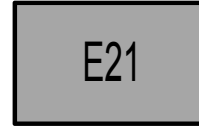
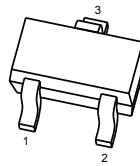


## FEATURES

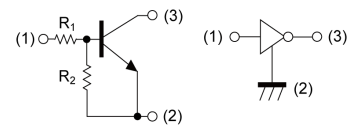
- 1) Built-In Biasing Resistors,  
 $R_1 = 1k\Omega$ ,  $R_2 = 10k\Omega$
- 2) Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors (see inner circuit) .
- 3) Only the on/off conditions need to be set for operation, making the circuit design easy.
- 4) Complementary PNP Types: DTA113Z series



SOT-23



Equivalent Circuit



(1) IN (BASE)  
(2) GND (EMITTER)  
(3) OUT (COLLECTOR)

## MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Absolute Maximum Ratings  $T_a = 25^\circ\text{C}$

Parameter		Symbol	Values	Unit
Supply voltage		$V_{CC}$	50	V
Input voltage		$V_{IN}$	-5 to 10	V
Output current		$I_O$	100	mA
Collector current		$I_{C(MAX)}^{*1}$	100	mA
Power dissipation	DTC113ZM	$P_D^{*2}$	150	mW
	DTC113ZE		150	
	DTC113ZU		200	
	DTC113ZCA		200	
Junction temperature		$T_j$	150	$^\circ\text{C}$
Range of storage temperature		$T_{stg}$	-55 to +150	$^\circ\text{C}$

**ELECTRICAL CHARACTERISTICS (TA = 25°C unless otherwise noted.)**

Parameter	Symbol	Conditions	Values			Unit
			Min.	Typ.	Max.	
Input voltage	$V_{I(off)}$	$V_{CC} = 5V, I_O = 100\mu A$	-	-	0.3	V
	$V_{I(on)}$	$V_O = 0.3V, I_O = 20mA$	3.0	-	-	
Output voltage	$V_{O(on)}$	$I_O = 10mA, I_I = 0.5mA$	-	100	300	mV
Input current	$I_I$	$V_I = 5V$	-	-	7.2	mA
Output current	$I_{O(off)}$	$V_{CC} = 50V, V_I = 0V$	-	-	500	nA
DC current gain	$G_I$	$V_O = 5V, I_O = 5mA$	33	-	-	-
Input resistance	$R_I$	-	0.7	1.0	1.3	k $\Omega$
Resistance ratio	$R_2/R_1$	-	8	10	12	-
Transition frequency	$f_T^{*1}$	$V_{CE} = 10V, I_E = -5mA,$ $f = 100MHz$	-	250	-	MHz

\*1 Characteristics of built-in transistor

\*2 Each terminal mounted on a reference land.

RATING AND CHARACTERISTIC CURVES

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

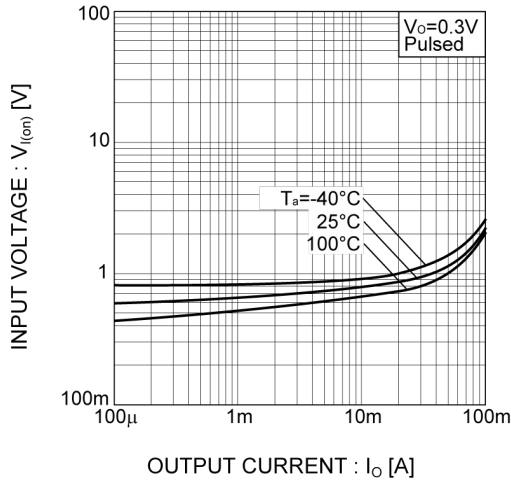


Fig.2 Output current vs. input voltage (OFF characteristics)

