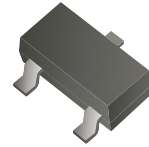


DTCxxxxCA-HF Series

RoHS Device
Halogen Free



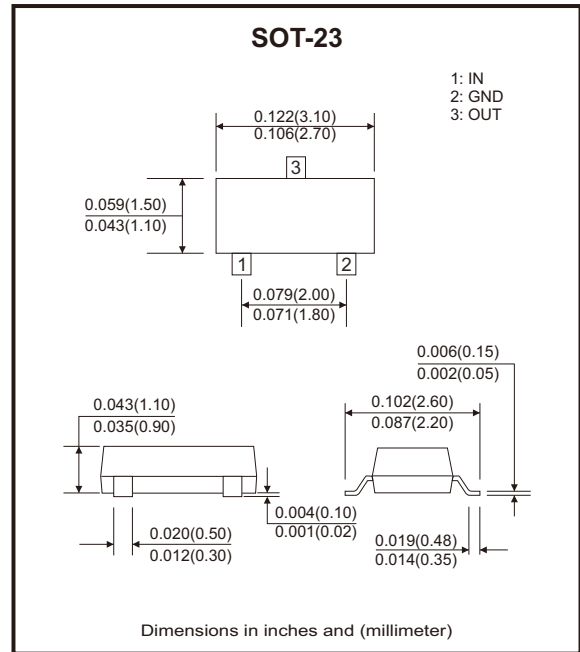
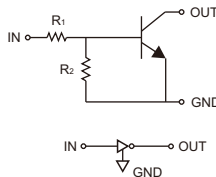
Features

- Epitaxial planar die construction.
- Built-in biasing resistors, $R_1 \neq R_2$.

Mechanical data

- Case: SOT-23, molded plastic.

Circuit Diagram



Maximum Ratings (at $T_a=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Units
Supply voltage	V_{CC}	50	V
Input voltage	V_{IN}	-5 to +10 -10 to +30 -6 to +40 -5 to +12 -5 to +12 -7 to +20 -5 to +30	V
Output current	I_o	100 100 70 100 100 100 100	mA
Output current	I_c (Max.)	100	mA
Power dissipation	P_b	200	mW
Thermal resistance, junction to ambient air	$R_{\theta JA}$	625	$^\circ\text{C}/\text{W}$
Operating and storage and temperature range	T_j, T_{STG}	-55 to +150	$^\circ\text{C}$

Electrical Characteristics (at Ta=25°C unless otherwise noted)

Parameter	Symbol	Test conditions	Min	Typ	Max	Units	
Input voltage	V _{I(off)}	V _{CC} = 5V, I _o = 100μA	DTC113ZCA-HF	0.3			V
			DTC114WCA-HF	0.8			
			DTC114YCA-HF	0.3			
			DTC123JCA-HF	0.5			
			DTC123YCA-HF	0.3			
			DTC143XCA-HF	0.3			
			DTC143ZCA-HF	0.5			
Input voltage	V _{I(on)}	V _o = 0.3V, I _o = 20mA V _o = 0.3V, I _o = 2mA V _o = 0.3V, I _o = 1mA V _o = 0.3V, I _o = 5mA V _o = 0.3V, I _o = 20mA V _o = 0.3V, I _o = 20mA V _o = 0.3V, I _o = 5mA			3.0	V	
					3.0		
					1.4		
					1.1		
					3.0		
					2.5		
					1.3		
Output voltage	V _{O(on)}	I _o / I _i = 5mA / 0.25mA		0.1	0.3	V	
		I _o / I _i = 10mA / 0.5mA					
Input current	I _i	V _i = 5V			7.2	mA	
					0.88		
					0.88		
					3.6		
					3.8		
					1.8		
					1.8		
Output current	I _{O(off)}	V _{CC} = 50V, V _i = 0V			0.5	μA	
DC current gain	G _I	V _o = 5V, I _o = 10mA	DTC113ZCA-HF	33			
			DTC114WCA-HF	24			
			DTC114YCA-HF	68			
			DTC123JCA-HF	80			
			DTC123YCA-HF	33			
			DTC143XCA-HF	30			
			DTC143ZCA-HF	80			
Input resistor	R ₁ (R ₂)		DTC113ZCA-HF	0.7	1(10)	1.3	kΩ
			DTC114WCA-HF	7	10(4.7)	13	
			DTC114YCA-HF	7	10(47)	13	
			DTC123JCA-HF	1.54	2.2(47)	2.86	
			DTC123YCA-HF	1.54	2.2(10)	2.86	
			DTC143XCA-HF	3.29	4.7(10)	6.11	
			DTC143ZCA-HF	3.29	4.7(47)	6.11	
Input resistor (R ₁) tolerance	ΔR ₁		-30		+30	%	
Resistance ratio tolerance	ΔR ₂ /R ₁		-20		+20	%	
Gain-bandwidth product	f _r	V _{CE} = 10V, I _E = 5mA, f = 100MHz		250		MHz	

