

UNR221xシリーズ (UN221xシリーズ)

シリコンNPNエピタキシャルプレーナ形

デジタル回路用

■ 特長

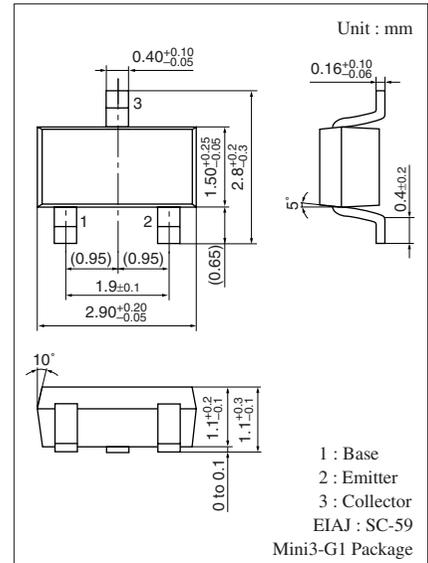
- 機器の小形化、部品点数の削減によりコストダウン可能
- ミニ型パッケージのため、テーピング、マガジン包装による自動挿入が可能

■ 品種別抵抗値

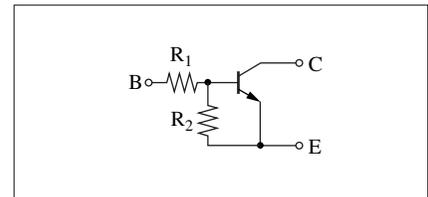
		形名表示記号 (R ₁)		(R ₂)
● UNR2210 (UN2210)	8L	47 kΩ	—	—
● UNR2211 (UN2211)	8A	10 kΩ	10 kΩ	10 kΩ
● UNR2212 (UN2212)	8B	22 kΩ	22 kΩ	22 kΩ
● UNR2213 (UN2213)	8C	47 kΩ	47 kΩ	47 kΩ
● UNR2214 (UN2214)	8D	10 kΩ	47 kΩ	47 kΩ
● UNR2215 (UN2215)	8E	10 kΩ	—	—
● UNR2216 (UN2216)	8F	4.7 kΩ	—	—
● UNR2217 (UN2217)	8H	22 kΩ	—	—
● UNR2218 (UN2218)	8I	0.51 kΩ	5.1 kΩ	—
● UNR2219 (UN2219)	8K	1 kΩ	10 kΩ	—
● UNR221D (UN221D)	8M	47 kΩ	10 kΩ	—
● UNR221E (UN221E)	8N	47 kΩ	22 kΩ	—
● UNR221F (UN221F)	8O	4.7 kΩ	10 kΩ	—
● UNR221K (UN221K)	8P	10 kΩ	4.7 kΩ	—
● UNR221L (UN221L)	8Q	4.7 kΩ	4.7 kΩ	—
● UNR221M (UN221M)	EL	2.2 kΩ	47 kΩ	—
● UNR221N (UN221N)	EX	4.7 kΩ	47 kΩ	—
● UNR221T (UN221T)	EZ	22 kΩ	47 kΩ	—
● UNR221V (UN221V)	FD	2.2 kΩ	2.2 kΩ	—
● UNR221Z (UN221Z)	FF	4.7 kΩ	22 kΩ	—

■ 絶対最大定格 T_a = 25°C

項目	記号	定格	単位
コレクタ・ベース間電圧(E開放時)	V _{CBO}	50	V
コレクタ・エミッタ間電圧(B開放時)	V _{CEO}	50	V
コレクタ電流	I _C	100	mA
全許容損失	P _T	200	mW
接合温度	T _j	150	°C
保存温度	T _{stg}	-55 ~ +150	°C



内部接続図



注) 形名の()内は、従来品番です

■ 電気的特性 $T_a = 25^\circ\text{C} \pm 3^\circ\text{C}$

項目	記号	条件	最小	標準	最大	単位
コレクタ・ベース間電圧(E開放時)	V_{CBO}	$I_C = 10 \mu\text{A}, I_E = 0$	50			V
コレクタ・エミッタ間電圧(B開放時)	V_{CEO}	$I_C = 2 \text{mA}, I_B = 0$	50			V
コレクタ・ベース間遮断電流(E開放時)	I_{CBO}	$V_{CB} = 50 \text{V}, I_E = 0$			0.1	μA
コレクタ・エミッタ間遮断電流(B開放時)	I_{CEO}	$V_{CE} = 50 \text{V}, I_B = 0$			0.5	μA
エミッタ ・ベース間 遮断電流 (C開放時)	UNR2210/2215/2216/2217	I_{EBO} $V_{EB} = 6 \text{V}, I_C = 0$			0.01	mA
	UNR2213				0.1	
	UNR2212/2214/221D/ 221E/221M/221N/221T				0.2	
	UNR221Z				0.4	
	UNR2211				0.5	
	UNR221F/221K				1.0	
	UNR2219				1.5	
	UNR2218/221L/221V				2.0	
直流電流 増幅率	UNR221V	h_{FE} $V_{CE} = 10 \text{V}, I_C = 5 \text{mA}$	6		20	—
	UNR2218/221K/221L		20			
	UNR2219/221D/221F		30			
	UNR2211		35			
	UNR2212/221E		60			
	UNR221Z		60		200	
	UNR2213/2214/221M		80			
	UNR221N/221T		80		400	
	UNR2210 [*] /2215 [*] /2216 [*] /2217 [*]		160		460	
コレクタ・エミッタ間飽和電圧	$V_{CE(sat)}$	$I_C = 10 \text{mA}, I_B = 0.3 \text{mA}$			0.25	V
		$I_C = 10 \text{mA}, I_B = 1.5 \text{mA}$				
出力電圧ハイレベル	V_{OH}	$V_{CC} = 5 \text{V}, V_B = 0.5 \text{V}, R_L = 1 \text{k}\Omega$	4.9			V
出力電圧ローレベル	V_{OL}	$V_{CC} = 5 \text{V}, V_B = 2.5 \text{V}, R_L = 1 \text{k}\Omega$			0.2	V
		$V_{CC} = 5 \text{V}, V_B = 3.5 \text{V}, R_L = 1 \text{k}\Omega$				
		$V_{CC} = 5 \text{V}, V_B = 10 \text{V}, R_L = 1 \text{k}\Omega$				
		$V_{CC} = 5 \text{V}, V_B = 6 \text{V}, R_L = 1 \text{k}\Omega$				
トランジション周波数	f_T	$V_{CB} = 10 \text{V}, I_E = -2 \text{mA}, f = 200 \text{MHz}$		150		MHz
入力抵抗	R_i		-30%	0.51	+30%	k Ω
				1.0		
				2.2		
				4.7		
				10		
				22		
				47		

注) 1. 測定方法は、日本工業規格 JIS C 7030 トランジスタ測定方法によります。

2. *: ランク分類

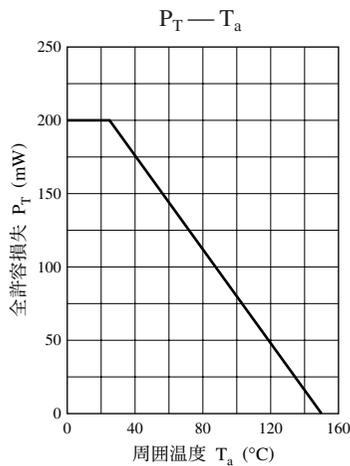
ランク	Q	R	S	ノンランク品
h_{FE}	160 ~ 260	210 ~ 340	290 ~ 460	160 ~ 460

■ 電気的特性(つづき) $T_a = 25^\circ\text{C} \pm 3^\circ\text{C}$

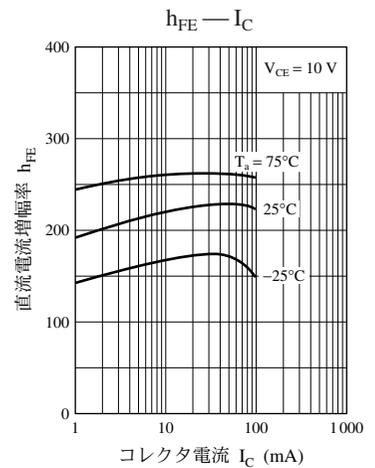
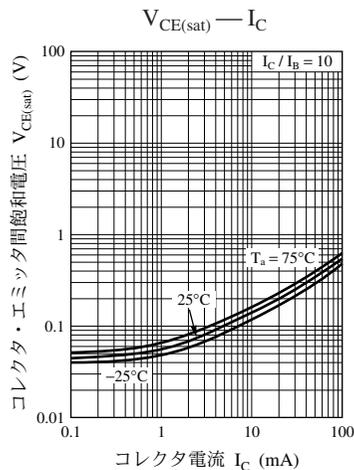
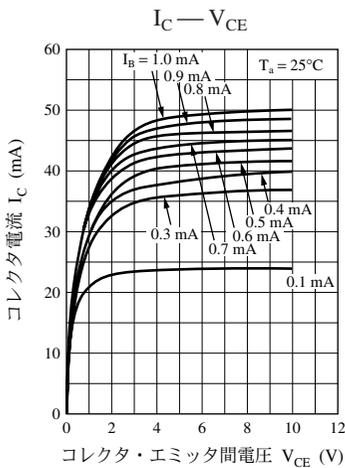
項目	記号	条件	最小	標準	最大	単位
抵抗比率	UNR221M	R_1/R_2		0.047		—
	UNR221N			0.1		
	UNR2218/2219		0.08	0.10	0.12	
	UNR221Z			0.21		
	UNR2214		0.17	0.21	0.25	
	UNR221T			0.47		
	UNR221F		0.37	0.47	0.57	
	UNR221V			1.0		
	UNR2211/2212/2213/221L		0.8	1.0	1.2	
	UNR221K		1.70	2.13	2.60	
	UNR221E		1.70	2.14	2.60	
	UNR221D		3.7	4.7	5.7	

