

BRA144ECM Series

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

HITACHI

ADE-208-1444B (Z)

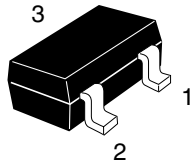
Rev.2
Sep. 2001

Features

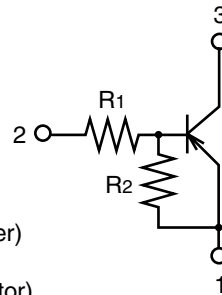
- Built-in Resistor Type
- Simplifies Circuit Design
- Reduces Board Space
- Complementary pair with BRC144ECM series

Outline

CMPAK



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



Note: Marking is shown in below.

Device	Marking	R1 (k Ω)	R2 (k Ω)
BRA144ECM	AG	47	47
BRA124ECM	CG	22	22
BRA114ECM	EG	10	10
BRA143ECM	GG	4.7	4.7
BRA123ECM	JG	2.2	2.2

BRA144ECM Series

Absolute Maximum Ratings

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

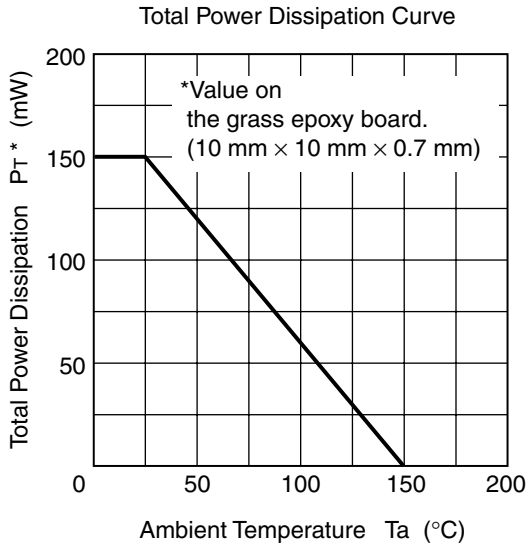
Item		Symbol	Ratings	Unit
Supply voltage		V_{CC}	-50	V
Input voltage	BRA144ECM	V_I	+10 to -50	V
	BRA124ECM		+10 to -45	
	BRA114ECM		+10 to -30	
	BRA143ECM		+10 to -20	
	BRA123ECM		+10 to -15	
Output current		I_o	-100	mA
Total power dissipation		P_T^*	150	mW
Junction temperature		T_j	150	$^\circ\text{C}$
Storage temperature		T_{stg}	-55 to +150	$^\circ\text{C}$

