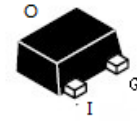


DTCxxxEM-HF Series (NPN)

RoHS Device
Halogen Free



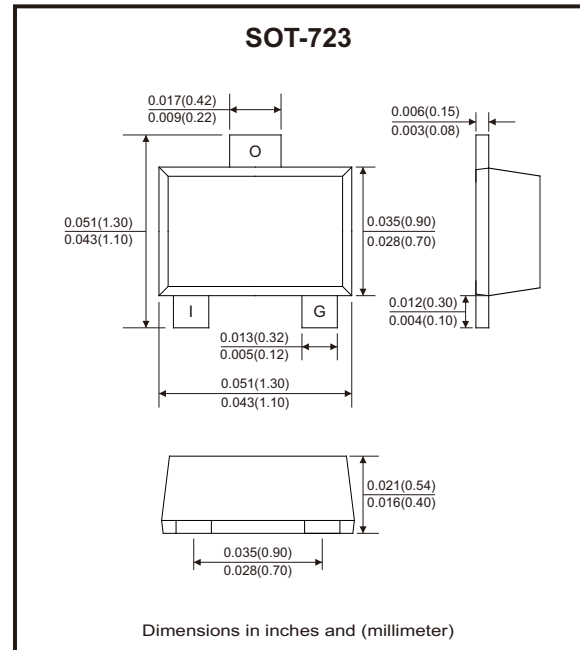
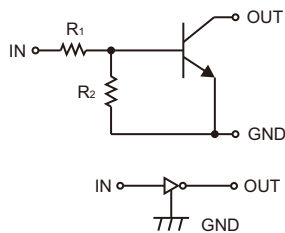
Features

- Epitaxial planar die construction.
- Built-in biasing resistors, $R_1=R_2$.
- The NPN style digital transistor.

Mechanical data

- Case: SOT-723, molded plastic.
- Mounting position: Any.

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}	-10 to +40 -10 to +40 -10 to +30 -10 to +40 -10 to +40	V
Output current	I_o	50 30 100 30 100	mA
Max. output current	I_c	100	mA
Power dissipation	P_D	100	mW
Thermal resistance, junction to ambient air	$R_{\theta JA}$	1250	$^\circ\text{C}/\text{W}$
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	$V_{I(off)}$	$V_{CC} = 5V, I_o = 100\mu A$	0.5	1.1		
Input voltage	$V_{I(on)}$	$V_o = 0.3V, I_o = 10mA$ $V_o = 0.2V, I_o = 5mA$ $V_o = 0.3V, I_o = 20mA$ $V_o = 0.3V, I_o = 2mA$ $V_o = 0.3V, I_o = 1mA$		1.9	3	V
Output voltage	$V_{O(on)}$	$I_o / I_i = 10mA / 0.5mA$ $I_o / I_i = 10mA / 0.5mA$ $I_o / I_i = 10mA / 0.5mA$ $I_o / I_i = 10mA / 0.5mA$ $I_o / I_i = 5mA / 0.25mA$		0.1	0.3	V
Input current	I_i	$V_i = 5V$			0.88 0.36 1.8 0.18 0.15	mA
Output current	$I_{O(off)}$	$V_{CC} = 50V, V_i = 0V$			0.5	μA
DC current gain	G_i	$V_o = 5V, I_o = 5mA$ $V_o = 5V, I_o = 5mA$ $V_o = 5V, I_o = 10mA$ $V_o = 5V, I_o = 5mA$ $V_o = 5V, I_o = 5mA$	30 56 20 68 82			
Input resistor	$R_1(R_2)$		7 15.4 3.29 32.9 70	10 22 4.7 47 100	13 28.6 6.11 61.1 130	k Ω
Resistance ratio	R_2/R_1		0.8	1	1.2	
Gain-bandwidth product	f_t	$V_{CE} = 10V, I_E = -5mA, f = 100MHz$		250		MHz

Typical Rating and Characteristic Curves (DTCxxxEM-HF Series)

Fig.1 - Input Voltage vs. Output Current (ON Characteristics)

