

# BRC144ETP Series

NPN Built-in Resistor Transistor TO-92 Series  
Inverter, Driver, Switching

## HITACHI

ADE-208-1447B (Z)

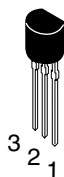
Rev.2  
Sep. 2001

### Features

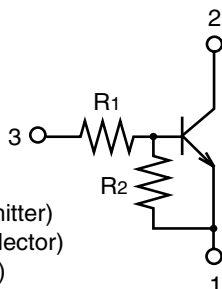
- Built-in Resistor Type
- Simplifies Circuit Design
- Reduces Board Space
- Complementary pair with BRA144ETP series

### Outline

TO-92



1. Ground (Emitter)
2. Output (Collector)
3. Input (Base)



Note: Input resistance is shown in below.

Device	R1 (k $\Omega$ )	R2 (k $\Omega$ )
BRC144ETP	47	47
BRC124ETP	22	22
BRC114ETP	10	10
BRC143ETP	4.7	4.7
BRC123ETP	2.2	2.2

# BRC144ETP Series

## Absolute Maximum Ratings

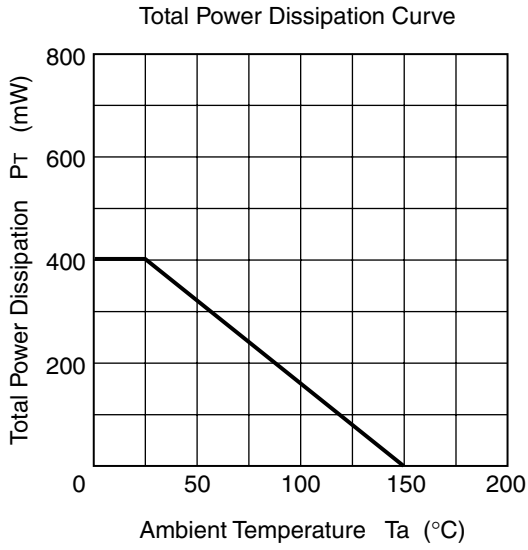
( $T_a = 25^\circ\text{C}$ )

Item		Symbol	Ratings	Unit
Supply voltage		$V_{CC}$	50	V
Input voltage	BRC144ETP	$V_I$	-10 to +50	V
	BRC124ETP		-10 to +50	
	BRC114ETP		-10 to +50	
	BRC143ETP		-10 to +35	
	BRC123ETP		-10 to +24	
Output current		$I_o$	100	mA
Total power dissipation		$P_T$	400	mW
Junction temperature		$T_j$	150	$^\circ\text{C}$
Storage temperature		$T_{stg}$	-55 to +150	$^\circ\text{C}$

