

BRC144EMP Series

NPN Built-in Resistor Transistor MPAK Series
Inverter, Driver, Switching

HITACHI

ADE-208-1443B (Z)

Rev.2
Sep. 2001

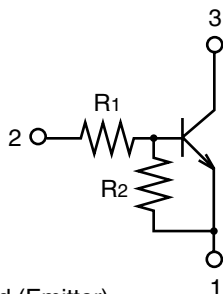
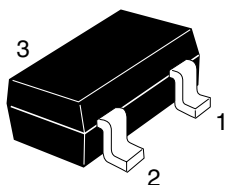
Features

- Built-in Resistor Type
- Simplifies Circuit Design
- Reduces Board Space
- Complementary pair with BRA144EMP series

Outline

MPAK

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

Note: Marking is shown in below.

Device	Marking	R1 (k Ω)	R2 (k Ω)
BRC144EMP	BG	47	47
BRC124EMP	DG	22	22
BRC114EMP	FG	10	10
BRC143EMP	HG	4.7	4.7
BRC123EMP	KG	2.2	2.2

BRC144EMP Series

Absolute Maximum Ratings

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

Item		Symbol	Ratings	Unit
Supply voltage		V_{CC}	50	V
Input voltage	BRC144EMP	V_I	-10 to +50	V
	BRC124EMP		-10 to +50	
	BRC114EMP		-10 to +35	
	BRC143EMP		-10 to +25	
	BRC123EMP		-10 to +15	
Output current		I_O	100	mA
Total power dissipation		P_T^{*1}	200	mW
Junction temperature		T_J	150	$^\circ\text{C}$
Storage temperature		T_{stg}	-55 to +150	$^\circ\text{C}$

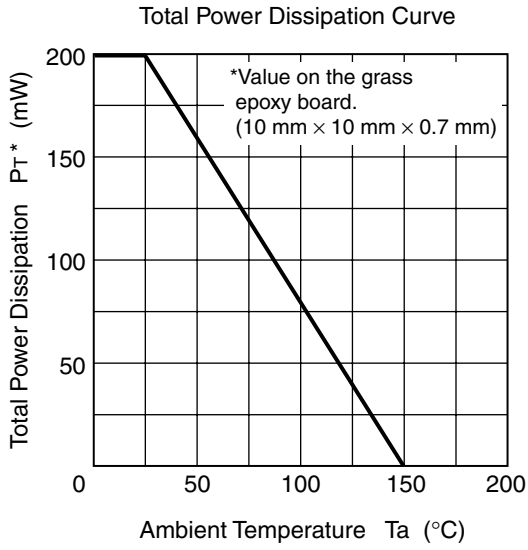
*Value on the glass epoxy board. (10 mm × 10 mm × 0.7 mm)