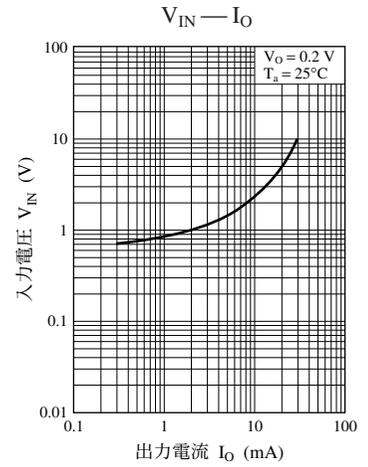
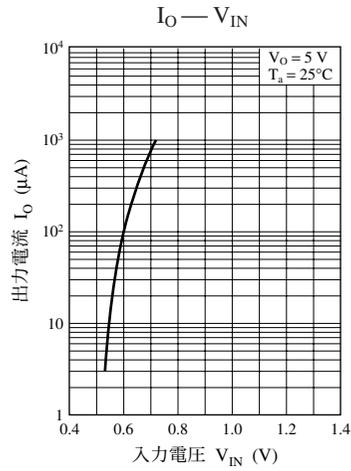
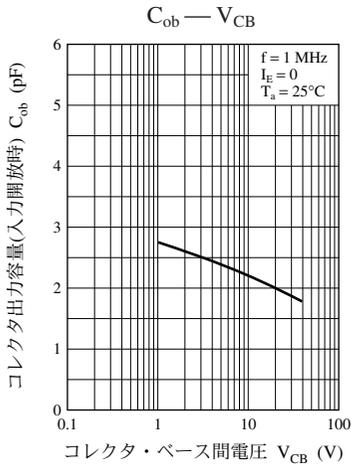
注) 測定方法は、日本工業規格 JIS C 7030 トランジスタ測定方法によります。

共通特性図

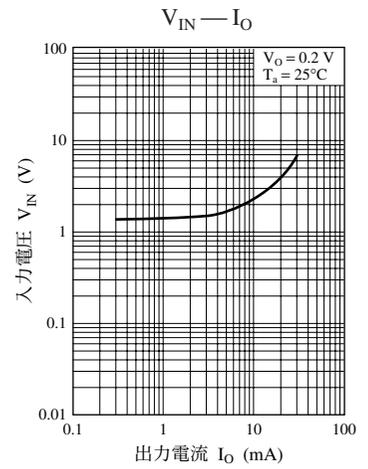
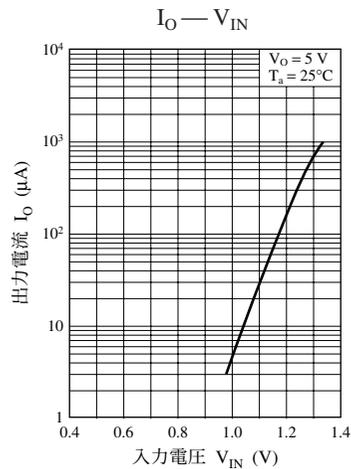
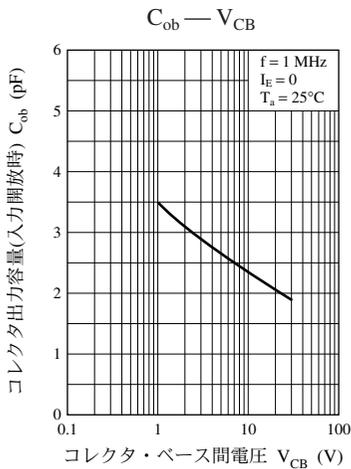
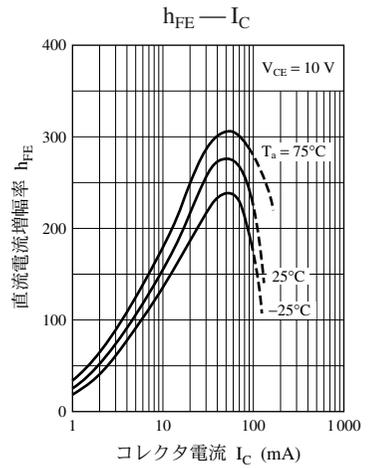
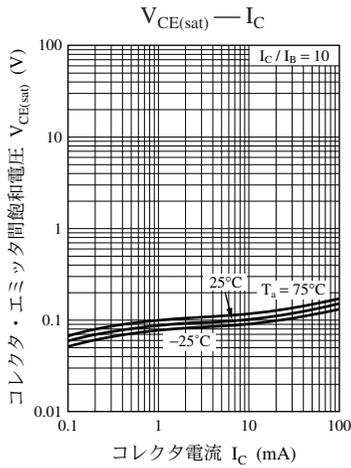
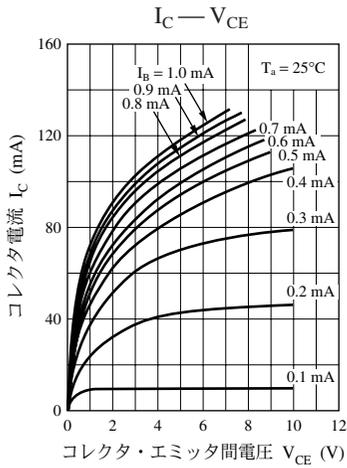


UNR2210 特性図

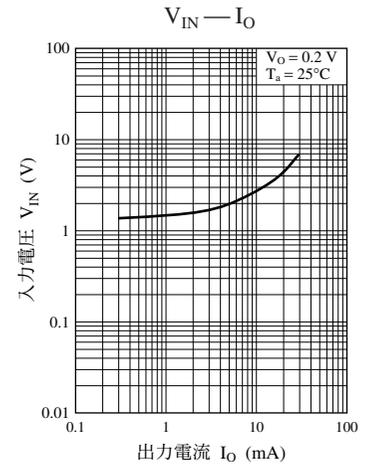
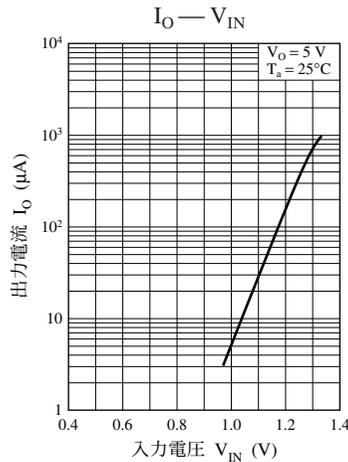
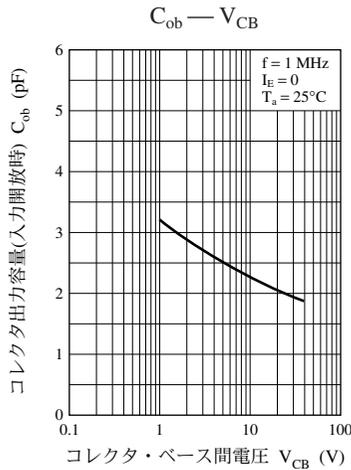
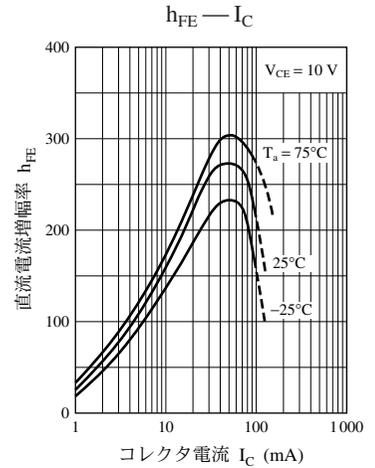
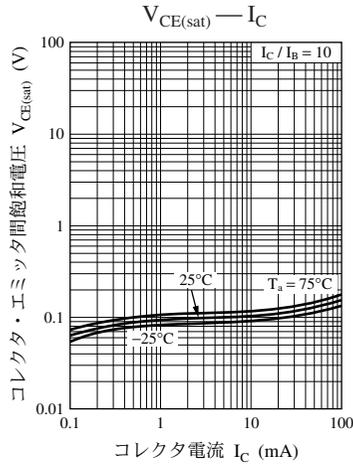
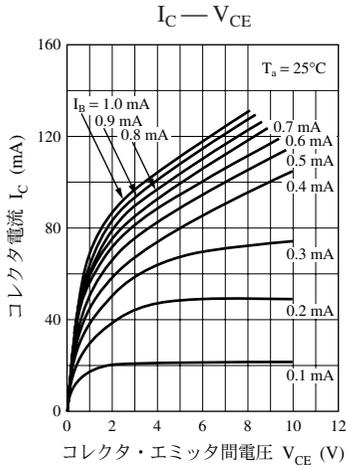




