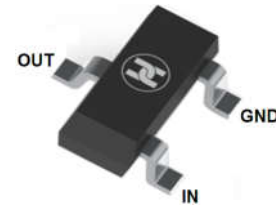
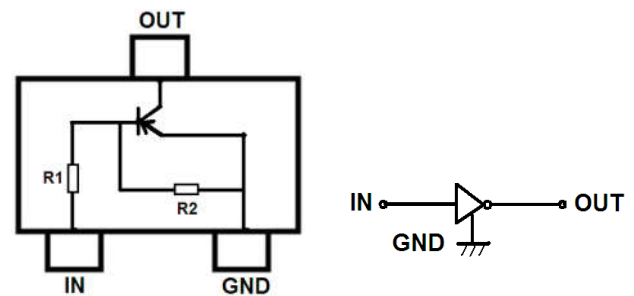


**DIGITAL TRANSISTORS (BUILT-IN RESISTORS)**
**FEATURES**

- Built-in bias resistors enable the configuration of an invert circuit without connecting external input resistors(see equivalent circuit)
- The bias resistors consist of thin-film resistors with complete isolation to allow negative biasing of the input.They also have the advantage of almost completely eliminating parasitic effects
- Only the on/off conditions need to be set for operation making device design easy

**DTA114YKA**

**SOT-23**
**Equivalent circuit**

**MECHANICAL DATA**

- Case: SOT-23
- Case material: Molded Plastic. UL flammability
- Classification rating: 94V-0
- Weight: 0.008 grams (approximate)

Marking: 54

**MAXIMUM RATINGS** ( $T_A = 25^\circ\text{C}$  unless otherwise specified)

Parameter	Symbol	Value	Unit
Supply voltage	$V_{CC}$	-50	V
Input voltage	$V_{IN}$	-40 ~ +6	V
Output current	$I_o$	-70	mA
	$I_{C(Max.)}$	-100	mA
Power dissipation	$P_c$	200	mA
Junction temperature	$T_j$	150	$^\circ\text{C}$
Storage temperature	$T_{stg}$	-55 ~ +150	$^\circ\text{C}$

**ELECTRICAL CHARACTERISTICS** ( $T_A = 25^\circ\text{C}$  unless otherwise specified)

Parameter	Symbol	Min	Typ.	Max	Unit	Conditions
Input voltage	$V_{I(off)}$			-0.3	V	$V_{CC}=-5V, I_o=-100\mu A$
	$V_{I(on)}$	-1.4			V	$V_o=-0.3V, I_o=-1mA$
Output voltage	$V_{O(on)}$			-0.3	V	$I_o/I_i=-5mA/-0.25mA$
Input current	$I_i$			-0.88	mA	$V_i=-5V$
Output current	$I_{o(off)}$			-0.5	$\mu A$	$V_{CC}=-50V, V_i=0$
DC current gain	$G_i$	68				$V_o=-5V, I_o=-5mA$
Input resistance	R1	7	10	13	K $\Omega$	
Resistance ratio	R2/R1	3.7	4.7	5.7		
Transition frequency	$f_r$		250		MHz	$V_o=-100V, I_o=5mA, f=100MHz$

DIGITAL TRANSISTORS (BUILT-IN RESISTORS)

**Typical Characteristics**

Fig.1 Input voltage vs. output current (ON characteristics)

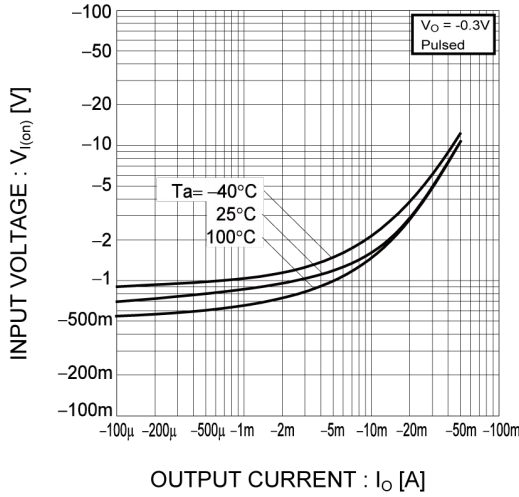


Fig.2 Output current vs. input voltage (OFF characteristics)