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Electrical Characteristics

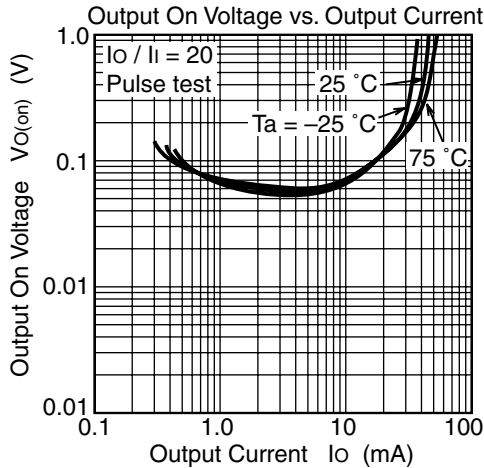
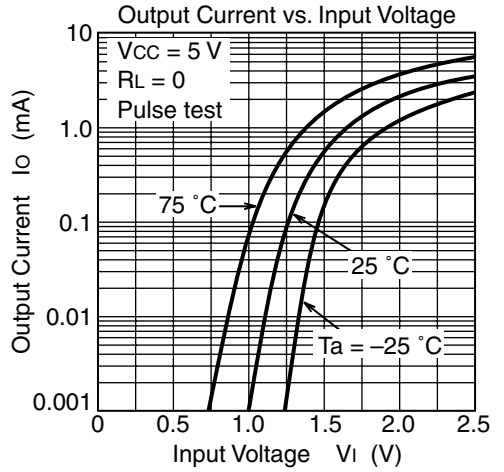
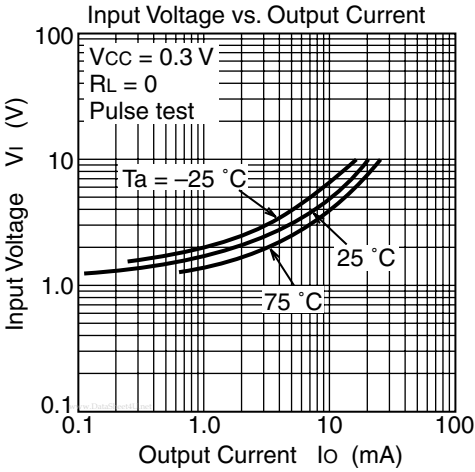
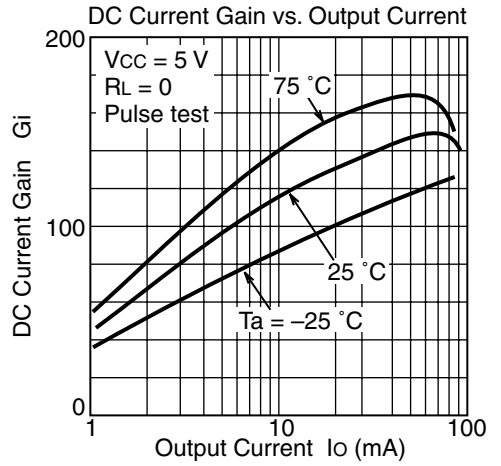
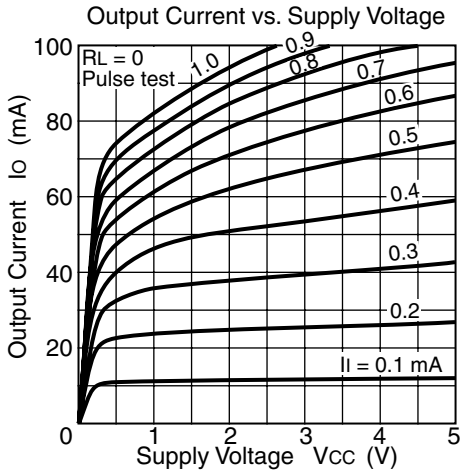
(Ta = 25°C)

Item		Symbol	Min	Typ	Max	Unit	Test conditions
Input on voltage	BRC144EMP	$V_{I(on)}$	1.5	—	4.5	V	$V_{cc} = 0.3 \text{ V}, I_o = 5 \text{ mA}$
	BRC124EMP		1.3	—	3.0		
	BRC114EMP		1.2	—	2.4		
	BRC143EMP		1.1	—	2.0		
	BRC123EMP		1.1	—	1.8		
Input off voltage	BRC144EMP	$V_{I(off)}$	1.0	—	1.5	V	$V_{cc} = 5 \text{ V}, I_o = 100 \mu\text{A}$
	BRC124EMP		1.0	—	1.5		
	BRC114EMP		1.0	—	1.5		
	BRC143EMP		1.0	—	1.5		
	BRC123EMP		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	μA	$V_{cc} = 50 \text{ V}, I_1 = 0$
DC current transfer ratio	BRC144EMP	G_i	70	—	—		$V_{cc} = 5 \text{ V}, I_o = 5 \text{ mA}$
	BRC124EMP		56	—	—		
	BRC114EMP		30	—	—		
	BRC143EMP		20	—	—		$V_{cc} = 5 \text{ V}, I_o = 10 \text{ mA}$
	BRC123EMP		20	—	—		$V_{cc} = 5 \text{ V}, I_o = 20 \text{ mA}$
Input resistance	BRC144EMP	R_i	33	47	61	$\text{k}\Omega$	
	BRC124EMP		15	22	28		
	BRC114EMP		7	10	13		
	BRC143EMP		3.3	4.7	6.1		
	BRC123EMP		1.5	2.2	2.8		
Resistance ratio		R_1/R_2	0.8	1.0	1.2		

