

To all our customers

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Renesas Technology Corp.
Customer Support Dept.
April 1, 2003

Cautions

Keep safety first in your circuit designs!

1. Renesas Technology Corporation puts the maximum effort into making semiconductor products better and more reliable, but there is always the possibility that trouble may occur with them. Trouble with semiconductors may lead to personal injury, fire or property damage.

Remember to give due consideration to safety when making your circuit designs, with appropriate measures such as (i) placement of substitutive, auxiliary circuits, (ii) use of nonflammable material or (iii) prevention against any malfunction or mishap.

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BRC144ECM Series

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

RENESAS

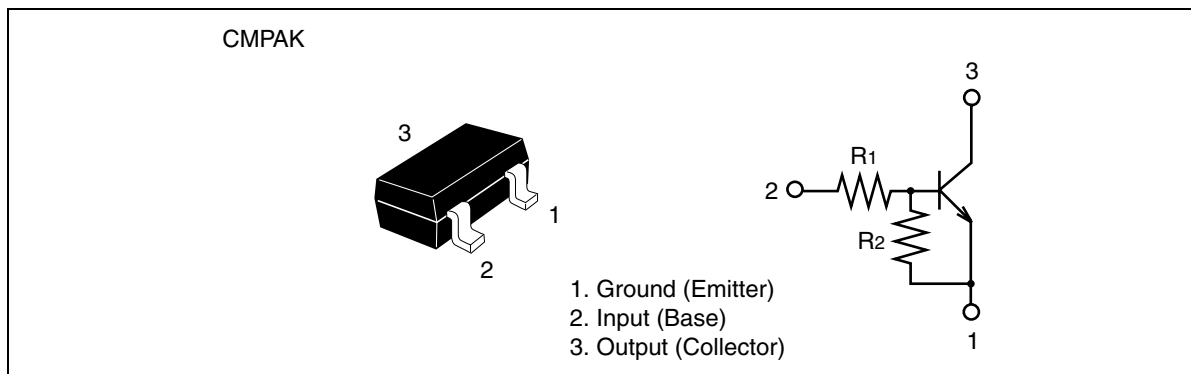
ADE-208-1445B (Z)

Rev.2
Sep. 2001

Features

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

Outline



Note: Marking is shown in below.

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

BRC144ECM Series

Absolute Maximum Ratings

(Ta = 25°C)

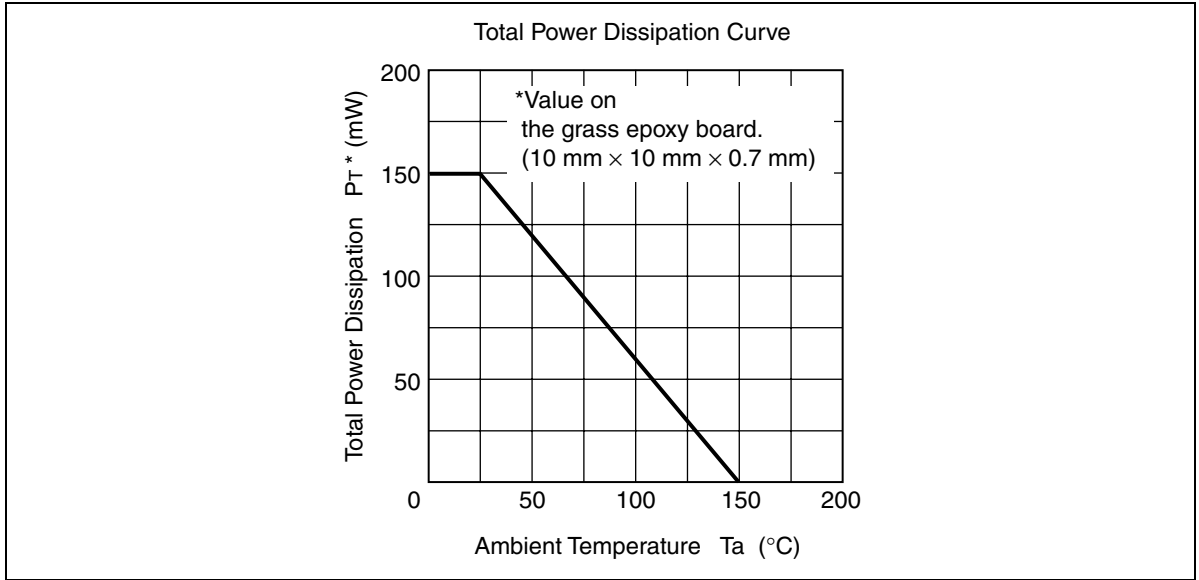
Item		Symbol	Ratings	Unit
Supply voltage		V_{cc}	50	V
Input voltage	BRC144ECM	V_i	-10 to +40	V
	BRC124ECM		-10 to +30	
	BRC114ECM		-10 to +20	
	BRC143ECM		-10 to +15	
	BRC123ECM		-10 to +12	
Output current		I_o	100	mA
Total power dissipation		P_T^*	150	mW
Junction temperature		T_j	150	°C
Storage temperature		T_{stg}	-55 to +150	°C

