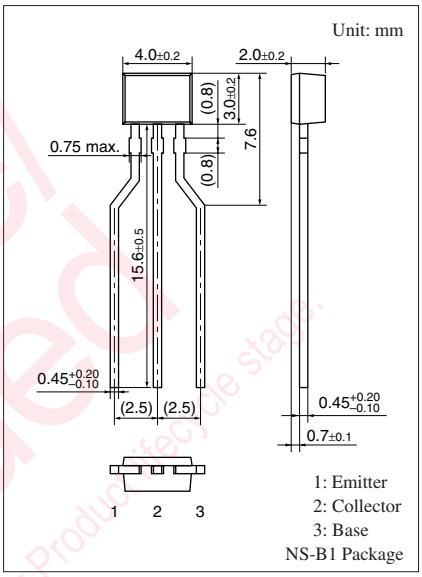
UNR411x Series (UN411x Series)

Silicon PNP epitaxial planar type

For digital circuits



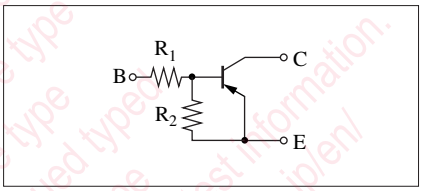
■ Features

- Costs can be reduced through downsizing of the equipment and reduction of the number of parts
- New S type package, allowing supply with the radial taping

■ Resistance by Part Number

	(R_1)	(R_2)
• UNR4110 (UN4110)	47 kΩ	—
• UNR4111 (UN4111)	10 kΩ	10 kΩ
• UNR4112 (UN4112)	22 kΩ	22 kΩ
• UNR4113 (UN4113)	47 kΩ	47 kΩ
• UNR4114 (UN4114)	10 kΩ	47 kΩ
• UNR4115 (UN4115)	10 kΩ	—
• UNR4116 (UN4116)	4.7 kΩ	—
• UNR4117 (UN4117)	22 kΩ	—
• UNR4118 (UN4118)	0.51 kΩ	5.1 kΩ
• UNR4119 (UN4119)	1 kΩ	10 kΩ
• UNR411D (UN411D)	47 kΩ	10 kΩ
• UNR411E (UN411E)	47 kΩ	22 kΩ
• UNR411F (UN411F)	4.7 kΩ	10 kΩ
• UNR411H (UN411H)	2.2 kΩ	10 kΩ
• UNR411L (UN411L)	4.7 kΩ	4.7 kΩ
• UNR411M	2.2 kΩ	47 kΩ
• UNR411N	4.7 kΩ	47 kΩ

Internal Connection



■ Absolute Maximum Ratings $T_a = 25°C$

Parameter	Symbol	Rating	Unit
Collector-base voltage (Emitter open)	V_{CBO}	−50	V
Collector-emitter voltage (Base open)	V_{CEO}	−50	V
Collector current	I_C	−100	mA
Total power dissipation	P_T	300	mW
Junction temperature	T_j	150	°C
Storage temperature	T_{stg}	−55 to +150	°C

Note) The part numbers in the parenthesis show conventional part number.

Maintenance/ Discontinued
Maintenance/Discontinued inquiries following for Product lifecycle stage.
please use maintenance type
maintenance type
Planned discontinued type
discontinued type
please use following URL about latest information.
http://www.semicon.panasonic.co.jp/en/

■ Electrical Characteristics $T_a = 25°C \pm 3°C$

Parameter		Symbol	Conditions	Min	Typ	Max	Unit
Collector-base voltage (Emitter open)		V_{CBO}	$I_C = -10$ µA, $I_E = 0$	−50			V
Collector-emitter voltage (Base open)		V_{CEO}	$I_C = -2$ mA, $I_B = 0$	−50			V
Collector-base cutoff current (Emitter open)		I_{CBO}	$V_{CB} = -50$ V, $I_E = 0$			− 0.1	µA
Collector-emitter cutoff current (Base open)		I_{CEO}	$V_{CE} = -50$ V, $I_B = 0$			− 0.5	µA
Emitter-base cutoff current (Collector open)	UNR4110/4115/4116/4117	I_{EBO}	$V_{EB} = -6$ V, $I_C = 0$			− 0.01	mA
	UNR4113					− 0.1	
	UNR4112/4114/411D/411E/411M/411N					− 0.2	
	UNR4111					− 0.5	
	UNR411F/411H					−1.0	
	UNR4119					−1.5	
	UNR4118/411L					−2.0	
Forward current transfer ratio	UNR4118/411L	h_{FE}	$V_{CE} = -10$ V, $I_C = -5$ mA	20			—
	UNR4119/411D/411F/411H			30			
	UNR4111			35			
	UNR4112/411E			60			
	UNR4113/4114/411M			80			
	UNR411N			80		400	
	UNR4110 *1/4115 *1/4116 *1/4117 *1			160		460	
Collector-emitter saturation voltage		$V_{CE(sat)}$	$I_C = -10$ mA, $I_B = -0.3$ mA			− 0.25	V
Output voltage high-level		V_{OH}	$V_{CC} = -5$ V, $V_B = -0.5$ V, $R_L = 1$ kΩ	−4.9			V
Output voltage low-level		V_{OL}	$V_{CC} = -5$ V, $V_B = -2.5$ V, $R_L = 1$ kΩ			− 0.2	V
	UNR4113		$V_{CC} = -5$ V, $V_B = -3.5$ V, $R_L = 1$ kΩ				
	UNR411D		$V_{CC} = -5$ V, $V_B = -10$ V, $R_L = 1$ kΩ				
	UNR411E		$V_{CC} = -5$ V, $V_B = -6$ V, $R_L = 1$ kΩ				
Transition frequency		f_T	$V_{CB} = -10$ V, $I_E = 1$ mA, f = 200 MHz		80		MHz
Input resistance	UNR4118	R_1		−30%	0.51	+30%	kΩ
	UNR4119				1.0		
	UNR411H/411M				2.2		
	UNR4116/411F/411L/411N				4.7		
	UNR4111/4114/4115				10		
	UNR4112/4117				22		
	UNR4110/4113/411D/411E				47		

Note) 1. Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.

2. *: Rank classification

Rank	Q	R	S	No-rank
h_{FE}	160 to 260	210 to 340	290 to 460	160 to 460

Maintenance/Discontinued
Maintenance/Discontinued (Including following four Product lifecycle stage planned discontinue type)
Please visit following URL about latest information.
http://www.semicon.panasonic.co.jp/en/

■ Electrical Characteristics (continued) $T_a = 25°C \pm 3°C$

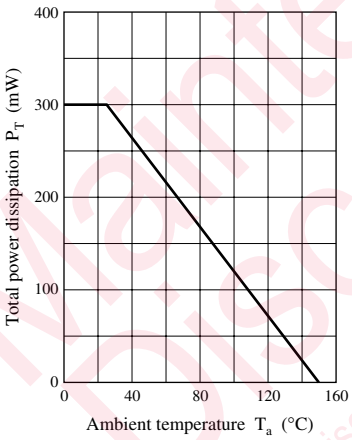
Parameter		Symbol	Conditions	Min	Typ	Max	Unit
Resistance ratio	UNR411M	R_1/R_2			0.047		—
	UNR411N				0.1		
	UNR4118/4119			0.08	0.10	0.12	
	UNR4114			0.17	0.21	0.25	
	UNR411H			0.17	0.22	0.27	
	UNR411F			0.37	0.47	0.57	
	UNR4111/4112/4113/411L			0.8	1.0	1.2	
	UNR411E			1.70	2.14	2.60	
	UNR411D			3.7	4.7	5.7	

Note) Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.

