

**DTC113ZCA**  
NPN TRANSISTOR



**VOLTAGE:** 50 Volts

**CURRENT:** 0.1 Amperes

SOT-23

Marking and Polarity

**FEATURES**

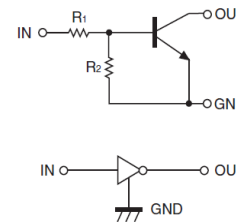
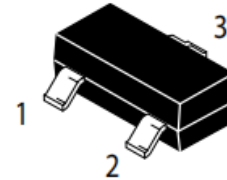
- Collector current:  $I_O=0.1A$ .

**MECHANICAL DATA**

- Package: SOT-23
- Epoxy UL: 94V-0
- Mounting position: Any
- Weight: approx. 0.01g

**DEVICE MARKING**

Device	Marking
DTC113ZCA	E21



**Maximum Ratings (Ratings at 25 °C ambient temperature unless otherwise specified.)**

Parameter	Symbol	Value	Unit
Supply Voltage	$V_{CC}$	50	V
Input Voltage	$V_{IN}$	-5~+50	V
Output Dissipation	$I_o$	0.1	A
Collector Power Dissipation	$P_C$	200	mW

**Thermal Characteristics (Ratings at 25 °C ambient temperature unless otherwise specified.)**

Parameter	Symbol	Value	Unit
Junction Temperature	$T_J$	-55 to 150	°C
Storage Temperature Range	$T_{STG}$	-55 to 150	°C

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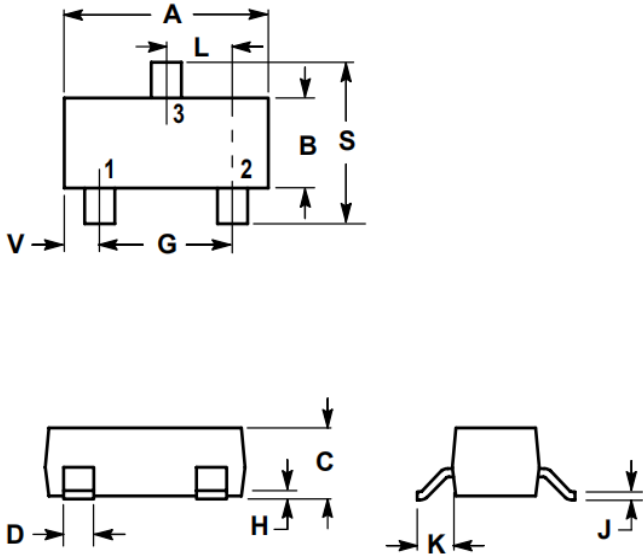
**ELECTRICAL CHARACTERISTICS** ( $T_A=25^{\circ}\text{C}$  unless otherwise noted)

Characteristic	Test Condition	Symbol	Min.	Typ.	Max.	Unit
Input Voltage	$V_{CC}=5V, I_O=100\mu A$	$V_{I(OFF)}$	0.3	-	-	V
	$V_O=0.3V, I_O=20mA$	$V_{I(ON)}$	-	-	3	V
Output current	$I_O/I_I=10mA/0.5mA$	$V_{O(ON)}$	-	-	0.3	V
Input Current	$V_I=5V$	$I_I$	-	-	7.2	mA
Output current	$V_{CC}=50V, V_I=0$	$I_{O(OFF)}$	-	-	0.5	$\mu A$
DC Current Gain	$V_O=5V, I_O=5mA$	$G_I$	33	-	-	
Input resistance		$R1$	0.7	1	1.3	K $\Omega$
Resistance ratio		$R2/R1$	8	10	12	
Transition Frequency	$V_O=10V, I_O=5mA$ $f=100MHz$	$F_T$	-	250	-	MHz

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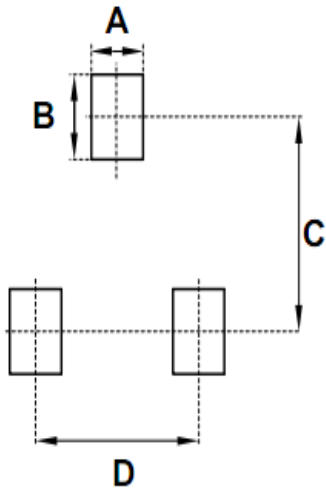
**OUTLINE DRAWINGS**



