BRC144ECM Series

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

HITACHI

ADE-208-1445B (Z)

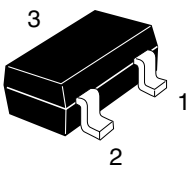
Rev.2
Sep. 2001

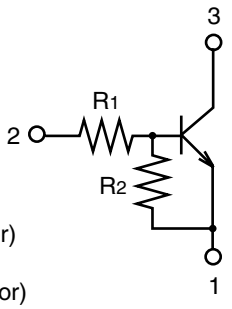
Features

- Built–in Resistor Type
- Simplifies Circuit Design
- Reduces Board Space
- Complementary pair with BRA144ECM series

Outline

CMPAK





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

Note: Marking is shown in below.

Device	Marking	R1 (kΩ)	R2 (kΩ)
BRC144ECM	BG	47	47
BRC124ECM	DG	22	22
BRC114ECM	FG	10	10
BRC143ECM	HG	4.7	4.7
BRC123ECM	KG	2.2	2.2

Hitachi semiconductor

Absolute Maximum Ratings

(Ta = 25°C)

Item		Symbol	Ratings	Unit
Supply voltage		V_{CC}	50	V
Input voltage	BRC144ECM	V_I	−10 to +50	V
	BRC124ECM		−10 to +45	
	BRC114ECM		−10 to +30	
	BRC143ECM		−10 to +20	
	BRC123ECM		−10 to +15	
Output current		I_O	100	mA
Total power dissipation		P_T*	150	mW
Junction temperature		Tj	150	°C
Storage temperature		Tstg	−55 to +150	°C

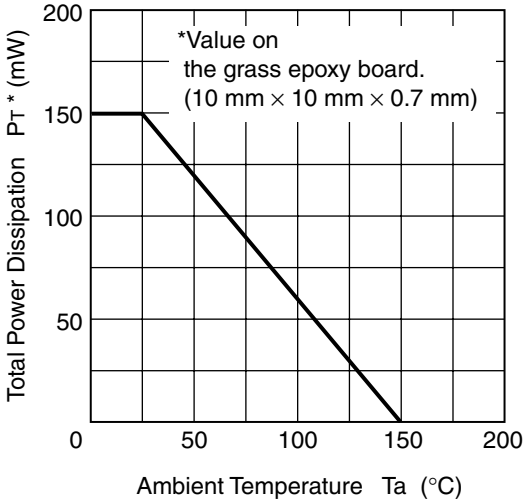
*Value on the glass epoxy board. (10 mm × 10 mm × 0.7 mm)

Electrical Characteristics

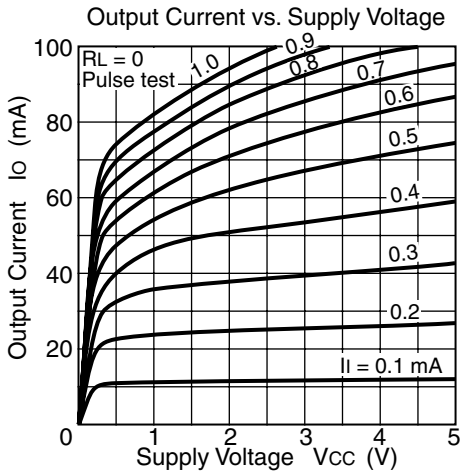
(Ta = 25°C)