Maintenance/ Discontinued
Maintenance/Discontinued includes following four Product lifecycle stage.
planed maintenance type
maintenance type
planed discontinued type
discontinued type
Please check following URL about latest information.
http://www.semicon.panasonic.co.jp/en/

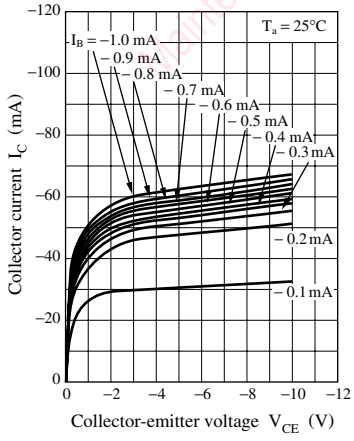
Common characteristics chart

P_T — T_a

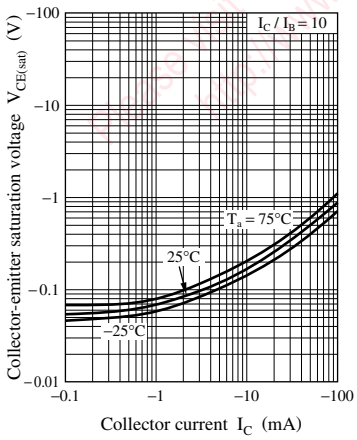


Characteristics charts of UNR4110

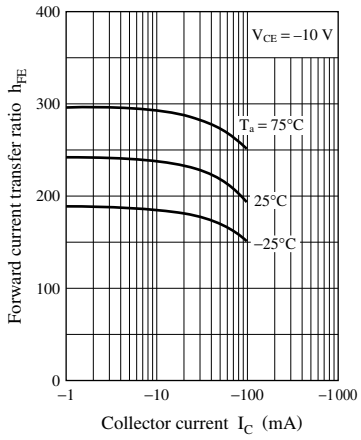
I_C — V_{CE}



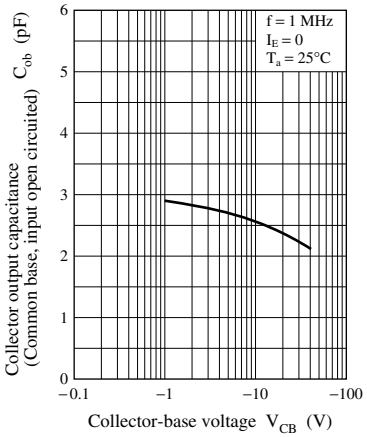
$V_{CE(sat)}$ — I_C



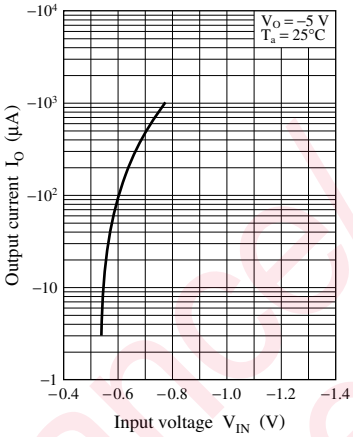
h_{FE} — I_C



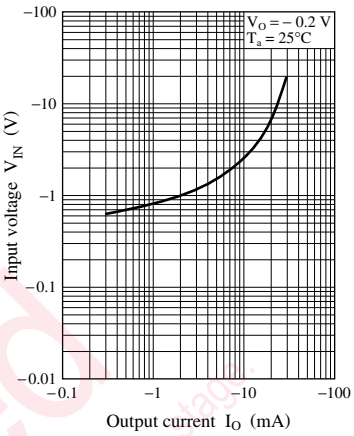
C_{ob} — V_{CB}



I_O — V_{IN}

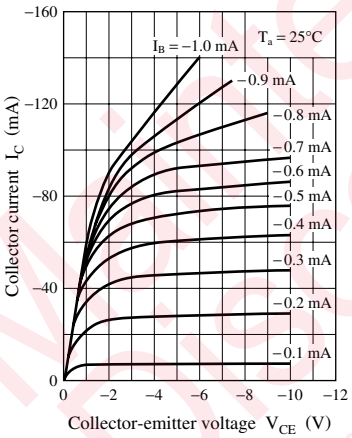


V_{IN} — I_O

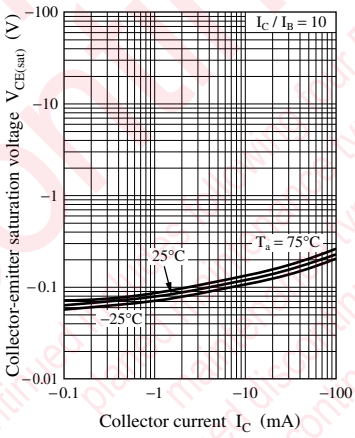


Characteristics charts of UNR4111

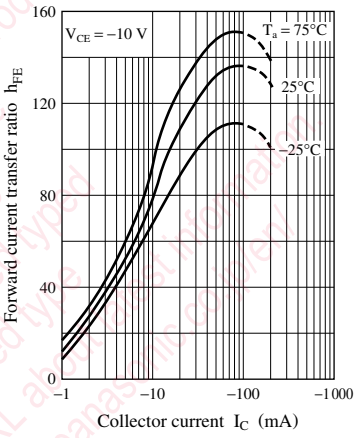
I_C — V_{CE}



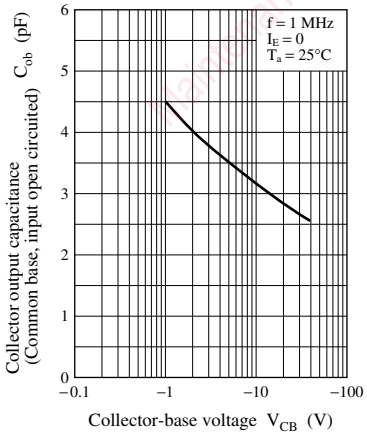
$V_{CE(sat)}$ — I_C



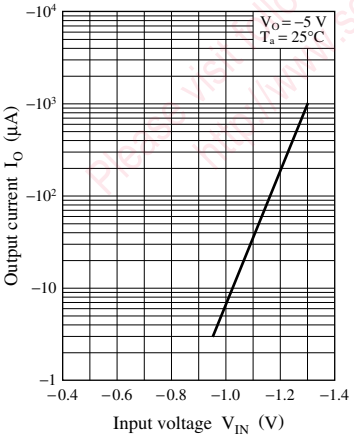
h_{FE} — I_C



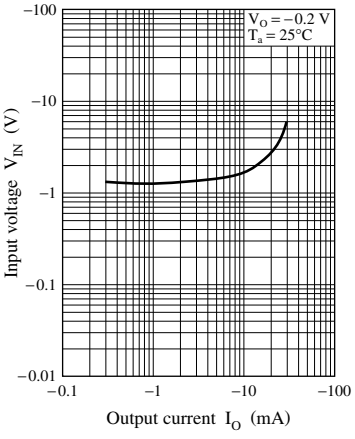
C_{ob} — V_{CB}



I_O — V_{IN}



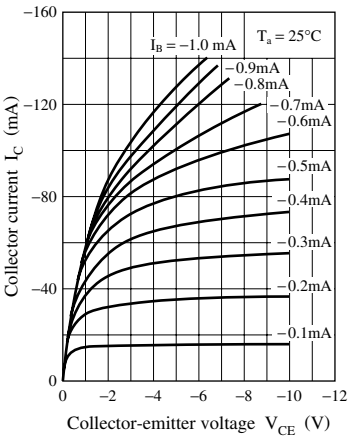
V_{IN} — I_O



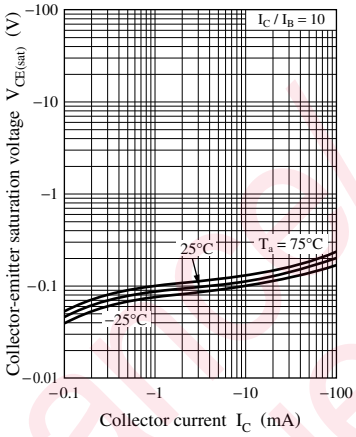
Maintenance/Discontinued
Please visit the following URL about the successor type.
http://www.semicon.panasonic.co.jp/en/
Maintenance/Discontinued
Please visit the following URL about the successor type.
http://www.semicon.panasonic.co.jp/en/
Maintenance/Discontinued
Please visit the successor type.
planned discontinued type.
discontinued type.
following URL about the
http://www.semicon.panasonic.co.jp/en/

