10 V, 70 mA, f_T = 1.5 GHz, NPN Single CP

1 03

SC−59 / CP3
CASE 318BJ

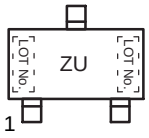
Features

- High Cut−off Frequency: f_T = 1.5 GHz typ.
- High Gain: $|S21e|^2$ = 13 dB typ. (f = 0.4 GHz)
- This is a Pb−Free Device

Applications

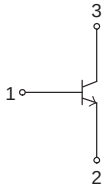
- VHF, RF, MIXER, OSC, IF Amplifier

MARKING DIAGRAM



ZU = Specific Device Code

ELECTRICAL CONNECTION



1: Base
2: Emitter
3: Collector

ABSOLUTE MAXIMUM RATINGS (at T_A = 25°C)

Parameter	Symbol	Ratings	Unit
Collector to Base Voltage	V_{CBO}	20	V
Collector to Emitter Voltage	V_{CEO}	10	V
Emitter to Base Voltage	V_{EBO}	3	V
Collector Current	I_C	70	mA
Collector Dissipation	P_C	200	mW
Junction Temperature	T_J	150	°C
Storage Temperature	T_{STG}	55 to +150	°C

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

ORDERING INFORMATION

Device	Package	Shipping†
15GN03CA TB E	SC 59/CP3 (Pb Free)	3000 / Tape & Reel

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specification Brochure, BRD8011/D.

ELECTRICAL CHARACTERISTICS (at T_A = 25°C)

Parameter	Symbol	Conditions	Ratings			Unit
			Min	Typ	Max	
Collector Cutoff Current	I_{CBO}	V_{CB} = 10 V, I_E = 0 A				