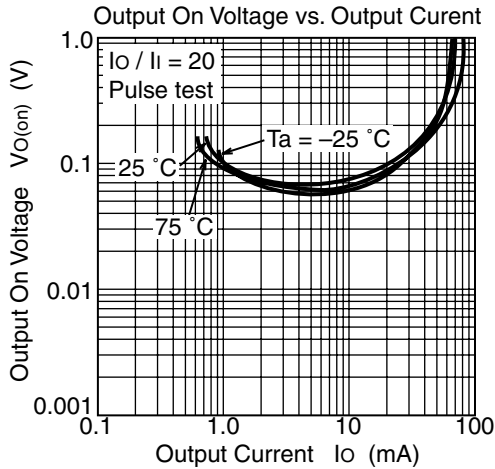
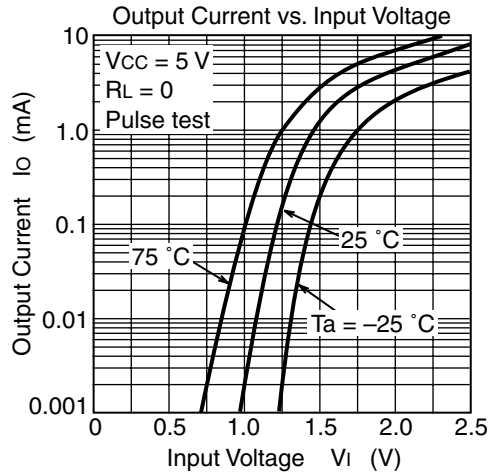
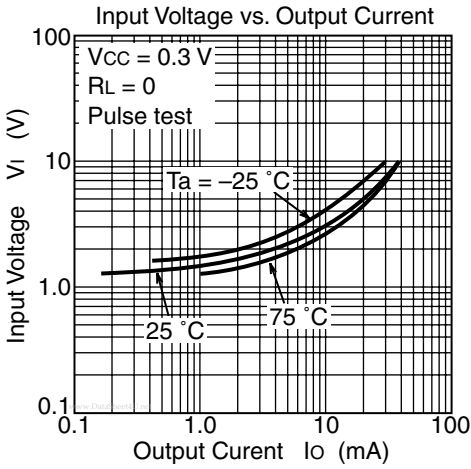
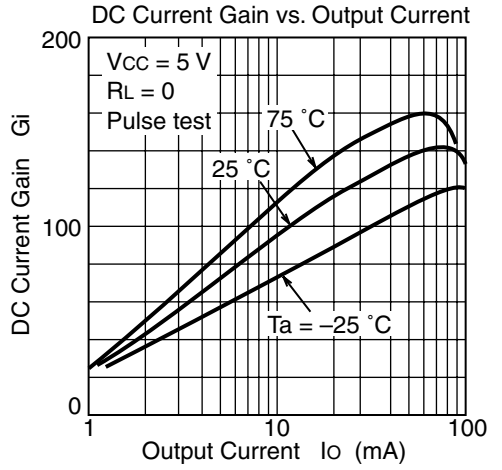
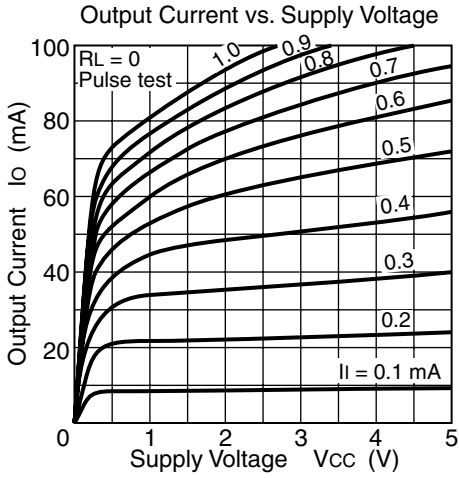


