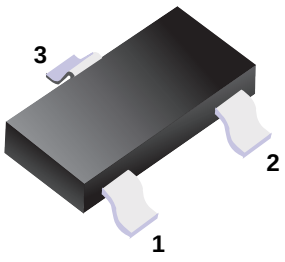
■ NPN Digital Transistors - DTC (R1 = R2 Series)ECA

■ Features

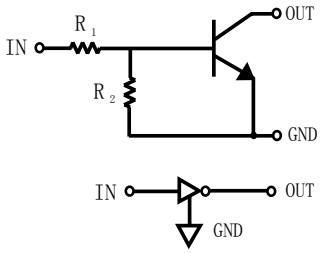
- Epitaxial Planar Die Construction
- Built-In Biasing Resistors, R1 = R2
- Complementary PNP Types Available



1.IN (B)
2.GND (E)
3.OUT (C)

■ 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℃

Parameter		Symbol	Rating	Unit
Supply Voltage		V_{CC}	50	V
Input Voltage	DTC123ECA	V_{IN}	-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	I_O	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		$R_{\theta JA}$	625	℃/W
Junction Temperature		T_J	150	℃
Storage Temperature Range		T_{stg}	-55 to 150	

■ Electrical Characteristics Ta = 25℃

Parameter		Symbol	Test Conditions	Min	Typ	Max	Unit
Input Voltage		$V_{I(off)}$	Vcc= 5V,Io= 100uA	0.5	1.1		V
Input Voltage	DTC123ECA	$V_{I(on)}$	Vo= 300mV,Io= 20mA		1.9	3	
	DTC143ECA		Vo= 300mV,Io= 20mA				
	DTC114ECA		Vo= 300mV,Io= 10mA				
	DTC124ECA		Vo= 300mV,Io= 5mA				
	DTC144ECA		Vo= 300mV,Io= 2mA				
	DTC115ECA		Vo= 300mV,Io= 1mA				
Output Voltage	DTC123ECA	$V_{O(on)}$	Io=10mA,Ii=0.5mA		0.1	0.3	
	DTC143ECA		Io=10mA,Ii=0.5mA				
	DTC114ECA		Io=10mA,Ii=0.5mA				
	DTC124ECA		Io=10mA,Ii=0.5mA				
	DTC144ECA		Io=10mA,Ii=0.5mA				
	DTC115ECA		Io=10mA,Ii=0.25mA				
Input Current	DTC123ECA	I_I	V_I= 5 V			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}= 50 V , V_I= 0			0.5	uA
DC Current Gain	DTC123ECA	G_I	V_O= 5V , Io=20mA	20			
	DTC143ECA		V_O= 5V , Io=10mA	20			
	DTC114ECA		V_O= 5V , Io=5mA	30			
	DTC124ECA		V_O= 5V , Io=5mA	56			
	DTC144ECA		V_O= 5V , Io=5mA	68			
	DTC115ECA		V_O= 5V , Io=5mA	82			
Input Resistor (R1) Tolerance		△ R_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 Characterisitics