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

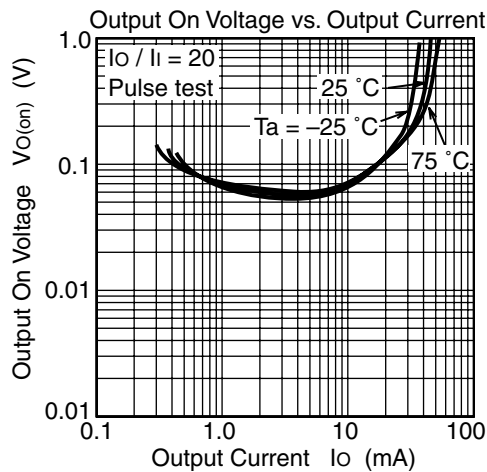
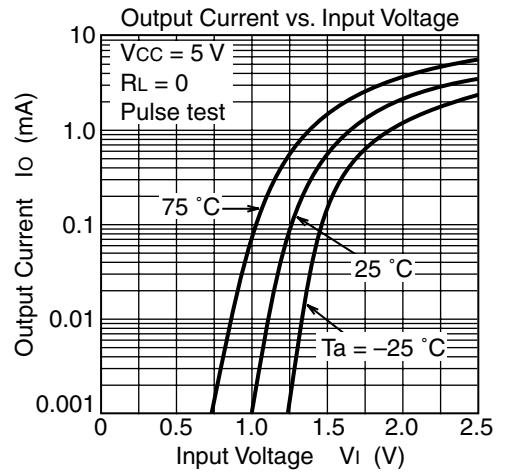
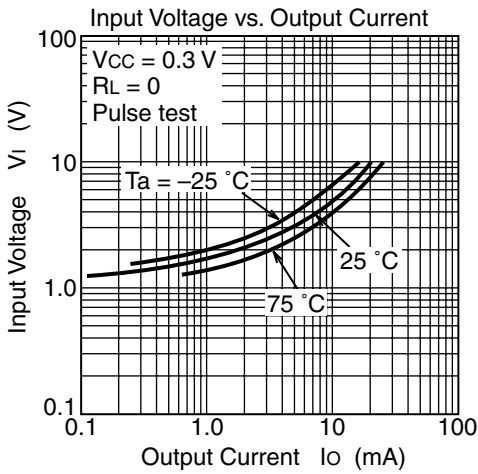
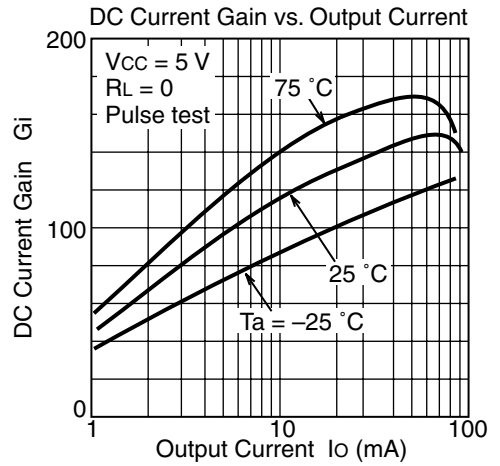
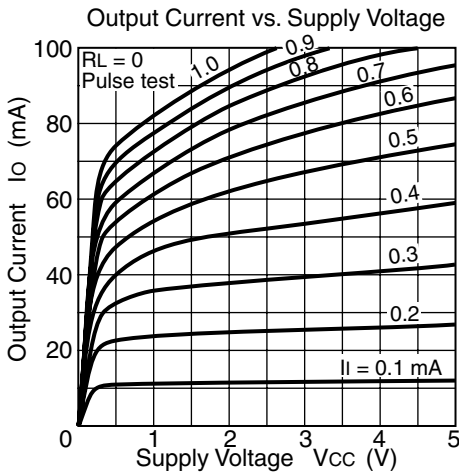
Electrical Characteristics