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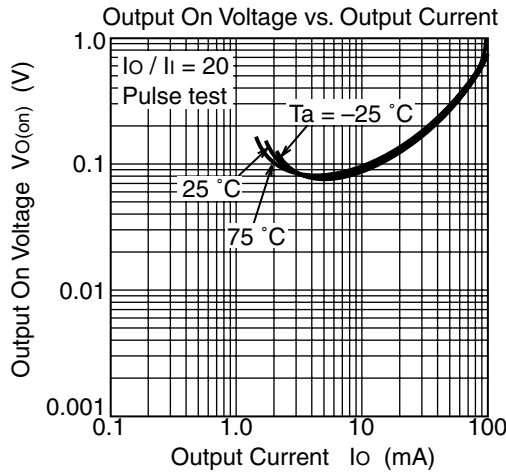
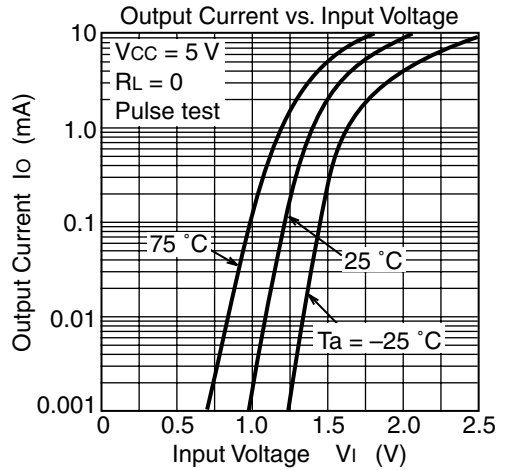
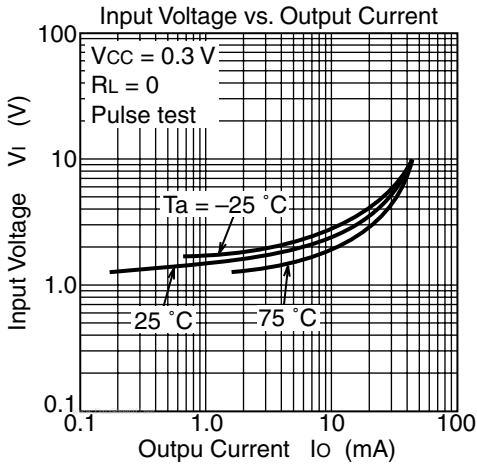
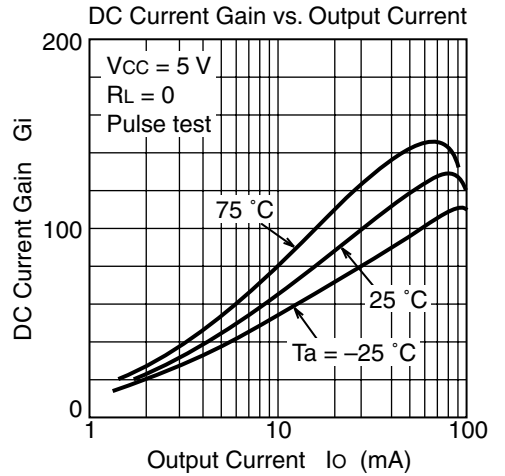
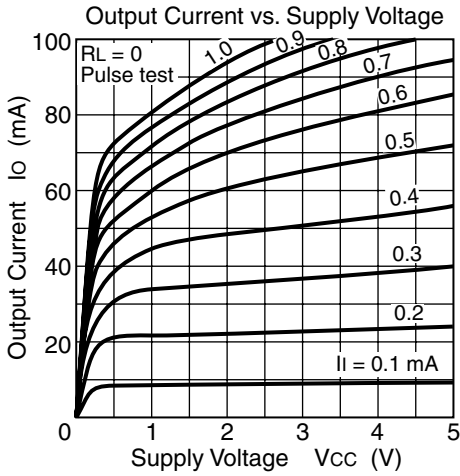
Main Characteristics (BRC144EMP)