Characteristics charts of UNR4112

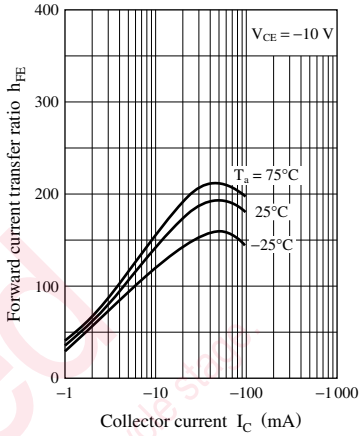
I_C — V_{CE}



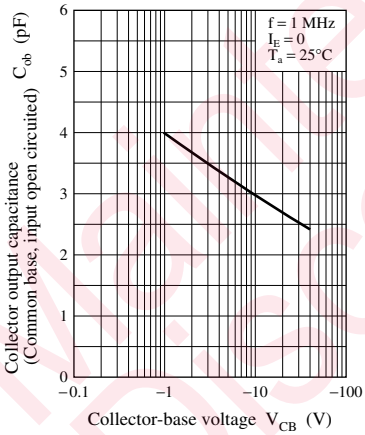
$V_{CE(sat)}$ — I_C



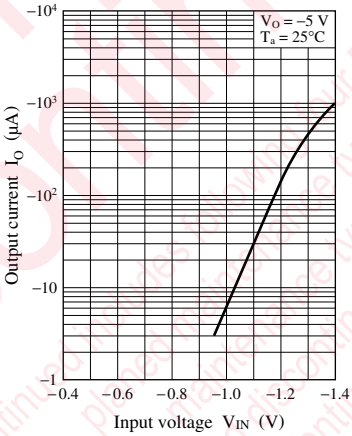
h_{FE} — I_C



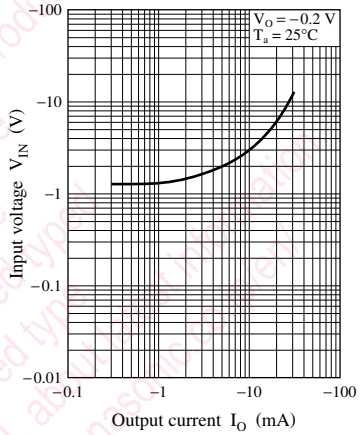
C_{ob} — V_{CB}



I_O — V_{IN}

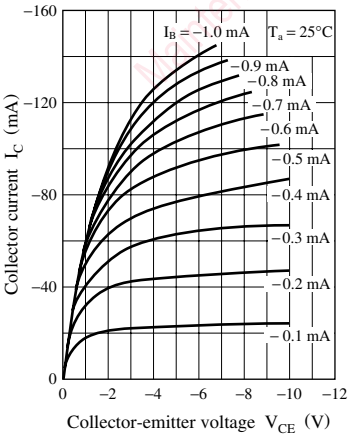


V_{IN} — I_O

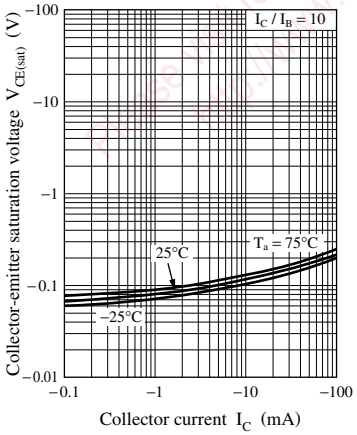


Characteristics charts of UNR4113

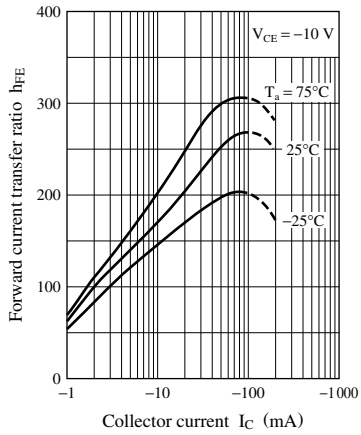
I_C — V_{CE}



$V_{CE(sat)}$ — I_C

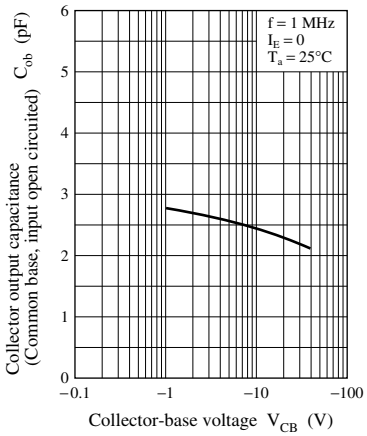


h_{FE} — I_C

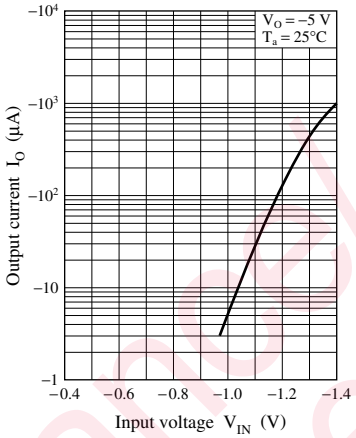


Maintenance/Discontinued
Discontinued (Maintenance type)
planned to be discontinued type
discontinued type
Please see the following URL about the successor models.
http://www.semicon.panasonic.co.jp/en/