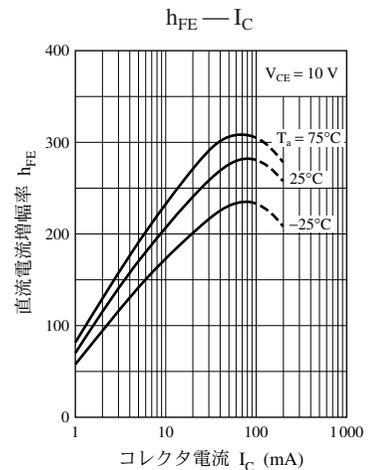
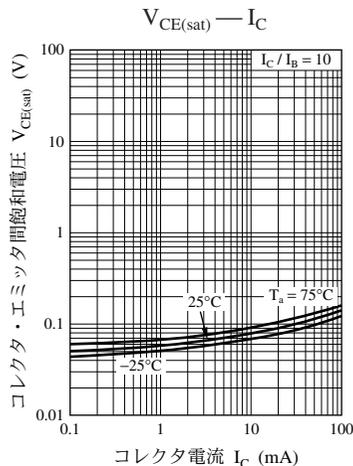
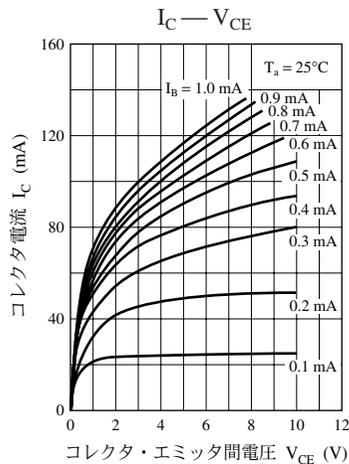
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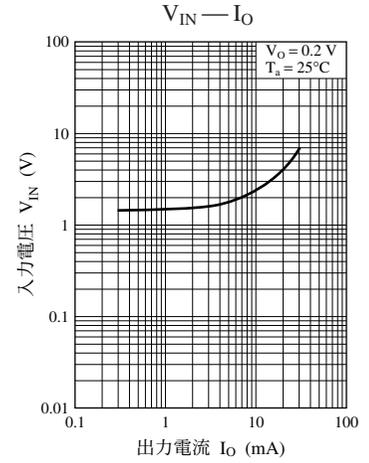
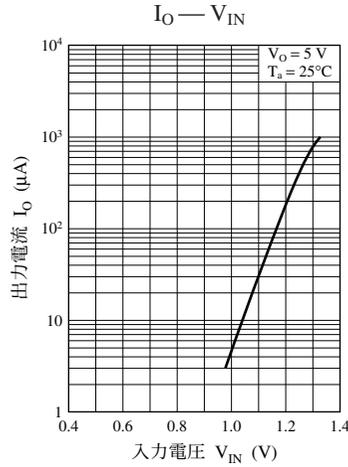
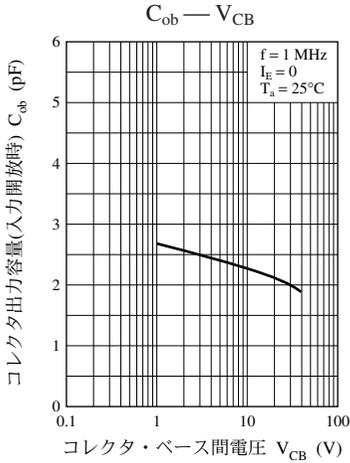


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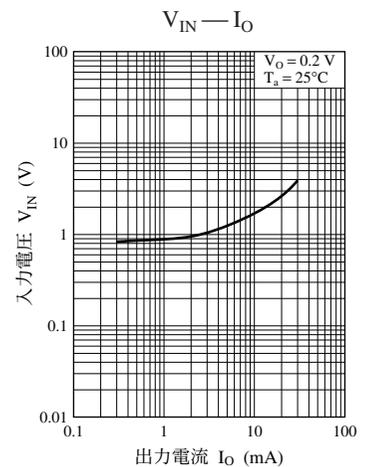
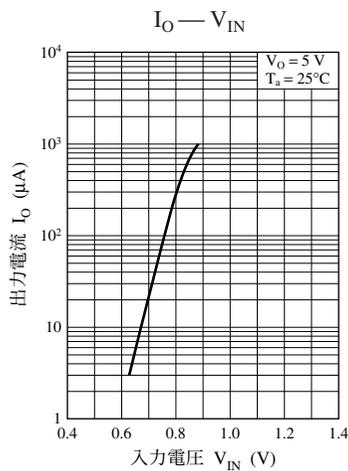
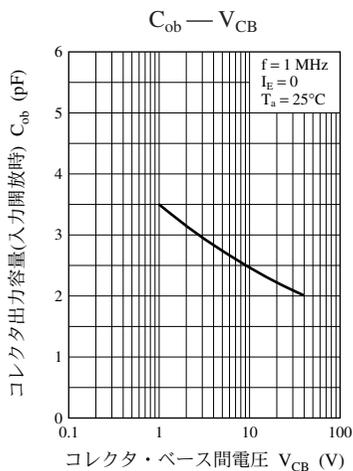
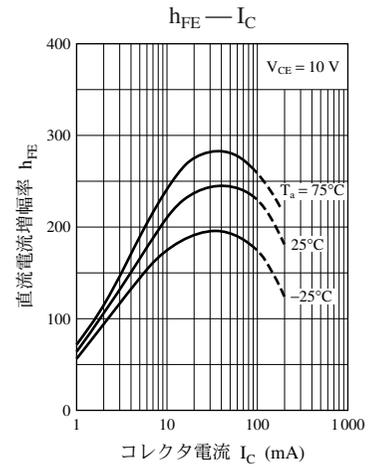
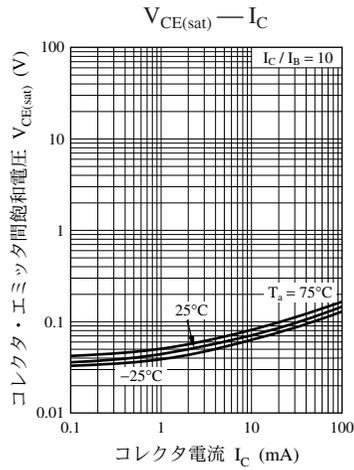
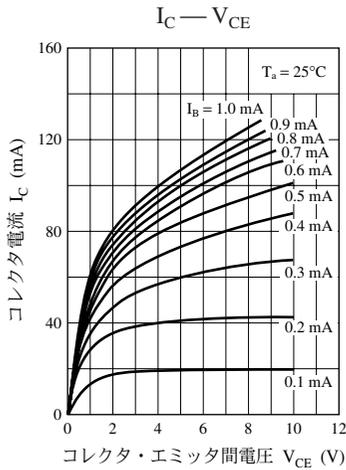


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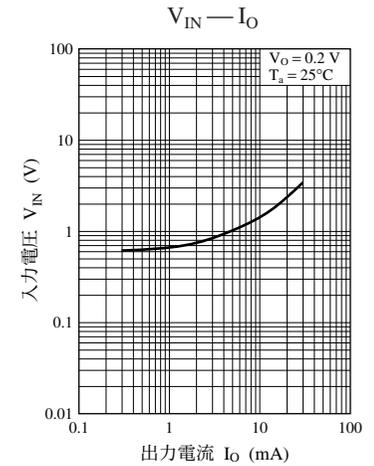
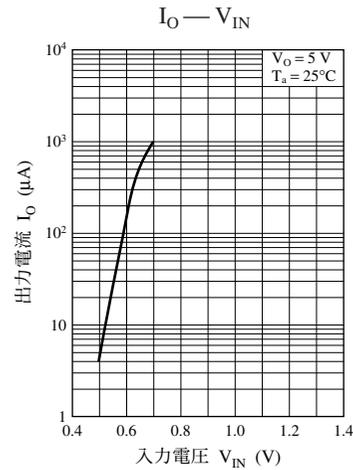
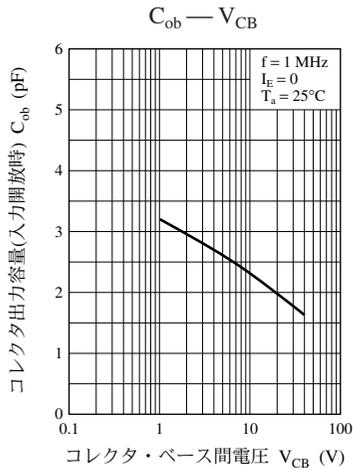
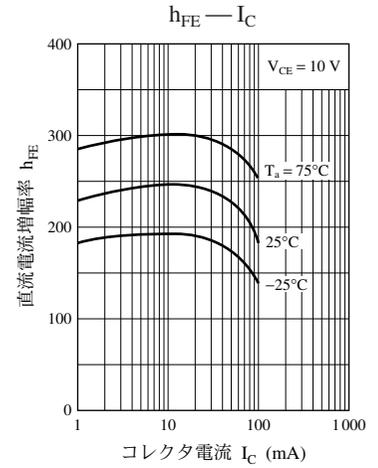
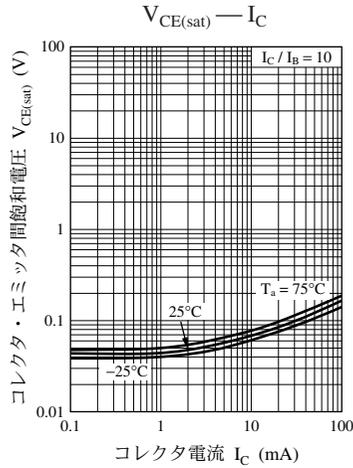
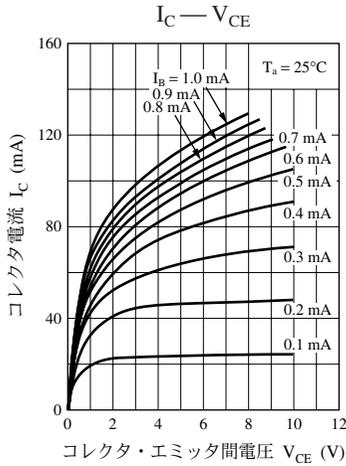