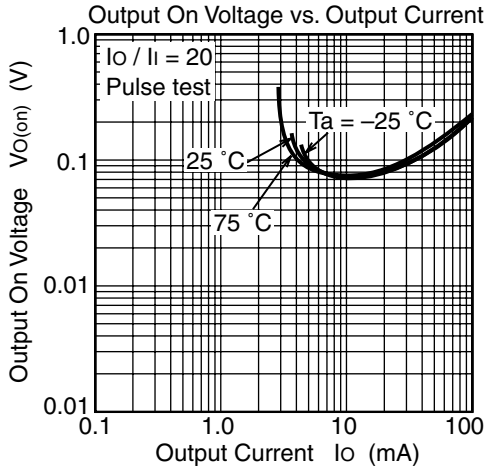
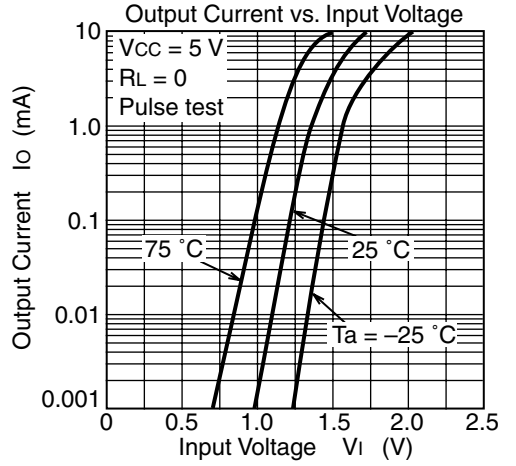
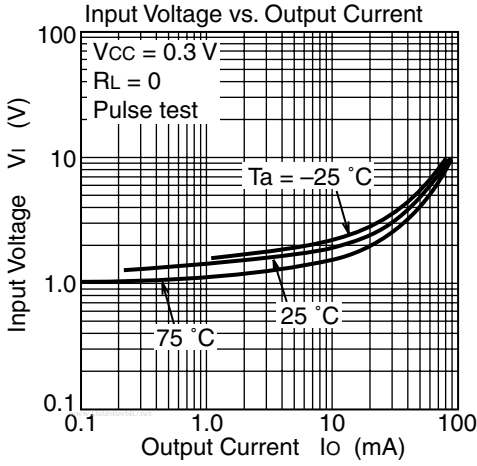
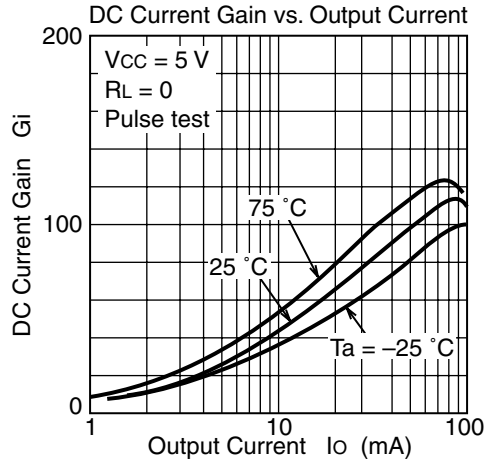
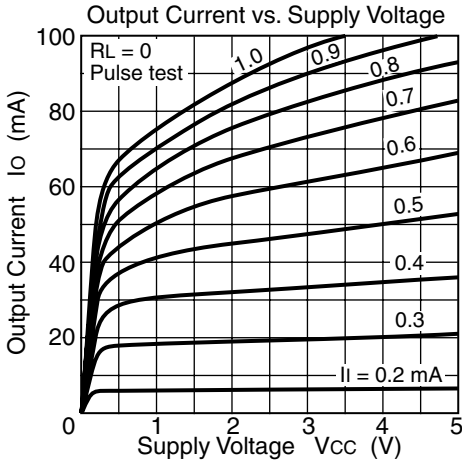
Main Characteristics (BRC124EMP)



