

UP0421x Series

Silicon NPN epitaxial planar type

For switching/digital circuits

■ Features

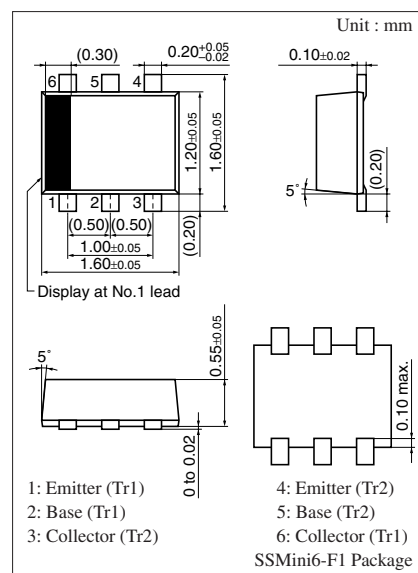
- Two elements incorporated into one package
(Transistors with built-in resistor)
- Reduction of the mounting area and assembly cost by one half

■ Resistance by Part Number

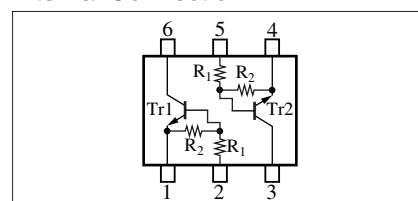
	Marking Symbol	(R ₁)	(R ₂)
• UP04210	8Z	47 kΩ	—
• UP04211	9V	10 kΩ	10 kΩ
• UP04213	8S	47 kΩ	47 kΩ
• UP04214	BR	10 kΩ	47 kΩ
• UP04215	8T	10 kΩ	—
• UP04216	8U	4.7 kΩ	—

■ 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	125	mW
Junction temperature	T _j	125	°C
Storage temperature	T _{stg}	-55 to +125	°C



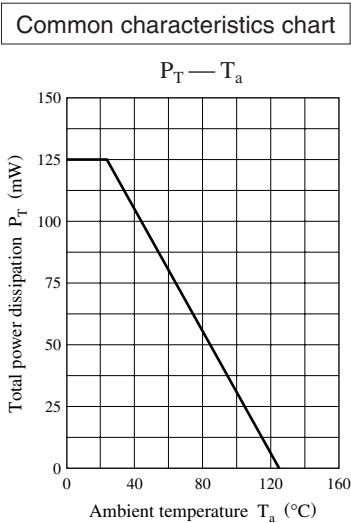
Internal Connection



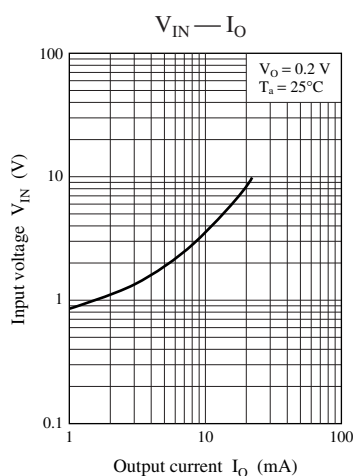
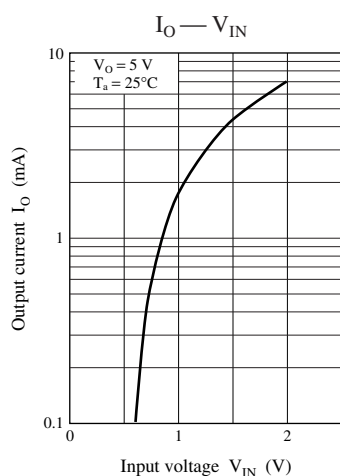
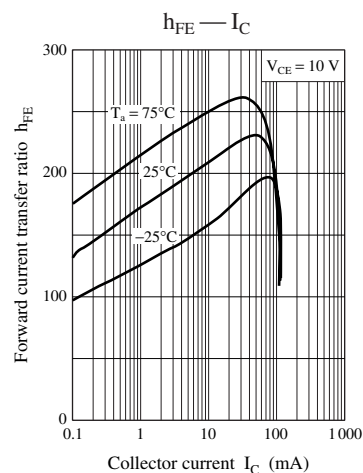
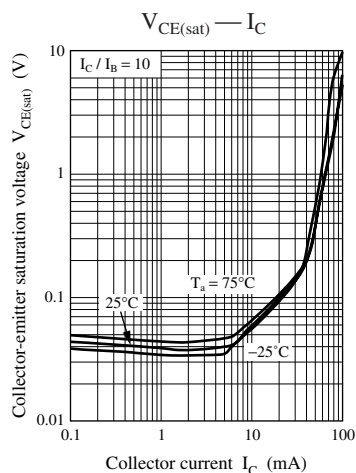
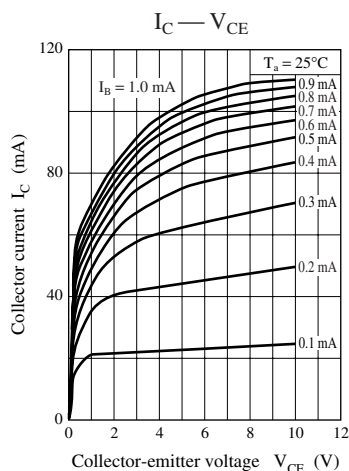
■ Electrical Characteristics $T_a = 25^\circ\text{C} \pm 3^\circ\text{C}$