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

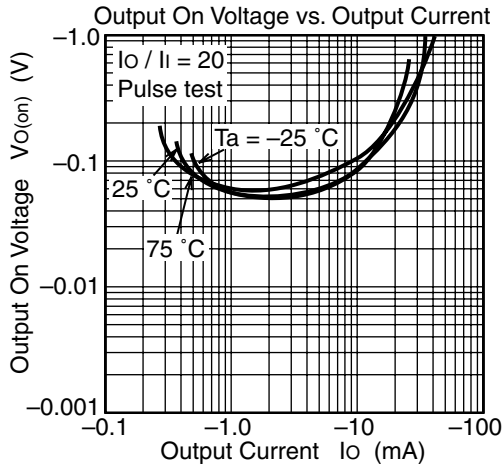
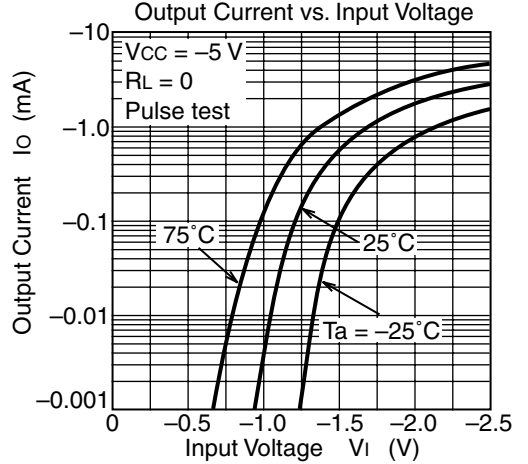
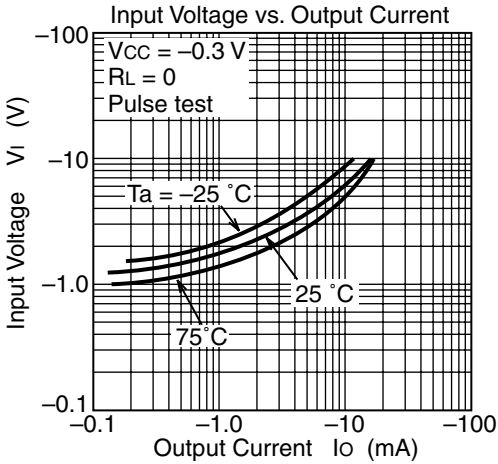
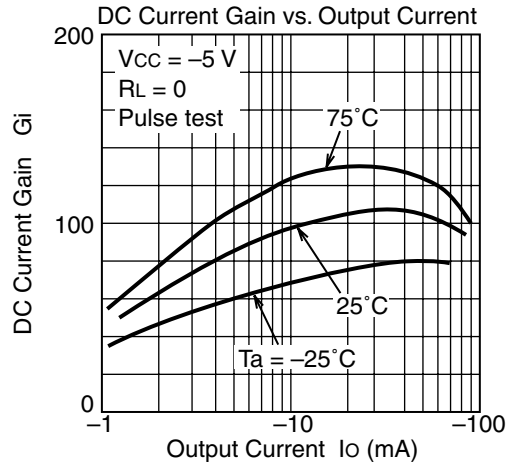
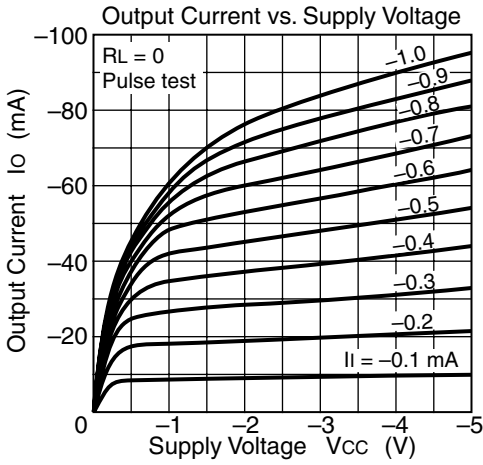
Electrical Characteristics

(Ta = 25°C)

