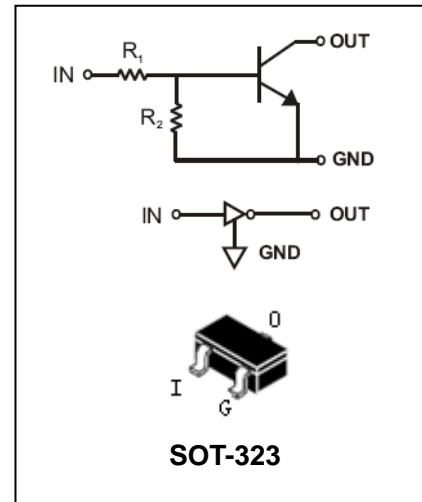## Digital Transistor

DTC($R_1 \neq R_2$ SERIES)UA

FEATURES

- Epitaxial planar die construction.
- Complementary PNP types available(DTA).
- Built-in biasing resistors, $R_1 \neq R_2$
- Also available in lead free version.

Lead-free

SOT-323

APPLICATIONS

- The NPN style digital transistor.

ORDERING INFORMATION

Type No.	Marking	Package Code
DTC113ZUA	E21	SOT-323
DTC114WUA	84	SOT-323
DTC114YUA	64	SOT-323
DTC123JUA	E42	SOT-323
DTC123YUA	62	SOT-323
DTC143XUA	43•	SOT-323
DTC143ZUA	E23	SOT-323

MAXIMUM RATING @ Ta=25℃ unless otherwise specified

Symbol	Parameter		Value	Units
V_{CC}	Supply Voltage		50	V
V_{IN}	Input Voltage	DTC113ZUA	-5 to+10	V
		DTC114WUA	-10 to+30	
		DTC114YUA	-6 to +40	
		DTC123JUA	-5 to+12	
		DTC123YUA	-5 to+12	
		DTC143XUA	-7 to+20	
		DTC143ZUA	-5 to+30	
I_O	Output Current	DTC113ZUA	100	mA
		DTC114WUA	100	
		DTC114YUA	70	
		DTC123JUA	100	
		DTC123YUA	100	
		DTC143XUA	100	
		DTC143ZUA	100	
I_C(Max.)	Output current	ALL	100	mA

Symbol	Parameter	Value	Units
P_D	Power Dissipation	200	mW
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient Air	625	℃/W
T_j,T_{stg}	Operating and Storage and Temperature Range	-55 to +150	℃

ELECTRICAL CHARACTERISTICS @ Ta=25℃ unless otherwise specified

Parameter		Symbol	Test conditions	MIN	TYP	MAX	UNIT
Input Voltage	DTC113ZUA	$V_{I(off)}$	V_{CC}=5V,I_O=100μA	0.3	-	-	V
	DTC114WUA			0.8			
	DTC114YUA			0.3			
	DTC123JUA			0.5			
	DTC123YUA			0.3			
	DTC143XUA			0.3			
	DTC143ZUA			0.5			
Input Voltage	DTC113ZUA	$V_{I(on)}$	V_O=0.3V,I_O=20mA	-	-	3.0	
	DTC114WUA		V_O=0.3V,I_O=2mA			3.0	
	DTC114YUA		V_O=0.3V,I_O=1mA			1.4	
	DTC123JUA		V_O=0.3V,I_O=5mA			1.1	
	DTC123YUA		V_O=0.3V,I_O=20mA			3.0	
	DTC143XUA		V_O=0.3V,I_O=20mA			2.5	
	DTC143ZUA		V_O=0.3V,I_O=5mA			1.3	
Output Voltage	DTC123JUA	$V_{O(on)}$	I_O/I_I=5mA/0.25mA	-	0.1	0.3	V
	DTC143ZUA						
	DTC114YUA						
	ALL Others		I_O/I_I=10mA/0.5mA				
Input Current	DTC113ZUA	I_I	V_I=5V	-	-	7.2	mA
	DTC114WUA					0.88	
	DTC114YUA					0.88	
	DTC123JUA					3.6	
	DTC123YUA					3.8	
	DTC143XUA					1.8	
	DTC143ZUA					1.8	
Output Current		$I_{O(off)}$	V_{CC}=50V,V_I=0V	-	-	0.5	μA
DC Current Gain	DTC113ZUA	G_I	V_O=5V,I_O=10mA	33	-	-	
	DTC114WUA			24			
	DTC114YUA			68			
	DTC123JUA			80			
	DTC123YUA			33			