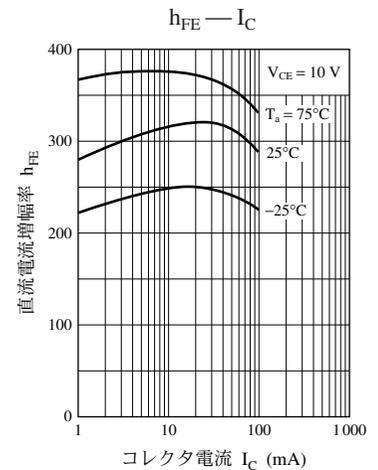
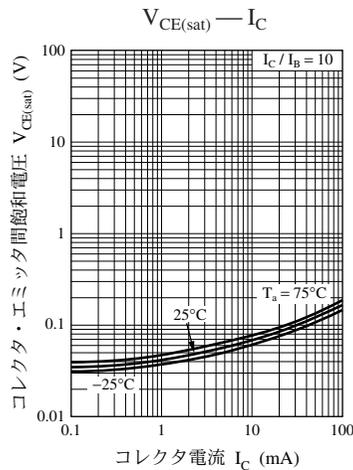
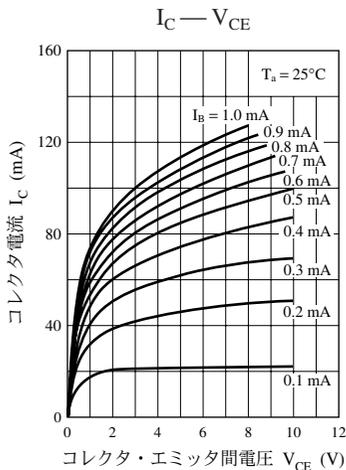
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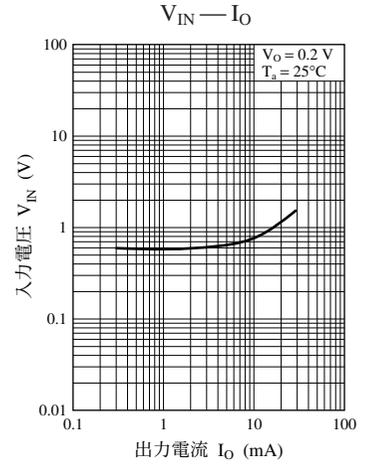
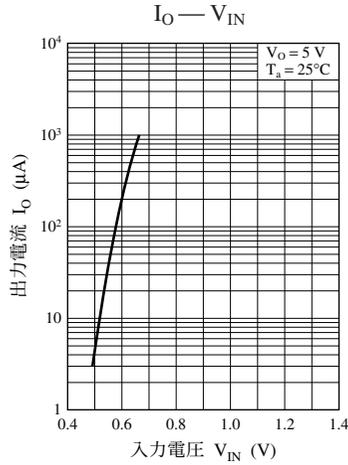
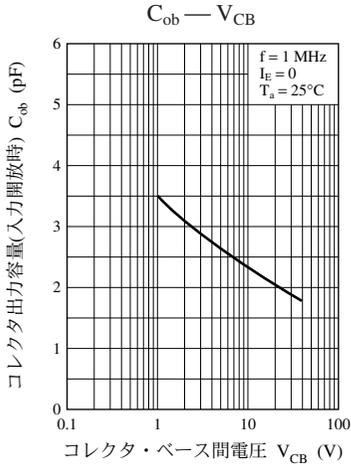


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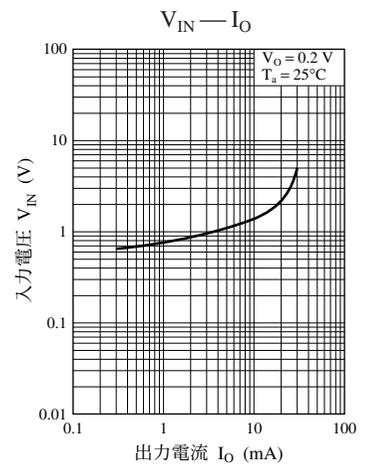
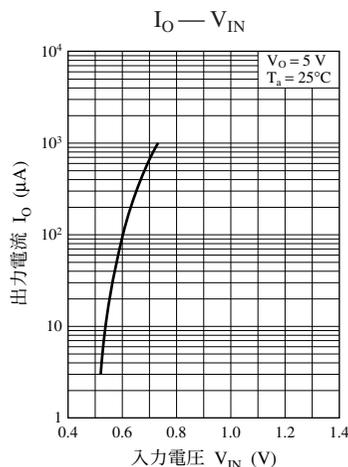
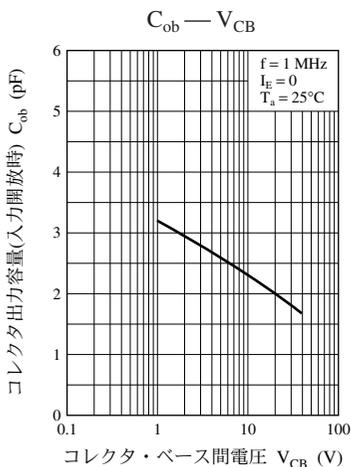
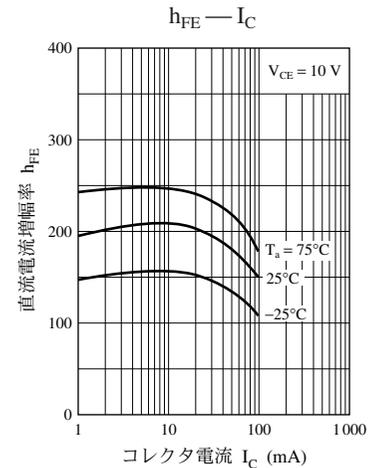
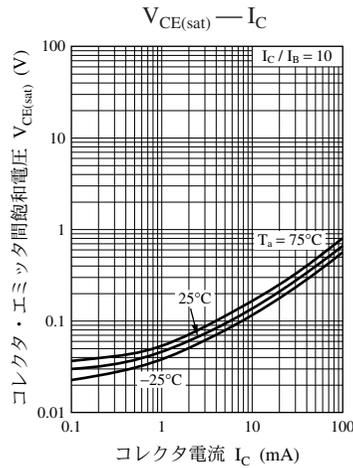
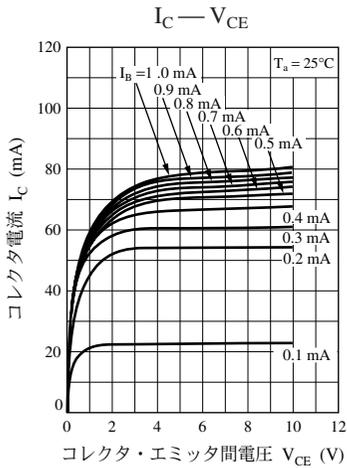


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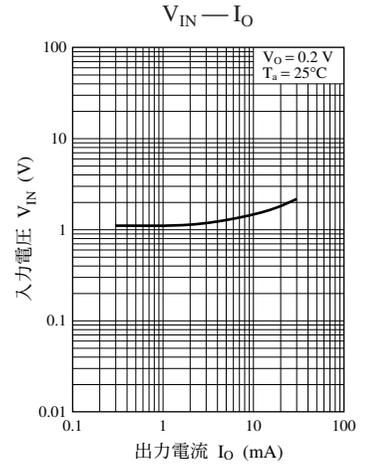
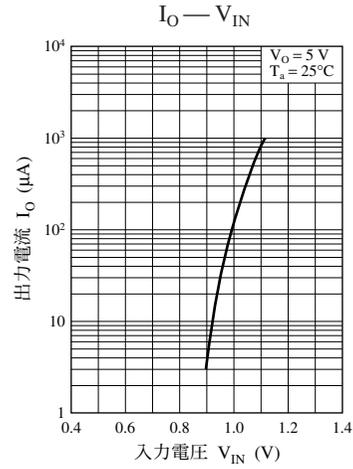
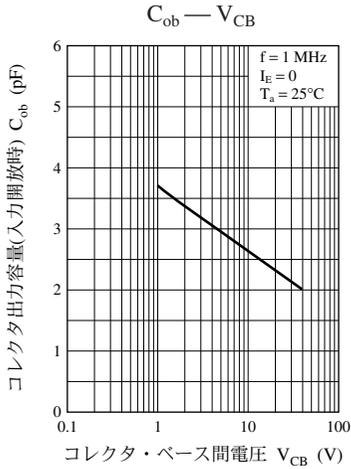
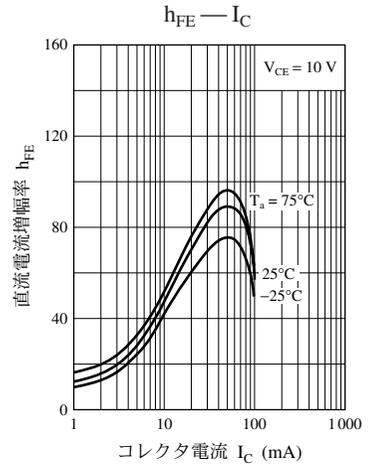
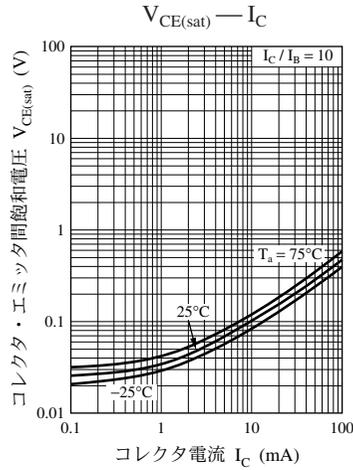
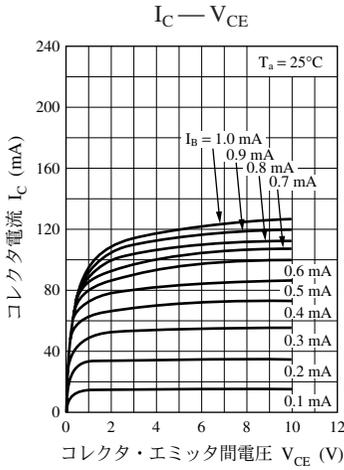




