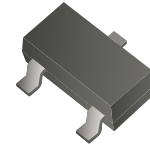


DTCxxxxCA-HF Series

RoHS Device
Halogen Free



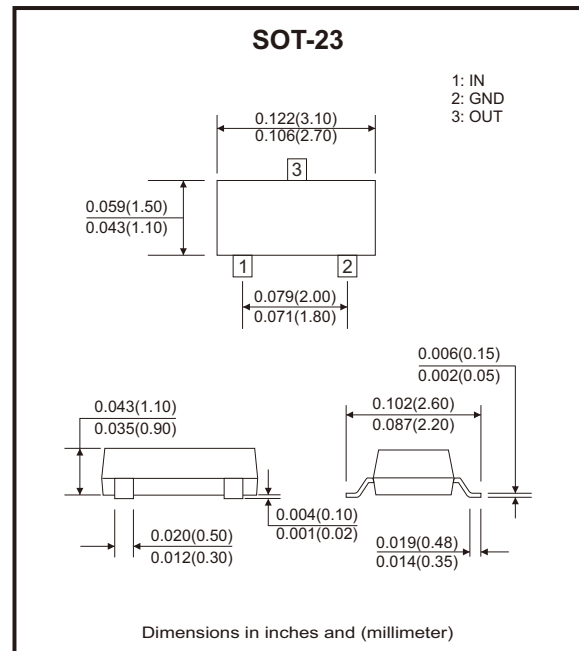
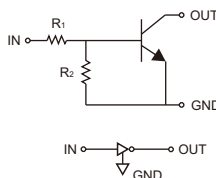
Features

- 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	DTC113ZCA-HF DTC114WCA-HF DTC114YCA-HF DTC123JCA-HF DTC123YCA-HF DTC143XCA-HF DTC143ZCA-HF	$V_{I(off)}$ $V_{CC} = 5V, I_o = 100\mu A$	0.3			V
			0.8			
			0.3			
			0.5			
			0.3			
			0.3			
			0.5			
Input voltage	DTC113ZCA-HF DTC114WCA-HF DTC114YCA-HF DTC123JCA-HF DTC123YCA-HF DTC143XCA-HF DTC143ZCA-HF	$V_{I(on)}$ $V_o = 0.3V, I_o = 20mA$ $V_o = 0.3V, I_o = 2mA$ $V_o = 0.3V, I_o = 1mA$ $V_o = 0.3V, I_o = 5mA$ $V_o = 0.3V, I_o = 20mA$ $V_o = 0.3V, I_o = 20mA$ $V_o = 0.3V, I_o = 5mA$			3.0	V
					3.0	
					1.4	
					1.1	
					3.0	
					2.5	
					1.3	
Output voltage	DTC123JCA-HF DTC143ZCA-HF DTC114YCA-HF All others	$V_{O(on)}$ $I_o / I_i = 5mA / 0.25mA$		0.1	0.3	V
			$I_o / I_i = 10mA / 0.5mA$			
Input current	DTC113ZCA-HF DTC114WCA-HF DTC114YCA-HF DTC123JCA-HF DTC123YCA-HF DTC143XCA-HF DTC143ZCA-HF	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	DTC113ZCA-HF DTC114WCA-HF DTC114YCA-HF DTC123JCA-HF DTC123YCA-HF DTC143XCA-HF DTC143ZCA-HF	G_I $V_o = 5V, I_o = 10mA$	33			
			24			
			68			
			80			
			33			
			30			
			80			
Input resistor	DTC113ZCA-HF DTC114WCA-HF DTC114YCA-HF DTC123JCA-HF DTC123YCA-HF DTC143XCA-HF DTC143ZCA-HF	$R_1(R_2)$	0.7	1(10)	1.3	k Ω
			7	10(4.7)	13	
			7	10(47)	13	
			1.54	2.2(47)	2.86	
			1.54	2.2(10)	2.86	
			3.29	4.7(10)	6.11	
			3.29	4.7(47)	6.11	
Input resistor (R_1) tolerance	ΔR_1		-30		+30	%
Resistance ratio tolerance	$\Delta R_2/R_1$		-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

