

BRA144ETP Series

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

HITACHI

ADE-208-1446B (Z)

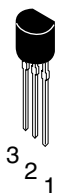
Rev.2
Sep. 2001

Features

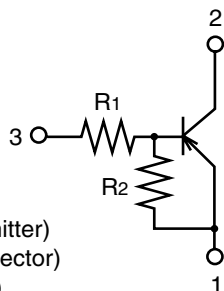
- Built-in Resistor Type
- Simplifies Circuit Design
- Reduces Board Space
- Complementary pair with BRC144ETP series

Outline

TO-92



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



Note: Input resistance is shown in below

Device	R1 (k Ω)	R2 (k Ω)
BRA144ETP	47	47
BRA124ETP	22	22
BRA114ETP	10	10
BRA143ETP	4.7	4.7
BRA123ETP	2.2	2.2

BRA144ETP Series

Absolute Maximum Ratings

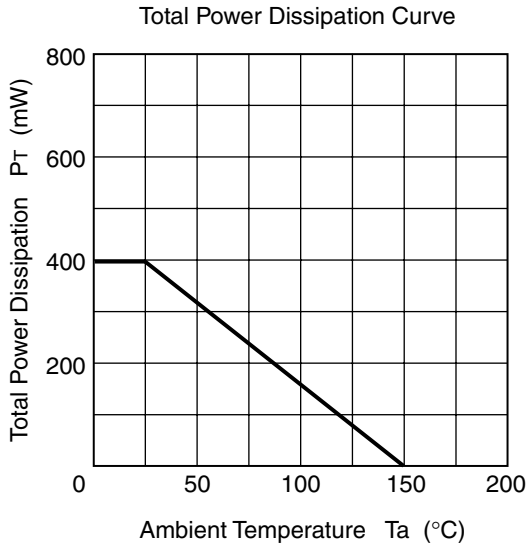
($T_a = 25^\circ\text{C}$)

Item		Symbol	Ratings	Unit
Supply voltage		V_{CC}	-50	V
Input voltage	BRA144ETP	V_I	+10 to -50	V
	BRA124ETP		+10 to -50	
	BRA114ETP		+10 to -50	
	BRA143ETP		+10 to -35	
	BRA123ETP		+10 to -24	
Output current		I_O	-100	mA
Total power dissipation		P_T	400	mW
Storage temperature		Tstg	-55 to +150	$^\circ\text{C}$

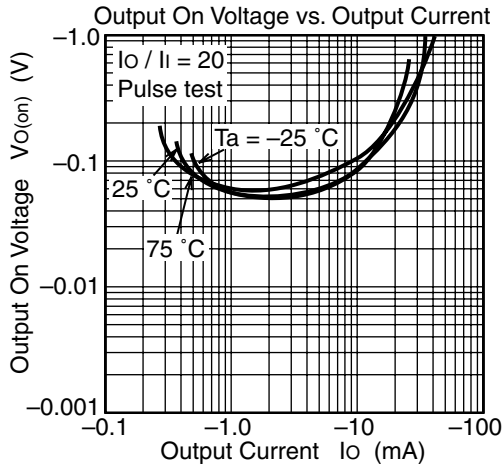
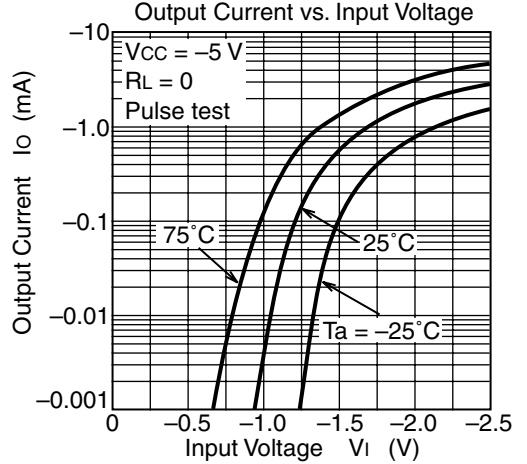
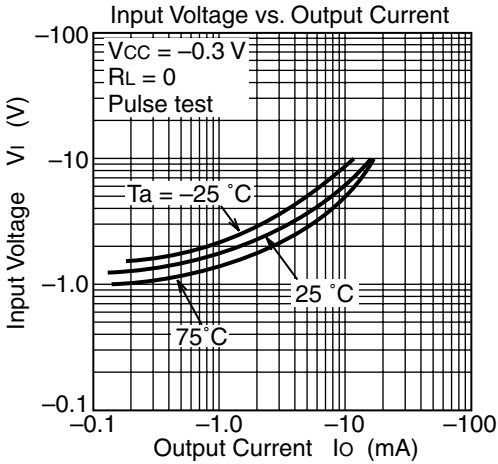
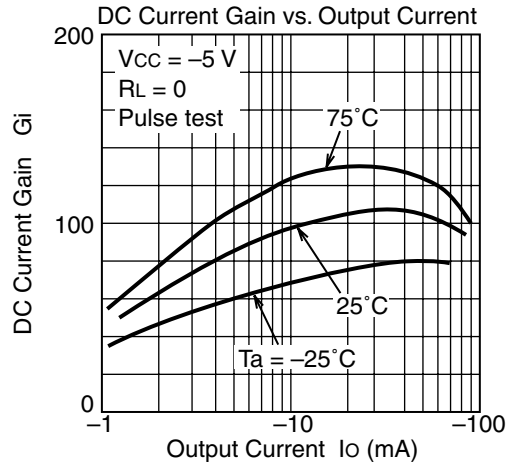
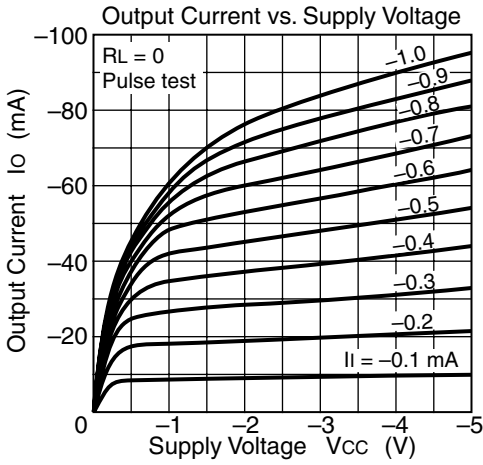
Electrical Characteristics