(Ta = 25°C)

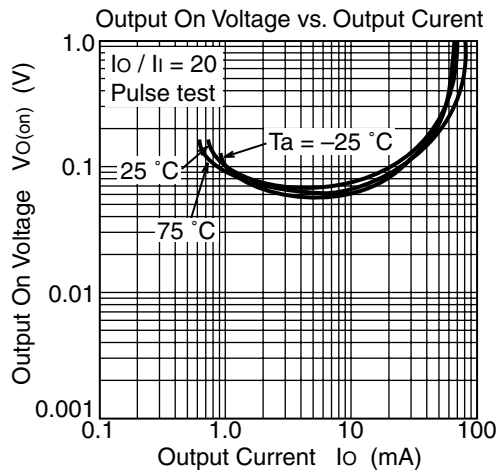
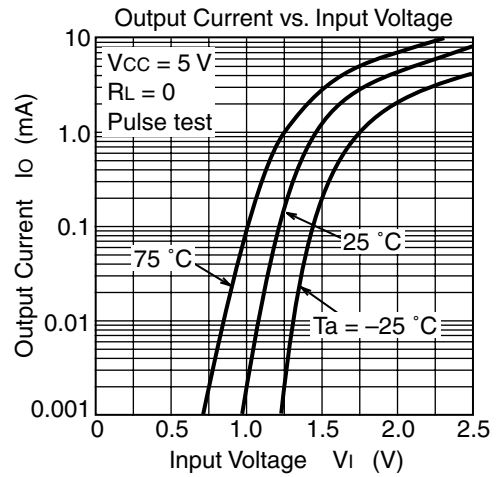
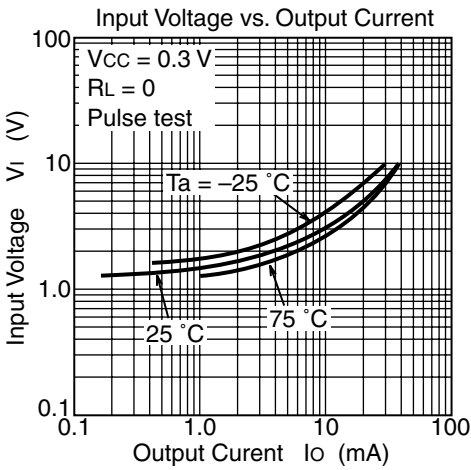
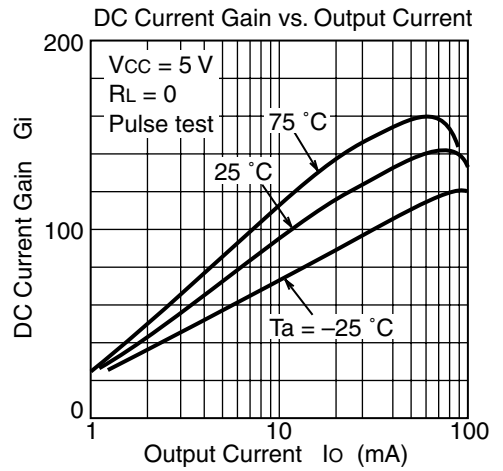
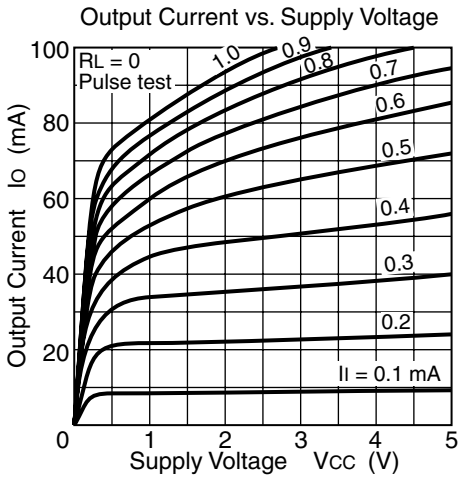
Item		Symbol	Min	Typ	Max	Unit	Test conditions
Input on voltage	BRC144ECM	$V_{I(on)}$	1.5	—	4.5	V	$V_{CC} = 0.3\text{ V}$, $I_O = 5\text{ mA}$
	BRC124ECM		1.3	—	3.0		
	BRC114ECM		1.2	—	2.4		
	BRC143ECM		1.1	—	2.0		
	BRC123ECM		1.1	—	1.8		
Input off voltage	BRC144ECM	$V_{I(off)}$	1.0	—	1.5	V	$V_{CC} = 5\text{ V}$, $I_O = 100\text{ }\mu\text{A}$
	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	$I_O = 10\text{ mA}$, $I_I = 0.5\text{ mA}$
Output cutoff current		$I_{O(off)}$	—	—	0.5	μA	$V_{CC} = 50\text{ V}$, $I_I = 0$
DC current transfer ratio	BRC144ECM	G_i	70	—	—		$V_{CC} = 5\text{ V}$, $I_O = 5\text{ mA}$
	BRC124ECM		56	—	—		
	BRC114ECM		30	—	—		
	BRC143ECM		20	—	—		$V_{CC} = 5\text{ V}$, $I_O = 10\text{ mA}$
	BRC123ECM		20	—	—		$V_{CC} = 5\text{ V}$, $I_O = 20\text{ mA}$
Input resistance	BRC144ECM	R_1	33	47	61	$\text{k}\Omega$	
	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		