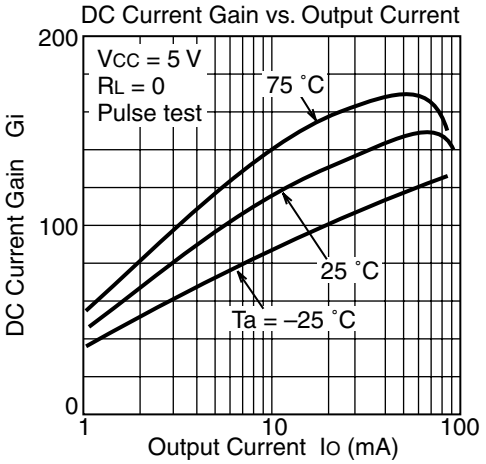
Item		Symbol	Min	Typ	Max	Unit	Test conditions
Input on voltage	BRC144ECM	$V_{I(on)}$	1.5	—	4.5	V	V_{CC} = 0.3 V, I_O = 5 mA
	BRC124ECM		1.3	—	3.0		
	BRC114ECM		1.2	—	2.4		
	BRC143ECM		1.1	—	2.0		
	BRC123ECM		1.1	—	1.8		
Input off voltage	BRC144ECM	$V_{I(off)}$	1.0	—	1.5	V	V_{CC} = 5 V, I_O = 100 µA
	BRC124ECM		1.0	—	1.5		
	BRC114ECM		1.0	—	1.5		
	BRC143ECM		1.0	—	1.5		
	BRC123ECM		1.0	—	1.5		
Output saturation voltage		$V_{O(on)}$	—	—	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	BRC144ECM	Gi	70	—	—		V_{CC} = 5 V, I_O = 5 mA
	BRC124ECM		56	—	—		
	BRC114ECM		30	—	—		
	BRC143ECM		20	—	—		V_{CC} = 5 V, I_O = 10 mA
	BRC123ECM		20	—	—		V_{CC} = 5 V, I_O = 20 mA
Input resistance	BRC144ECM	R_1	33	47	61	kΩ	
	BRC124ECM		15	22	28		
	BRC114ECM		7	10	13		
	BRC143ECM		3.3	4.7	6.1		
	BRC123ECM		1.5	2.2	2.8		
Resistance ratio		R_1/R_2	0.8	1.0	1.2		

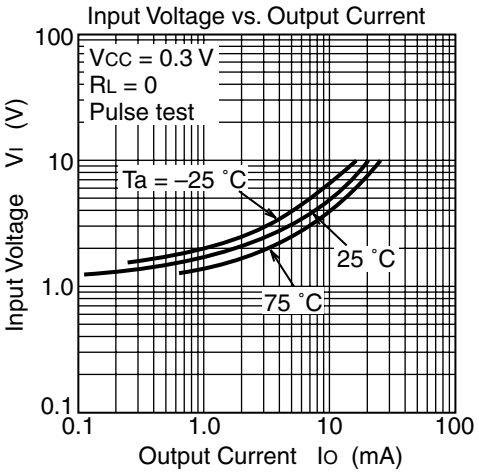
Total Power Dissipation Curve

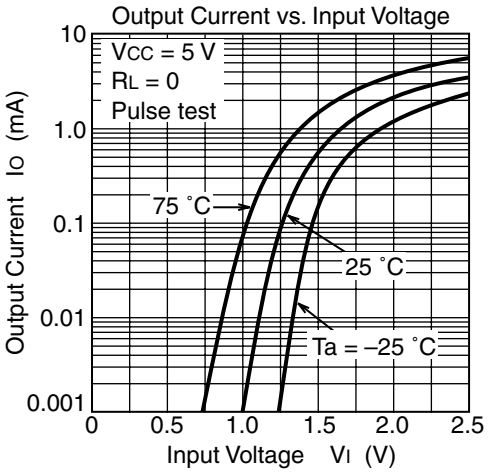


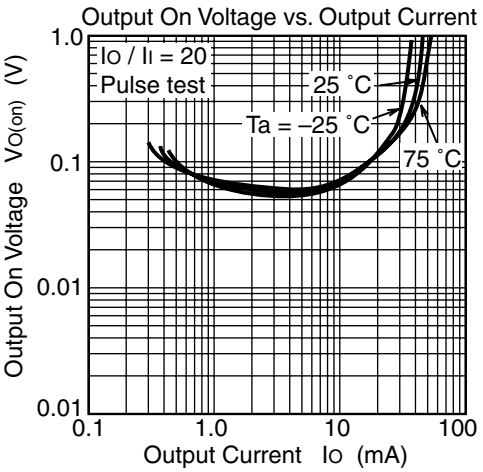
Main Characteristics (BRC144ECM)