Parameter		Symbol	Conditions	Min	Typ	Max	Unit
Collector-base voltage (Emitter open)		V_{CBO}	$I_{\text{C}} = 10 \mu\text{A}, I_{\text{E}} = 0$	50			V
Collector-emitter voltage (Base open)		V_{CEO}	$I_{\text{C}} = 2 \text{ mA}, I_{\text{B}} = 0$	50			V
Collector-base cutoff current (Emitter open)		I_{CBO}	$V_{\text{CB}} = 50 \text{ V}, I_{\text{E}} = 0$			0.1	μA
Collector-emitter cutoff current (Base open)		I_{CEO}	$V_{\text{CE}} = 50 \text{ V}, I_{\text{B}} = 0$			0.5	μA
Emitter-base cutoff current (Collector open)	UP04210/4215/4216	I_{EBO}	$V_{\text{EB}} = 6 \text{ V}, I_{\text{C}} = 0$			0.01	mA
	UP04211					0.5	
	UP04213					0.1	
	UP04214					0.2	
Forward current transfer ratio	UP04210/4215/4216	h_{FE}	$V_{\text{CE}} = 10 \text{ V}, I_{\text{C}} = 5 \text{ mA}$	160		460	—
	UP04211			35			
	UP04213/4214			80			
Collector-emitter saturation voltage		$V_{\text{CE(sat)}}$	$I_{\text{C}} = 10 \text{ mA}, I_{\text{B}} = 0.3 \text{ mA}$			0.25	V
Output voltage high-level		V_{OH}	$V_{\text{CC}} = 5 \text{ V}, V_{\text{B}} = 0.5 \text{ V}, R_{\text{L}} = 1 \text{ k}\Omega$	4.9			V
Output voltage low-level		V_{OL}	$V_{\text{CC}} = 5 \text{ V}, V_{\text{B}} = 2.5 \text{ V}, R_{\text{L}} = 1 \text{ k}\Omega$			0.2	V
	UP04213		$V_{\text{CC}} = 5 \text{ V}, V_{\text{B}} = 3.5 \text{ V}, R_{\text{L}} = 1 \text{ k}\Omega$				
Input resistance	UP04210/4213	R_{I}		-30%	47	+30%	k Ω
	UP04211/4214/4215				10		
	UP04216				4.7		
Resistance ratio	UP04211/4213	$R_{\text{I}} / R_{\text{2}}$		0.8	1.0	1.2	—
	UP04214			0.17	0.21	0.25	
Transition frequency		f_{T}	$V_{\text{CB}} = 10 \text{ V}, I_{\text{E}} = -2 \text{ mA}, f = 200 \text{ MHz}$		150		MHz