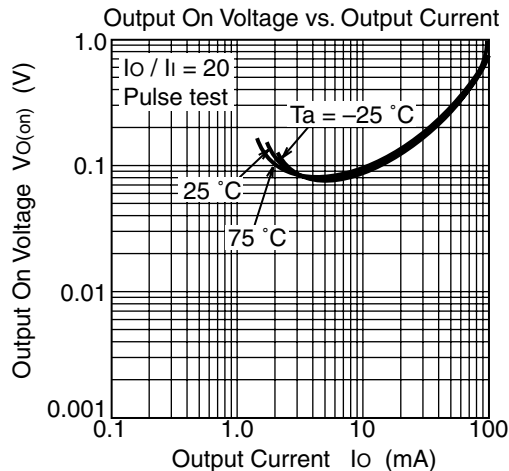
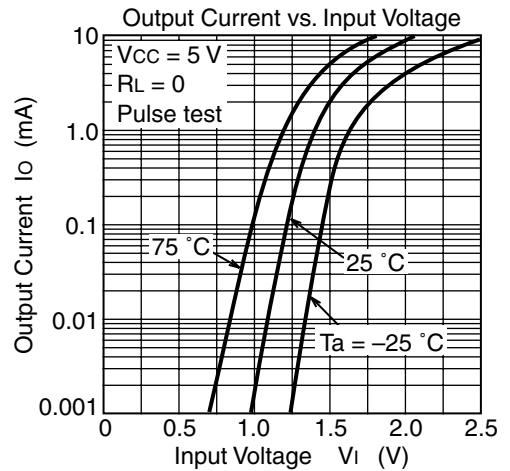
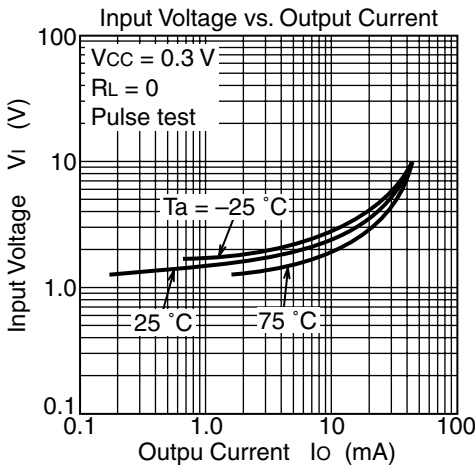
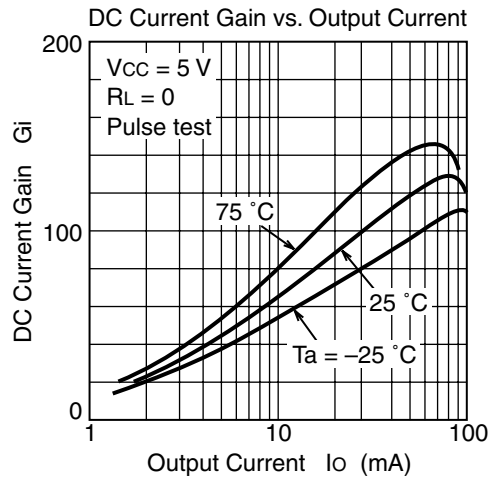
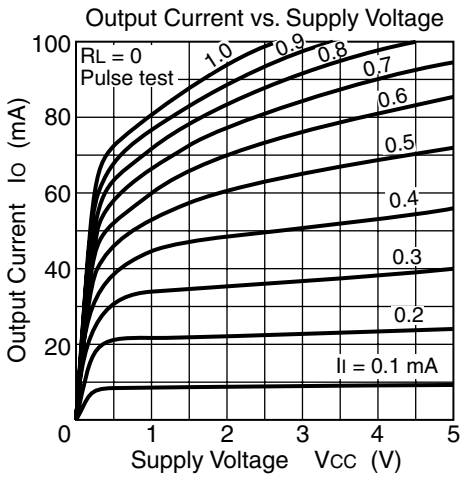
Main Characteristics (BRC144ECM)