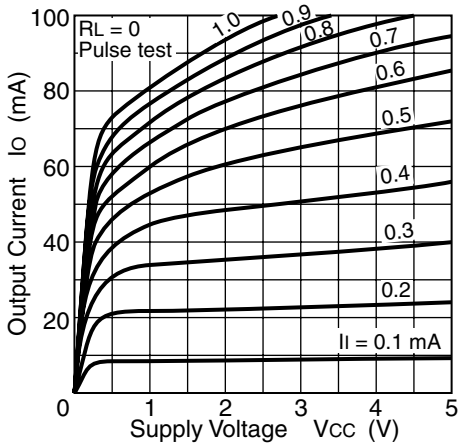




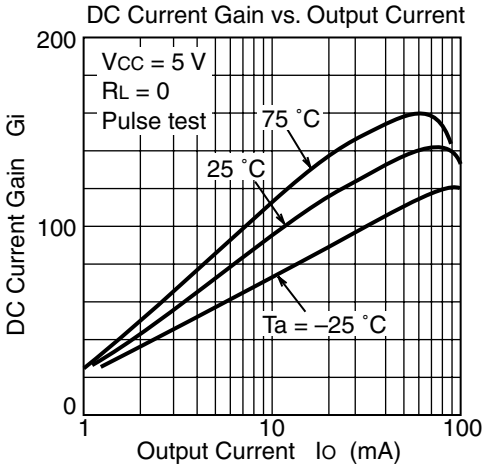


Main Characteristics (BRC124ECM)