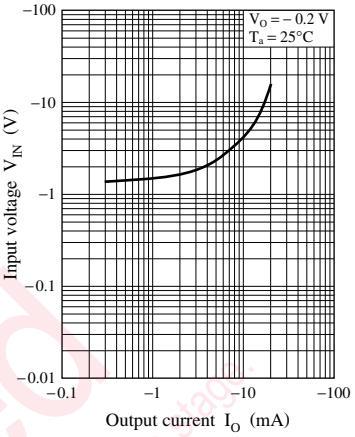
C_{ob} — V_{CB}



I_O — V_{IN}

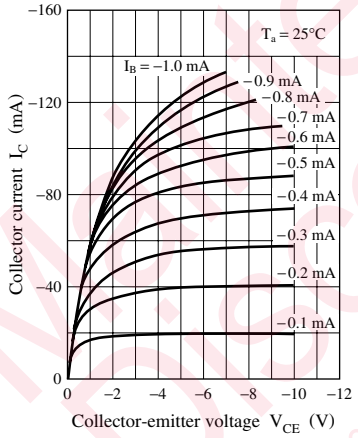


V_{IN} — I_O

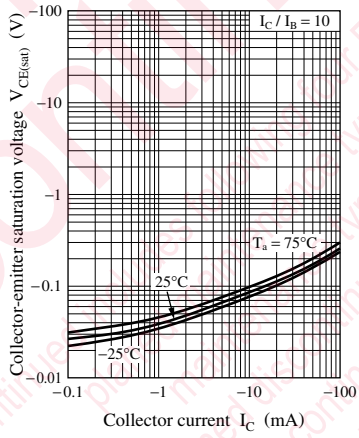


Characteristics charts of UNR4114

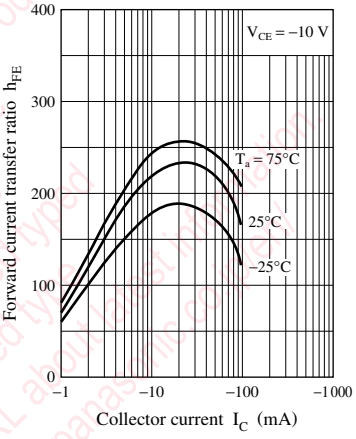
I_C — V_{CE}



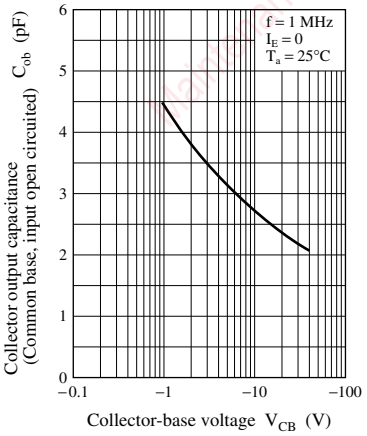
$V_{CE(sat)}$ — I_C



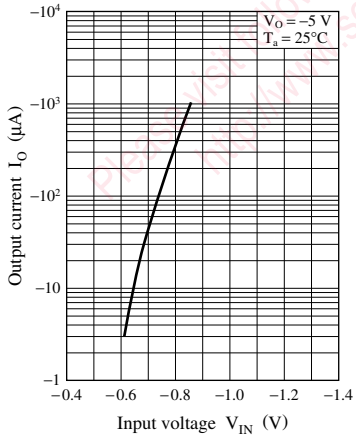
h_{FE} — I_C



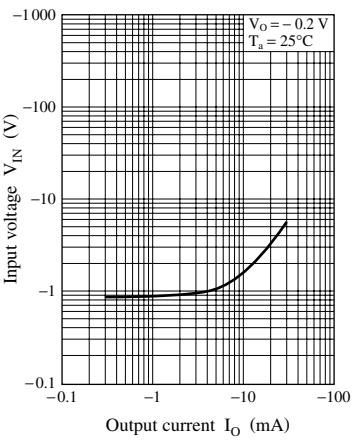
C_{ob} — V_{CB}



I_O — V_{IN}



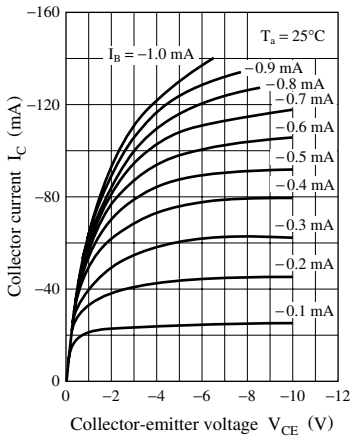
V_{IN} — I_O



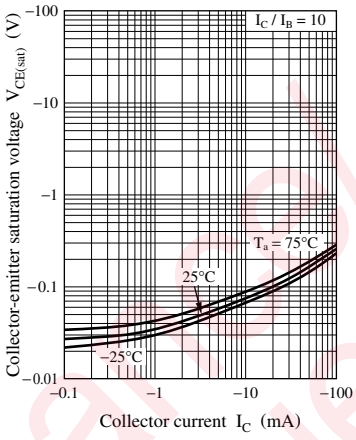
Maintenance/Discontinued
Please visit the successor type planned to be discontinued type
Product lifecycle stage
Maintenance/Discontinued
Please visit the successor type planned to be discontinued type
Product lifecycle stage
discontinued type, please visit the following URL about Panasonic semiconductor products
http://www.semicon.panasonic.co.jp/en/

Characteristics charts of UNR4115

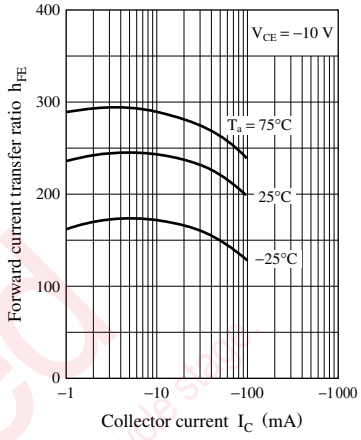
I_C — V_{CE}



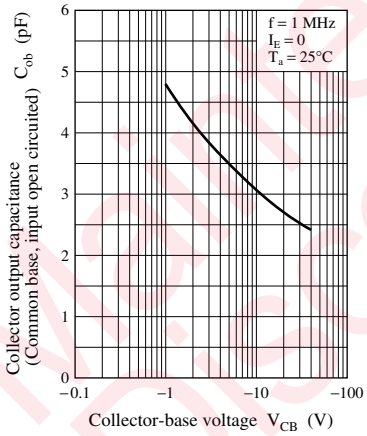
$V_{CE(sat)}$ — I_C



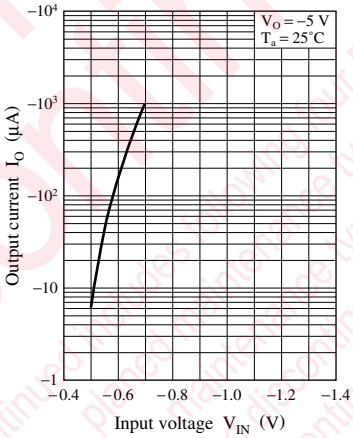
h_{FE} — I_C



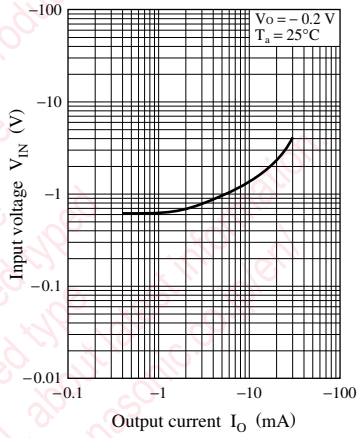
C_{ob} — V_{CB}



I_O — V_{IN}

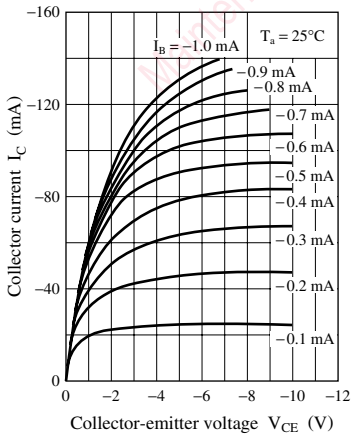


V_{IN} — I_O

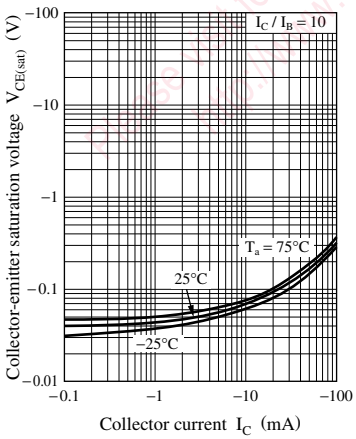


Characteristics charts of UNR4116

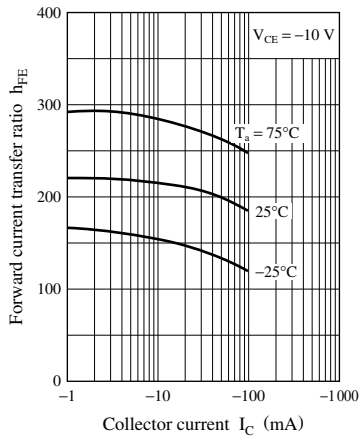
I_C — V_{CE}



$V_{CE(sat)}$ — I_C

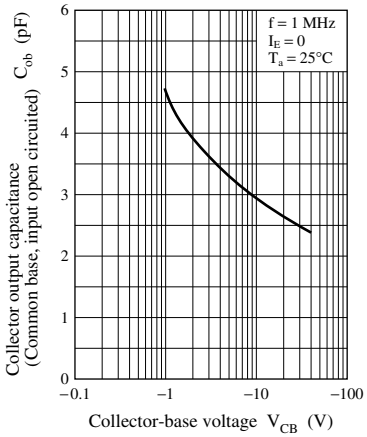


h_{FE} — I_C

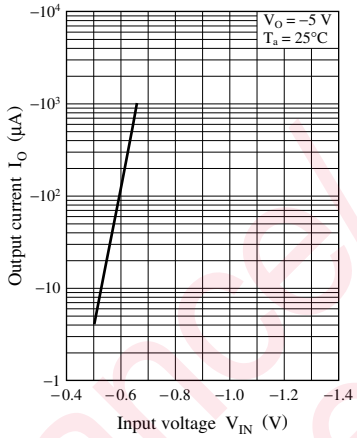


Maintenance/Discontinued
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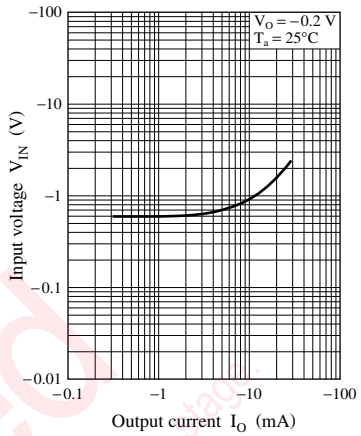
C_{ob} — V_{CB}