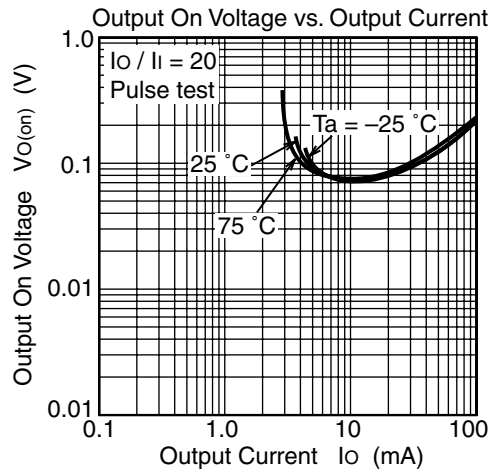
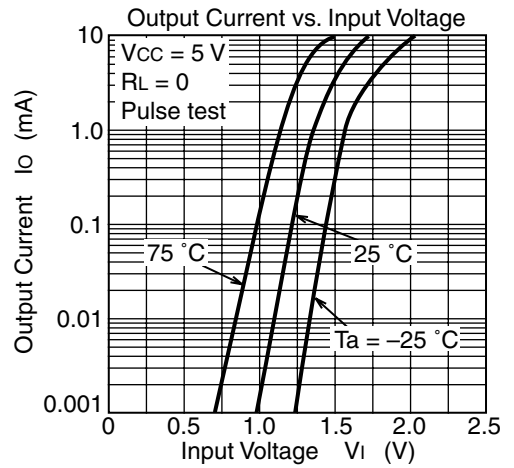
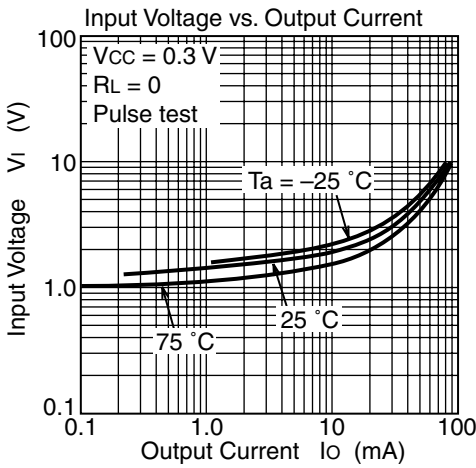
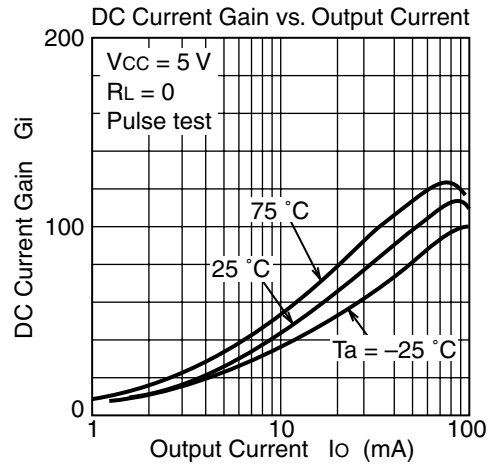
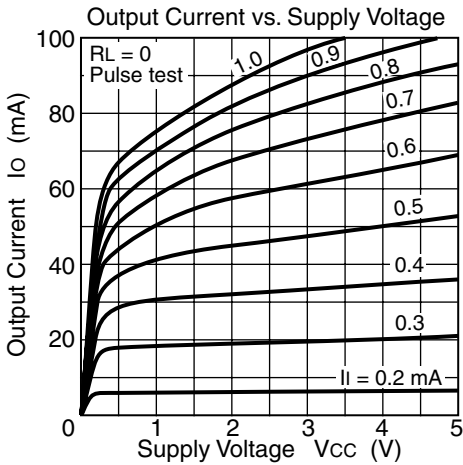
Main Characteristics (BRC124ECM)