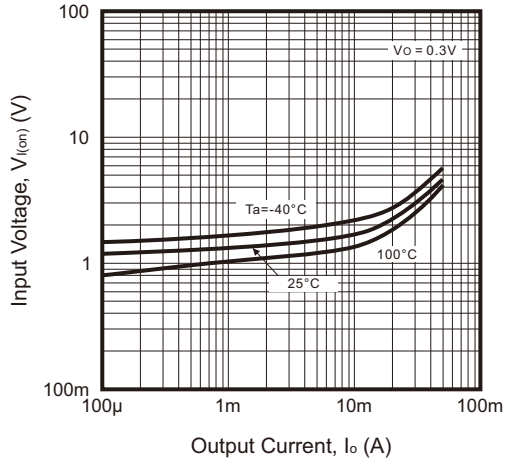


Fig.2 - Output Current vs. Input Voltage (OFF Characteristics)

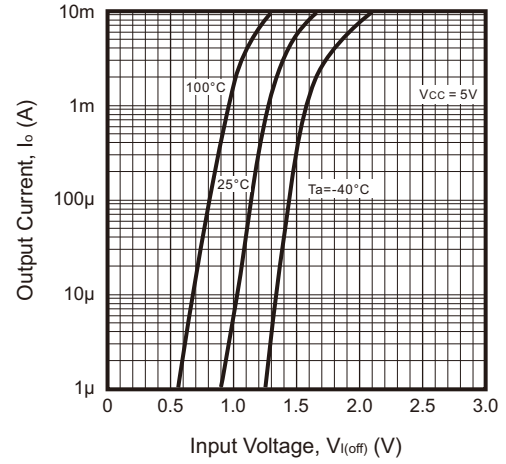
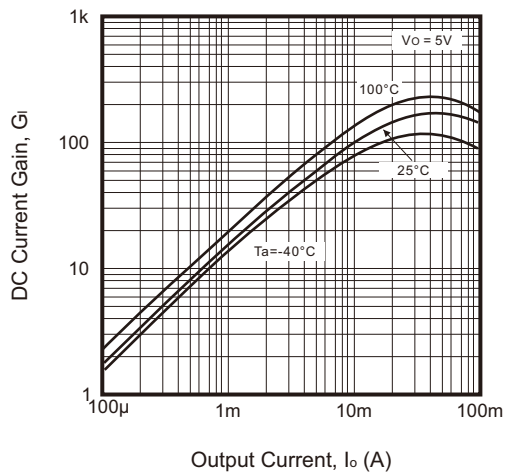
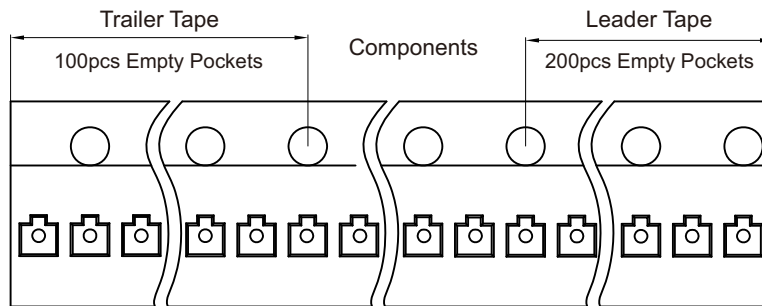
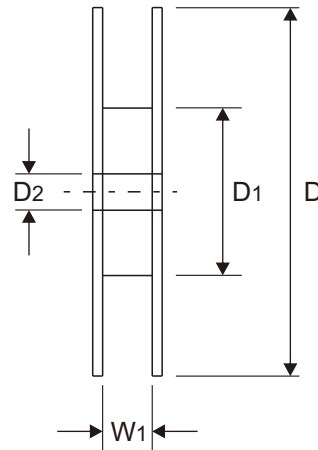
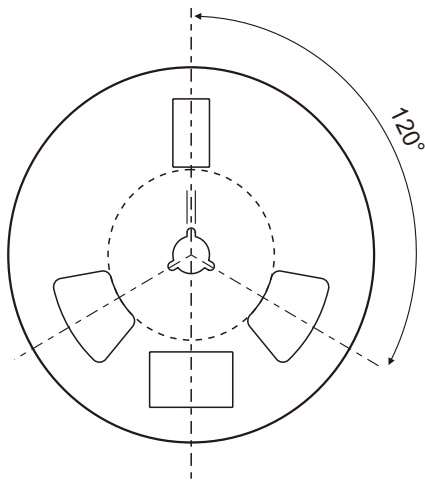
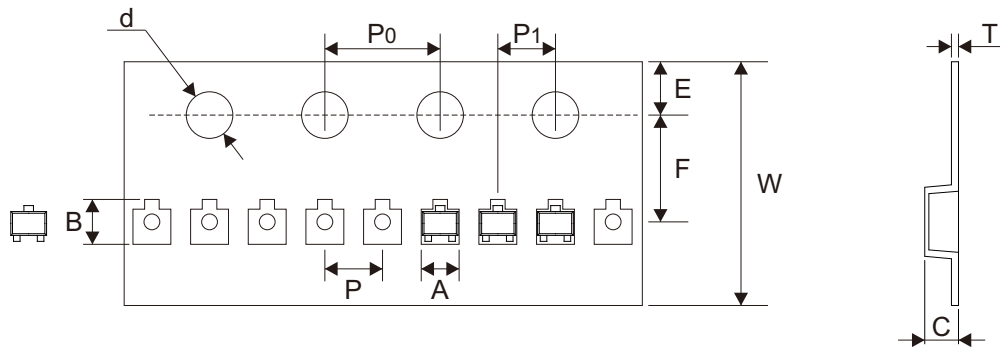