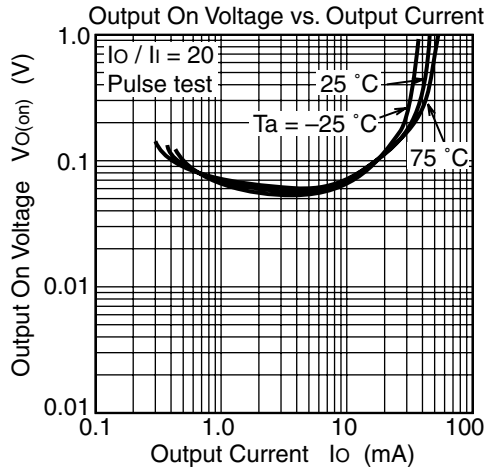
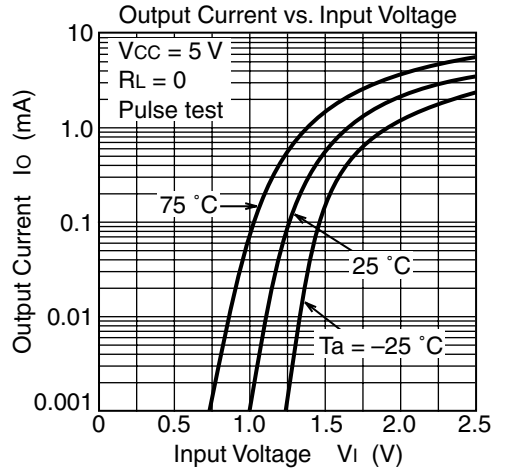
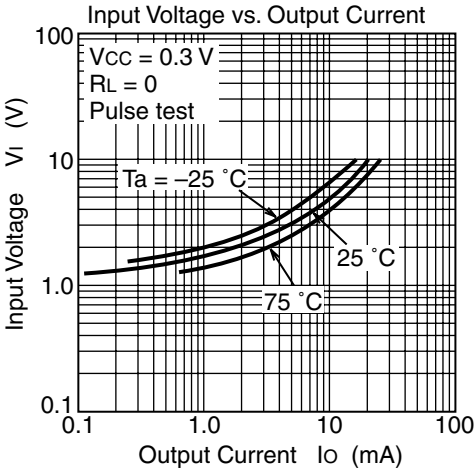
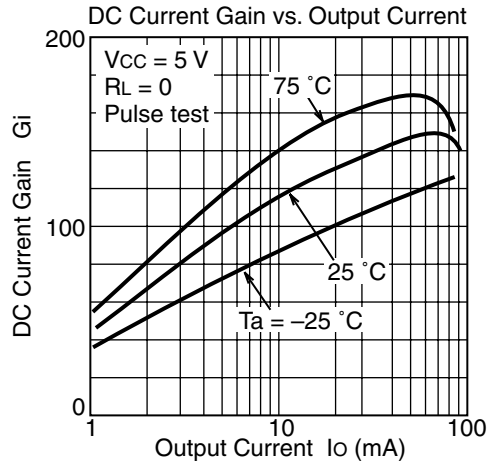
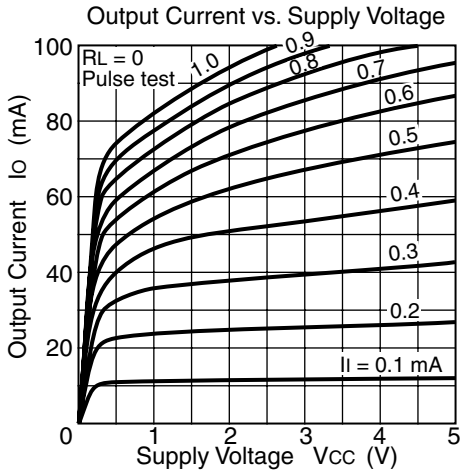
## Electrical Characteristics

(Ta = 25°C)