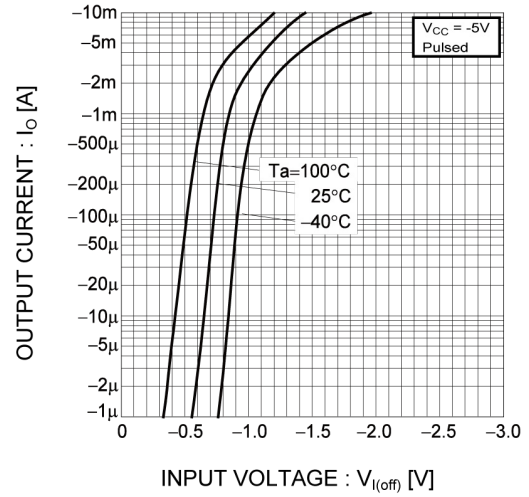


Fig.3 Output current vs. output voltage

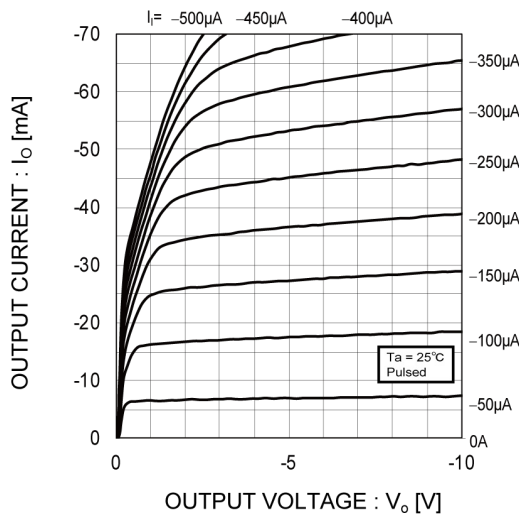


Fig.4 DC current gain vs. output current

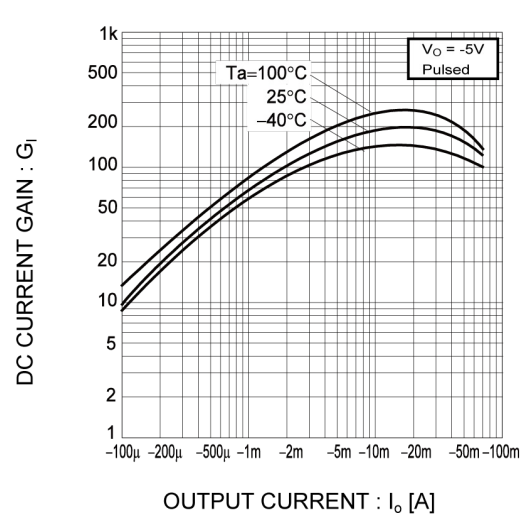
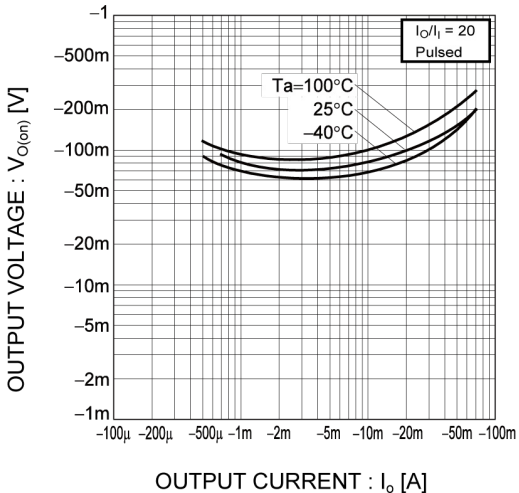
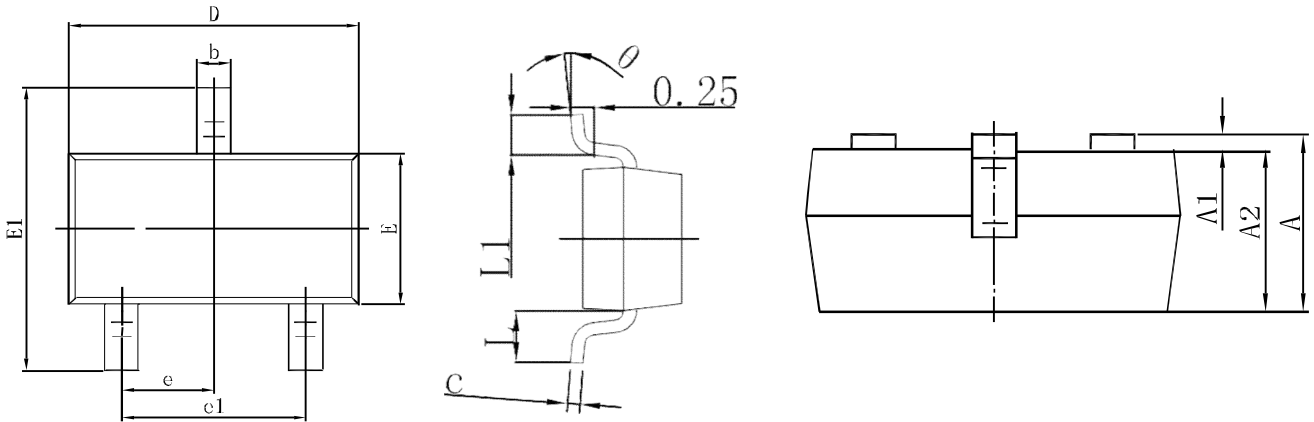
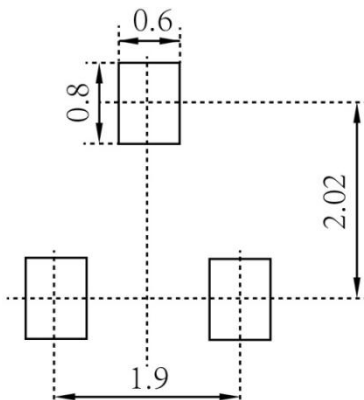


