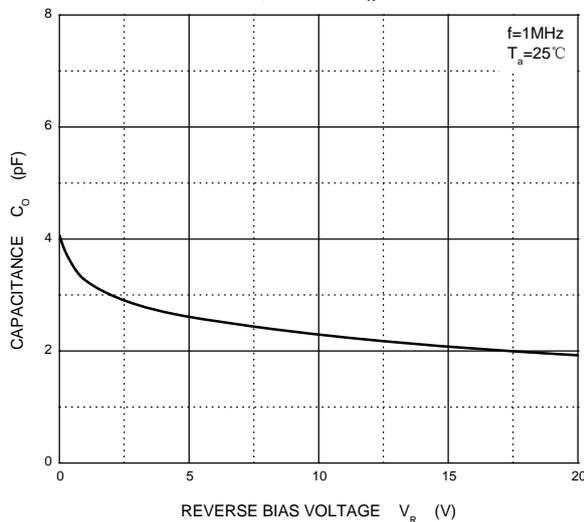
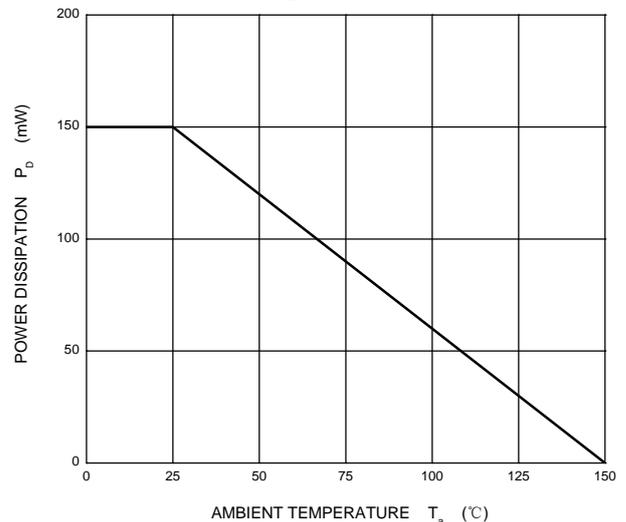
Parameter	Symbol	Min	Typ	Max	Unit	Conditions
Input voltage	$V_{I(off)}$	0.5			V	$V_{CC}=5V, I_O=100\mu A$
	$V_{I(on)}$			3		$V_O=0.3V, I_O=10mA$
Output voltage	$V_{O(on)}$			0.3	V	$I_O/I_I=10mA/0.5mA$
Input current	I_I			0.88	mA	$V_I=5V$
Output current	$I_{O(off)}$			0.5	μA	$V_{CC}=50V, V_I=0$
DC current gain	G_I	30				$V_O=5V, I_O=5mA$
Input resistance	R_1	7	10	13	k Ω	
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 DTA114E Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Supply voltage	V_{CC}	-50	V
Input voltage	V_{IN}	-40~+10	V
Output current	I_O	-50	mA
	I_{CM}	-100	
Power dissipation	P_D	150	mW
Operation Junction and Storage Temperature Range	T_J, T_{stg}	-55~+150	°C

Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min	Typ	Max	Unit	Conditions
Input voltage	$V_{I(off)}$	-0.5			V	$V_{CC}=-5V, I_O=-100\mu A$
	$V_{I(on)}$			-3		$V_O=-0.3V, I_O=-10mA$
Output voltage	$V_{O(on)}$			-0.3	V	$I_O/I_I=-10mA/-0.5mA$
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	30				$V_O=-5V, I_O=-5mA$
Input resistance	R_1	7	10	13	k Ω	
Resistance ratio	R_2/R_1	0.8	1	1.2		
Transition frequency	f_T		250		MHz	$V_{CE}=-10V, I_E=5mA, f=100MHz$

Typical Characteristics
DTC114E
ON Characteristics

OFF Characteristics

 $V_{O(ON)}$ — I_O

 G_1 — I_O

 C_O — V_R

 P_D — T_a


Typical Characteristics
DTA114E