I_O — V_{IN}

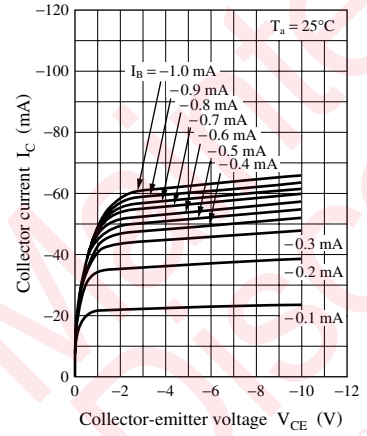


V_{IN} — I_O

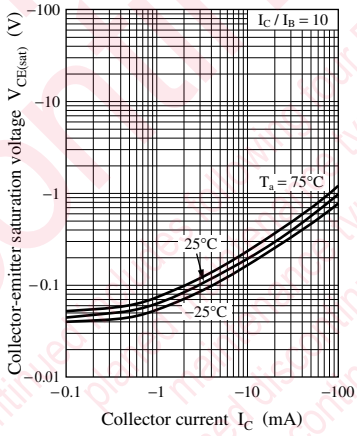


Characteristics charts of UNR4117

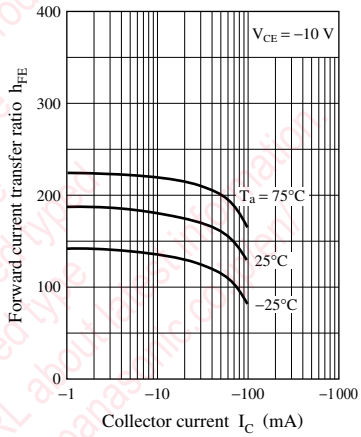
I_C — V_{CE}



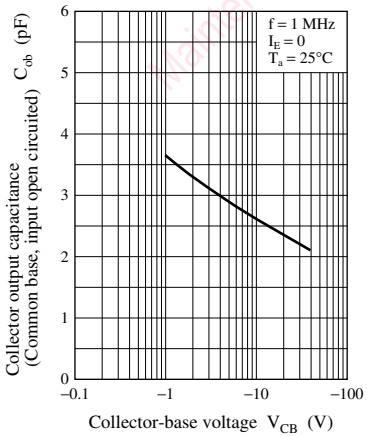
$V_{CE(sat)}$ — I_C



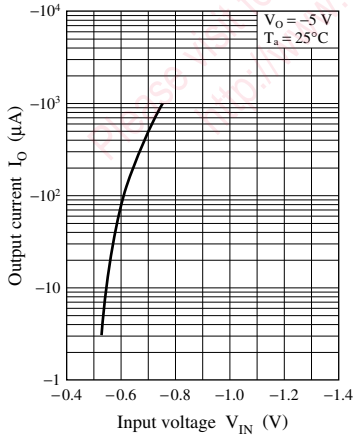
h_{FE} — I_C



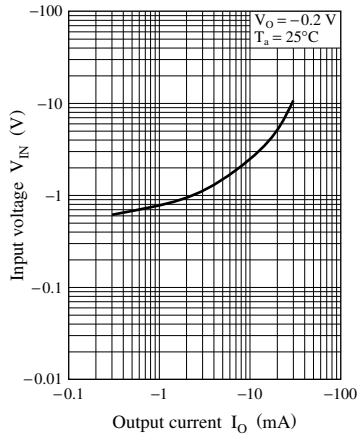
C_{ob} — V_{CB}



I_O — V_{IN}



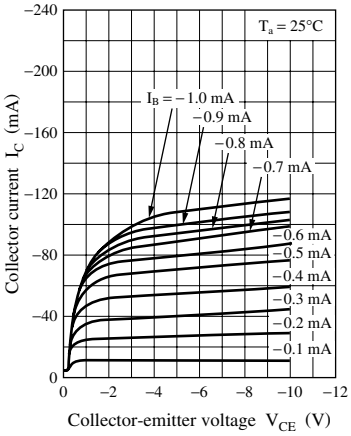
V_{IN} — I_O



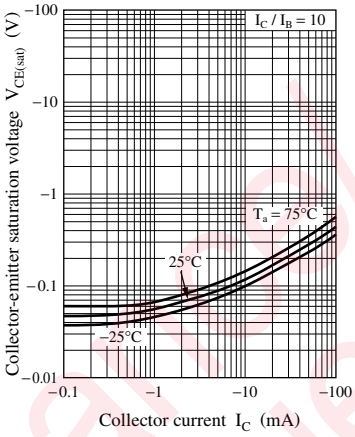
Maintenance/Discontinued
Please visit the following URL about alternative products
http://www.semicon.panasonic.co.jp/en/
Not recommended for new design
planned to discontinue (expected date: 03/2011)
Discontinued
Maintenance/Discontinued
Please visit the following URL about alternative products
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Not recommended for new design
planned to discontinue (expected date: 03/2011)
Discontinued

Characteristics charts of UNR4118

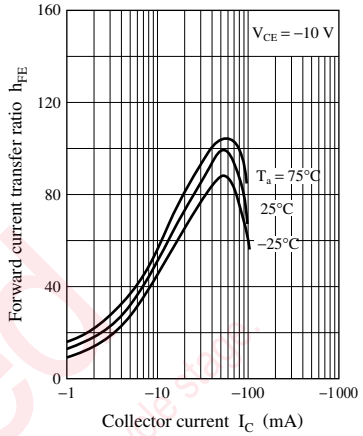
I_C — V_{CE}



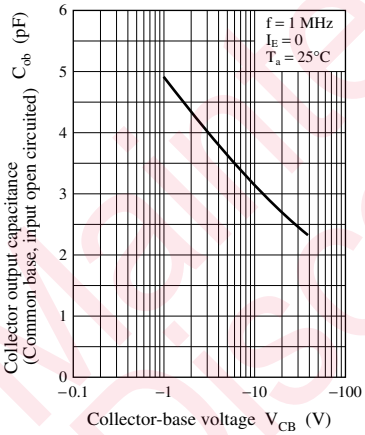
$V_{CE(sat)}$ — I_C



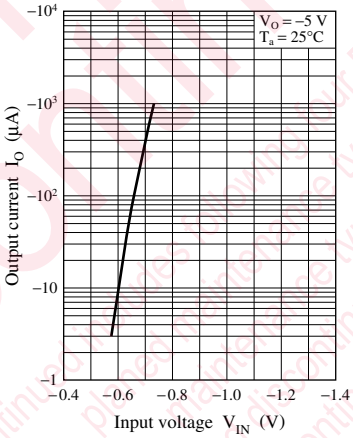
h_{FE} — I_C



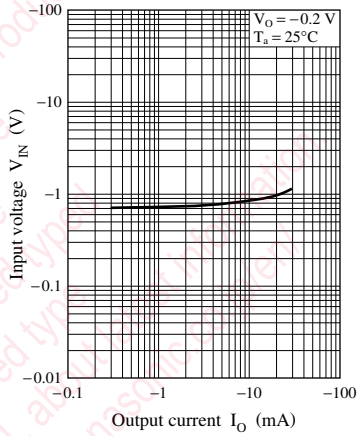
C_{ob} — V_{CB}



I_O — V_{IN}

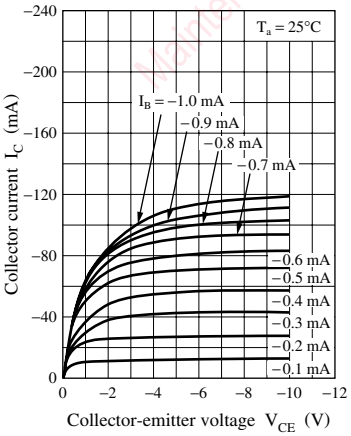


V_{IN} — I_O

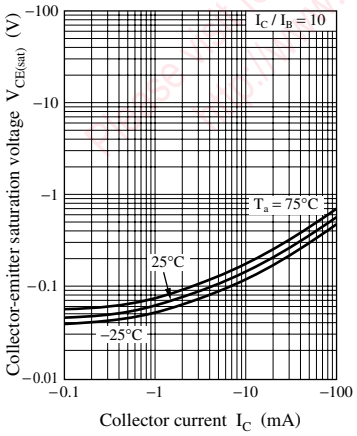


Characteristics charts of UNR4119

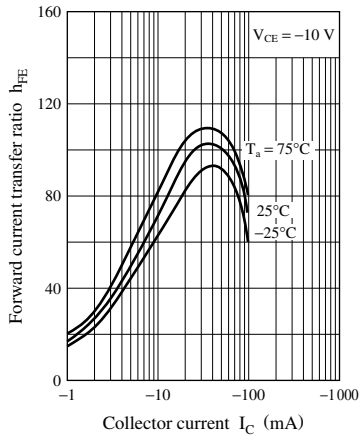
I_C — V_{CE}



$V_{CE(sat)}$ — I_C

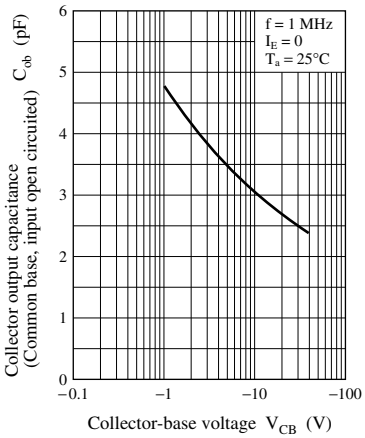


h_{FE} — I_C

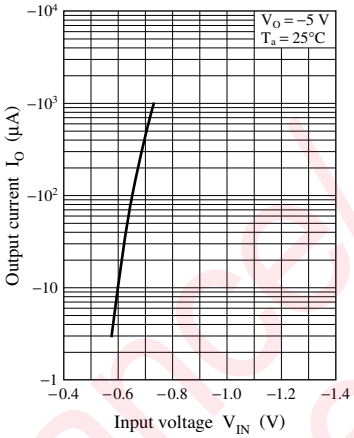


Maintenance/Discontinued
Discontinued
Maintenance/Discontinued
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planned discontinued type
discontinued type