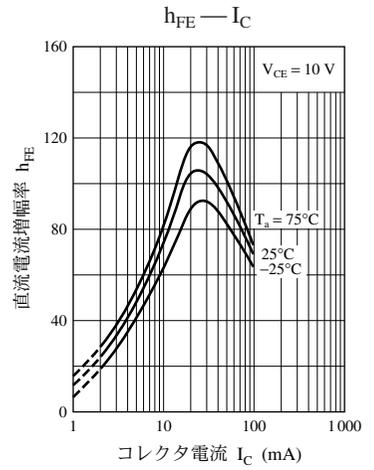
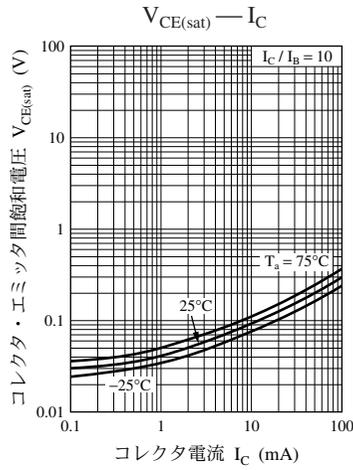
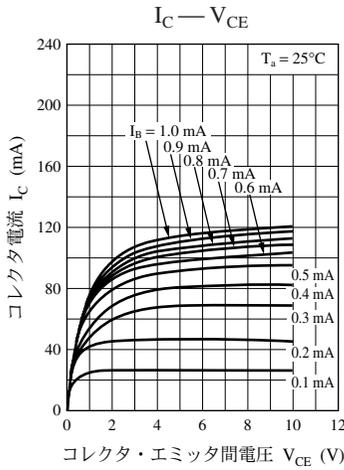
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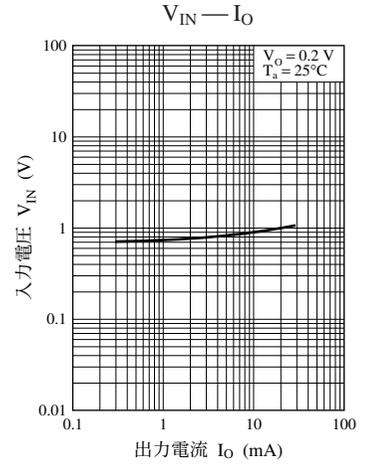
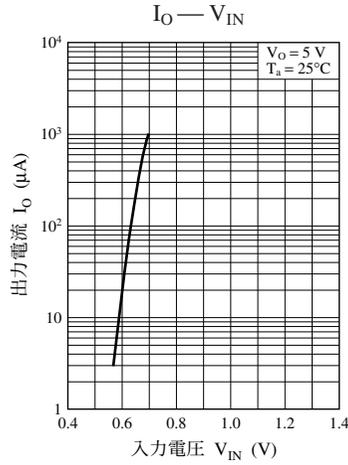
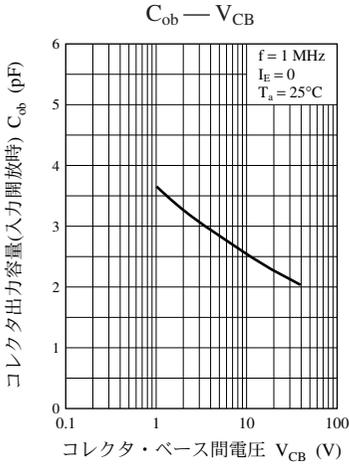


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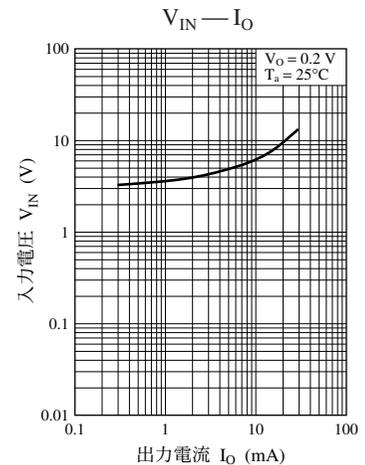
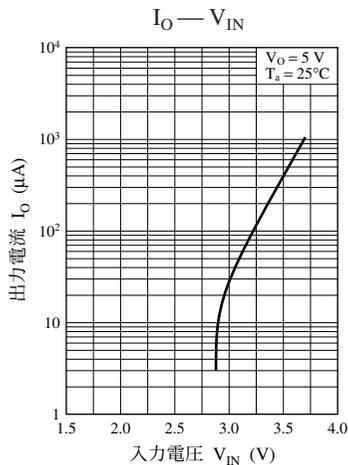
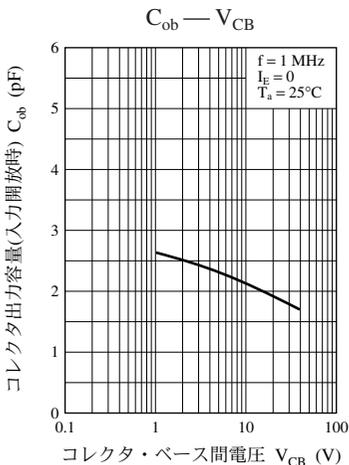
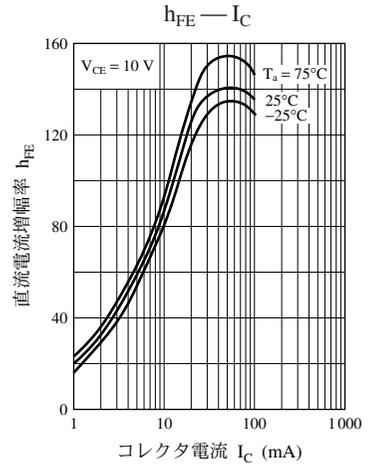
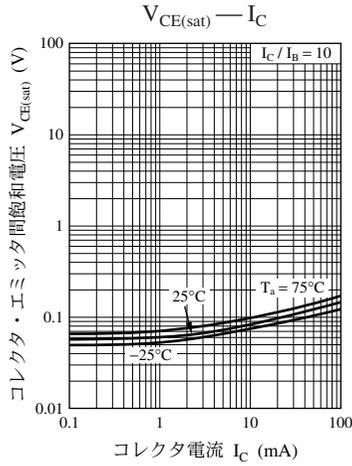
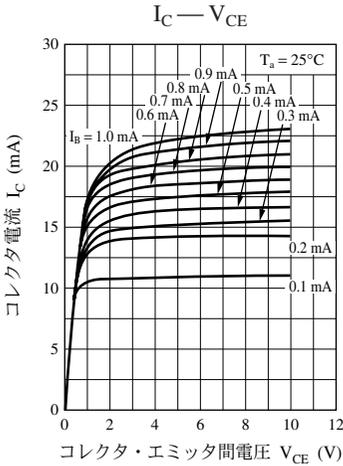