(Ta = 25°C)

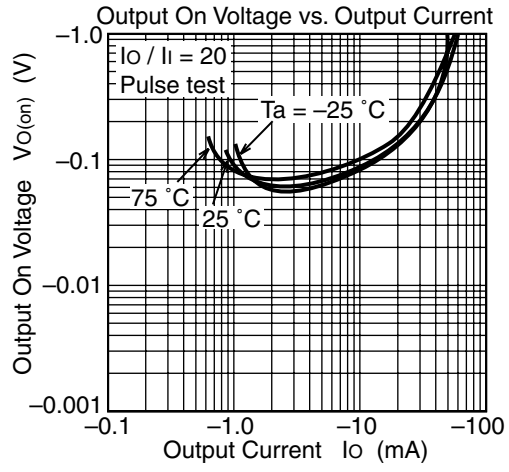
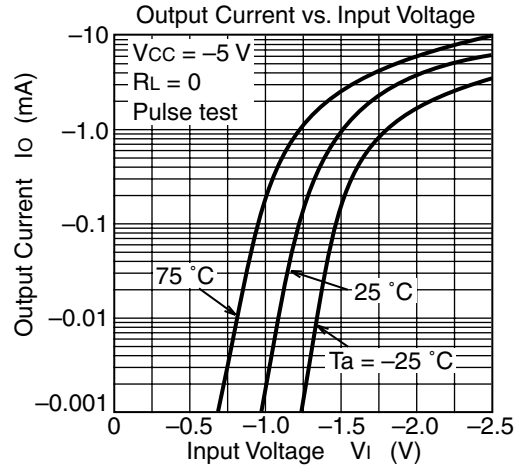
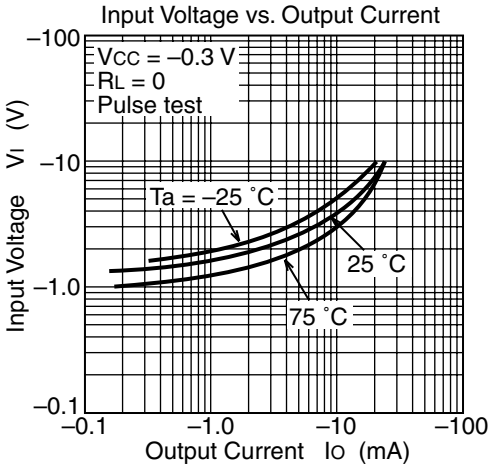
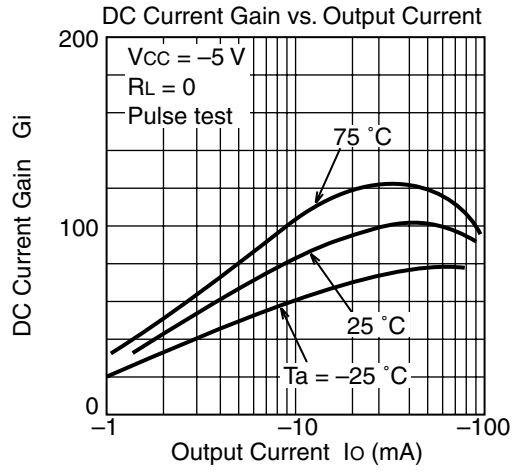
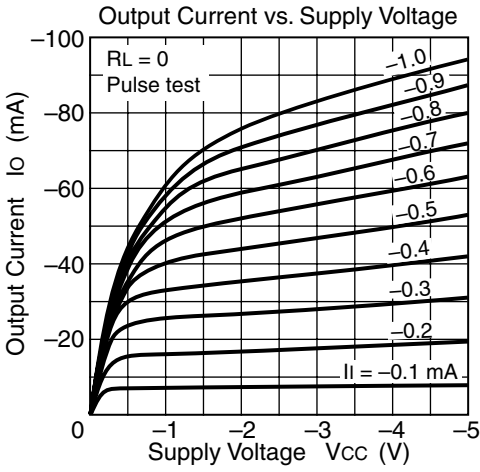
Item		Symbol	Min	Typ	Max	Unit	Test conditions	
Input on voltage	BRA144ETP	$V_{I(on)}$	-1.5	—	-4.5	V	$V_{cc} = -0.3 V,$ $I_o = -5 mA$	
	BRA124ETP		-1.3	—	-3.0			
	BRA114ETP		-1.2	—	-2.4			
	BRA143ETP		-1.1	—	-2.0			
	BRA123ETP		-1.1	—	-1.8			
Input off voltage	BRA144ETP	$V_{I(off)}$	-1.0	—	-1.5	V	$V_{cc} = -5 V,$ $I_o = -100 \mu A$	
	BRA124ETP		-1.0	—	-1.5			
	BRA114ETP		-1.0	—	-1.5			
	BRA143ETP		-1.0	—	-1.5			
	BRA123ETP		-1.0	—	-1.5			
Output saturation current		$V_{O(on)}$	—	—	-0.3	V	$I_o = -10 mA,$ $I_i = -0.5 mA$	
Output cutoff current		$I_{O(off)}$	—	—	-0.5	μA	$V_{cc} = -50 V, I_i = 0$	
DC current transfer ratio	BRA144ETP	G_i	70	—	—		$V_{cc} = -5 V, I_o = -5 mA$	
	BRA124ETP		56	—	—			
	BRA114ETP		30	—	—			
	BRA143ETP		20	—	—			$V_{cc} = -5 V, I_o = -10 mA$
	BRA123ETP		20	—	—			$V_{cc} = -5 V, I_o = -20 mA$
Input resistance	BRA144ETP	R_i	33	47	61	k Ω		
	BRA124ETP		15	22	28			
	BRA114ETP		7	10	13			
	BRA143ETP		3.3	4.7	6.1			
	BRA123ETP		1.5	2.2	2.8			
Resistance ratio		R_1/R_2	0.8	1.0	1.2			