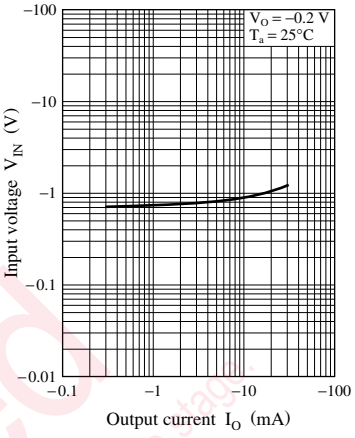
C_{ob} — V_{CB}



I_O — V_{IN}

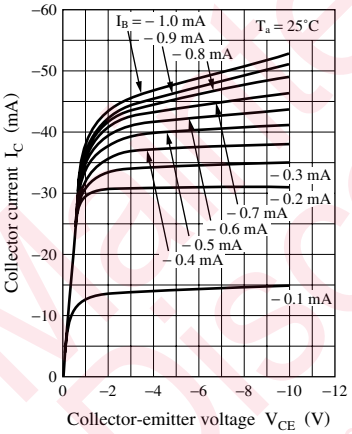


V_{IN} — I_O

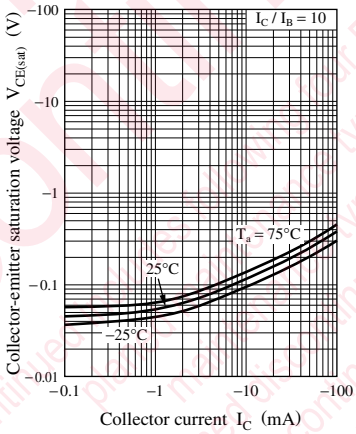


Characteristics charts of UNR411D

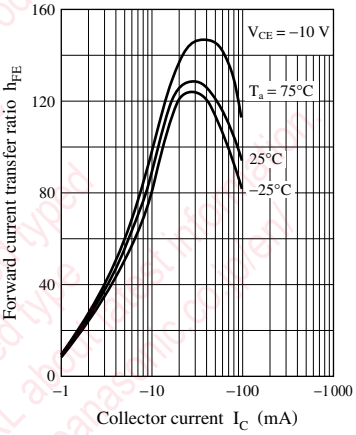
I_C — V_{CE}



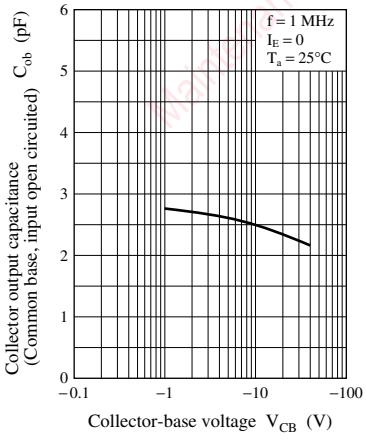
$V_{CE(sat)}$ — I_C



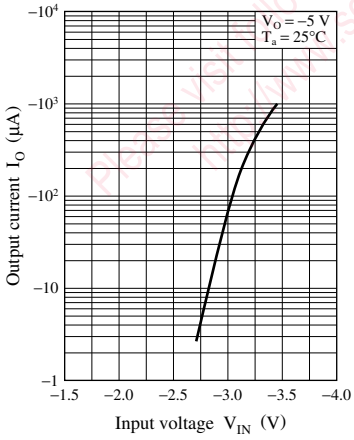
h_{FE} — I_C



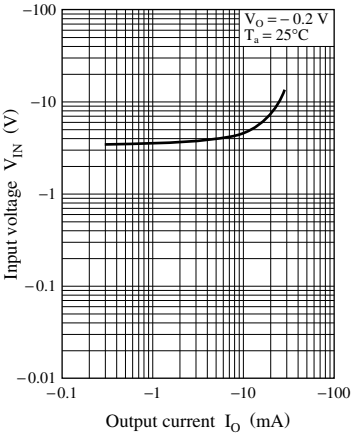
C_{ob} — V_{CB}



I_O — V_{IN}



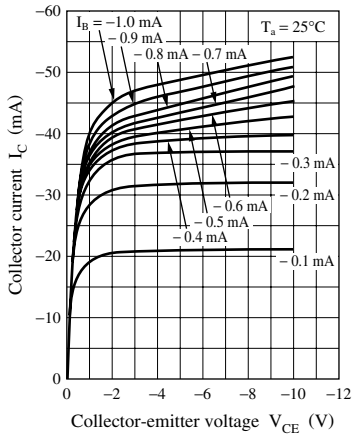
V_{IN} — I_O



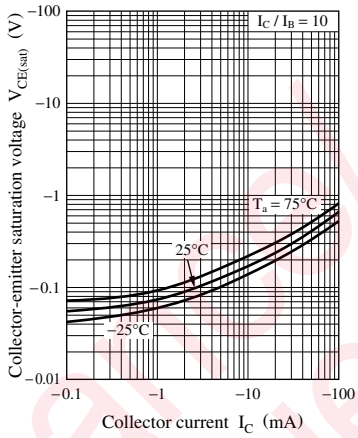
Maintenance/Discontinued
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Discontinued
Maintenance/Discontinued
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Characteristics charts of UNR411E