Fig.3 - DC Current Gain vs. Output Current



Reel Taping Specification

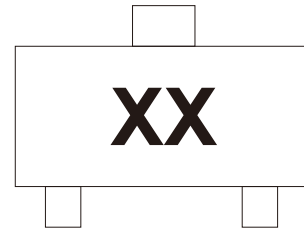


SOT-723	SYMBOL	A	B	C	d	D	D1	D2
	(mm)	1.31 ± 0.05	1.45 ± 0.05	0.61 ± 0.05	1.50 ± 0.10	178.00 ± 1.00	54.00 ± 0.50	13.00 ± 0.50
	(inch)	0.052 ± 0.002	0.057 ± 0.002	0.024 ± 0.002	0.059 ± 0.004	7.008 ± 0.039	2.126 ± 0.020	0.512 ± 0.020

SOT-723	SYMBOL	E	F	P	P0	P1	T	W	W1
	(mm)	1.75 ± 0.10	3.50 ± 0.05	2.00 ± 0.05	4.00 ± 0.10	2.00 ± 0.05	0.20 ± 0.02	8.00 + 0.30 - 0.10	9.50 ± 1.00
	(inch)	0.069 ± 0.004	0.138 ± 0.002	0.079 ± 0.002	0.157 ± 0.004	0.079 ± 0.002	0.008 ± 0.001	0.315 + 0.012 - 0.004	0.374 ± 0.039

Marking Code

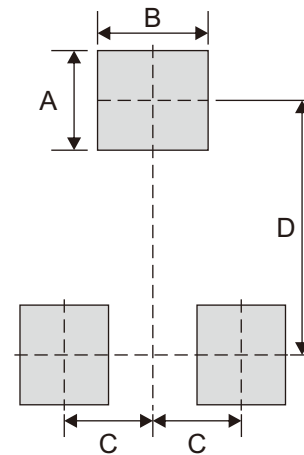
Part Number	Marking Code
DTC114EM-HF	24
DTC124EM-HF	25
DTC143EM-HF	23
DTC144EM-HF	26
DTC115EM-HF	29



xx = Product type marking code

Suggested P.C.B. PAD Layout

SIZE	SOT-723	
	(mm)	(inch)
A	0.45	0.018
B	0.50	0.020
C	0.40	0.016
D	1.15	0.045



Standard Packaging

Case Type	REEL PACK	
	REEL (pcs)	Reel Size (inch)
SOT-723	10,000	7