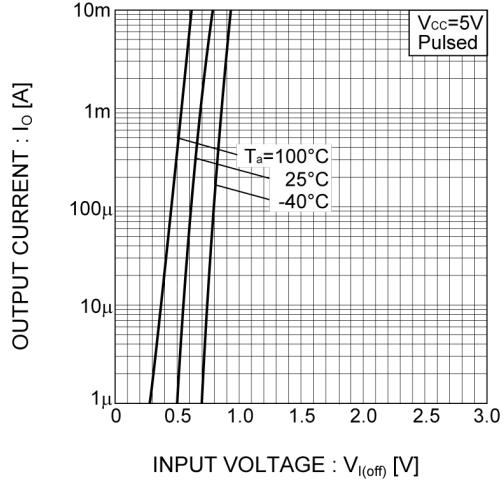


Fig.3 Output current vs. output voltage

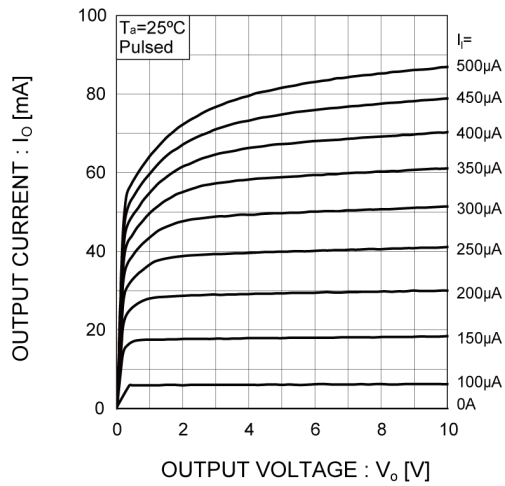


Fig.4 DC current gain vs. output current

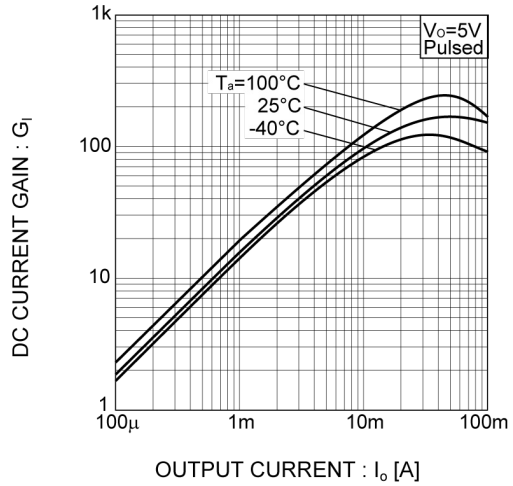
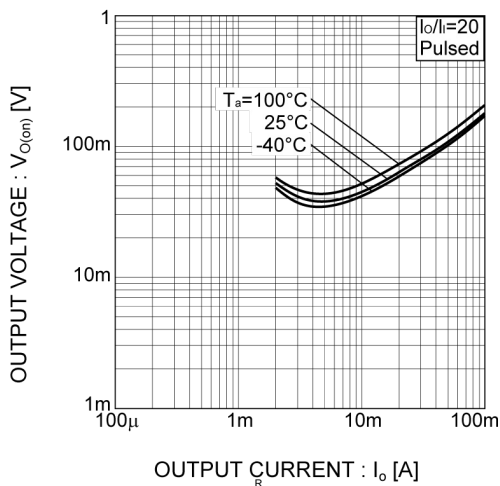


Fig.5 Output voltage vs. output current



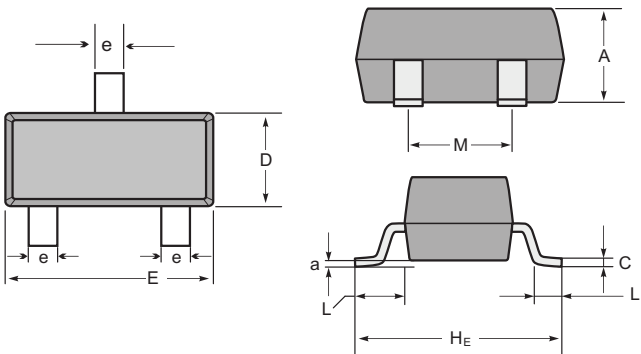
Soldering parameters

Reflow Condition		Pb-Free assembly (see as below)
Pre Heat	-Temperature Min ( $T_{s(min)}$ )	+150°C
	-Temperature Max( $T_{s(max)}$ )	+200°C
	-Time (Min to Max) (ts)	60-180 secs.
Average ramp up rate (Liquid us Temp ( $T_L$ ) to peak)		3°C/sec. Max
$T_{s(max)}$ to $T_L$ - Ramp-up Rate		3°C/sec. Max
Reflow	-Temperature( $T_L$ )(Liquid us)	+217°C
	-Temperature( $t_L$ )	60-150 secs.
Peak Temp ( $T_P$ )		+260(+0/-5)°C
Time within 5°C of actual Peak Temp ( $t_p$ )		30 secs. Max
Ramp-down Rate		6°C/sec. Max
Time 25°C to Peak Temp ( $T_P$ )		8 min. Max
Do not exceed		+260°C



Package Dimensions & Suggested Pad Layout

SOT23



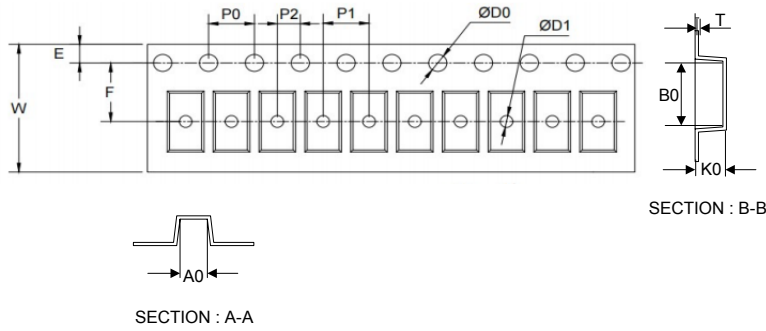
SOT-23 mechanical data

UNIT	A	C	D	E	He	e	M	L	L1	a	
mm	max	1.1	0.15	1.4	3.0	2.6	0.5	1.95	0.55 (ref)	0.36 (ref)	0.0
	min	0.9	0.08	1.2	2.8	2.2	0.3	1.7			0.15
mil	max	43	6	55	118	102	20	77	22 (ref)	14 (ref)	0.0
	min	35	3	47	110	87	12	67			6

Dimensions	SOT23
Z	2.9
X	0.8
Y	0.9
C	2.0
E	1.35

Tape & reel specification

Tape



Symbol	Dimension (mm)
P0	4.00±0.10
P1	4.00±0.10
P2	2.00±0.10
D0	1.55±0.10
D1	1.05±0.10
E	1.55±0.10
F	3.60±0.10
W	8.00±0.10
A0	3.80±0.20
B0	3.25±0.20
K0	1.45±0.10
T	0.25±0.05
D2	178.0±3.0
D3	55Min.
D4	R24.0±3.0
G	R82.0±3.0
I	13.0±2.0
W1	11.0±3.0

7" Reel



Quantity: 3000PCS