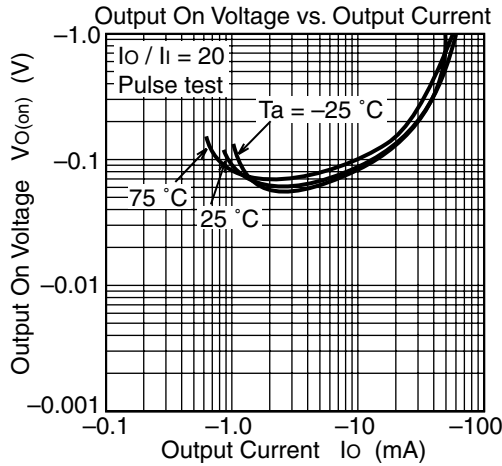
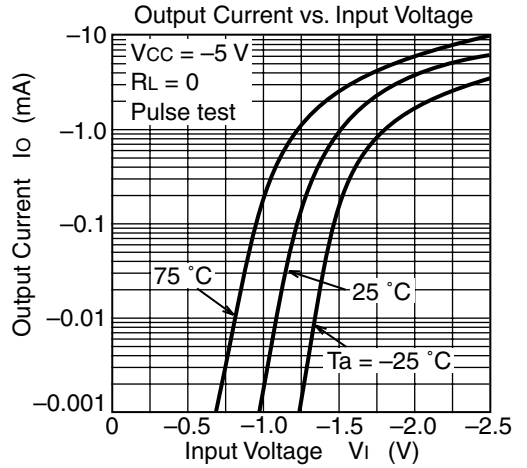
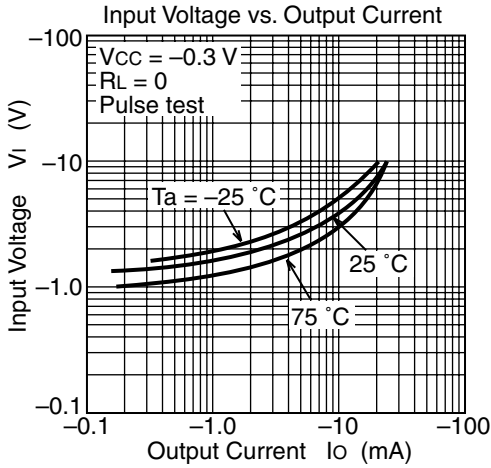
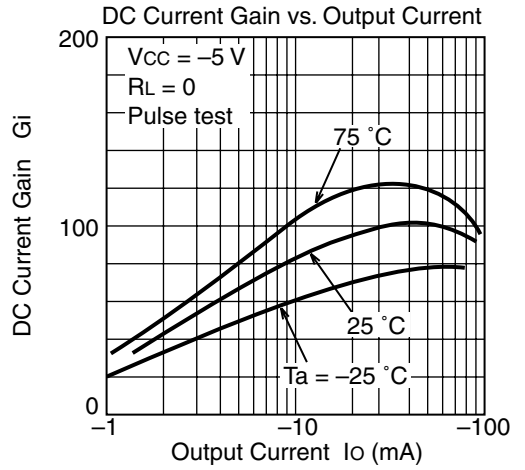
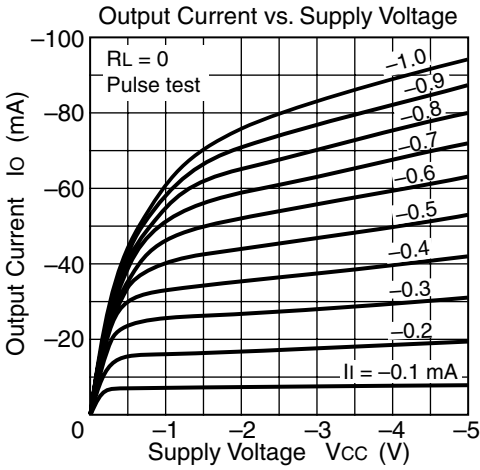
Item		Symbol	Min	Typ	Max	Unit	Test conditions	
Input on voltage	BRA144ECM	$V_{I(on)}$	-1.5	—	-4.5	V	$V_{cc} = -0.3 V,$ $I_o = -5 mA$	
	BRA124ECM		-1.3	—	-3.0			
	BRA114ECM		-1.2	—	-2.4			
	BRA143ECM		-1.1	—	-2.0			
	BRA123ECM		-1.1	—	-1.8			
Input off voltage	BRA144ECM	$V_{I(off)}$	-1.0	—	-1.5	V	$V_{cc} = -5 V,$ $I_o = -100 \mu A$	
	BRA124ECM		-1.0	—	-1.5			
	BRA114ECM		-1.0	—	-1.5			
	BRA143ECM		-1.0	—	-1.5			
	BRA123ECM		-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	BRA144ECM	G_i	70	—	—		$V_{cc} = -5 V, I_o = -5 mA$	
	BRA124ECM		56	—	—			
	BRA114ECM		30	—	—			
	BRA143ECM		20	—	—			$V_{cc} = -5 V, I_o = -10 mA$
	BRA123ECM		20	—	—			$V_{cc} = -5 V, I_o = -20 mA$
Input resistance	BRA144ECM	R_i	33	47	61	k Ω		
	BRA124ECM		15	22	28			
	BRA114ECM		7	10	13			
	BRA143ECM		3.3	4.7	6.1			
	BRA123ECM		1.5	2.2	2.8			
Resistance ratio		R_1/R_2	0.8	1.0	1.2			