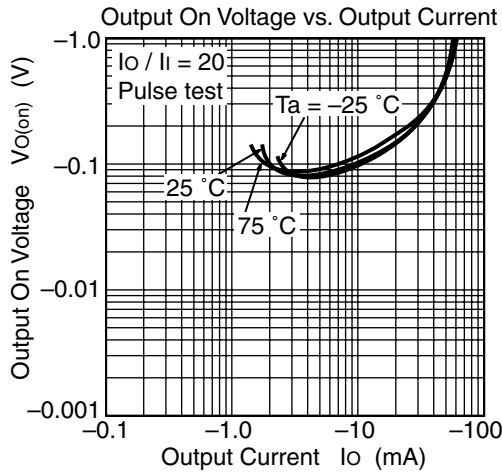
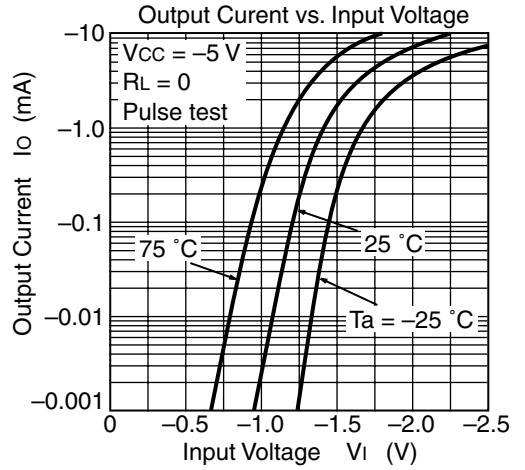
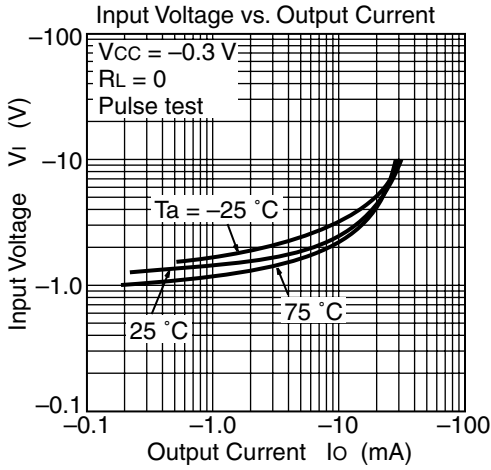
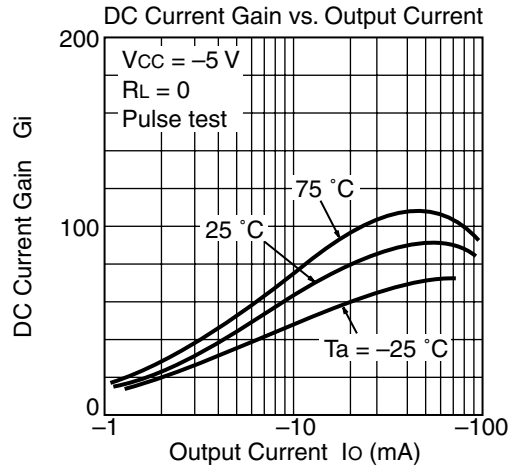
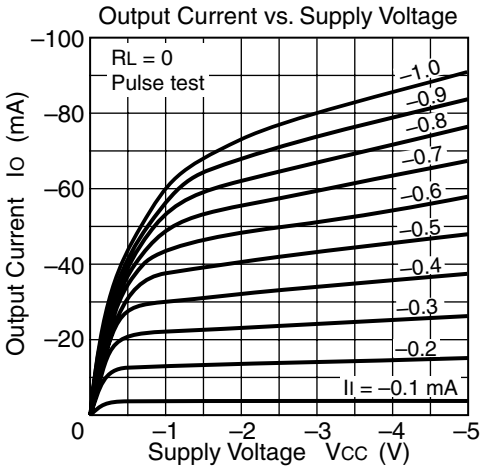
Main Characteristics (BRA144ETP)