Rating and Characteristic Curves (DTCxxxxCA-HF Series)

Fig.1 - Derating Curve

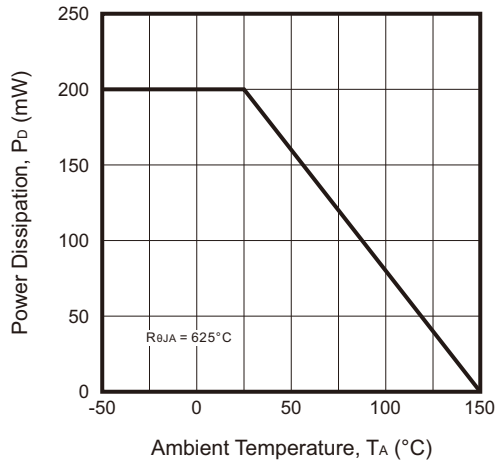


Fig.2 - $V_{CE(SAT)}$ vs. I_c

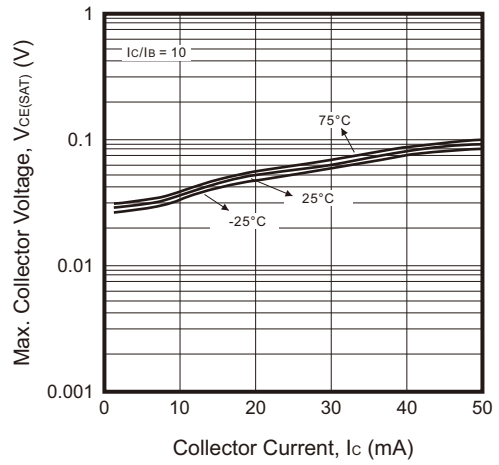


Fig.3 - DC Current Gain

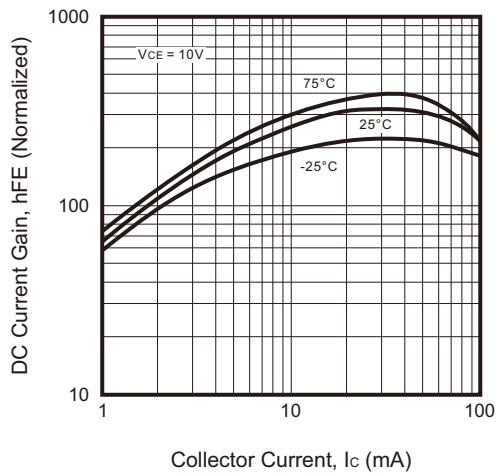


Fig.4 - Output Capacitance

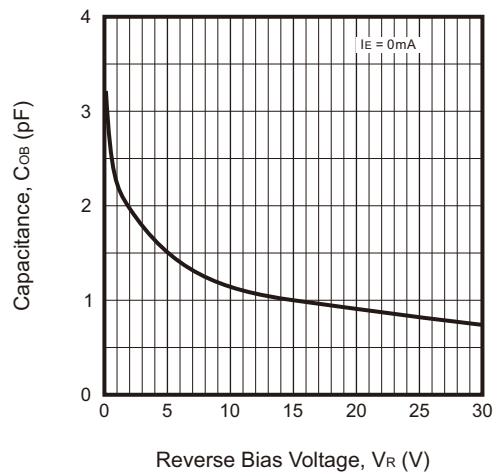


Fig.5 - Collector Current vs. Input Voltage