UNR2219 特性図

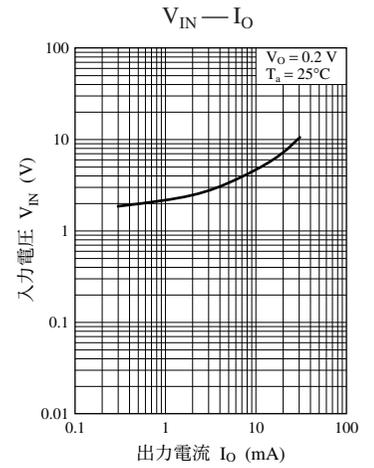
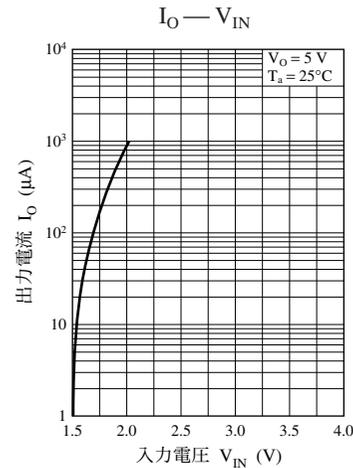
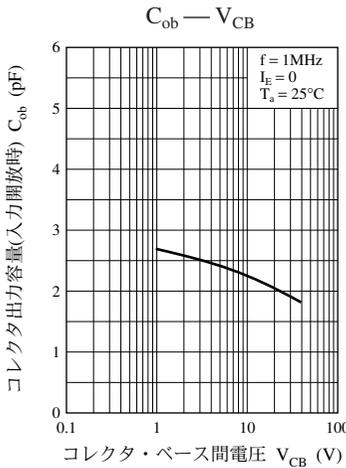
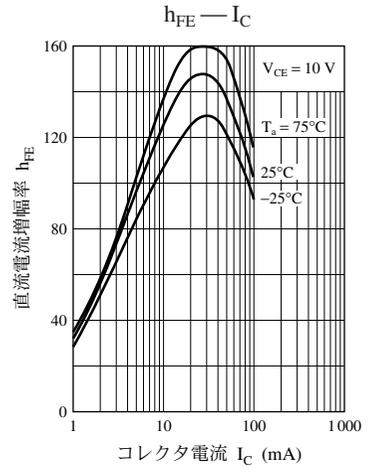
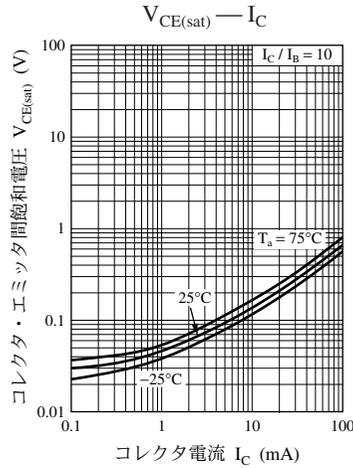
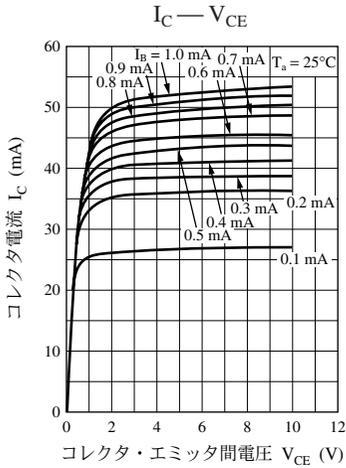




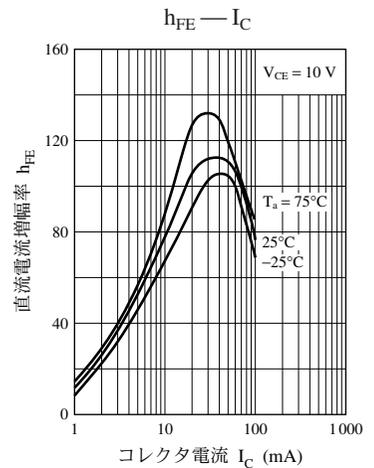
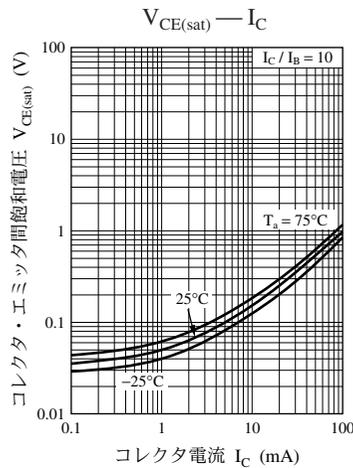
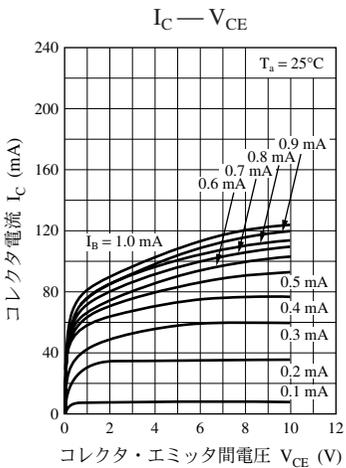
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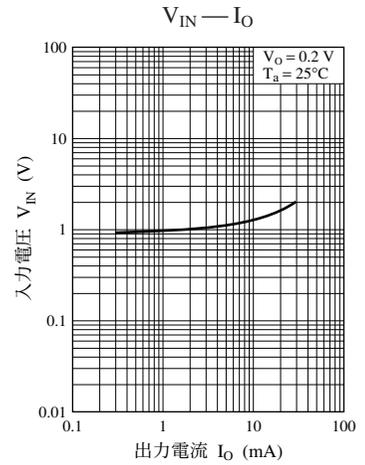
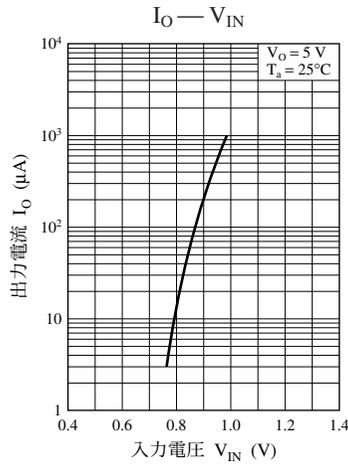
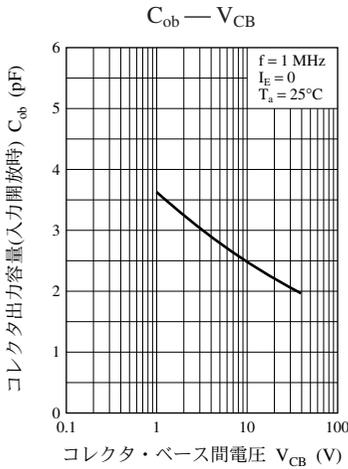


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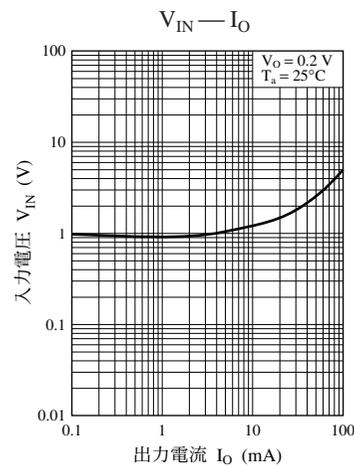
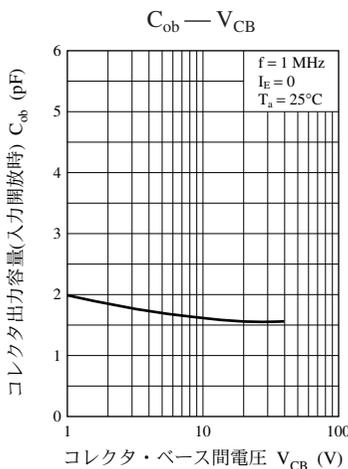
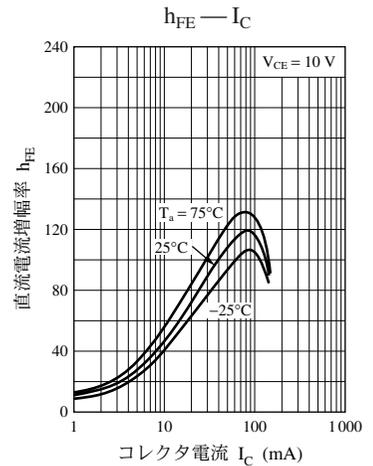
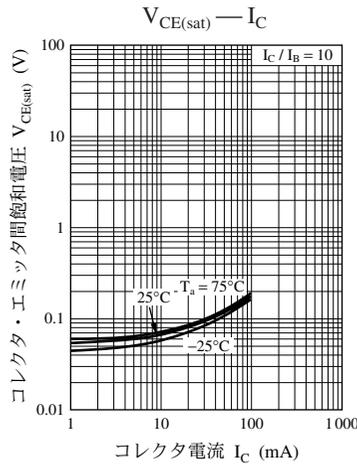
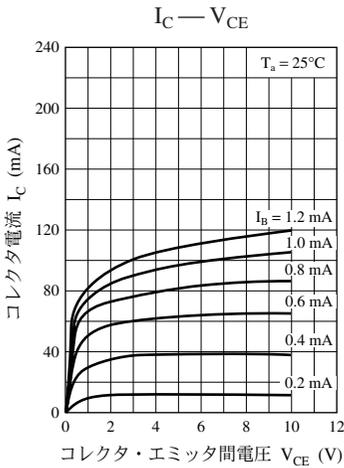