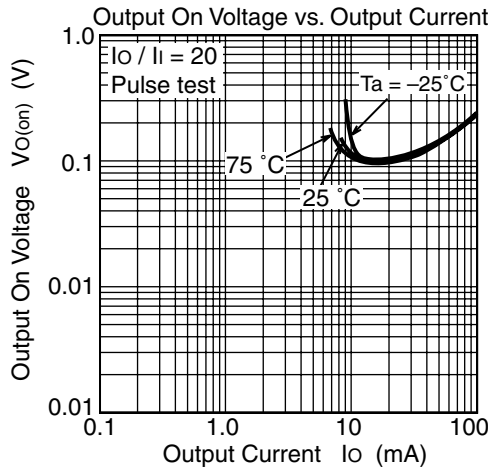
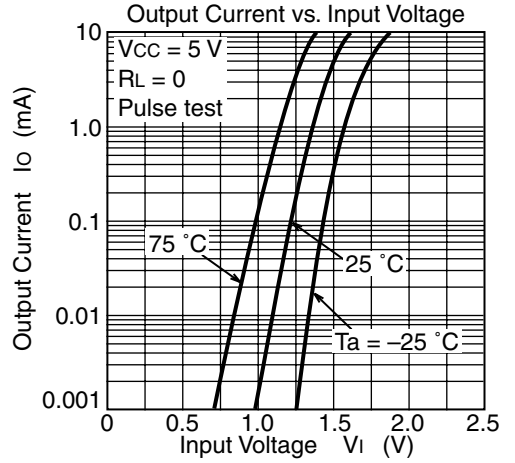
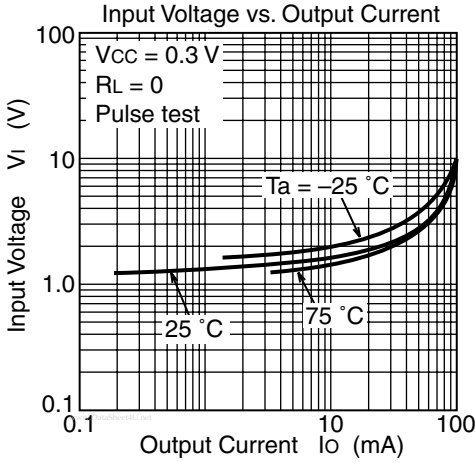
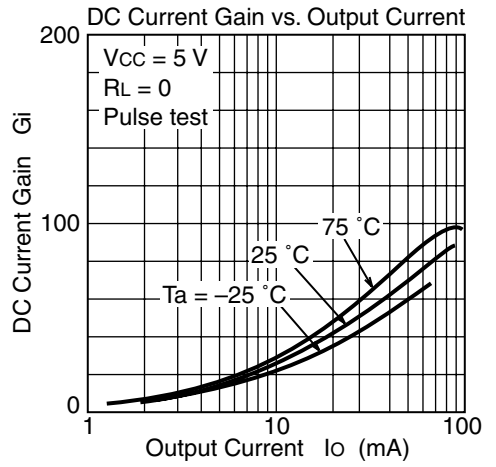
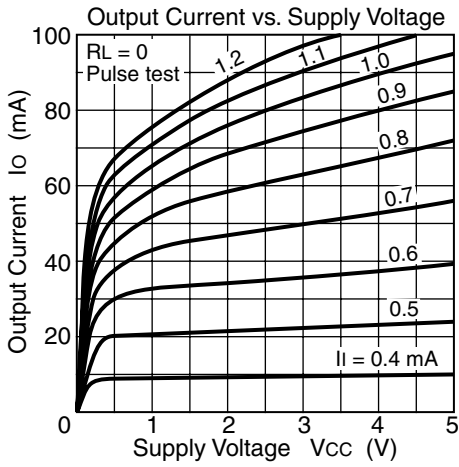
Main Characteristics (BRC114EMP)



Main Characteristics (BRC143EMP)



Main Characteristics (BRC123EMP)



Taping Specification

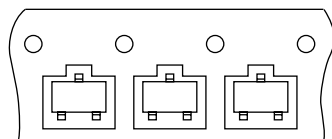
There are two different size reels in MPAK packaging.

Packing to “Left” direction

Purchasing Identification Code

Standard Reel 3000 pcs/reel: Type No. + Mark **TL**

Large Reel 12000 pcs/reel: Type No. + Mark **UL**

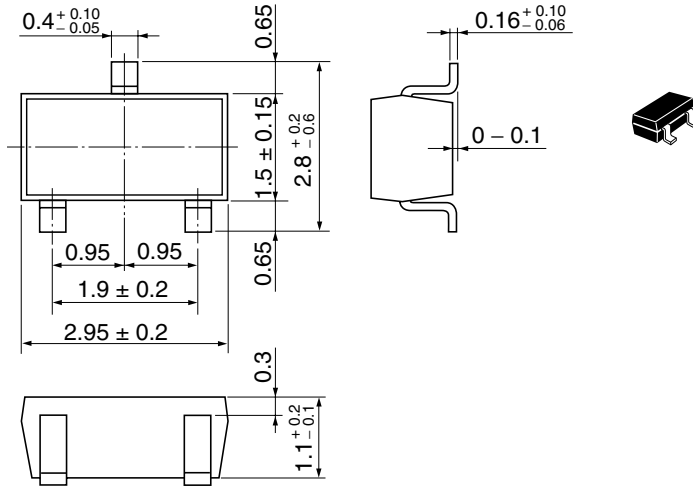


Marking face is up.
Center lead goes to left.

Direction of feed →

Package Dimensions

Unit: mm

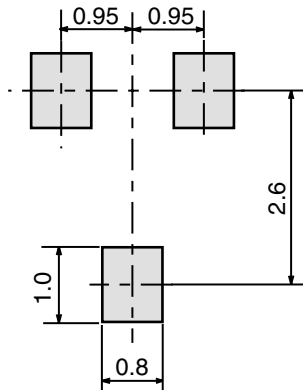


Hitachi Code	MPAK
JEDEC	—
EIAJ	Conforms
Mass (reference value)	0.011 g

Footprint

MPAK

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