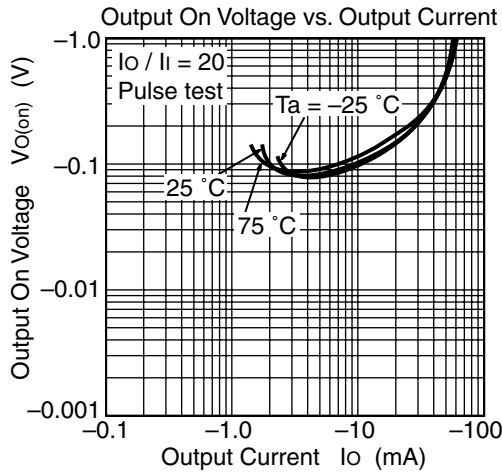
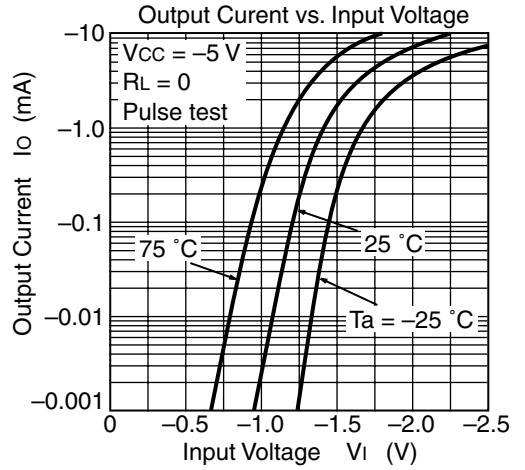
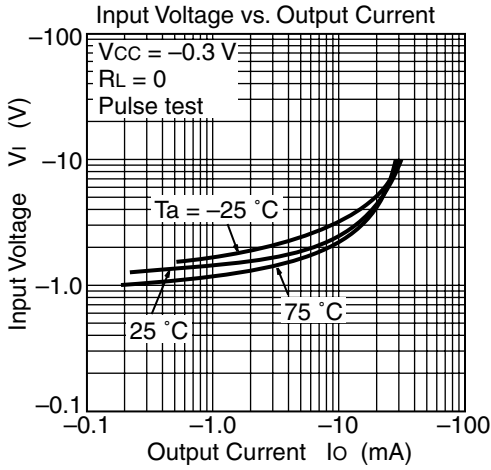
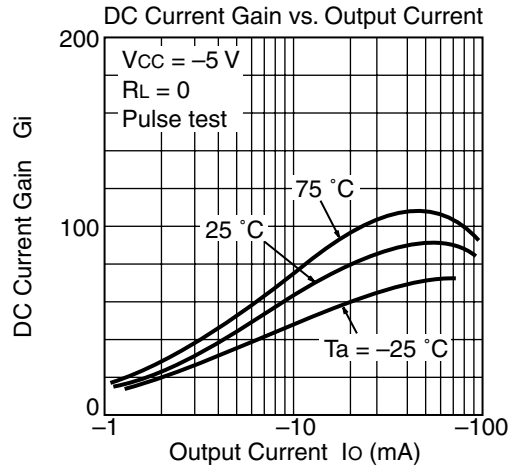
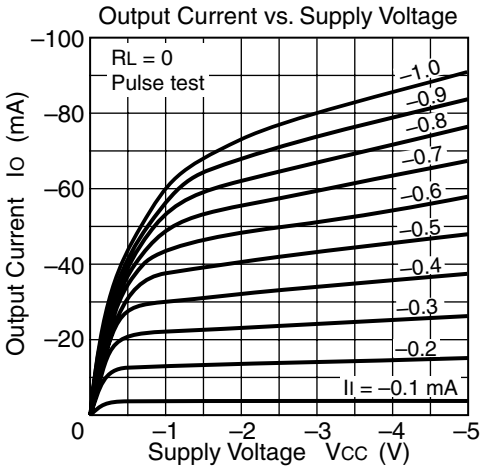
Main Characteristics (BRA144ECM)



