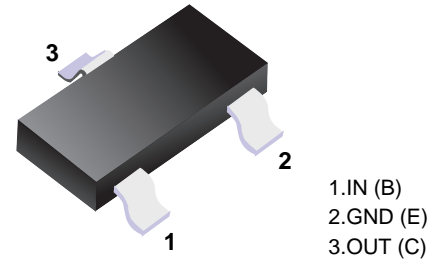


■ NPN Digital Transistors - DTC (R1 = R2 Series)ECA

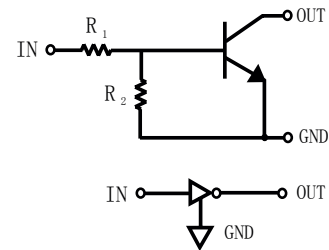
■ Features

- Epitaxial Planar Die Construction
- Built-In Biasing Resistors, R1 = R2
- Complementary PNP Types Available



■ Simplified outline(SOT-23)

P/N	R1, R2 (NOM)
DTC123ECA	2.2KΩ
DTC143ECA	4.7KΩ
DTC114ECA	10KΩ
DTC124ECA	22KΩ
DTC144ECA	47KΩ
DTC115ECA	100KΩ



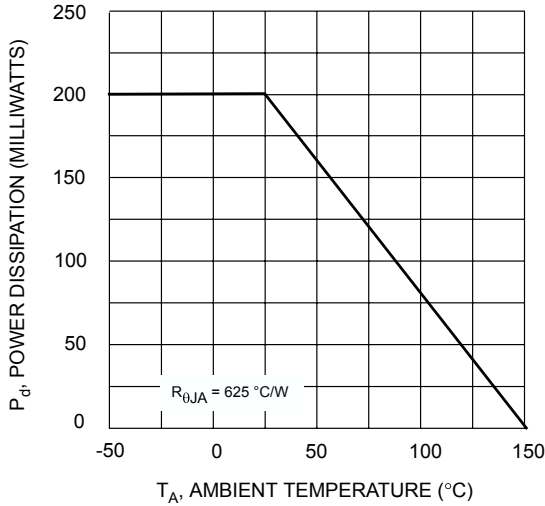
■ Absolute Maximum Ratings Ta = 25°C

Parameter	Symbol	Rating	Unit
Supply Voltage	V _{CC}	50	V
Input Voltage	DTC123ECA	-10 to 20	
	DTC143ECA	-10 to 30	
	DTC114ECA	-10 to 40	
	DTC124ECA	-10 to 40	
	DTC144ECA	-10 to 40	
	DTC115ECA	-10 to 40	
Output Current	DTC123ECA	100	mA
	DTC143ECA	100	
	DTC114ECA	50	
	DTC124ECA	30	
	DTC144ECA	100	
	DTC115ECA	20	
Output Current All	I _{C(Max)}	100	
Collector Power Dissipation	P _C	200	mW
Thermal Resistance, Junction to Ambient	R _{θJA}	625	°C/W
Junction Temperature	T _J	150	°C
Storage Temperature Range	T _{stg}	-55 to 150	