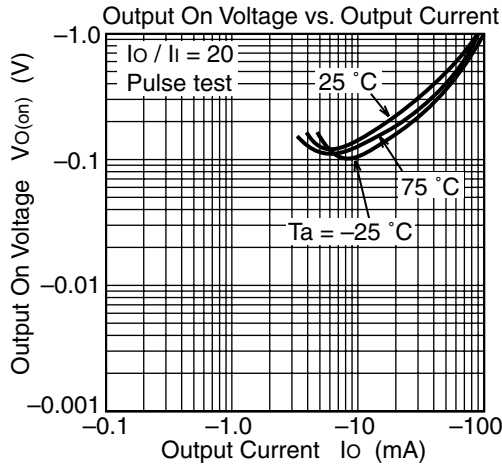
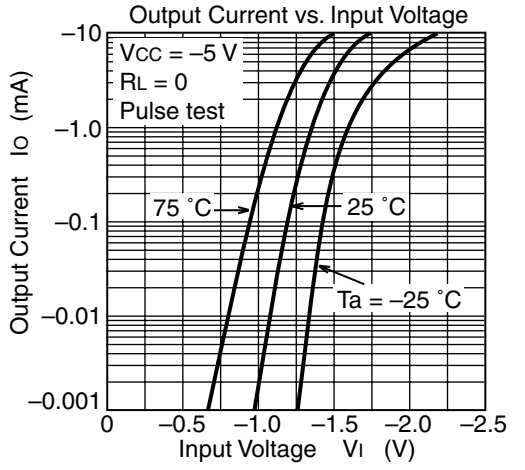
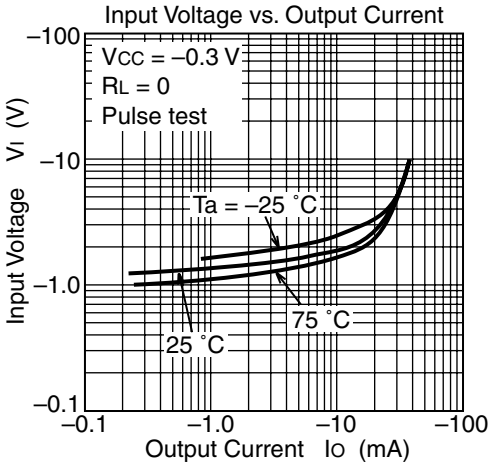
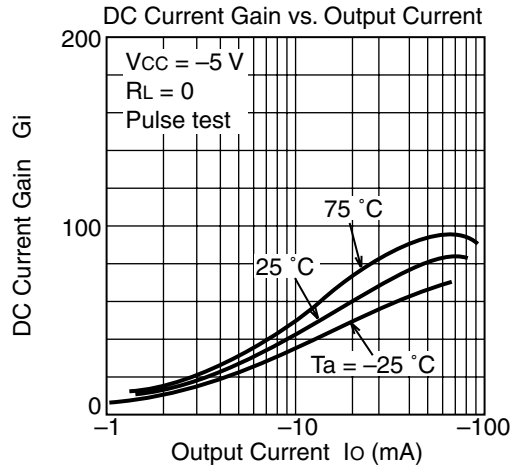
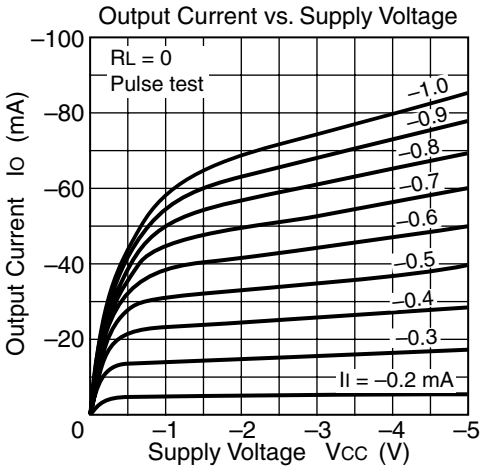
Main Characteristics (BRA124ETP)