Parameter		Symbol	Test conditions	MIN	TYP	MAX	UNIT
DTC143XUA	DTC143ZUA	G_I	V_O=5V,I_O=10mA	30 80			
Input Resistor	DTC113ZUA	$R_1(R_2)$			1(10)		kΩ
	DTC114WUA				10(4.7)		
	DTC114YUA				10(47)		
	DTC123JUA				2.2(47)		
	DTC123YUA				2.2(10)		
	DTC143XUA				4.7(10)		
	DTC143ZUA				4.7(47)		
Input Resistor (R_1) Tolerance		ΔR_1	-	-30		+30	%
Resistance Ratio Tolerance		$\Delta R_2/R_1$	-	-20		+20	%
Gain-Bandwidth Product		f_T	V_{CE}=10V,I_E=5mA, f=100MHz	-	250	-	MHz

TYPICAL CHARACTERISTICS @ Ta=25℃ unless otherwise specified

Fig. 1 Derating Curve
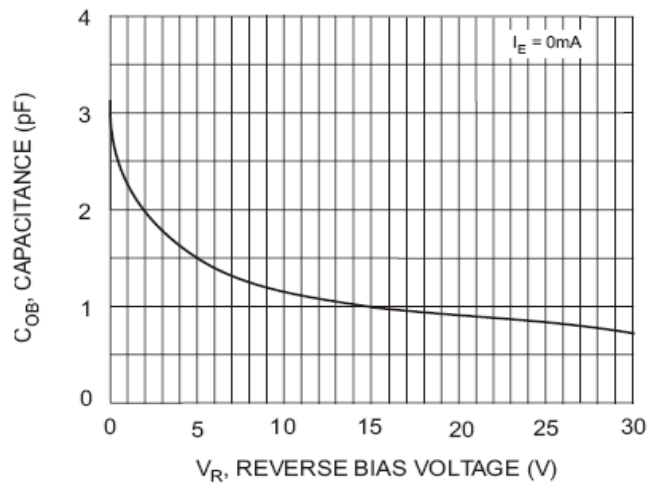

Fig. 2 $V_{CE(SAT)}$ vs. I_C
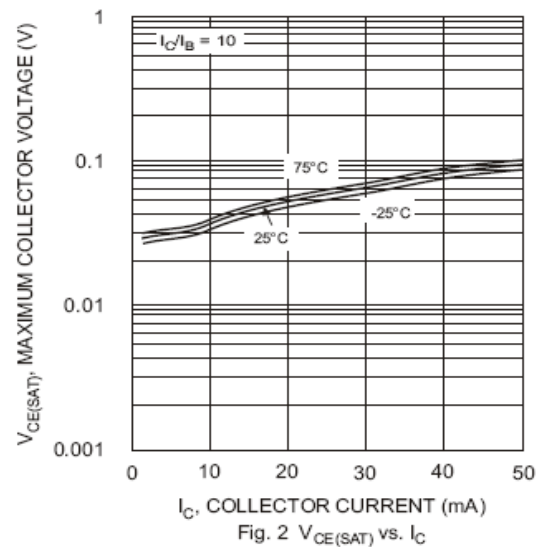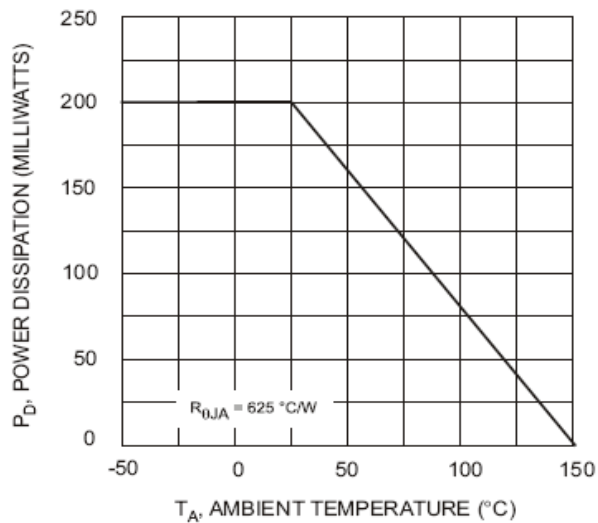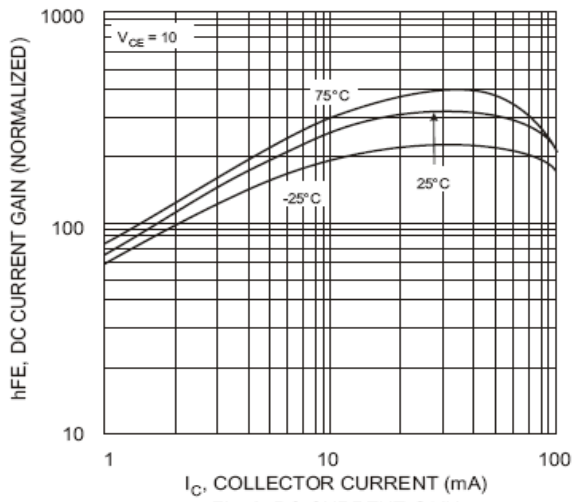
Fig. 3 DC CURRENT GAIN
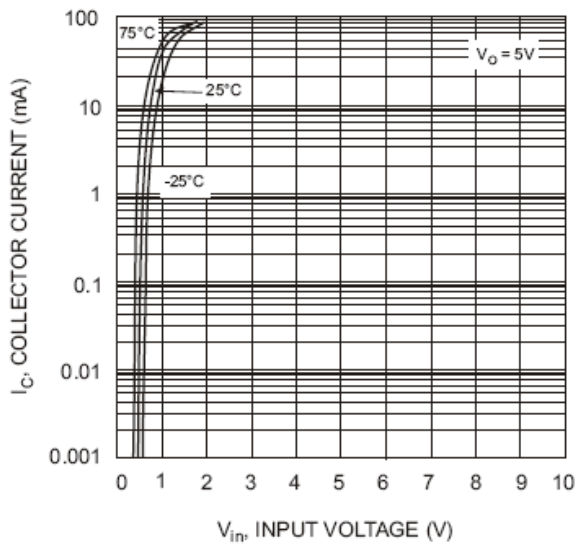