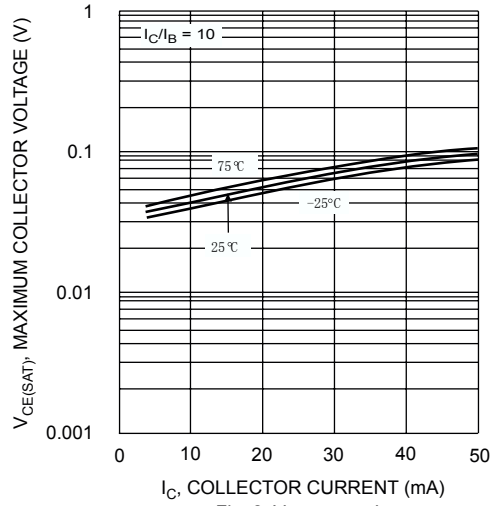
■ Electrical Characteristics Ta = 25°C

Parameter		Symbol	Test Conditions	Min	Typ	Max	Unit
Input Voltage		$V_{I(off)}$	$V_{CC}= 5V, I_o= 100\mu A$	0.5	1.1		
Input Voltage	DTC123ECA	$V_{I(on)}$	$V_o= 300mV, I_o= 20mA$		1.9	3	V
	DTC143ECA		$V_o= 300mV, I_o= 20mA$				
	DTC114ECA		$V_o= 300mV, I_o= 10mA$				
	DTC124ECA		$V_o= 300mV, I_o= 5mA$				
	DTC144ECA		$V_o= 300mV, I_o= 2mA$				
	DTC115ECA		$V_o= 300mV, I_o= 1mA$				
Output Voltage	DTC123ECA	$V_{O(on)}$	$I_o=10mA, I_i=0.5mA$		0.1	0.3	
	DTC143ECA		$I_o=10mA, I_i=0.5mA$				
	DTC114ECA		$I_o=10mA, I_i=0.5mA$				
	DTC124ECA		$I_o=10mA, I_i=0.5mA$				
	DTC144ECA		$I_o=10mA, I_i=0.5mA$				
	DTC115ECA		$I_o=10mA, I_i=0.25mA$				
Input Current	DTC123ECA	I_i	$V_i= 5V$			3.8	mA
	DTC143ECA					1.8	
	DTC114ECA					0.88	
	DTC124ECA					0.36	
	DTC144ECA					0.18	
	DTC115ECA					0.15	
Output Current		$I_{O(off)}$	$V_{CC}= 50V, V_i= 0$			0.5	μA
DC Current Gain	DTC123ECA	G_i	$V_o= 5V, I_o=20mA$	20			
	DTC143ECA		$V_o= 5V, I_o=10mA$	20			
	DTC114ECA		$V_o= 5V, I_o=5mA$	30			
	DTC124ECA		$V_o= 5V, I_o=5mA$	56			
	DTC144ECA		$V_o= 5V, I_o=5mA$	68			
	DTC115ECA		$V_o= 5V, I_o=5mA$	82			
Input Resistor (R1) Tolerance		ΔR_1		-30		30	%
Resistance Ratio		R_2 / R_1		0.8		1.2	
Transition frequency		f_T	$V_{CE}= 10V, I_E= -5mA, f=100MHz$		250		MHz

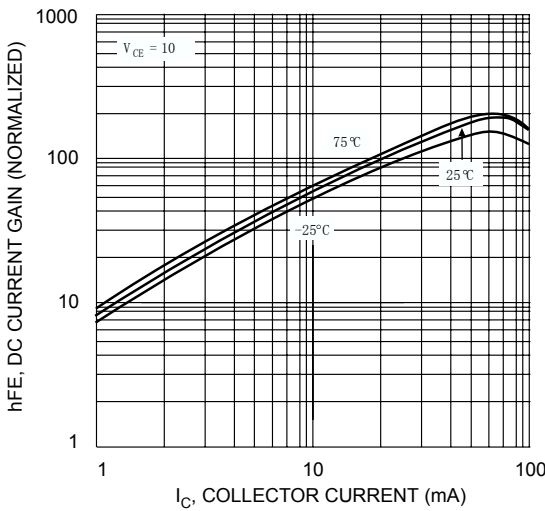
■ Typical Characteristics



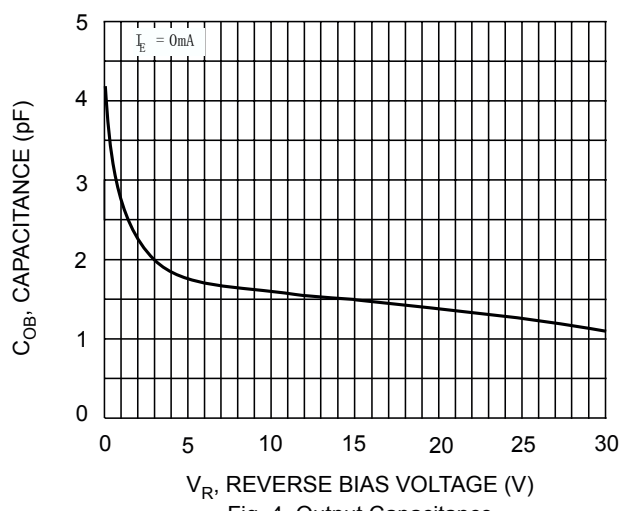
T_A , AMBIENT TEMPERATURE ($^\circ\text{C}$)
Fig. 1 Derating Curve