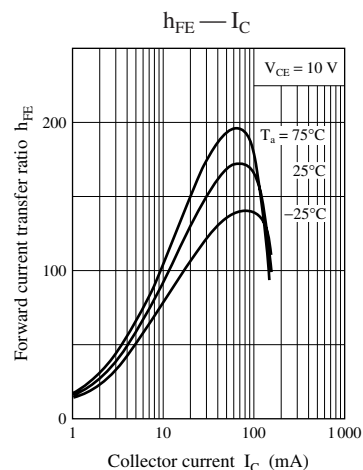
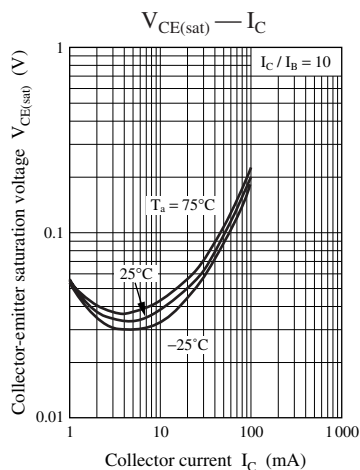
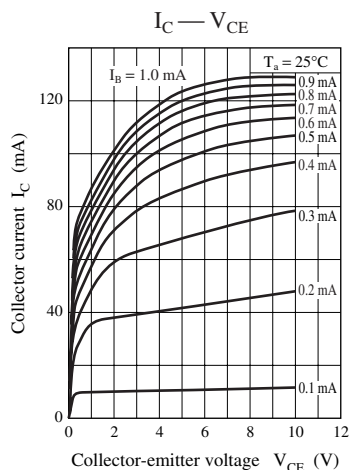
Note) Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.

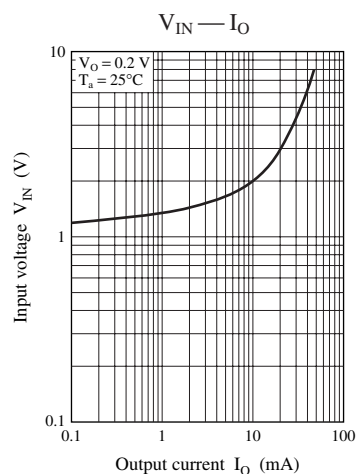
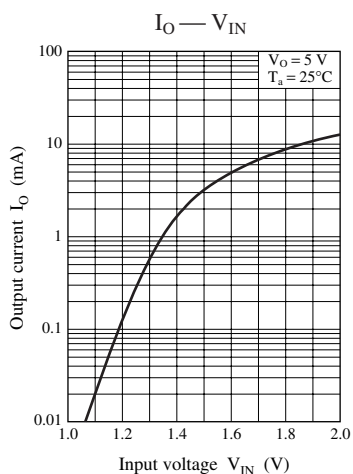
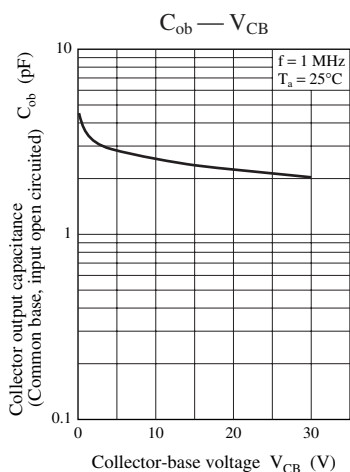