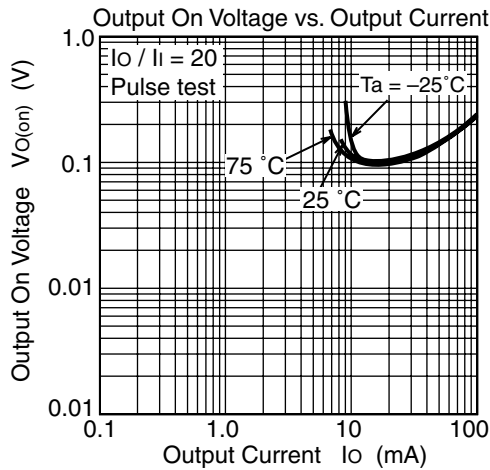
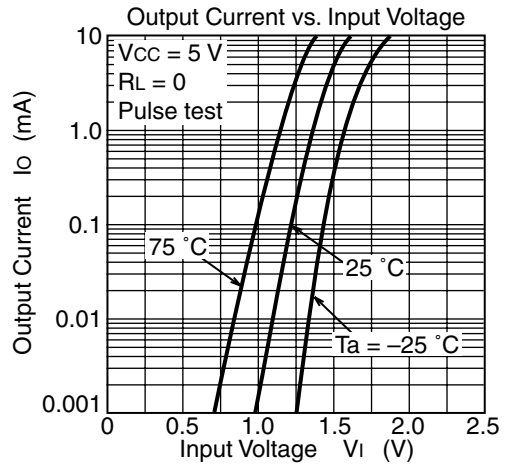
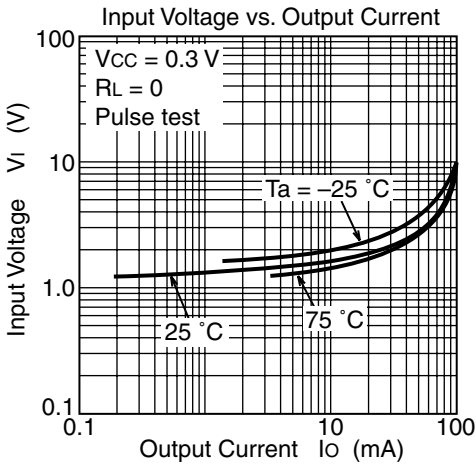
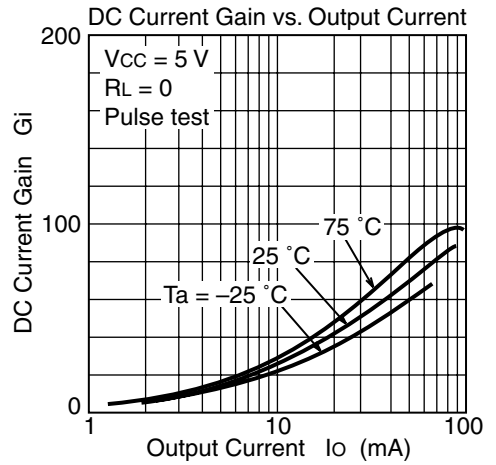
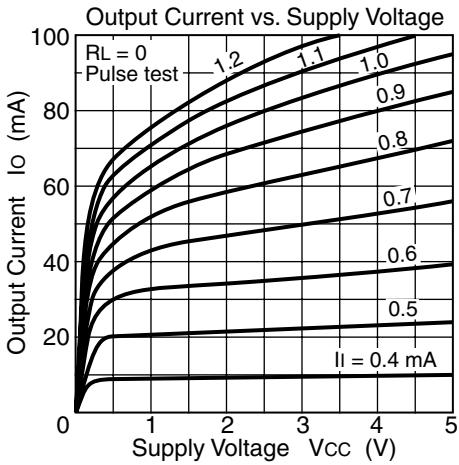
Main Characteristics (BRC114ECM)