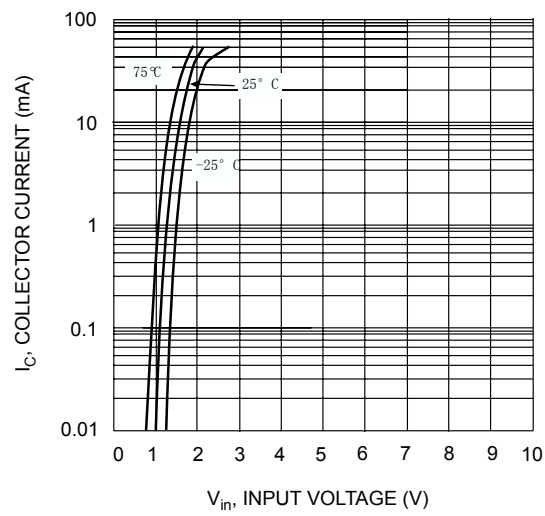
I_C , COLLECTOR CURRENT (mA)
Fig. 2 $V_{CE(SAT)}$ vs. I_C



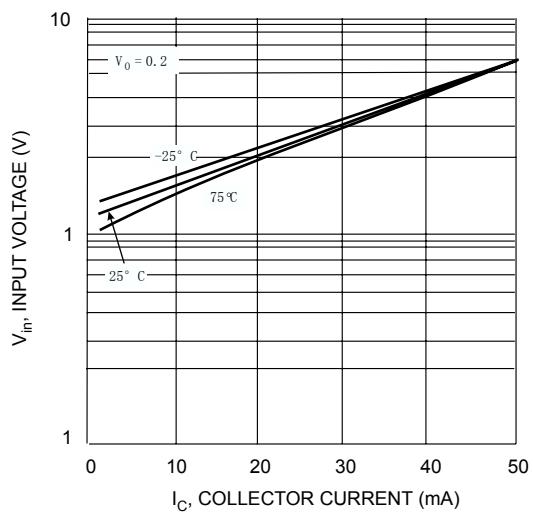
I_C , COLLECTOR CURRENT (mA)
Fig. 3 DC CURRENT GAIN



V_R , REVERSE BIAS VOLTAGE (V)
Fig. 4 Output Capacitance



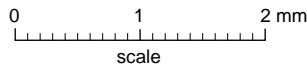
V_{in} , INPUT VOLTAGE (V)
Fig. 5 Collector Current Vs. Input Voltage



I_C , COLLECTOR CURRENT (mA)
Fig. 6 Input Voltage vs. Collector Current

Package Outline

SOT-23



DIMENSIONS (mm are the original dimensions)

UNIT	A	A ₁ max.	b _p	c	D	E	e	e ₁	H _E	L _p	Q	v	w
mm	1.1 0.9	0.1	0.48 0.38	0.15 0.09	3.0 2.8	1.4 1.2	1.9	0.95	2.5 2.1	0.45 0.15	0.55 0.45	0.2	0.1

Summary of Packing Options

Package	Packing Description	Packing Quantity	Industry Standard
SOT-23	Tape/Reel, 7" reel	3000	EIA-481-1

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[DTC114EUA-TP](#) [SMUN5237DW1T1G](#) [SMUN5213DW1T1G](#) [SMUN5114DW1T1G](#) [DTC124ECA-TP](#) [DTA114ECA-TP](#) [DTC113EM3T5G](#)
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[NSVMUN5215DW1T1G](#) [NSVMUN5213DW1T3G](#) [NSVIMD10AMT1G](#) [NSVEMC2DXV5T1G](#) [NSVDTC144WET1G](#) [NSVDTC123JET1G](#)
[NSVDTA143EM3T5G](#) [NSVB1706DMW5T1G](#) [NSBC143EDP6T5G](#) [NSBA144WDXV6T1G](#) [DTA115TET1G](#) [NSBC115TDP6T5G](#)
[NSBA113EF3T5G](#) [MUN2235T1G](#) [NSBC143ZDXV6T5G](#) [NSVDTA114EM3T5G](#) [MUN2138T1G](#) [DCX124EUQ-7-F](#) [MUN2141T1G](#)
[DTC144TET1G](#) [MUN2238T1G](#) [SMUN5112DW1T1G](#) [NSVMUN5131T1G](#)