Characteristics charts of UP04210

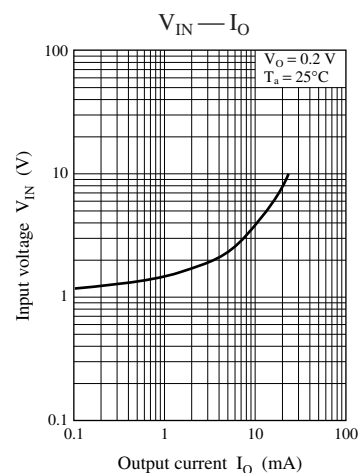
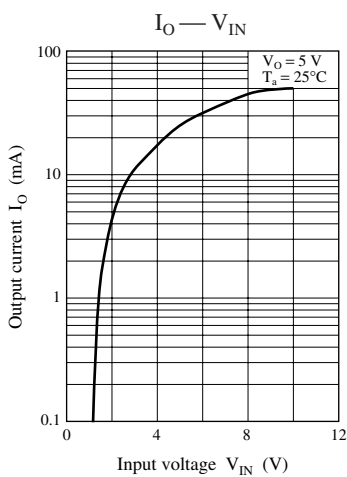
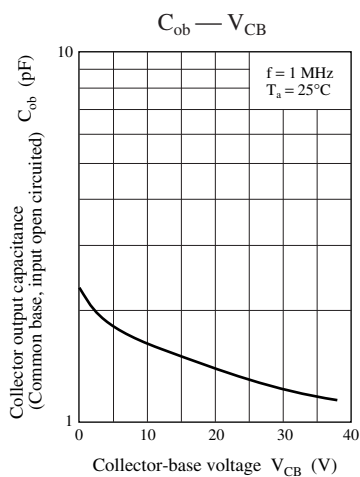
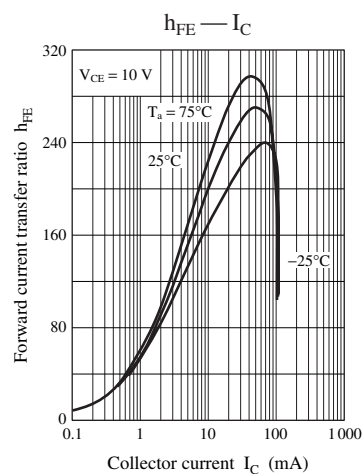
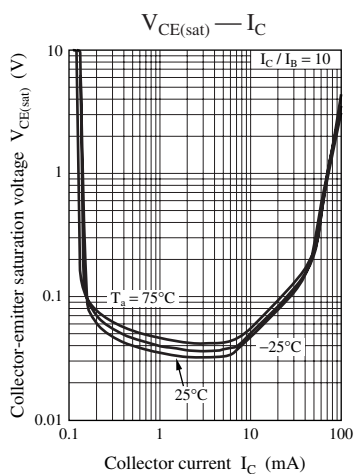
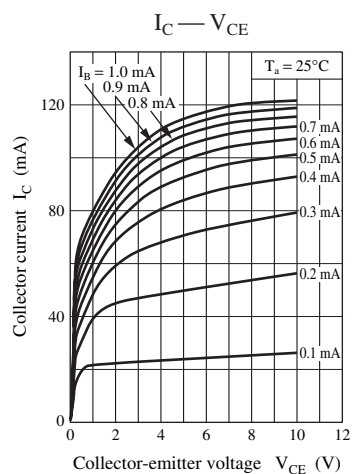