**SOT-23**

OUTLINE DIMENSIONS						
Dim.	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.800	-	3.040	0.1102	-	0.1197
B	1.200	-	1.400	0.0472	-	0.0551
C	0.890	-	1.110	0.0350	-	0.0437
D	0.370	-	0.500	0.0146	-	0.0197
G	1.780	-	2.040	0.0701	-	0.0803
H	0.013	-	0.100	0.0005	-	0.0039
J	0.085	-	0.177	0.0033	-	0.0070
K	0.350	-	0.690	0.0138	-	0.0272
L	0.890	-	1.020	0.0350	-	0.0402
S	2.100	-	2.640	0.0827	-	0.1039
V	0.450	-	0.600	0.0177	-	0.0236

**MOUNTING PAD LAYOUT**



**SOT-23**

RECOMMENDED MOUNTING PAD DIMENSIONS						
Dim.	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	-	0.600	-	-	0.0236	-
B	-	0.800	-	-	0.0315	-
C	-	2.020	-	-	0.0795	-
D	-	1.900	-	-	0.0748	-

**PACKING INFORMATION**

**SOT-23**

Package Method	Reel Size (mm)	Quantity (pcs/reel)	Inner Box Size LxWxH(mm)	Quantity (pcs/Inner Box)	Carton Size LxWxH(mm)	Quantity (pcs/carton)
Tape Reel	Φ180	3000	340x340x40	6000	364x364x360	160000

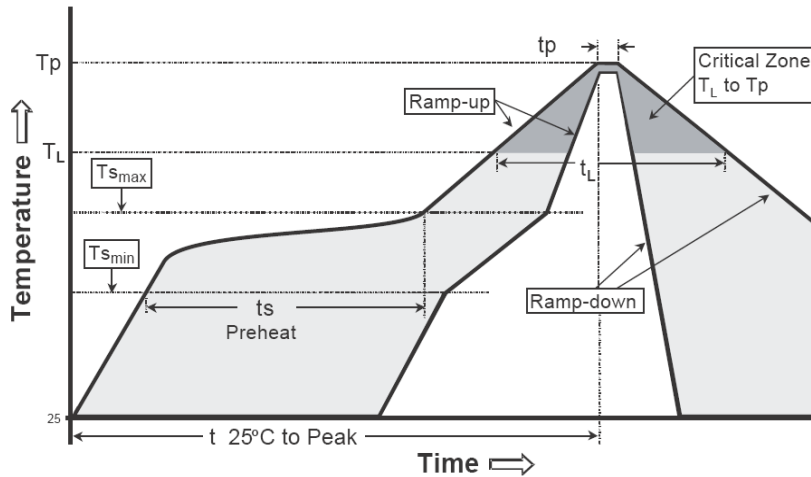
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**Recommended wave soldering condition**

Product	Peak Temperature	Soldering Time
Pb-free devices	260 +0/-5 °C	5 +1/-1 seconds

**Recommended temperature profile for IR reflow**



Profile feature	Sn-Pb eutectic Assembly	Pb-free Assembly
Average ramp-up rate (T <sub>smax</sub> to T <sub>p</sub> )	3°C/second max.	3°C/second max.
Preheat -Temperature Min(T <sub>s min</sub> ) -Temperature Max(T <sub>s max</sub> ) -Time(t <sub>s min</sub> to t <sub>s max</sub> )	100°C 150°C 60-120 seconds	150°C 200°C 60-180 seconds
Time maintained above: -Temperature (T <sub>l</sub> ) - Time (t <sub>l</sub> )	183°C 60-150 seconds	217°C 60-150 seconds
Peak Temperature(T <sub>p</sub> )	240 +0/-5 °C	260 +0/-5 °C
Time within 5°C of actual peak temperature(tp)	10-30 seconds	20-40 seconds
Ramp down rate	6°C/second max.	6°C/second max.
Time 25 °C to peak temperature	6 minutes max.	8 minutes max.

Note : All temperatures refer to topside of the package, measured on the package body surface.

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