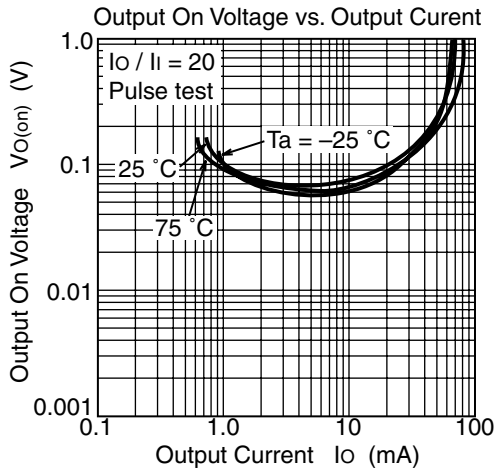
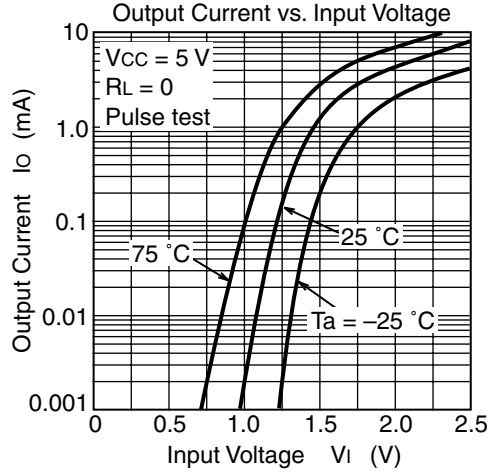
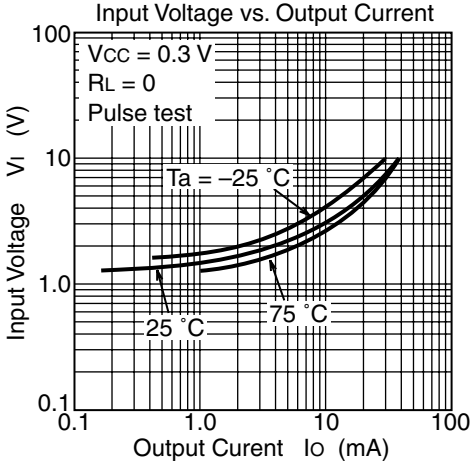
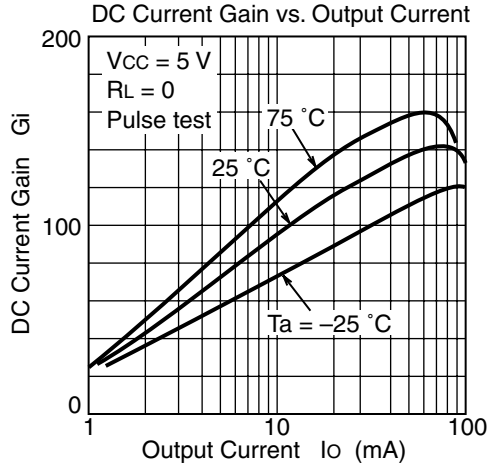
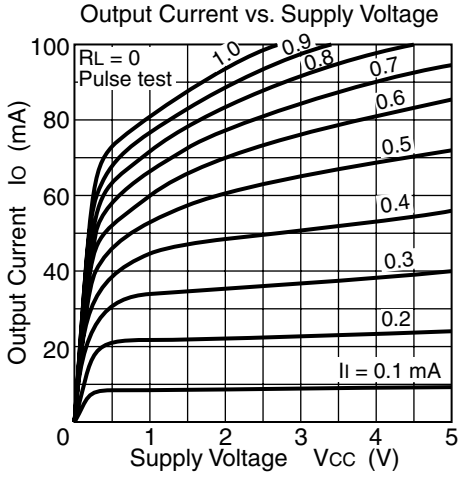
Item		Symbol	Min	Typ	Max	Unit	Test conditions	
Input on voltage	BRC144ETP	$V_{I(on)}$	1.5	—	4.5	V	$V_{cc} = 0.3 \text{ V}, I_o = 5 \text{ mA}$	
	BRC124ETP		1.3	—	3.0			
	BRC114ETP		1.2	—	2.4			
	BRC143ETP		1.1	—	2.0			
	BRC123ETP		1.1	—	1.8			
Input off voltage	BRC144ETP	$V_{I(off)}$	1.0	—	1.5	V	$V_{cc} = 5 \text{ V}, I_o = 100 \mu\text{A}$	
	BRC124ETP		1.0	—	1.5			
	BRC114ETP		1.0	—	1.5			
	BRC143ETP		1.0	—	1.5			
	BRC123ETP		1.0	—	1.5			
Output saturation voltage		$V_{O(on)}$	—	—	0.3	V	$I_o = 10 \text{ mA}, I_1 = 0.5 \text{ mA}$	
Output cutoff current		$I_{O(off)}$	—	—	0.5	$\mu\text{A}$	$V_{cc} = 50 \text{ V}, I_1 = 0$	
DC current transfer ratio	BRC144ETP	$G_i$	70	—	—		$V_{cc} = 5 \text{ V}, I_o = 5 \text{ mA}$	
	BRC124ETP		56	—	—			
	BRC114ETP		30	—	—			
	BRC143ETP		20	—	—			$V_{cc} = 5 \text{ V}, I_o = 10 \text{ mA}$
	BRC123ETP		20	—	—			$V_{cc} = 5 \text{ V}, I_o = 20 \text{ mA}$
Input resistance	BRC144ETP	$R_i$	33	47	61	$\text{k}\Omega$		
	BRC124ETP		15	22	28			
	BRC114ETP		7	10	13			
	BRC143ETP		3.3	4.7	6.1			
	BRC123ETP		1.5	2.2	2.8			
Resistance ratio		$R_1/R_2$	0.8	1.0	1.2			