Characteristics charts of UP04211

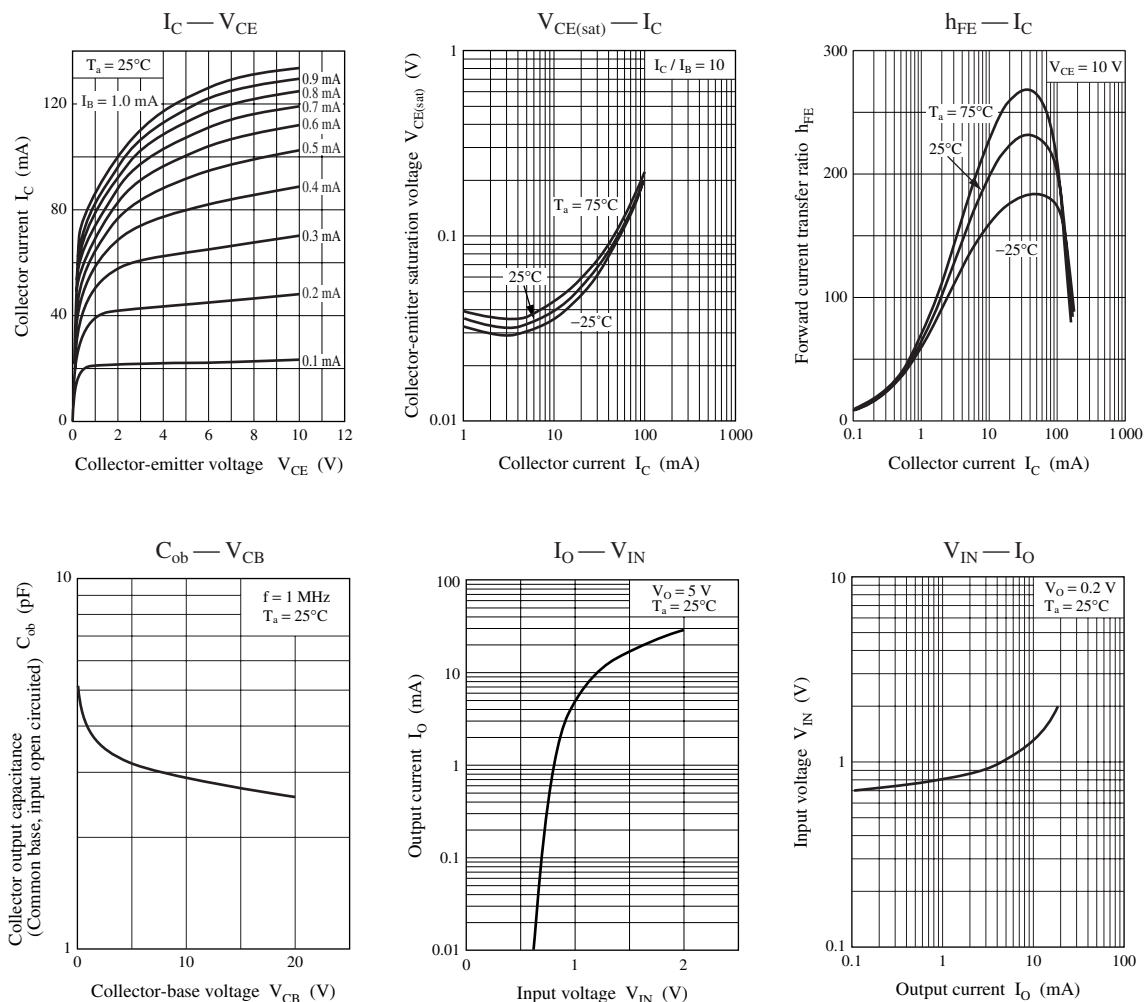




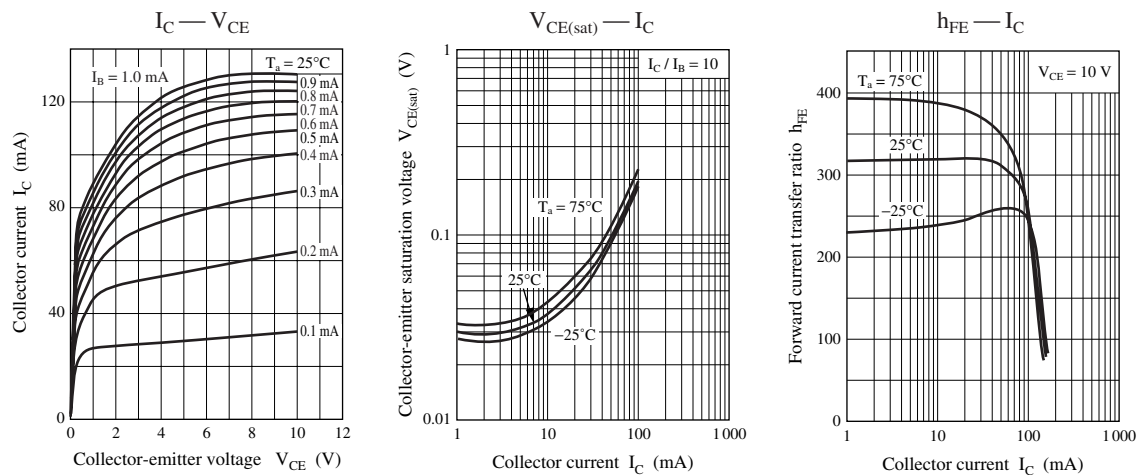
Characteristics charts of UP04213

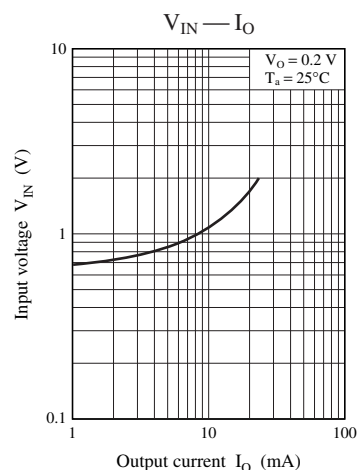
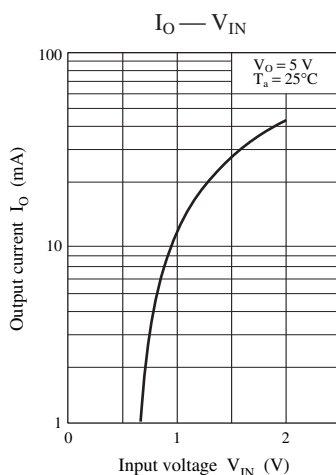
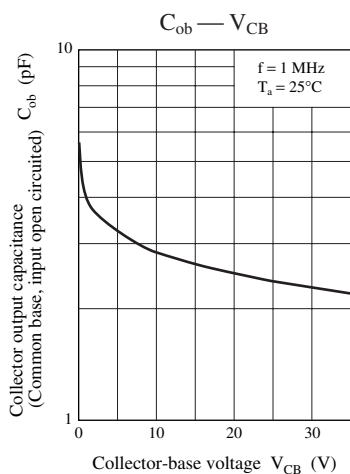