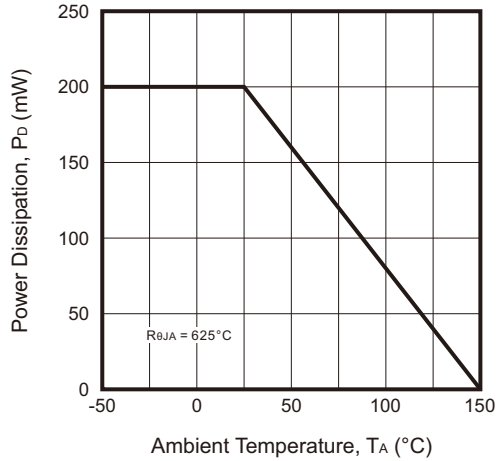


Fig.2 - $V_{CE(SAT)}$ vs. I_c

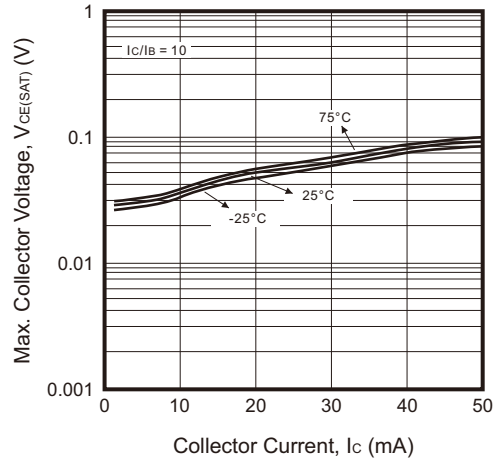


Fig.3 - DC Current Gain

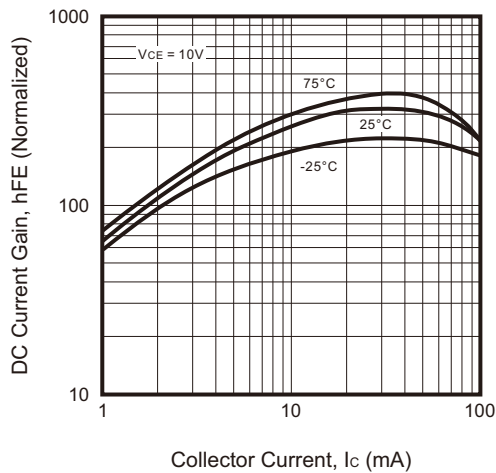


Fig.4 - Output Capacitance

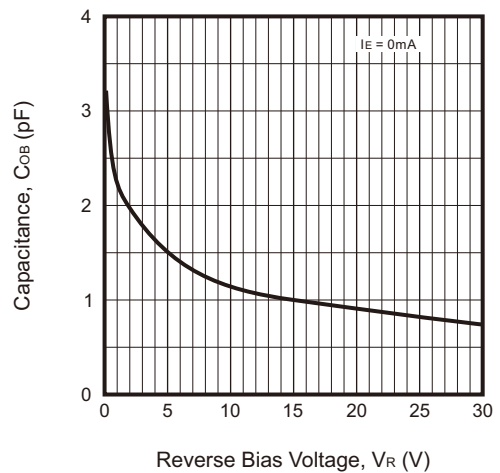


Fig.5 - Collector Current vs. Input Voltage

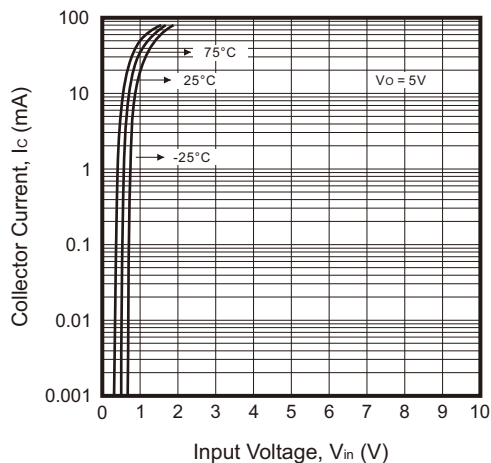