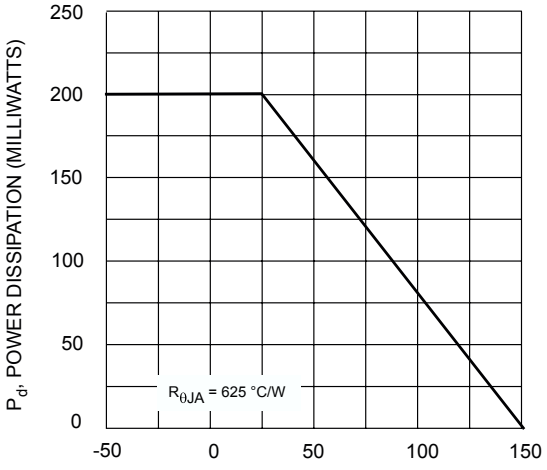


Fig. 1 Derating Curve

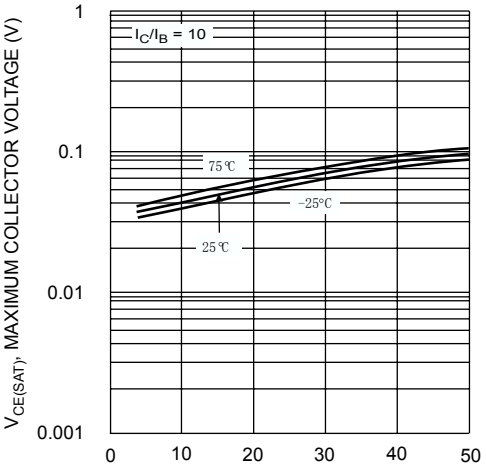


Fig. 2 $V_{CE(SAT)}$ vs. I_C

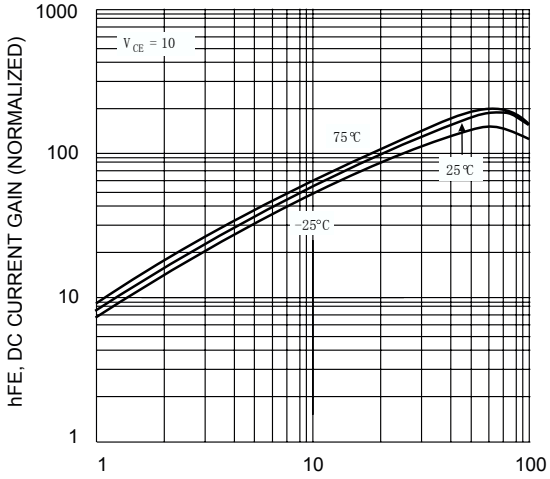


Fig. 3 DC CURRENT GAIN

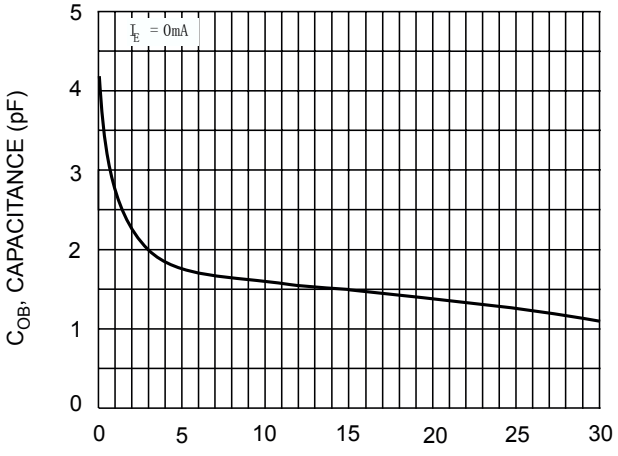


Fig. 4 Output Capacitance

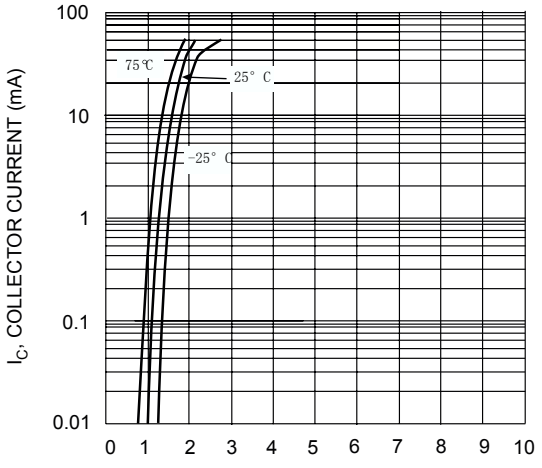


Fig. 5 Collector Current Vs. Input Voltage

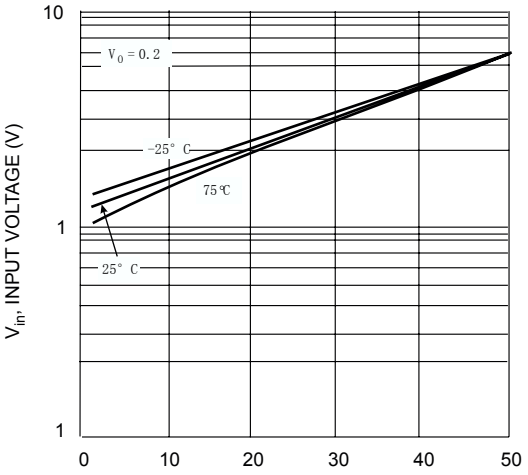
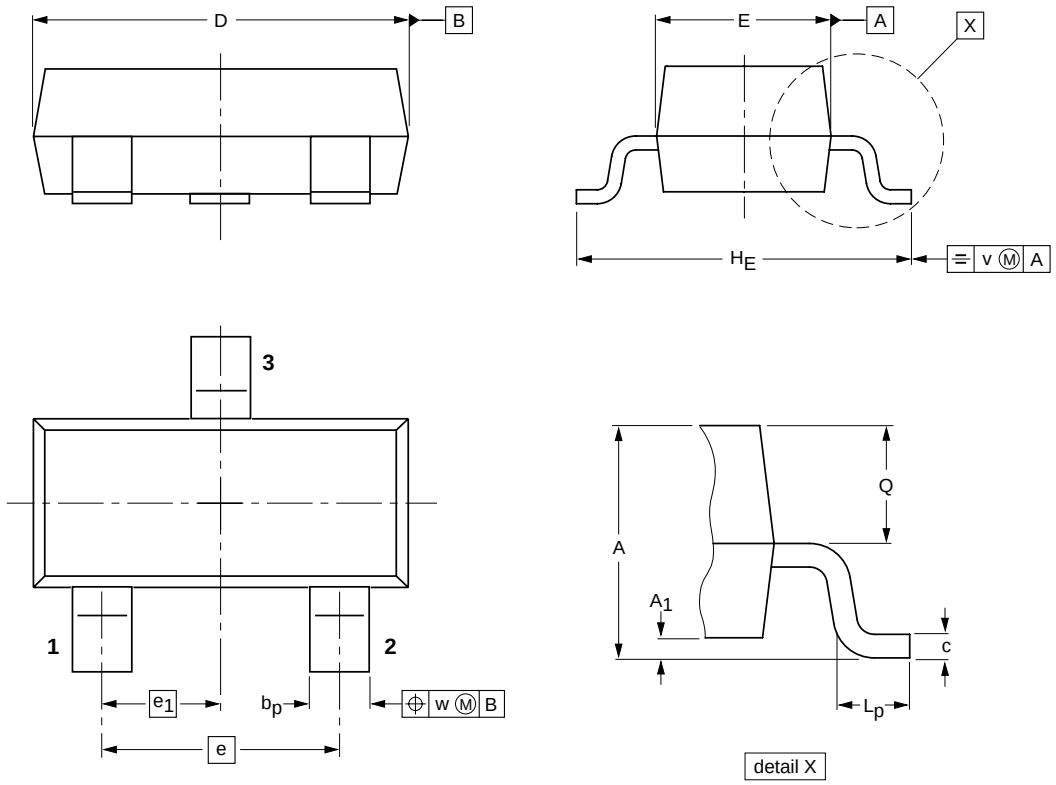


Fig. 6 Input Voltage vs. Collector Current

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