Fig.5 Output voltage vs. output current



**DIGITAL TRANSISTORS (BUILT-IN RESISTORS)**
**SOT-23 Package Outline Dimensions**


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP		0.037 TYP	
e1	1.800	2.000	0.071	0.079
L	0.550 REF		0.022 REF	
L1	0.300	0.500	0.012	0.020
$\theta$	0°	8°	0°	8°

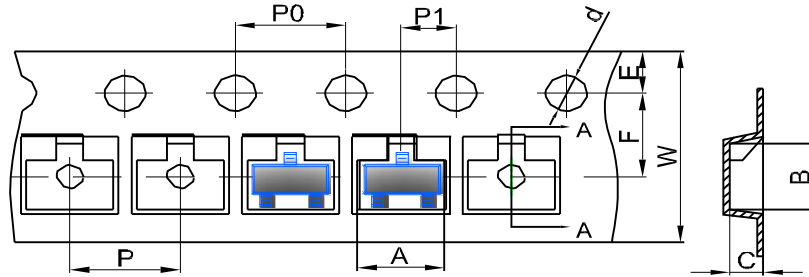
**SOT-23 Suggested Pad Layout**

**Note:**

1. Controlling dimension: in millimeters
2. General tolerance:  $\pm 0.05\text{mm}$
3. The pad layout is for reference purposes only

DIGITAL TRANSISTORS (BUILT-IN RESISTORS)

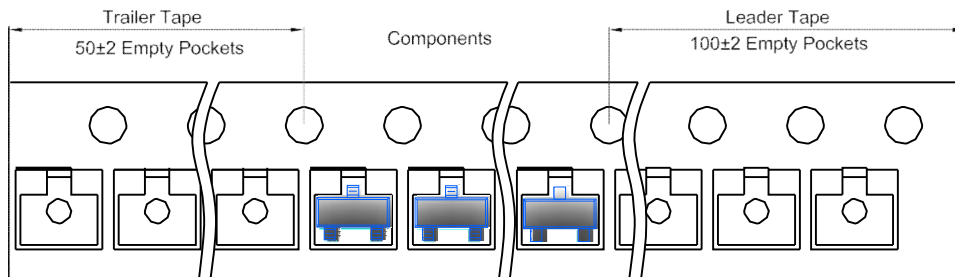
SOT-23 Tape and Reel

SOT-23 Embossed Carrier Tape

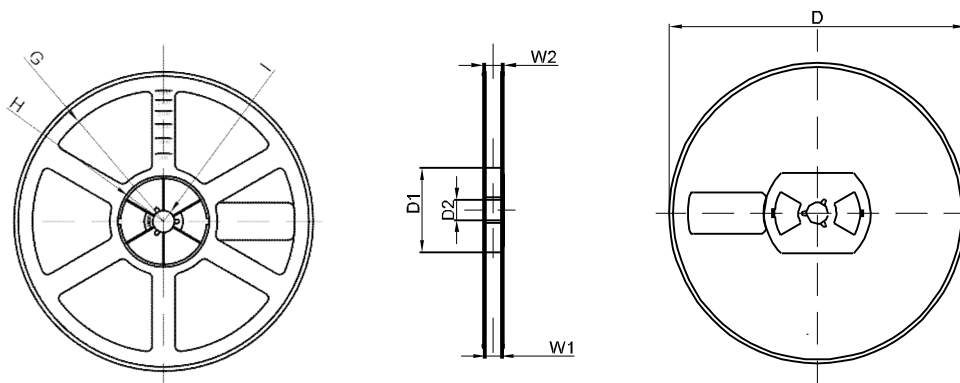


DIMENSIONS ARE IN MILLIMETER										
TYPE	A	B	C	d	E	F	P0	P	P1	W
SOT-23	3.15	2.77	1.22	Ø1.50	1.75	3.50	4.00	4.00	2.00	8.00
TOLERANCE	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1

SOT-23 Tape Leader and Trailer



SOT-23 Reel



DIMENSIONS ARE IN MILLIMETER								
REEL OPTION	D	D1	D2	G	H	I	W1	W2
7" DIA	Ø178	54.40	13.00	R78	R25.60	R6.50	9.50	12.30
TOLERANCE	±2	±1	±1	±1	±1	±1	±1	±1