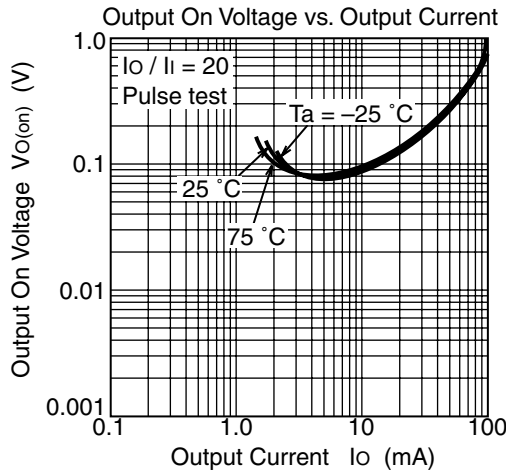
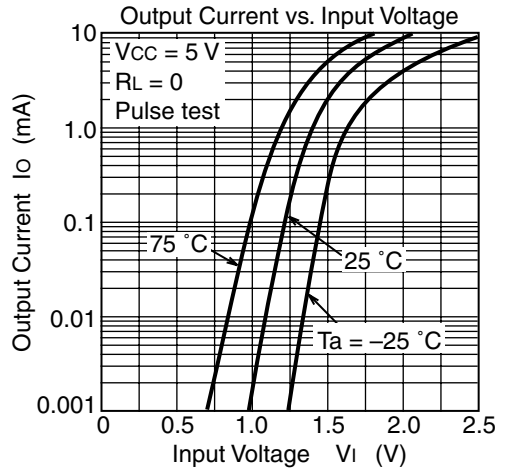
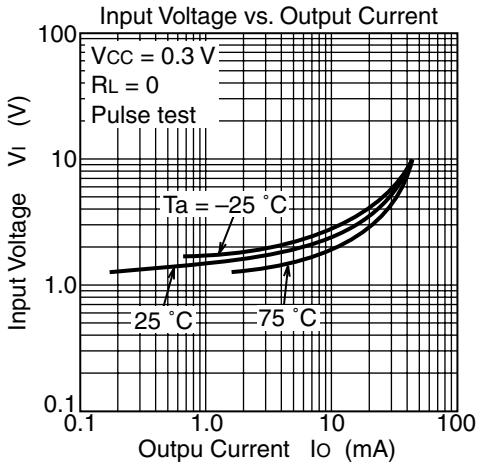
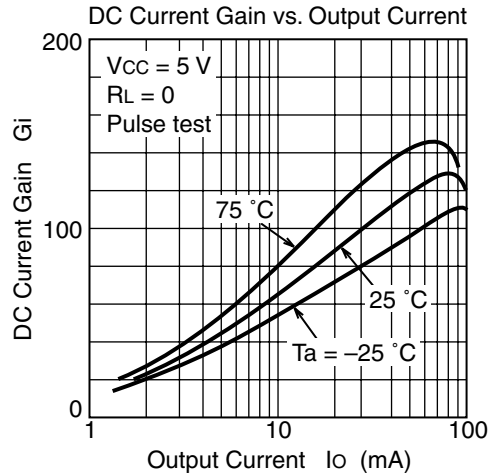
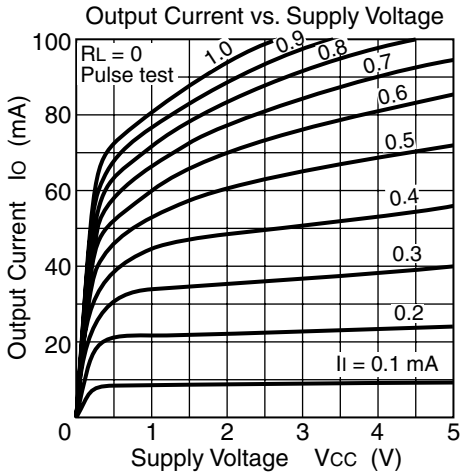
Main Characteristics (BRC144ETP)