Main Characteristics (BRC143ECM)



Main Characteristics (BRC123ECM)



Taping Specification

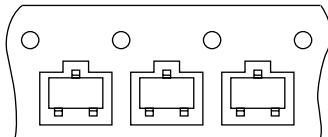
There are two different size reels in CMPAK packaging.

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**



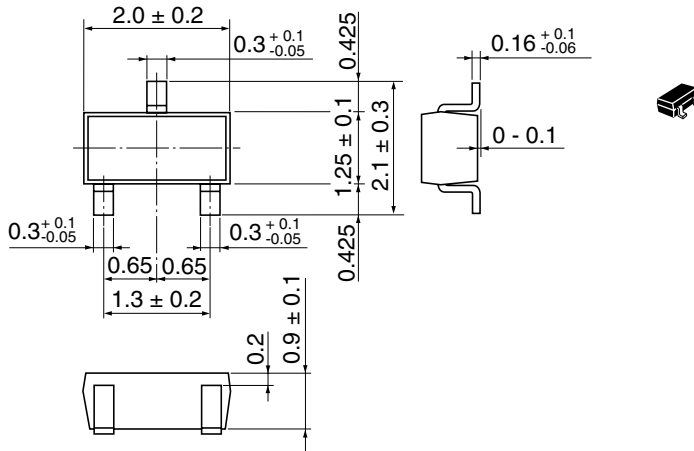
Marking face is up.
Center lead goes to left.

Direction of feed



Package Dimensions

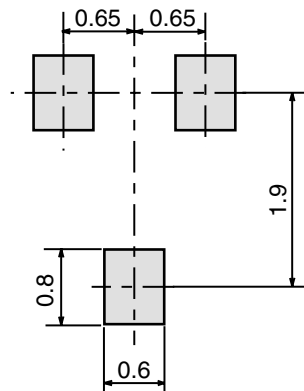
As of January, 2001
Unit: mm



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

Footprint

CMPAK



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