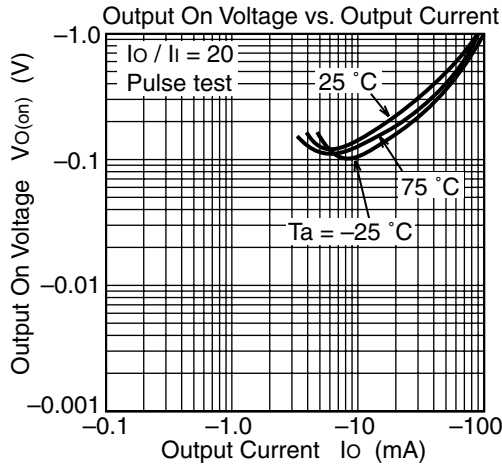
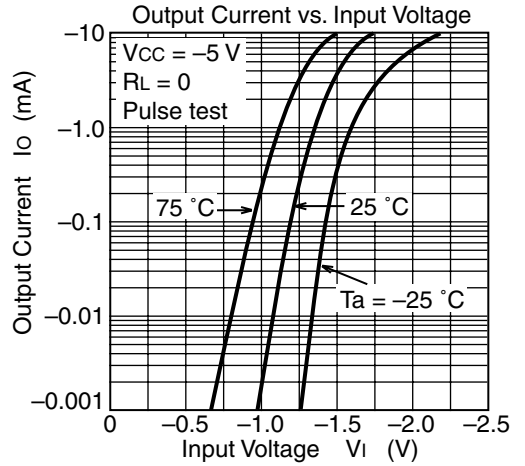
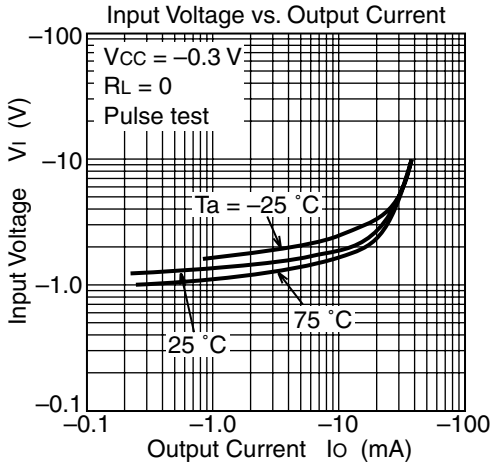
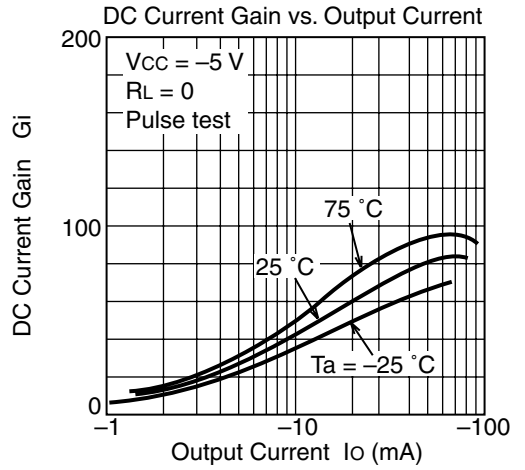
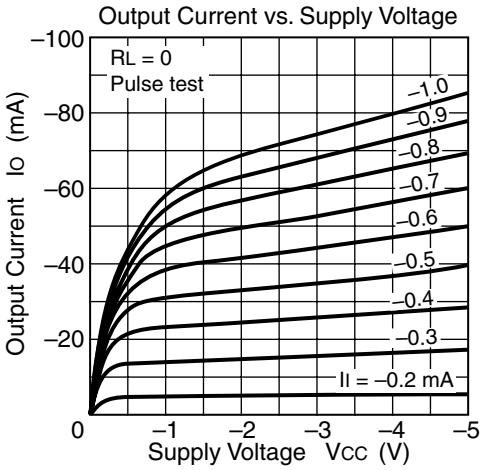
Main Characteristics (BRA124ECM)