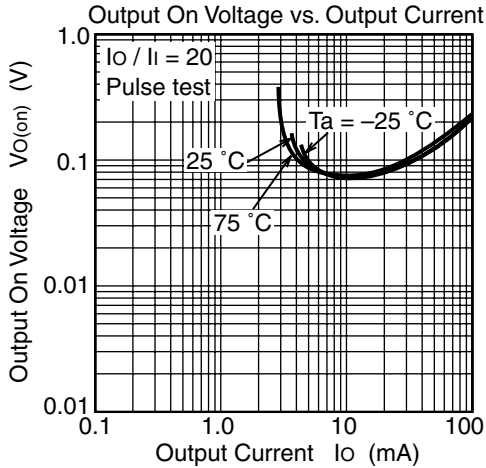
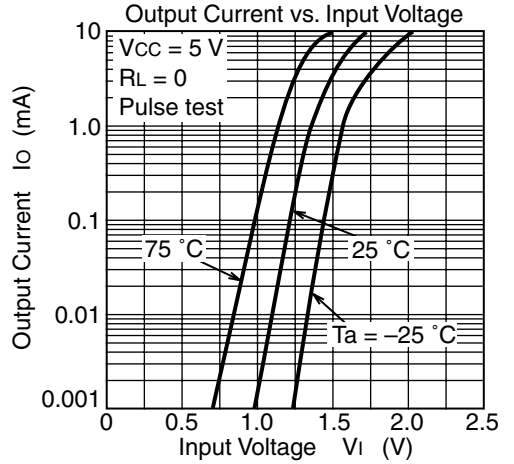
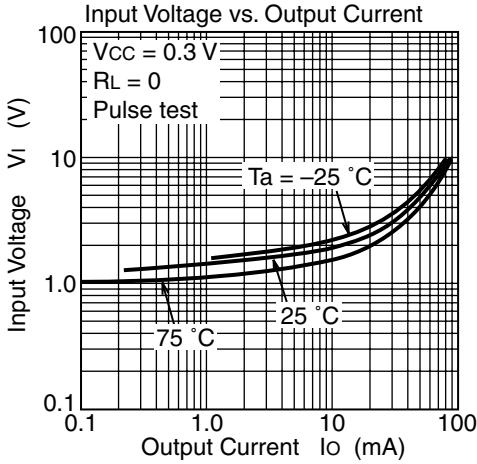
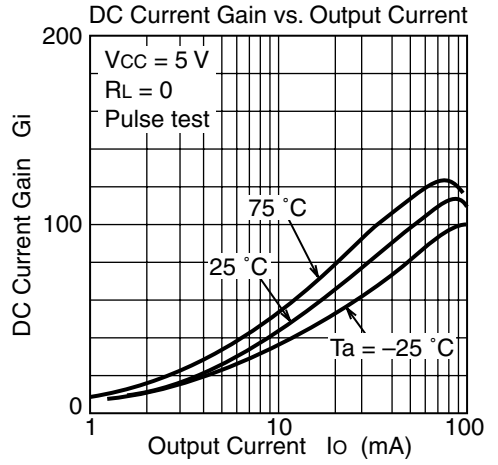
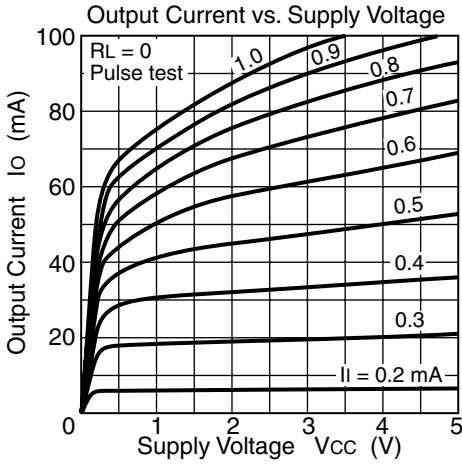
## Main Characteristics (BRC124ETP)