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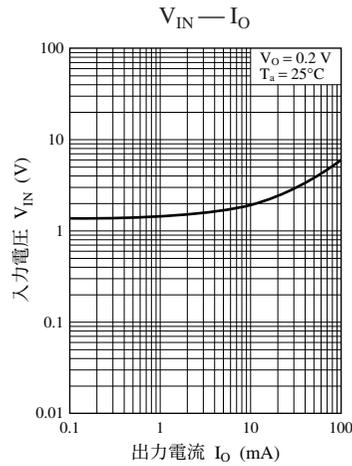
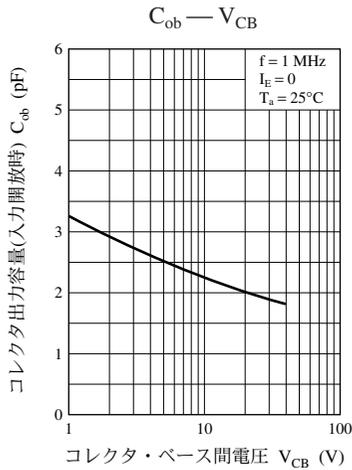
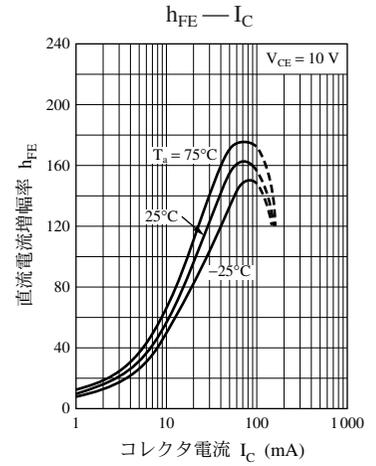
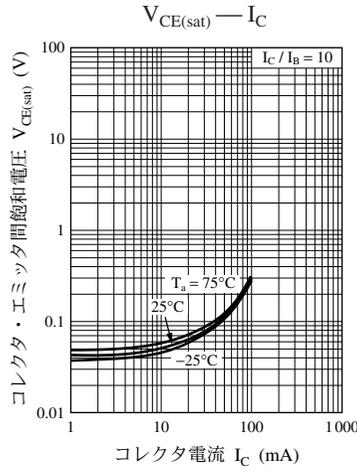
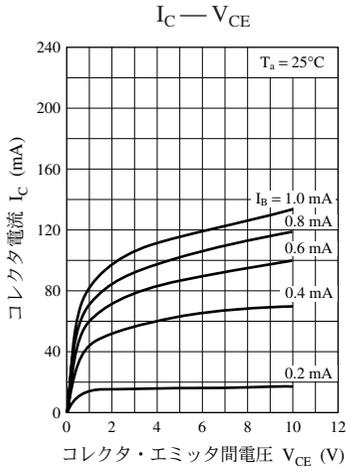




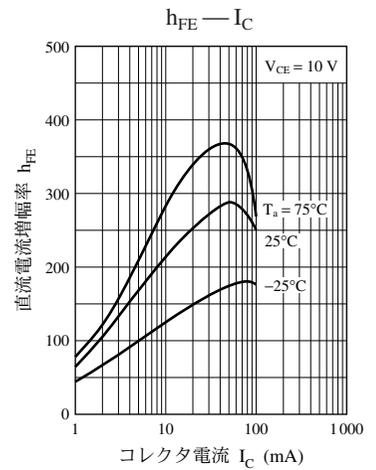
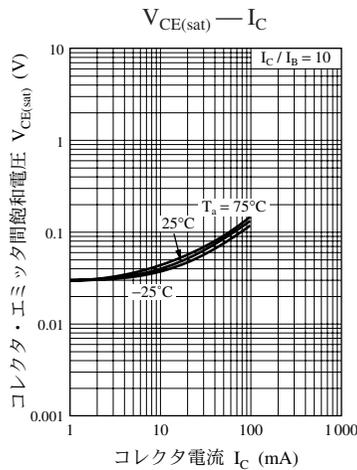
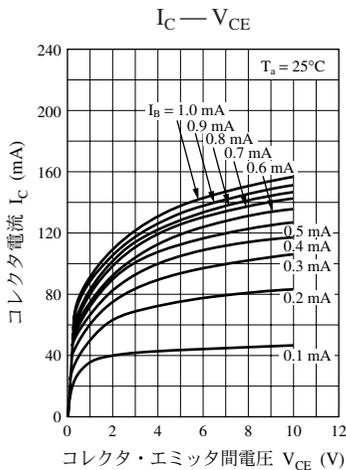
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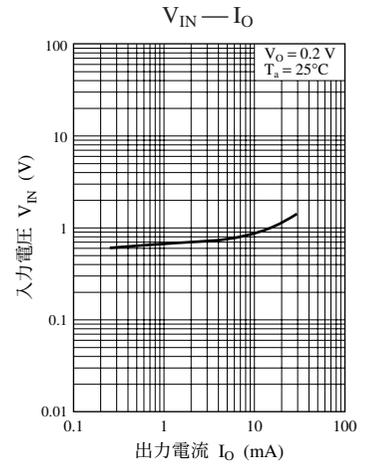
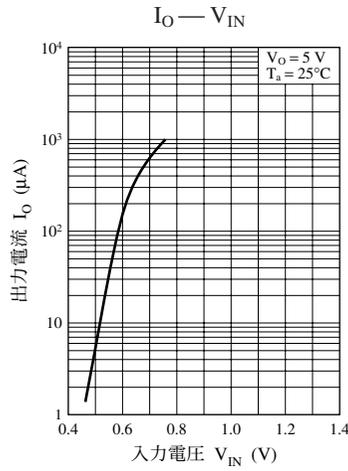
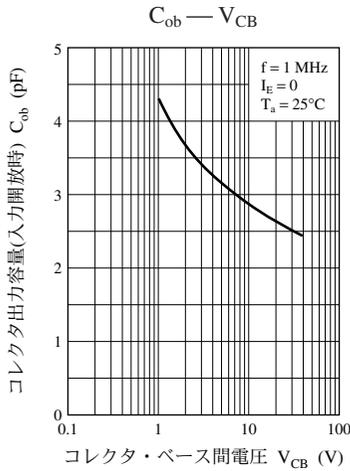


UNR221L 特性図

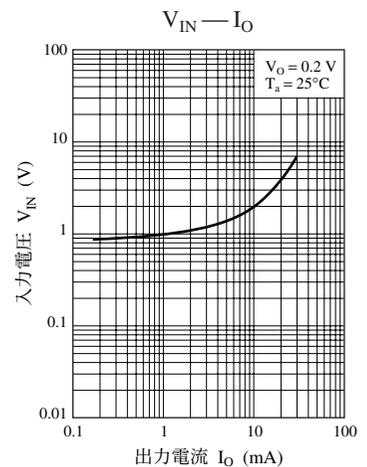
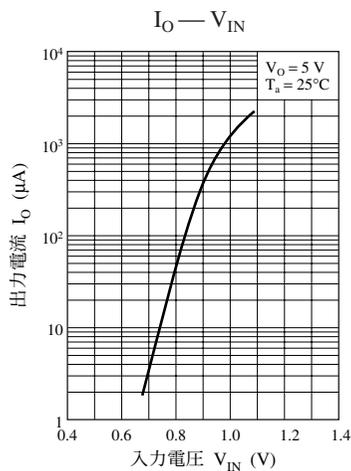
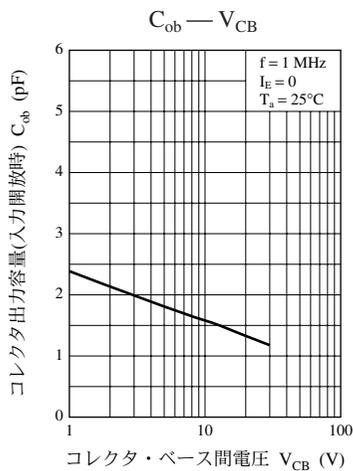
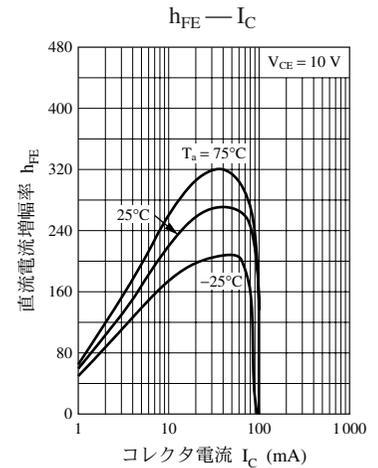
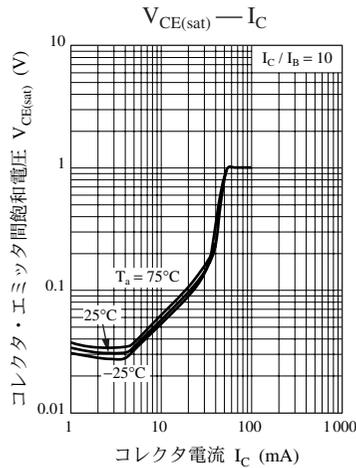
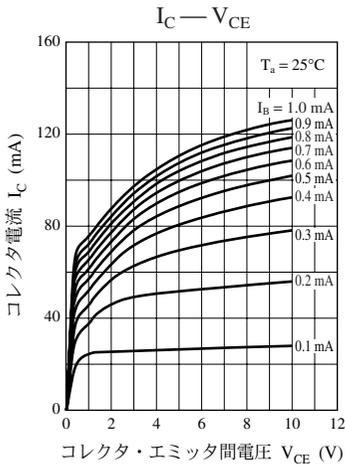