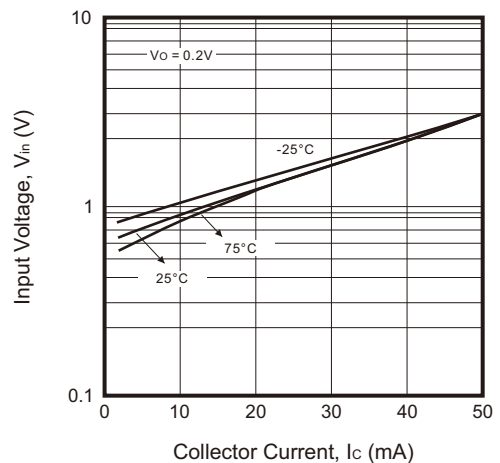
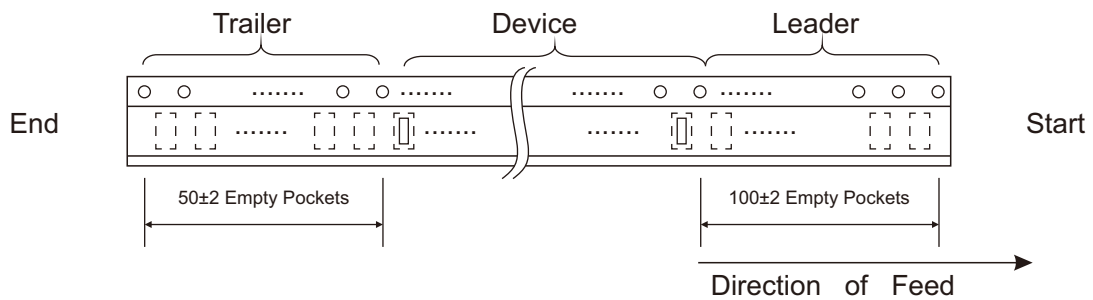
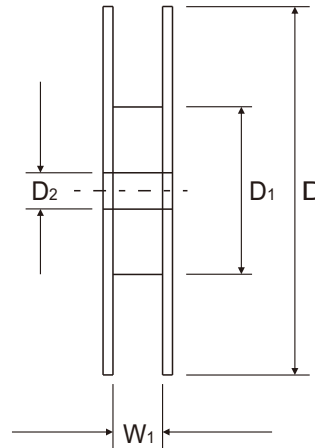
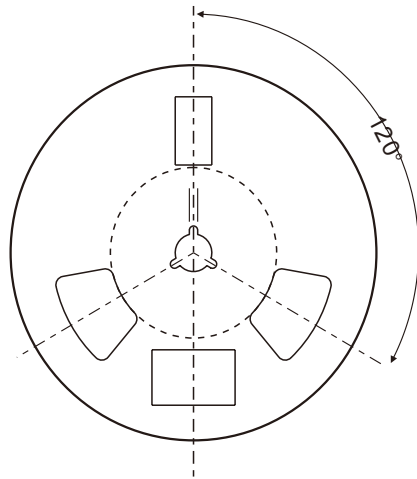
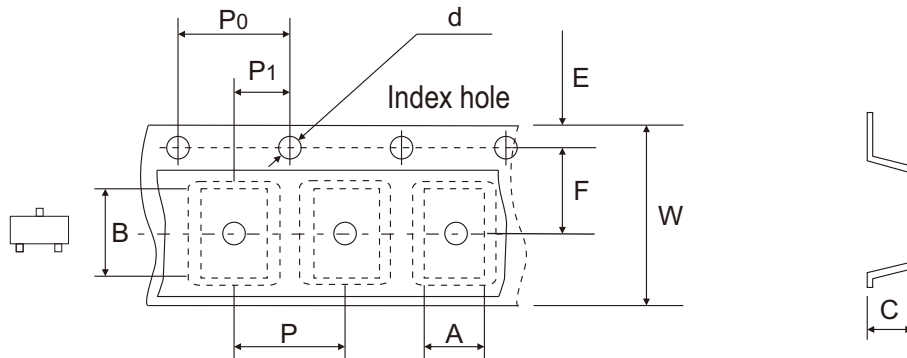


Fig.6 - Input Voltage vs. Collector Current



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