Characteristics charts of UP04214

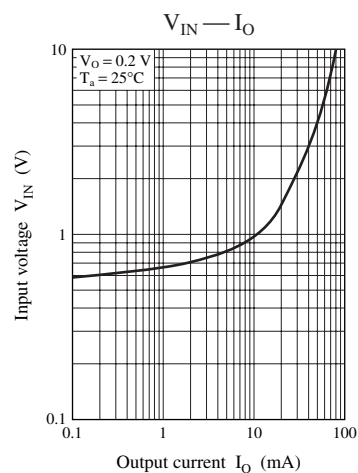
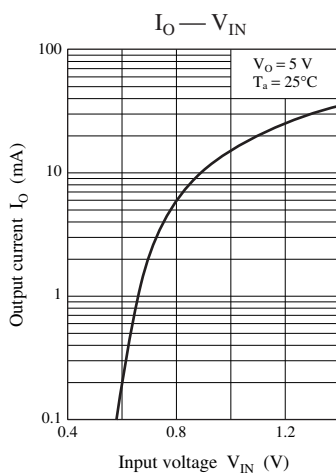
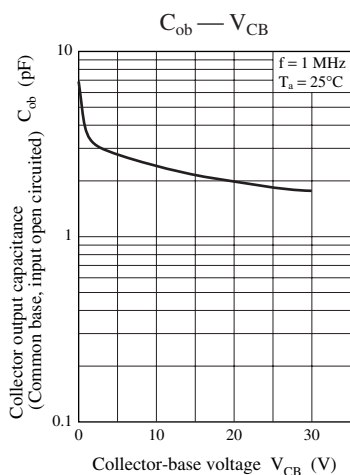
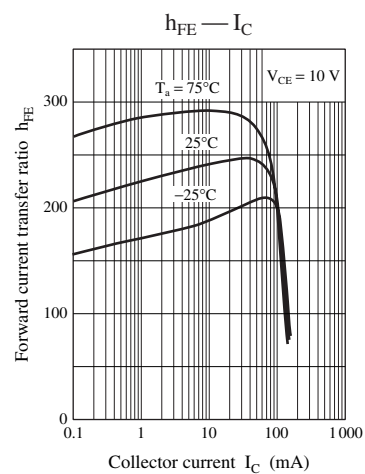
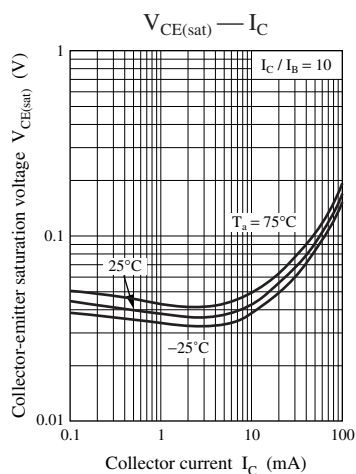
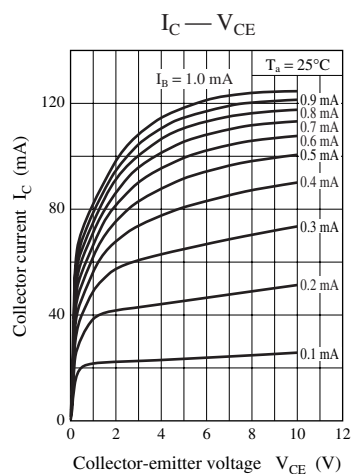


Characteristics charts of UP04215





Characteristics charts of UP04216



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