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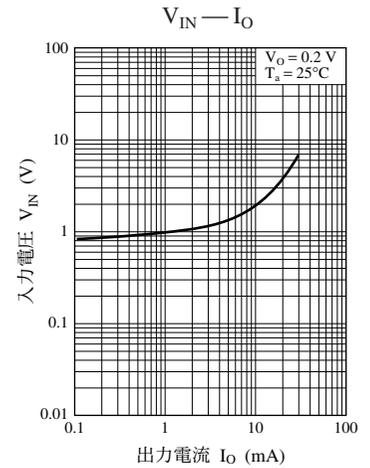
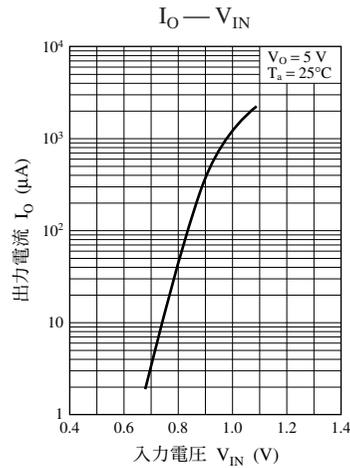
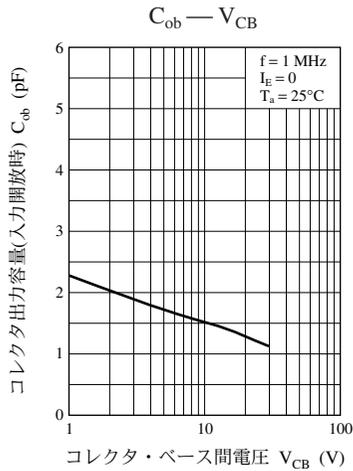
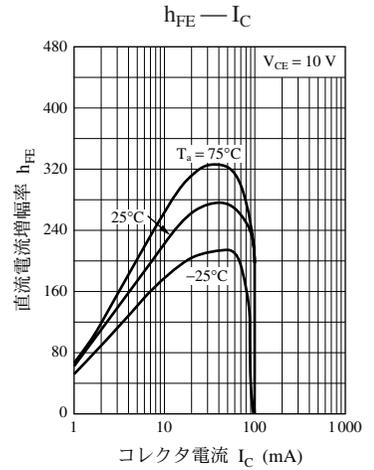
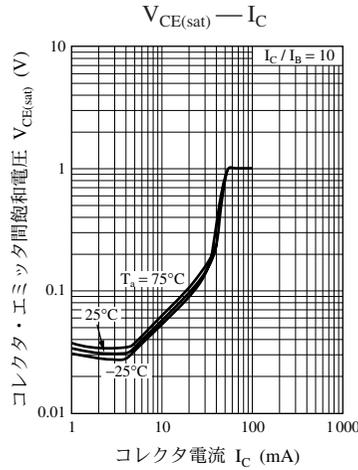
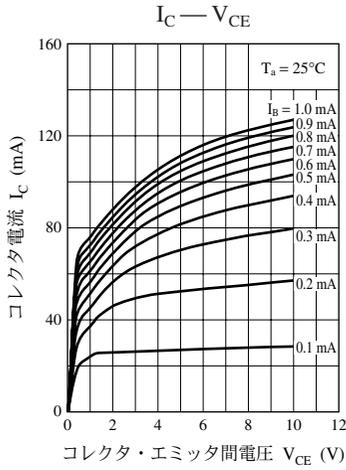




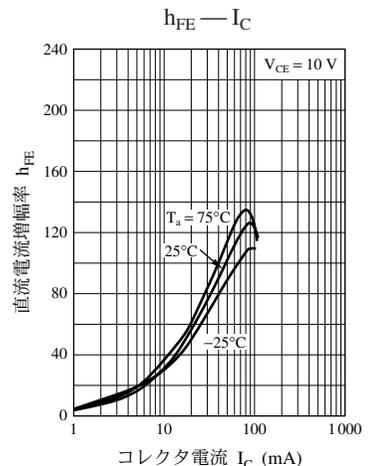
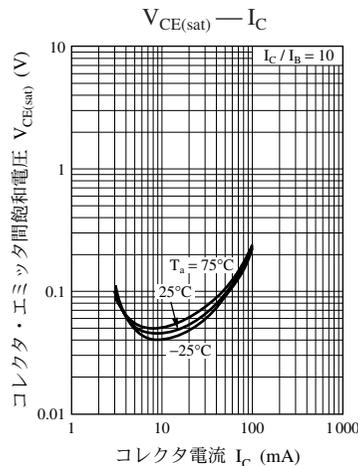
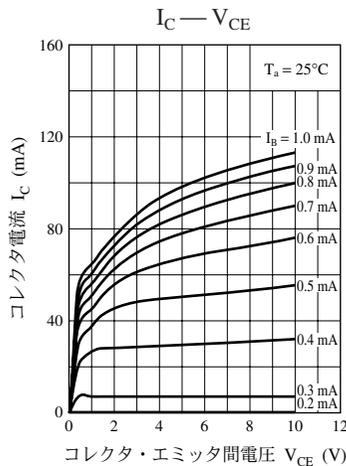
UNR221N 特性図

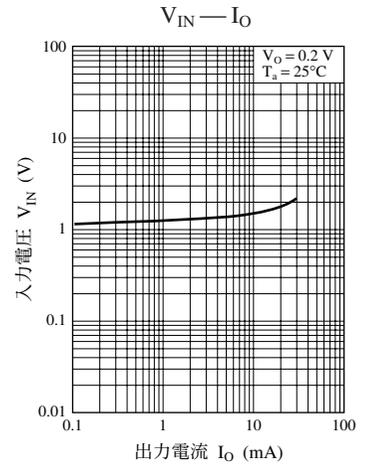
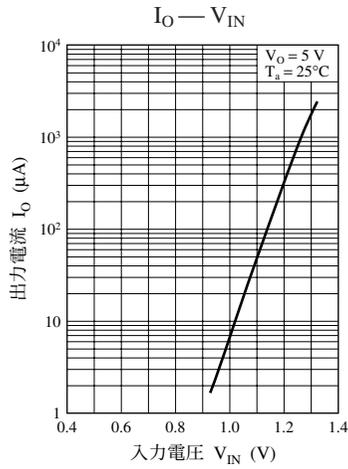
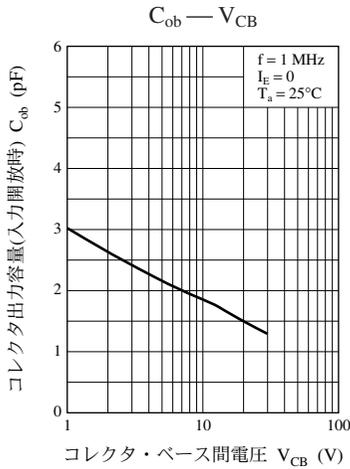


UNR221T 特性図

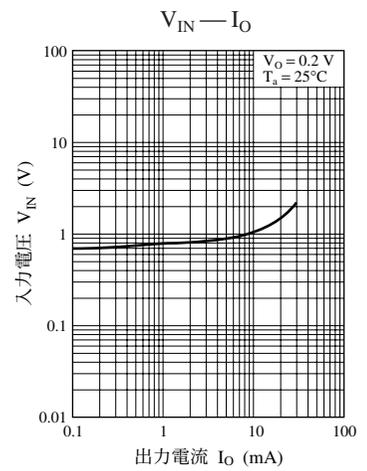
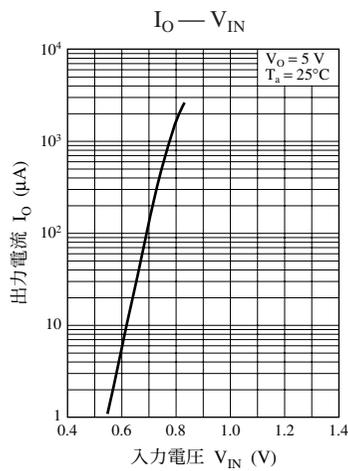
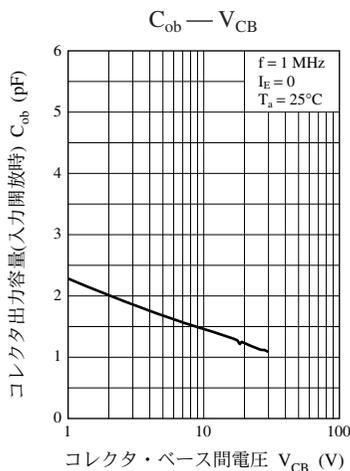
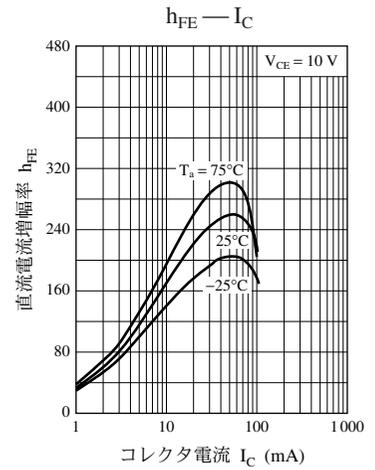
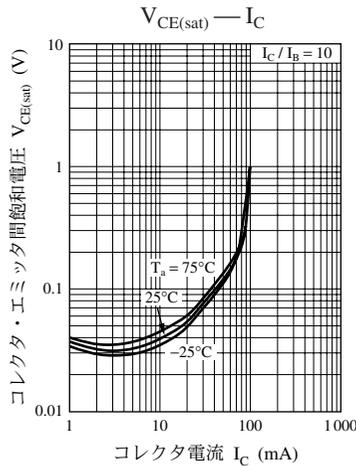
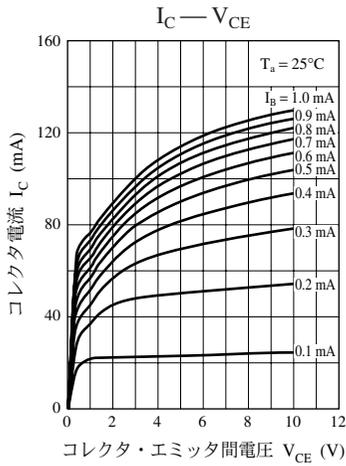


UNR221V 特性図





UNR211Z 特性図



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