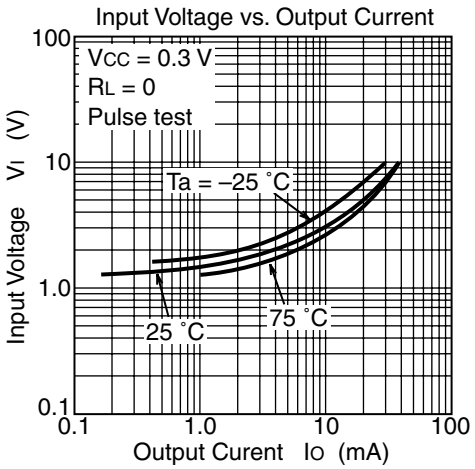
Output Current vs. Supply Voltage



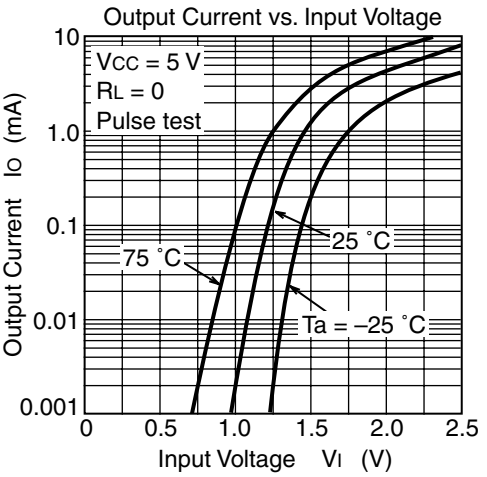
DC Current Gain vs. Output Current



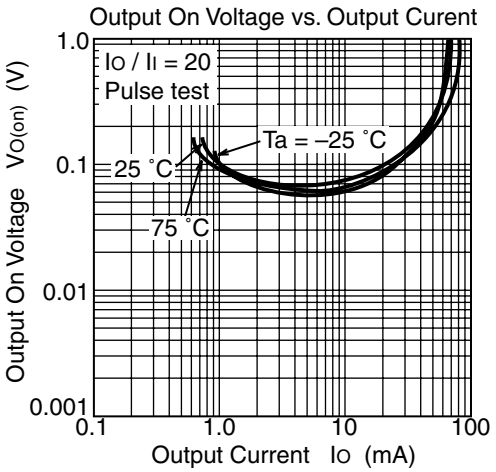
Input Voltage vs. Output Current



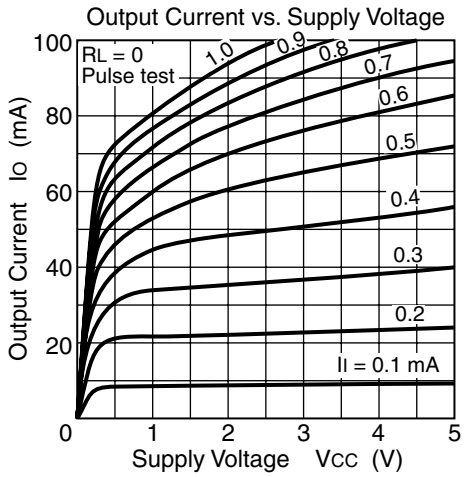
Output Current vs. Input Voltage

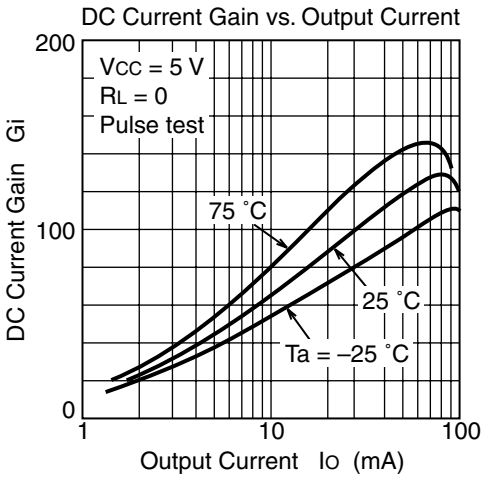


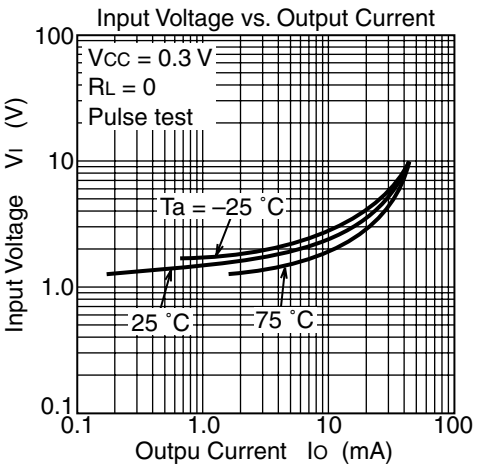
Output On Voltage vs. Output Curent

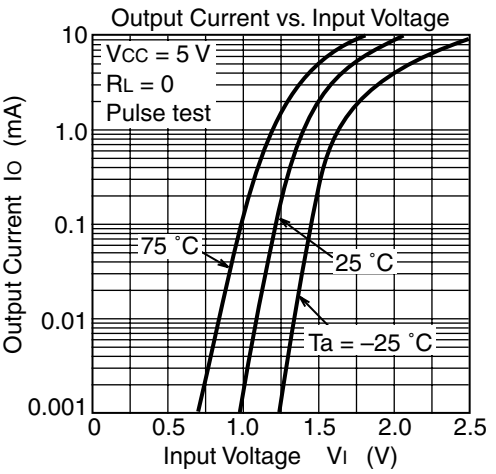


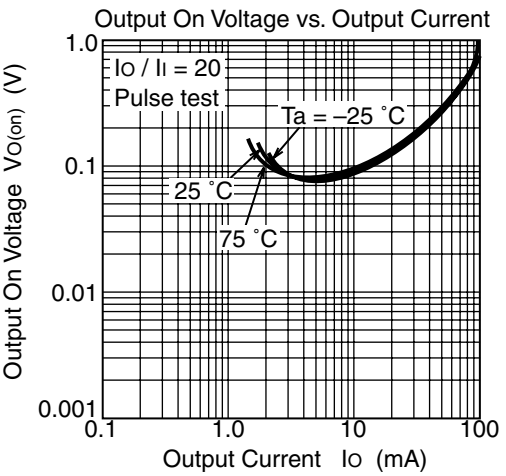
Main Characteristics (BRC114ECM)