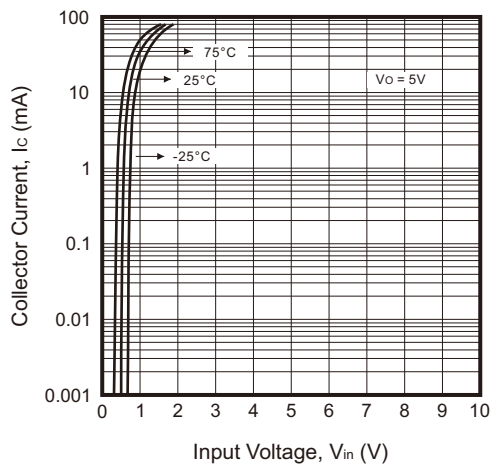
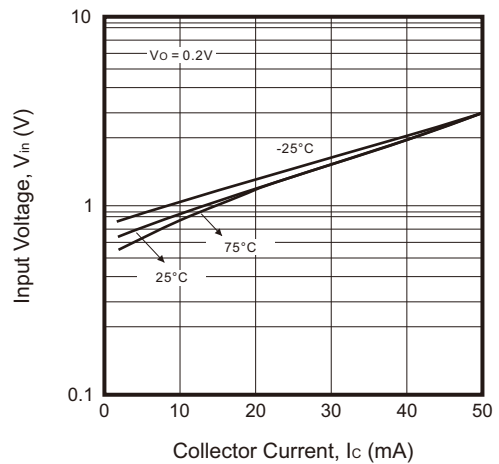
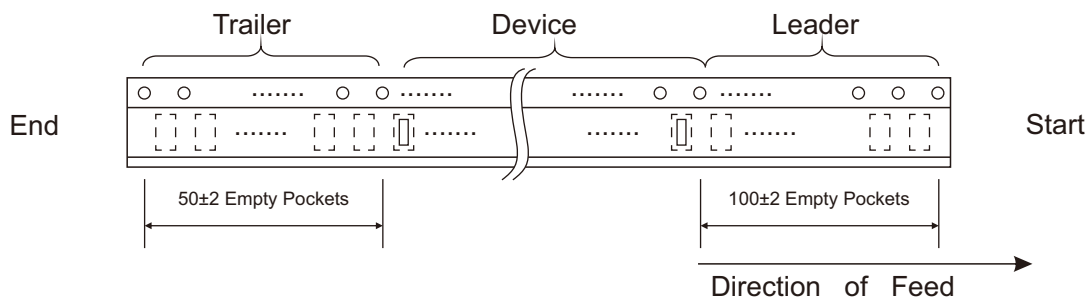
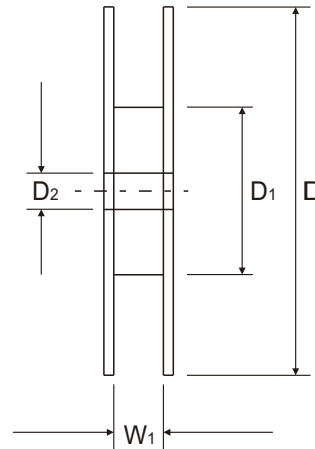
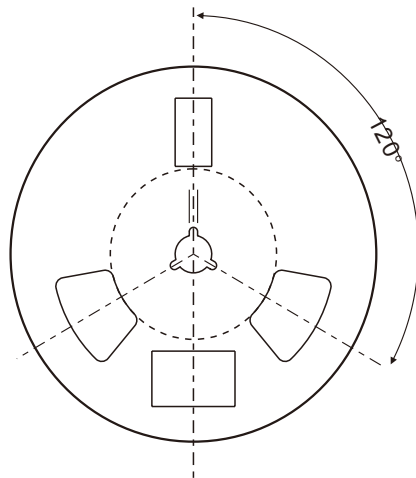
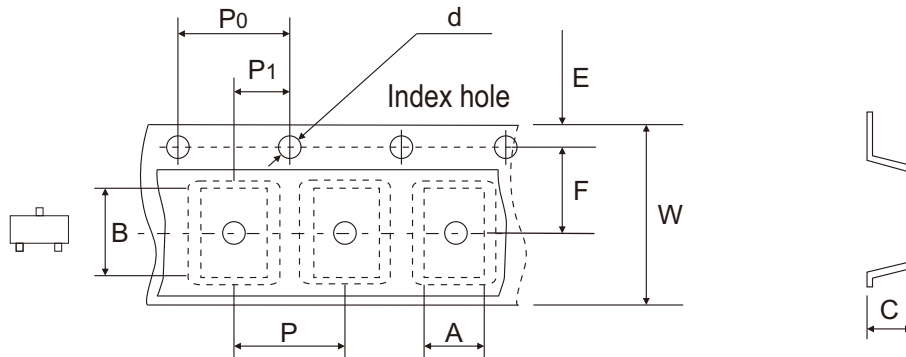


Fig.6 - Input Voltage vs. Collector Current



Company reserves the right to improve product design, functions and reliability without notice.