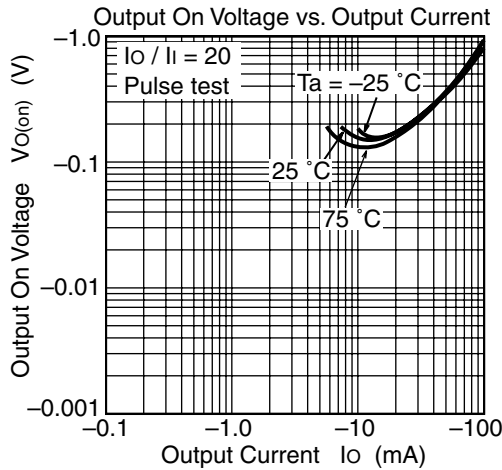
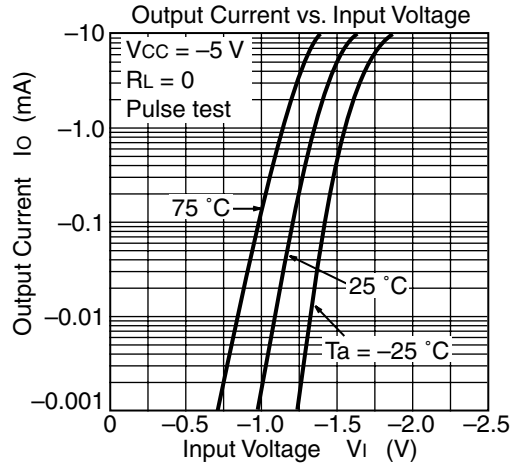
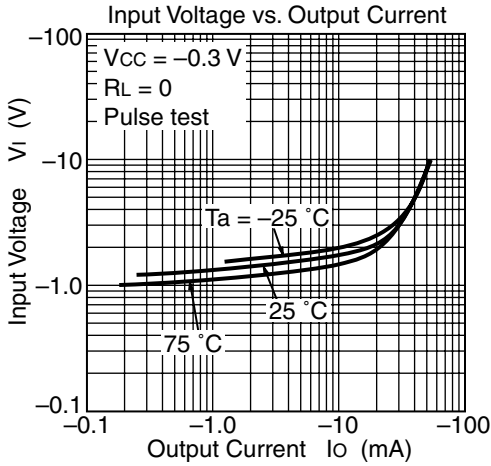
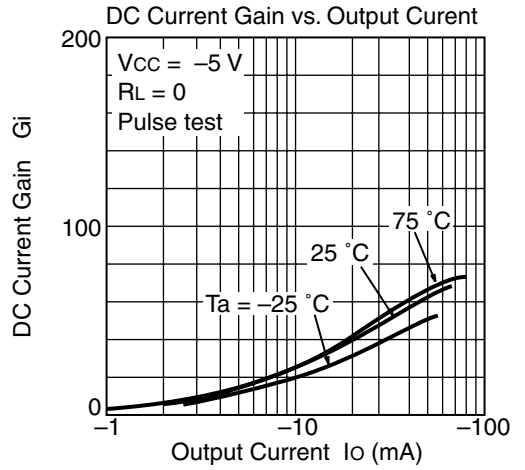
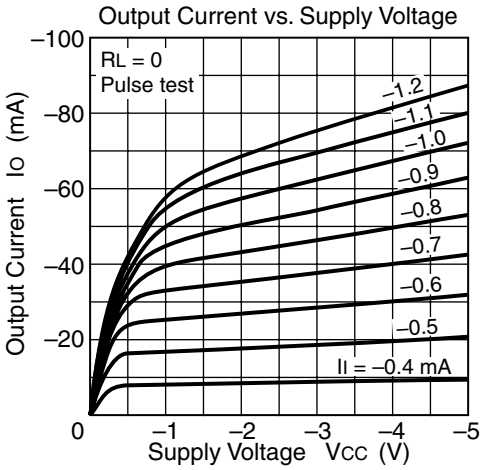
Main Characteristics (BRA114ECM)



Main Characteristics (BRA143ECM)



Main Characteristics (BRA123ECM)



Taping Specification

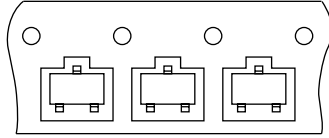
There are two different size reels in CMPAK packaging.

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**

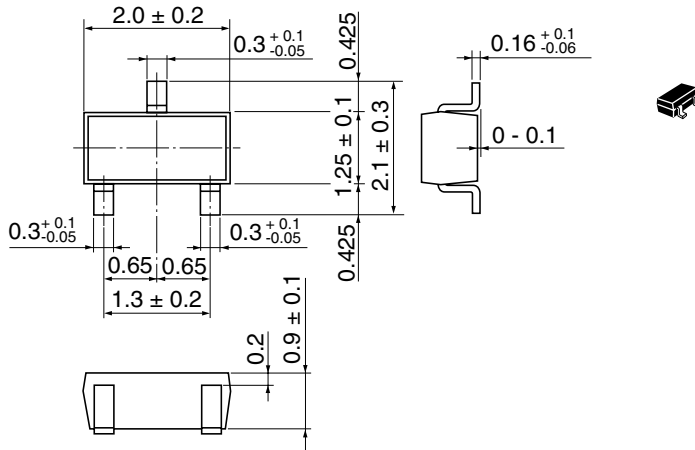


Marking face is up.
Center lead goes to left.

Direction of feed →

Package Dimensions

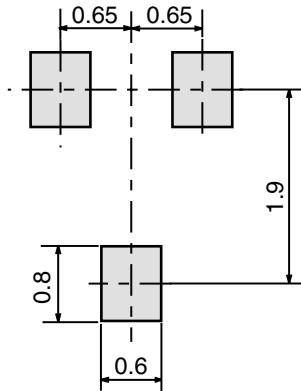
As of January, 2001
Unit: mm



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

Footprint

CMPAK



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