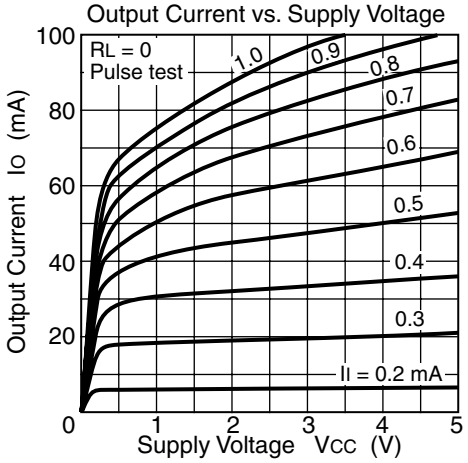


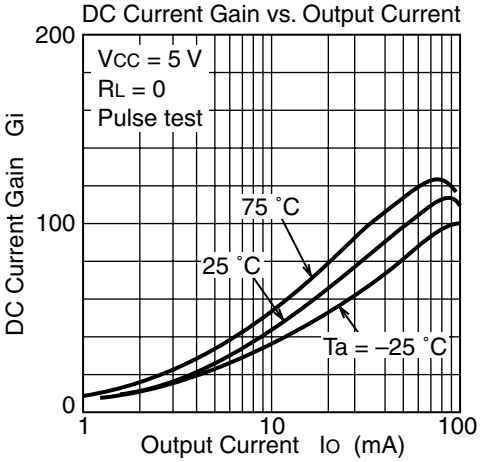


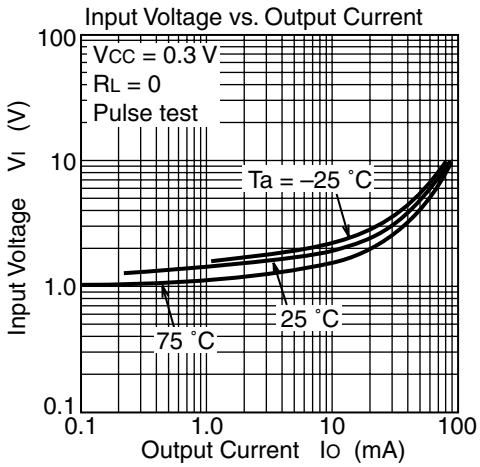


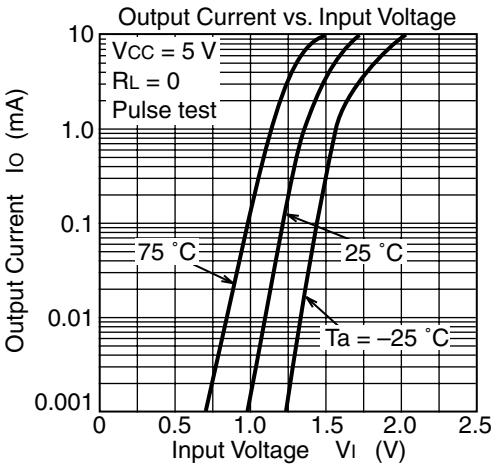


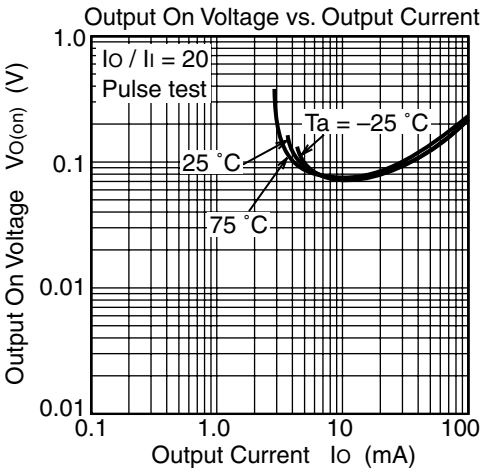
Main Characteristics (BRC143ECM)