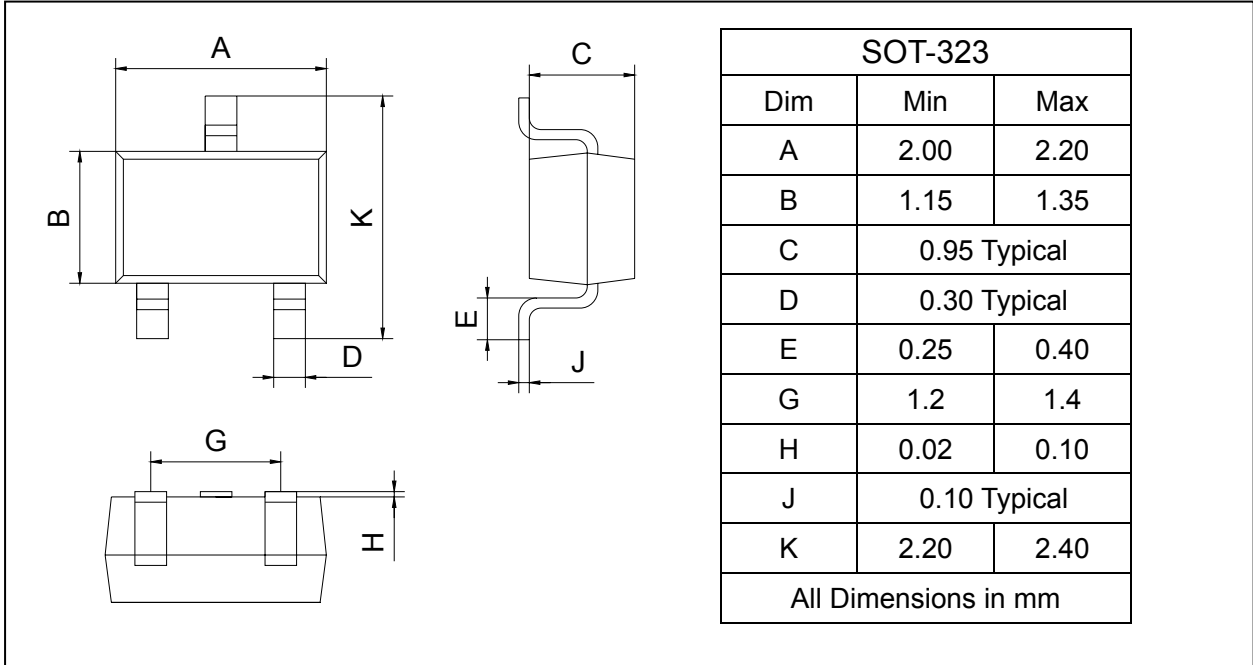Fig. 4 Output Capacitance

Fig. 5 Collector Current Vs. Input Voltage
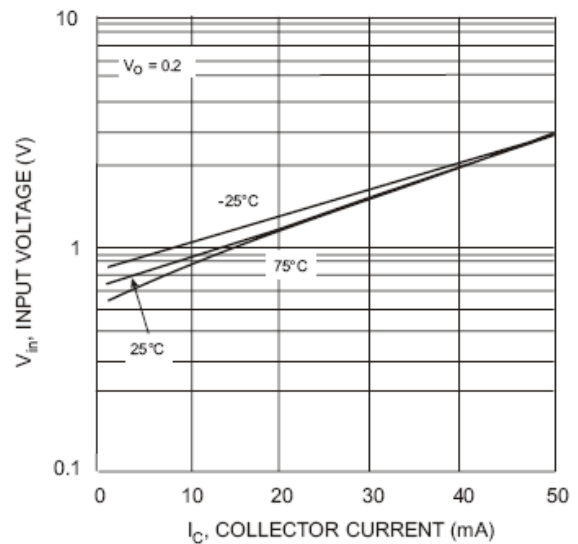
Fig. 6 Input Voltage vs. Collector Current

PACKAGE OUTLINE

Plastic surface mounted package   SOT-323

SOT-323		
Dim	Min	Max
A	2.00	2.20
B	1.15	1.35
C	0.95 Typical	
D	0.30 Typical	
E	0.25	0.40
G	1.2	1.4
H	0.02	0.10
J	0.10 Typical	
K	2.20	2.40
All Dimensions in mm		

SOLDERING FOOTPRINT

0.65   0.65
1.90
0.90
0.70

Unit : mm
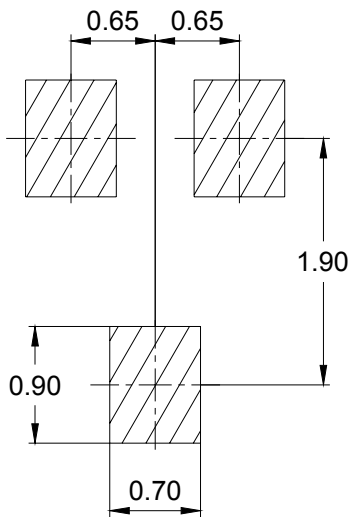
PACKAGE INFORMATION

Device	Package	Shipping
DTCxxxxUA	SOT-323	3000/Tape&Reel

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DTC115TKAT146 DTC124TETL DTC144VUAT106 MUN5241T1G BCR158WH6327XTSA1 NSBA114TDP6T5G NSBA123EF3T5G

NSBA143TF3T5G NSBA144TF3T5G NSBC113EF3T5G NSBC124XF3T5G SMUN5330DW1T1G SSVMUN5312DW1T2G

RN1303(TE85L,F) RN1306(TE85L,F) RN4605(TE85L,F) TTEPROTOTYPE79 EMH15T2R SMUN2214T3G SMUN5335DW1T1G

NSBC143ZPDP6T5G NSVDTA143ZET1G NSVDTC143ZET1G NSVMUN5113DW1T3G SMUN2214T1G FMA7AT148 DTC114EUA-TP

 SMUN5237DW1T1G SMUN5213DW1T1G SMUN5114DW1T1G SMUN2111T1G DTC124ECA-TP DTC123TM3T5G DTA114ECA-TP

DTA113EM3T5G DTC113EM3T5G NSVMUN5135DW1T1G NSVMUN2237T1G NSVDTC143ZM3T5G SMUN5335DW1T2G

SMUN5216DW1T1G NSVMUN5316DW1T1G NSVMUN5215DW1T1G