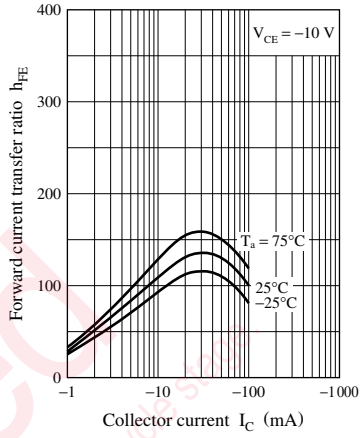
I_C — V_{CE}



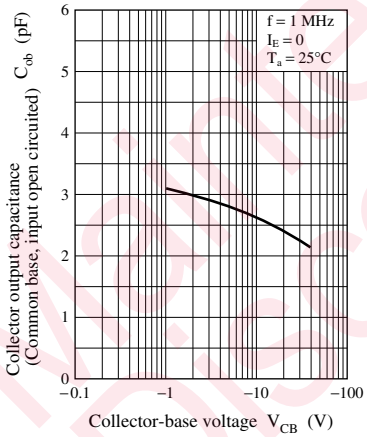
$V_{CE(sat)}$ — I_C



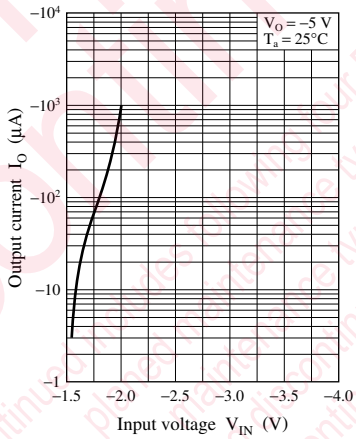
h_{FE} — I_C



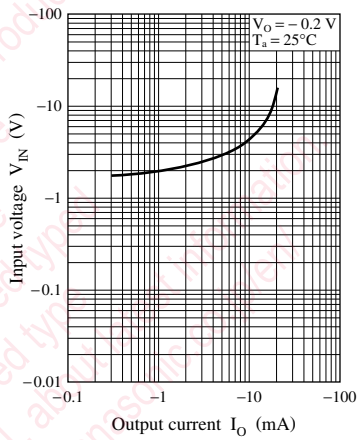
C_{ob} — V_{CB}



I_O — V_{IN}

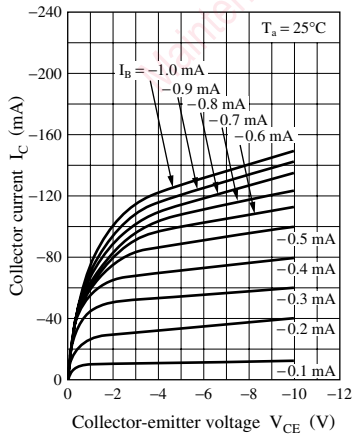


V_{IN} — I_O

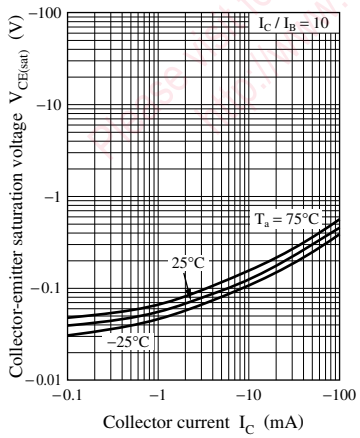


Characteristics charts of UNR411F

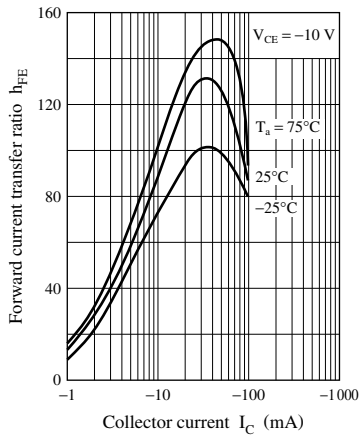
I_C — V_{CE}



$V_{CE(sat)}$ — I_C

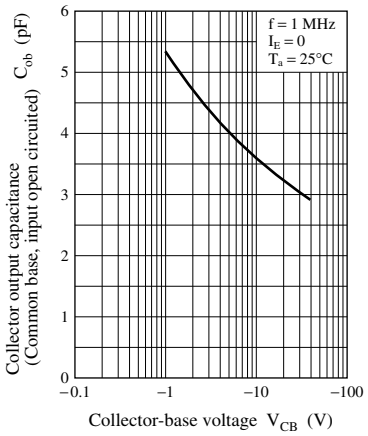


h_{FE} — I_C

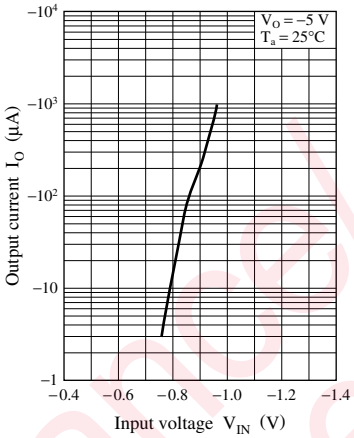


Maintenance/Discontinued
Please check with our sales representatives and information regarding the planned discontinued type, alternative type, Product lifecycle status, discontinued type, and the following URL about Panasonic Industrial Devices semicon.panasonic.com/en/

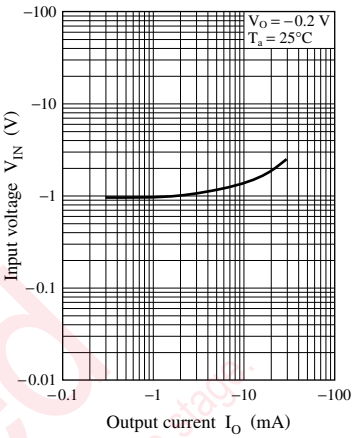
C_{ob} — V_{CB}



I_O — V_{IN}

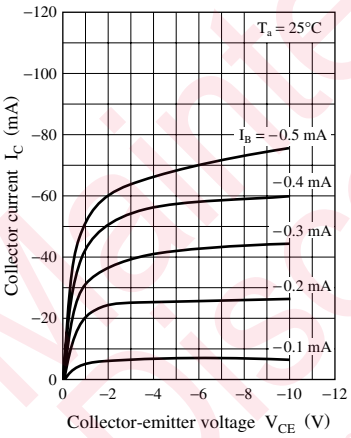


V_{IN} — I_O

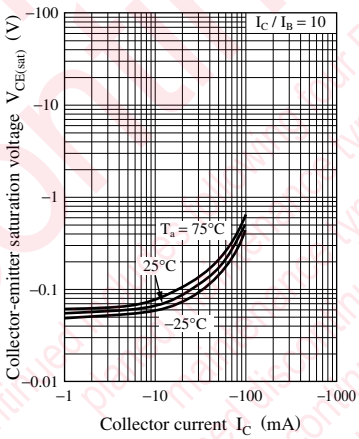


Characteristics charts of UNR411H

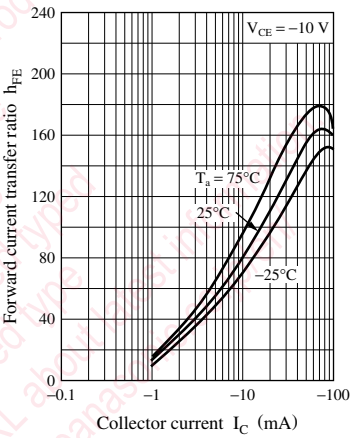
I_C — V_{CE}



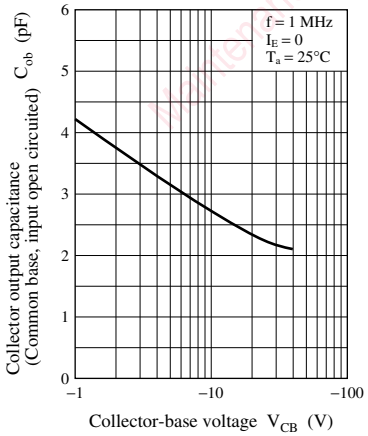
$V_{CE(sat)}$ — I_C



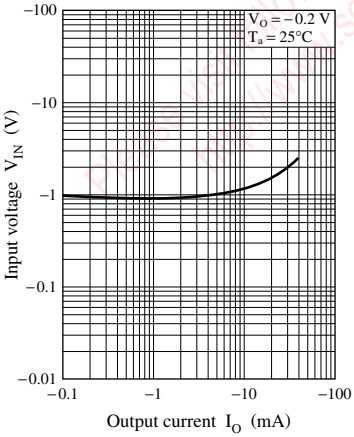
h_{FE} — I_C



C_{ob} — V_{CB}



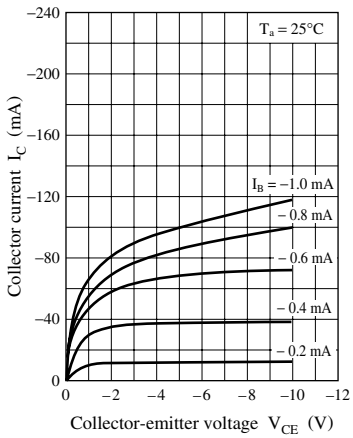
V_{IN} — I_O



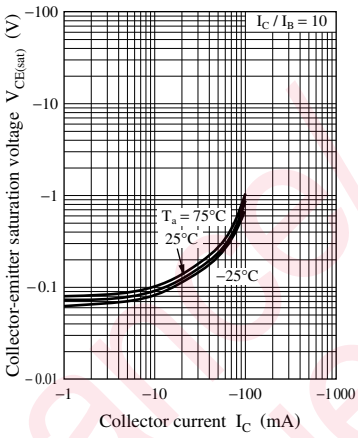
Maintenance/Discontinued
Discontinued
Maintenance/Discontinued
Please visit the following URL about this product's lifecycle status, planned maintenance type, discontinued type, and alternative type.
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Characteristics charts of UNR411L