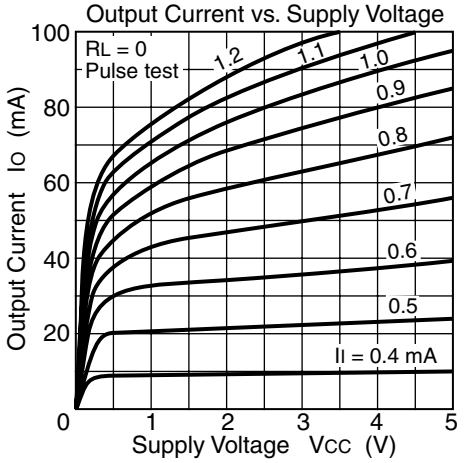


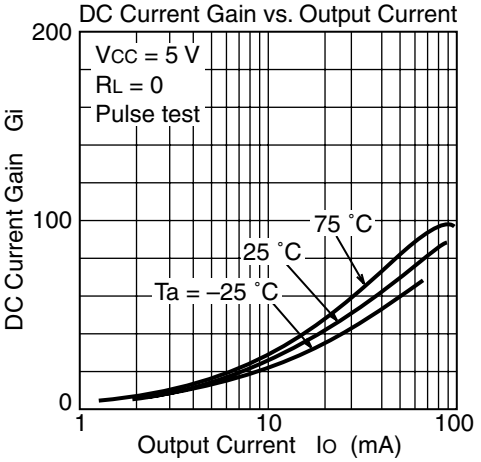


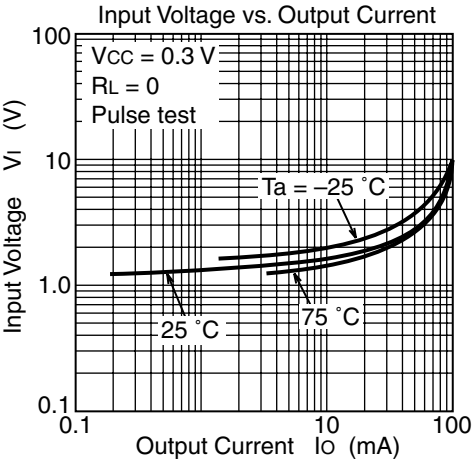


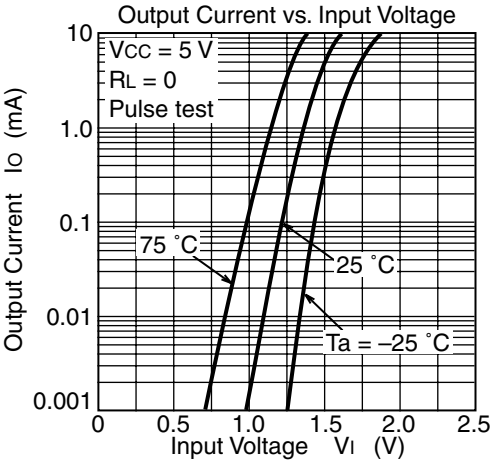


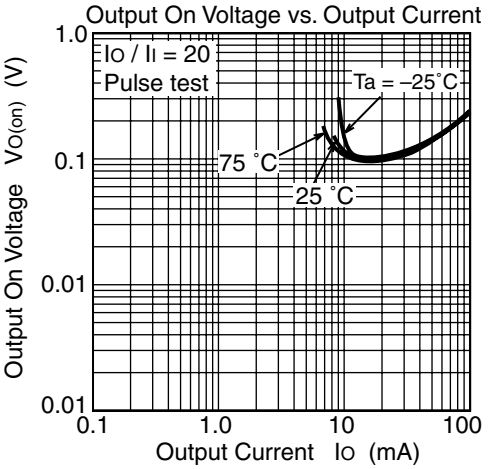
Main Characteristics (BRC123ECM)











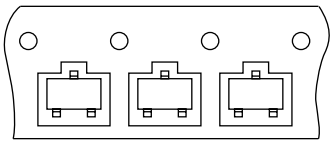
Taping Specification

There are two different size reels in CMPAK 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**



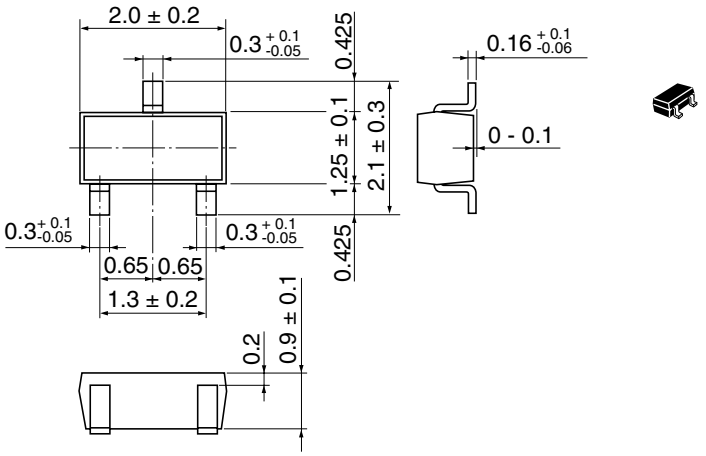
Marking face is up.
Center lead goes to left.

Direction of feed

Package Dimensions

As of January, 2001

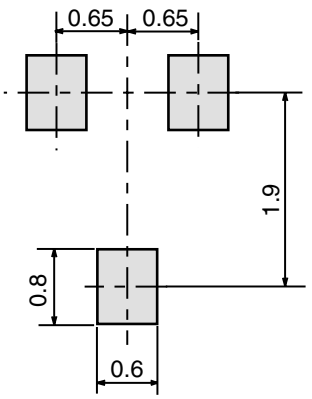
Unit: mm



Hitachi Code	CMPAK
JEDEC	—
EIAJ	Conforms
Mass (reference value)	0.006 g

Footprint

CMPAK



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