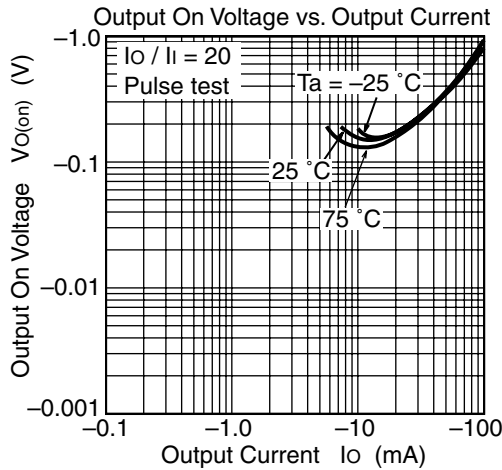
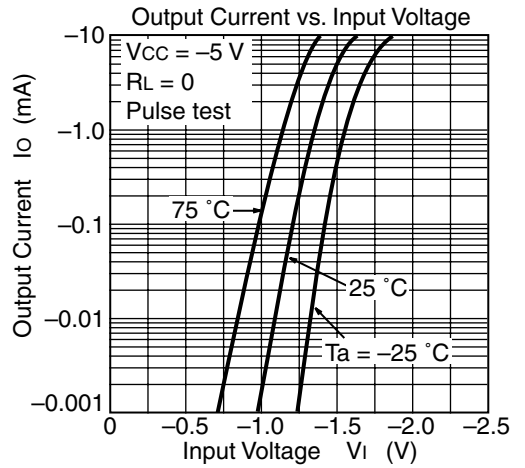
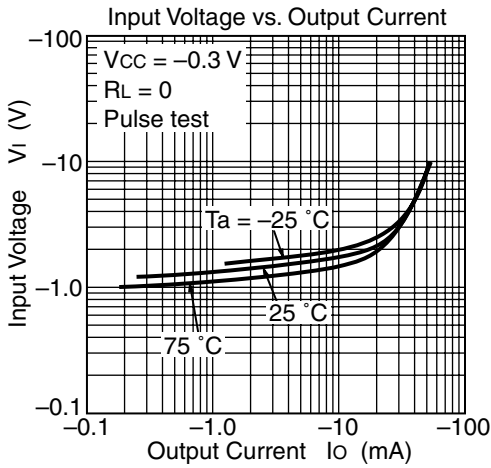
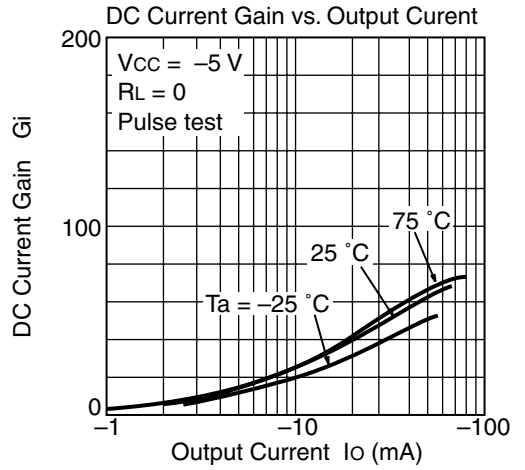
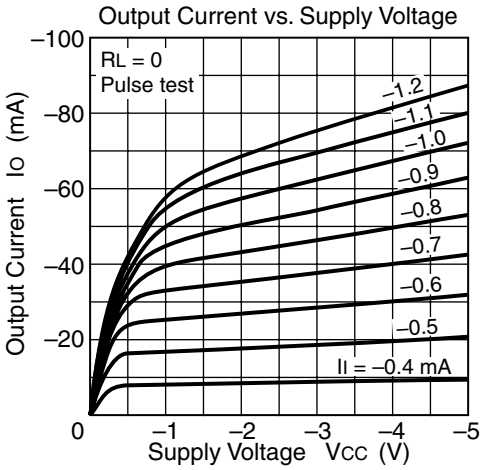
Main Characteristics (BRA114ETP)



Main Characteristics (BRA143ETP)



Main Characteristics (BRA123ETP)

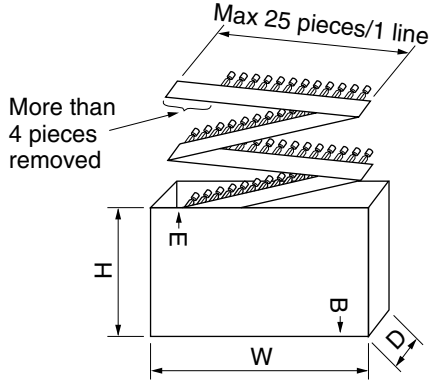


Taping Specification

Purchasing Identification Code: Type No. + Grade + TZ

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

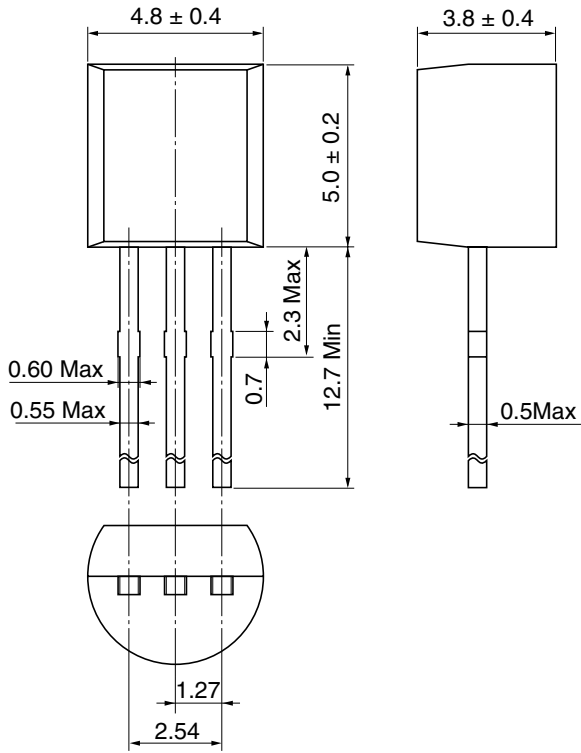
Packing quantity is 2500 pieces.



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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