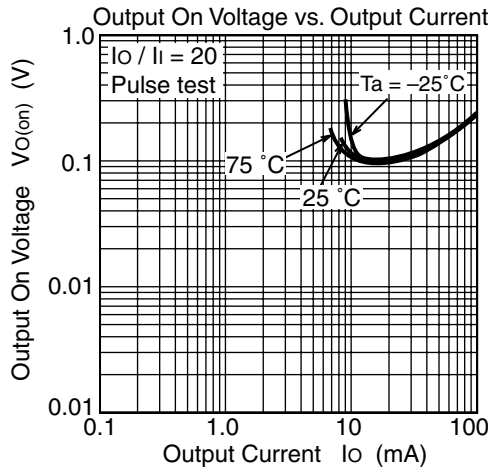
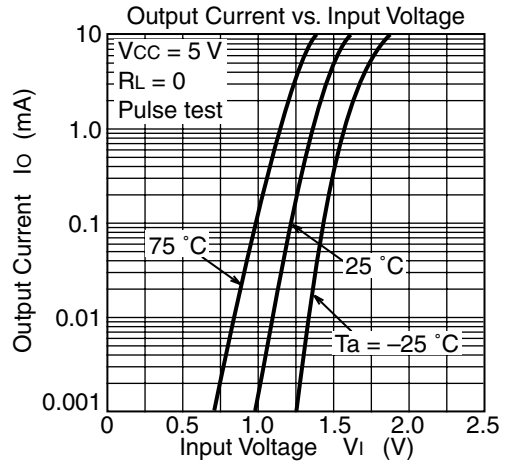
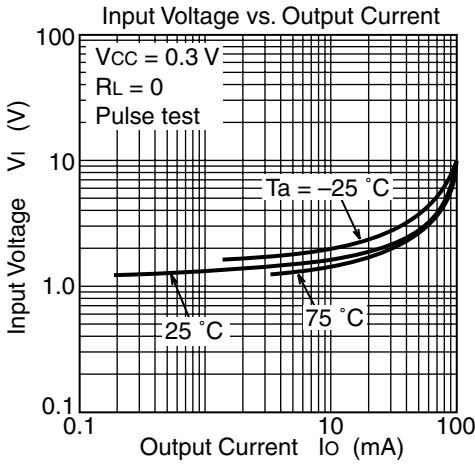
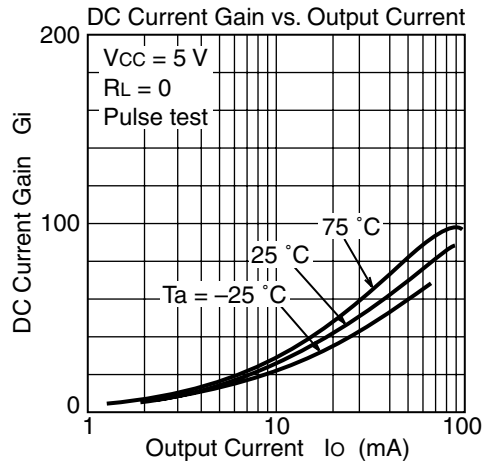
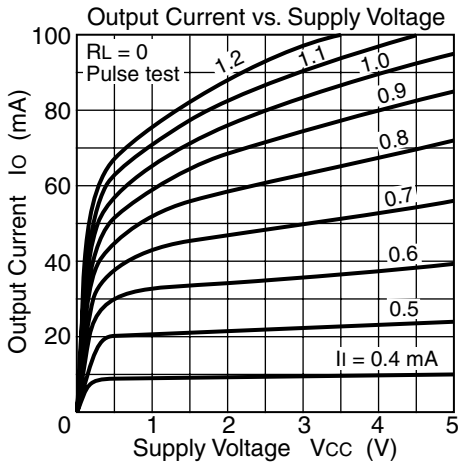
Main Characteristics (BRC144ETP)



## Main Characteristics (BRC143ETP)



Main Characteristics (BRC123ETP)

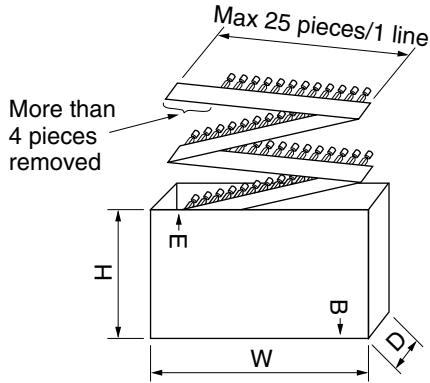


## Taping Specification

Purchasing Identification Code: Type No + **TZ**

The tape is held in every 25 pitches to a hold box.

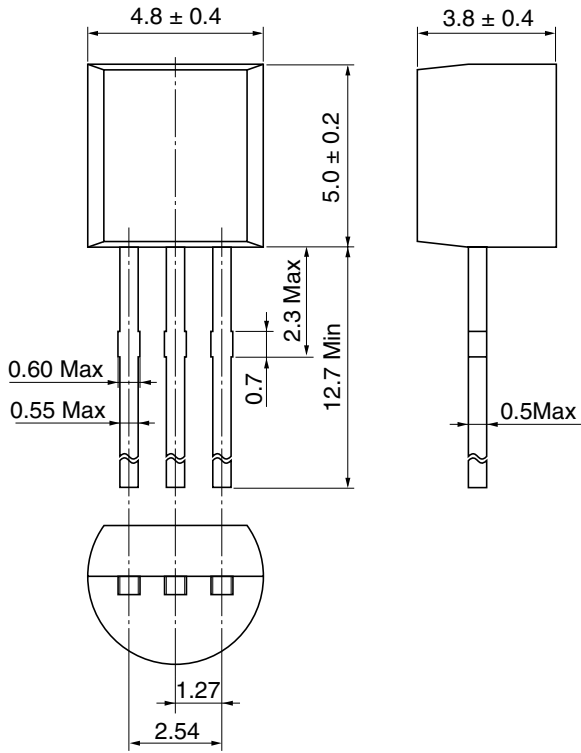
Packing quantity is 2500 pieces.



W	H	D	Unit: mm
336	262	47	

**Package Dimensions**

As of January, 2001  
Unit: mm



Hitachi Code	TO-92 (1)
JEDEC	Conforms
EIAJ	Conforms
Mass (reference value)	0.25 g

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