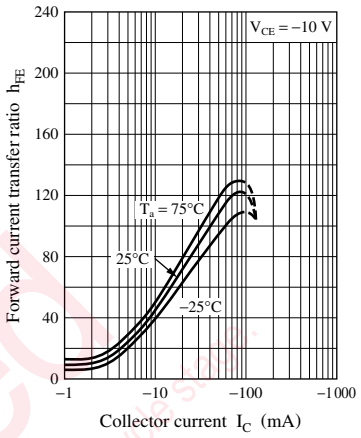
I_C — V_{CE}



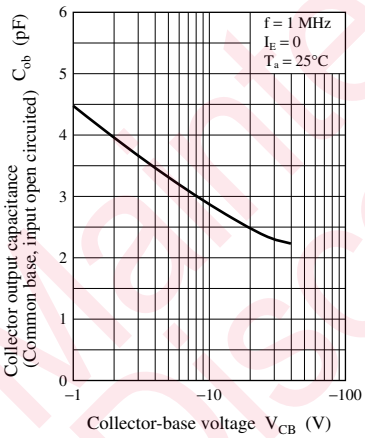
$V_{CE(sat)}$ — I_C



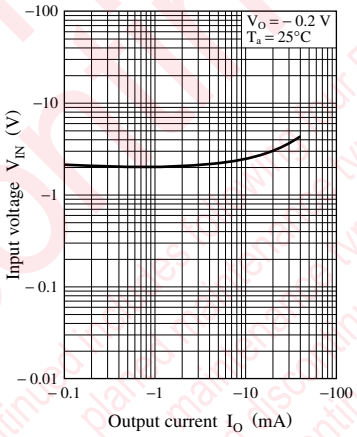
h_{FE} — I_C



C_{ob} — V_{CB}

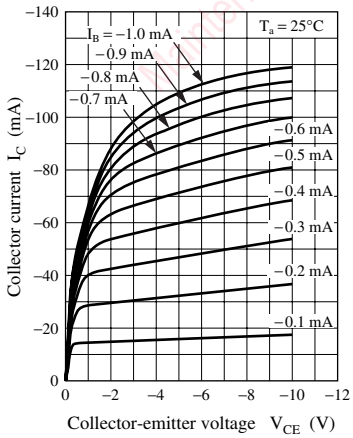


V_{IN} — I_O

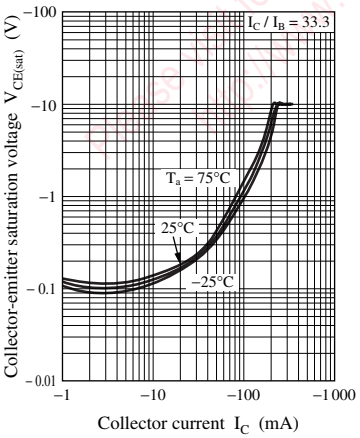


Characteristics charts of UNR411M

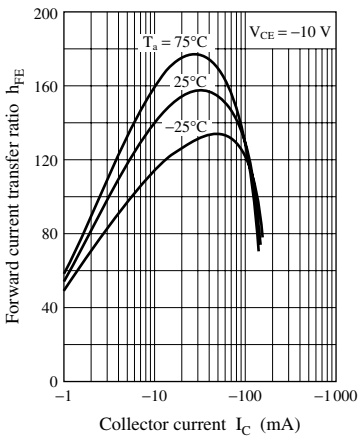
I_C — V_{CE}



$V_{CE(sat)}$ — I_C

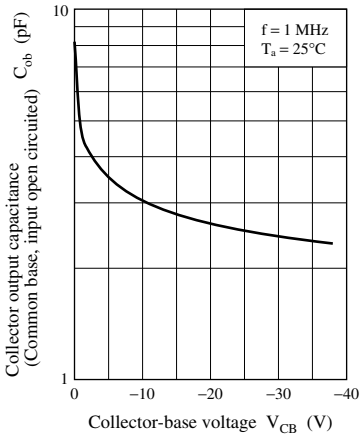


h_{FE} — I_C

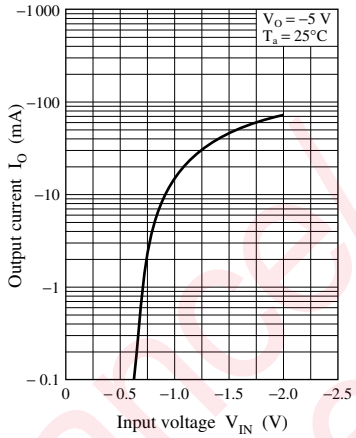


Maintenance/Discontinued
Discontinued and planned discontinued type
planned discontinued type
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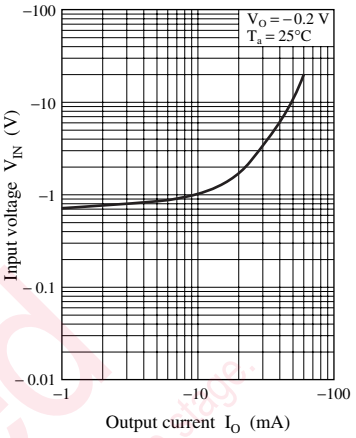
C_{ob} — V_{CB}



I_O — V_{IN}

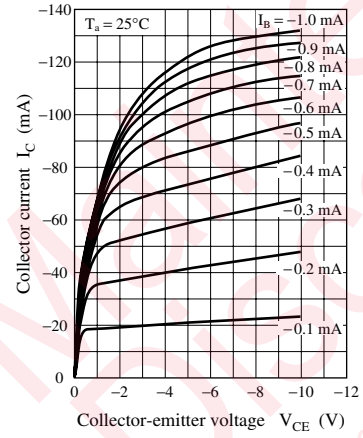


V_{IN} — I_O

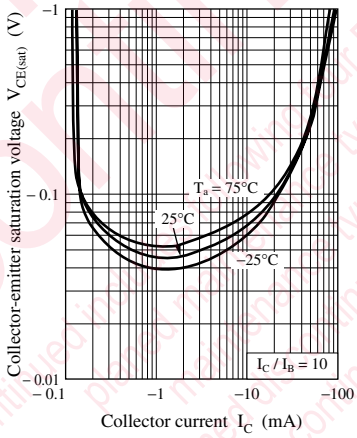


Characteristics charts of UNR411N

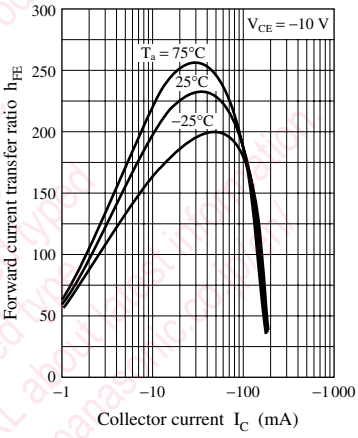
I_C — V_{CE}



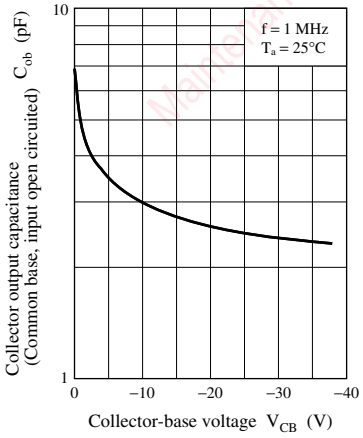
$V_{CE(sat)}$ — I_C



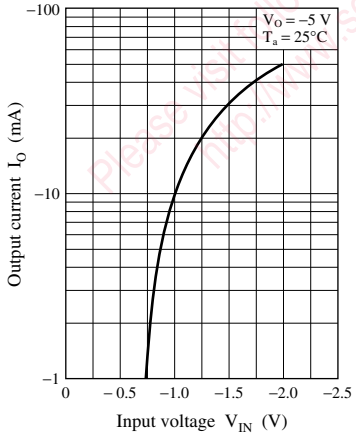
h_{FE} — I_C



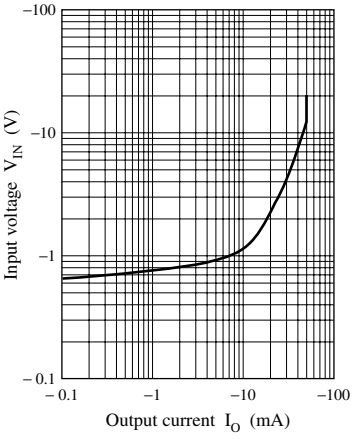
C_{ob} — V_{CB}



I_O — V_{IN}



V_{IN} — I_O



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