Reel Taping Specification



SOT-23	SYMBOL	A	B	C	d	D	D1	D2
	(mm)	3.15 ± 0.10	2.77 ± 0.10	1.22 ± 0.10	1.50 ± 0.10	178.00 ± 1.00	54.00 ± 0.50	13.00 ± 0.50
	(inch)	0.124 ± 0.004	0.109 ± 0.004	0.048 ± 0.004	0.059 ± 0.004	7.008 ± 0.039	2.126 ± 0.020	0.512 ± 0.020

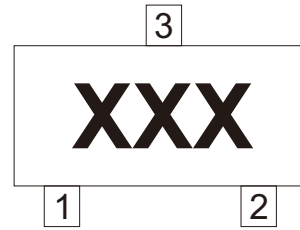
SOT-23	SYMBOL	E	F	P	P0	P1	W	W1
	(mm)	1.75 ± 0.10	3.50 ± 0.05	4.00 ± 0.10	4.00 ± 0.10	2.00 ± 0.05	8.00 + 0.30 - 0.10	9.50 ± 1.00
	(inch)	0.069 ± 0.004	0.138 ± 0.002	0.157 ± 0.004	0.157 ± 0.004	0.079 ± 0.002	0.315 + 0.012 - 0.004	0.374 ± 0.039

Company reserves the right to improve product design, functions and reliability without notice.

REV:A

Marking Code

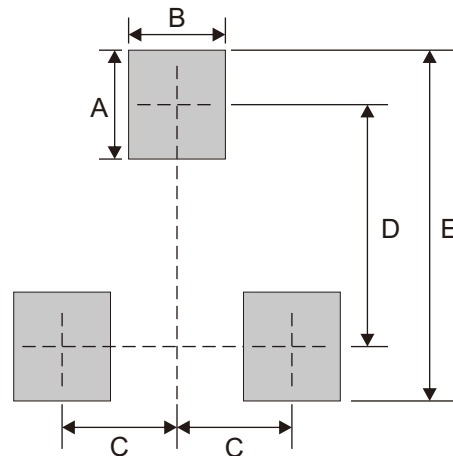
Part Number	Marking Code
DTC113ZCA-HF	E21
DTC114WCA-HF	84
DTC114YCA-HF	64
DTC123JCA-HF	E42
DTC123YCA-HF	62
DTC143XCA-HF	43•
DTC143ZCA-HF	E23



xx/xxx = Product type marking code

Suggested PAD Layout

SIZE	SOT-23	
	(mm)	(inch)
A	0.90	0.035
B	0.80	0.031
C	0.95	0.037
D	2.00	0.079
E	2.90	0.114



Note: 1. The pad layout is for reference purposes only.

Standard Packaging

Case Type	REEL PACK	
	REEL (pcs)	Reel Size (inch)
SOT-23	3,000	7

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[NSBC143ZPDP6T5G](#) [NSVMUN5113DW1T3G](#) [SMUN5230DW1T1G](#) [SMUN5133T1G](#) [SMUN2214T1G](#) [DTC114EUA-TP](#)
[NSBA144EF3T5G](#) [NSVDTA114EET1G](#) [2SC2223-T1B-A](#) [2SC3912-TB-E](#) [SMUN5237DW1T1G](#) [SMUN5213DW1T1G](#)
[SMUN5114DW1T1G](#) [SMUN2111T1G](#) [NSVDTC144EM3T5G](#) [DTC124ECA-TP](#) [DTC123TM3T5G](#) [DTA114ECA-TP](#) [DTA113EM3T5G](#)
[DCX115EK-7-F](#) [DTC113EM3T5G](#) [NSVMUN5135DW1T1G](#) [NSVMUN2237T1G](#)