TYPICAL CHARACTERISTICS

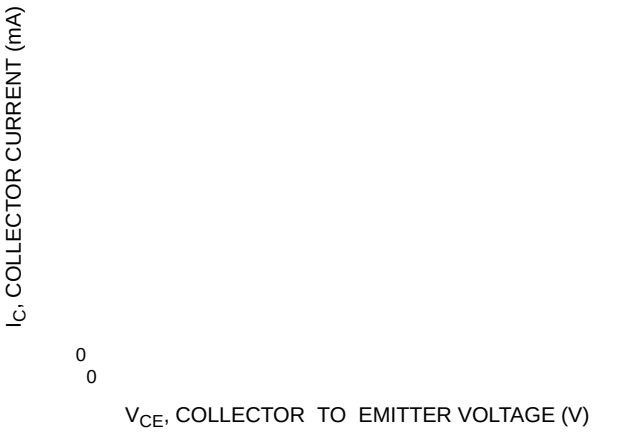


Figure 1. $I_C - V_{CE}$

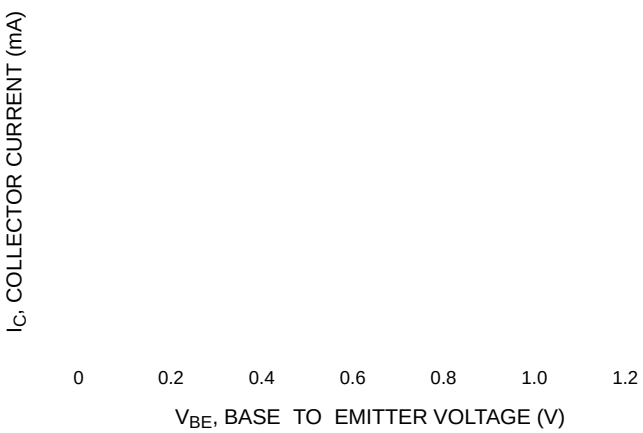


Figure 2. $I_C - V_{BE}$

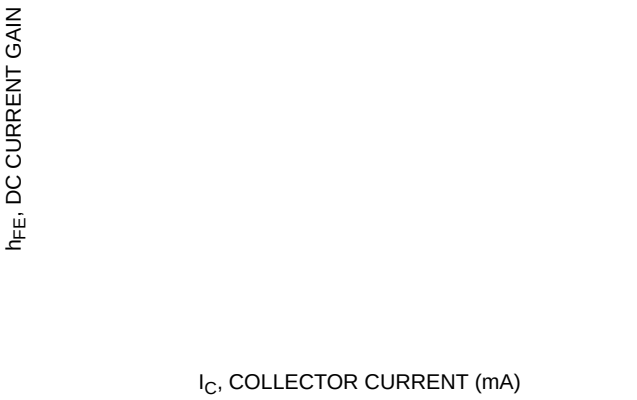


Figure 3. $h_{FE} - I_C$

Figure 4. $f_T - I_C$

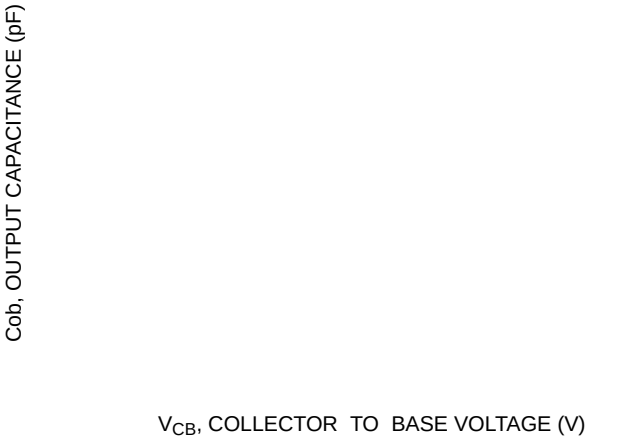


Figure 5. Cob − V_{CB}

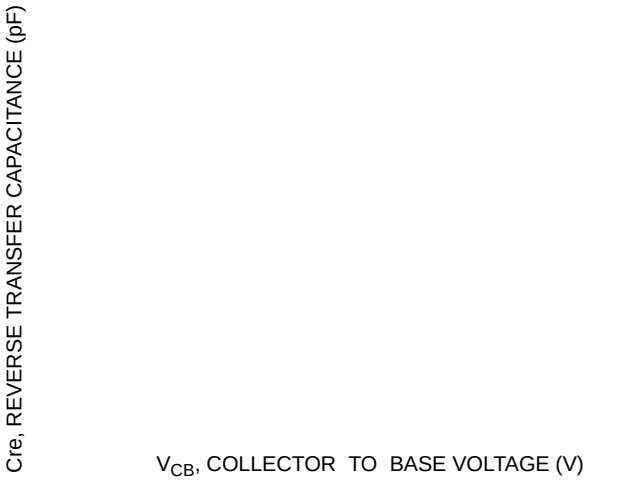


Figure 6. Cre − V_{CB}

TYPICAL CHARACTERISTICS (CONTINUED)

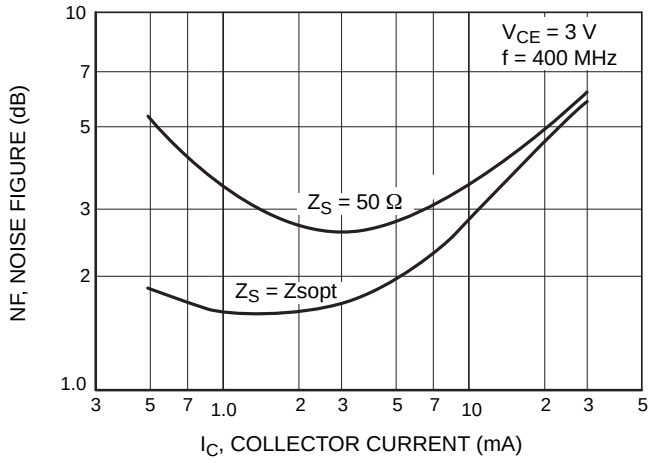


Figure 7. NF − I_C

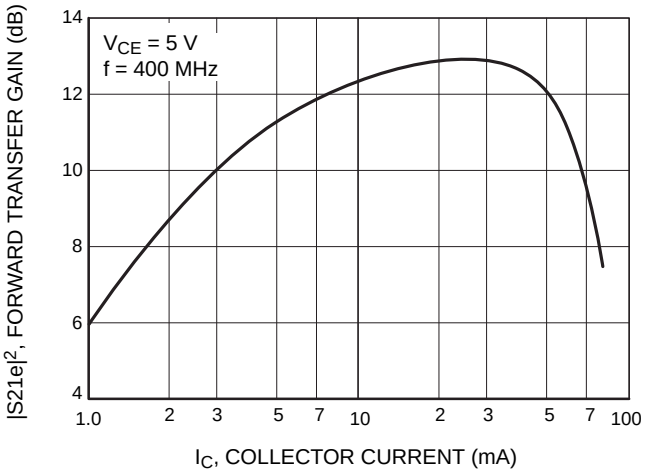


Figure 8. $|S21e|^2$ − I_C

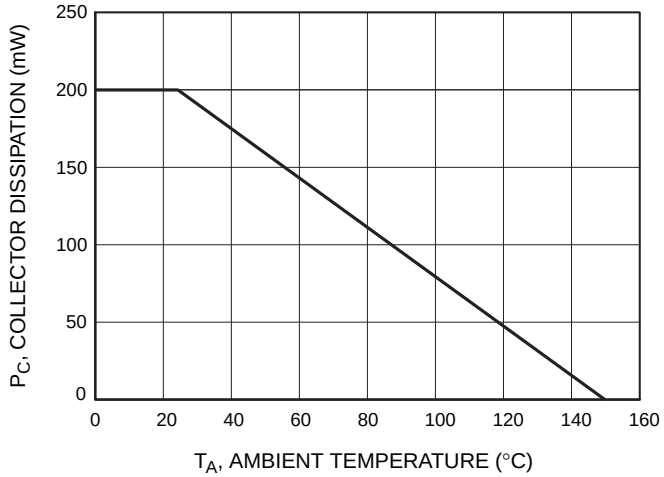


Figure 9. P_C − T_A

LAND PATTERN EXAMPLE

Unit: mm

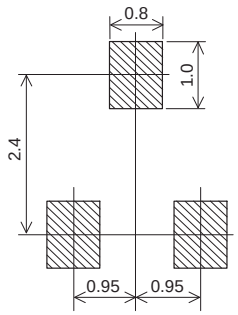


Figure 10. Land Pattern Example

S PARAMETERS (COMMON EMITTER) (continued)

Freq(MHz)	|S11|	∠S11	|S21|	∠S21	|S12|	∠S12	|S22|	∠S22
V_{CE} = 5 V, I_C = 15 mA, Z_O = 50 Ω								
100	0.506	103.02	14.843	116.40	0.020	52.22	0.680	19.13
200	0.433	139.11	8.300	98.87	0.027	55.27	0.595	17.41
300	0.418	156.74	5.691	89.86	0.032	60.47	0.571	17.79
400	0.416	167.49	4.336	83.26	0.040	65.01	0.567	19.20
500	0.423	175.59	3.518	77.72	0.047	70.77	0.564	21.38
600	0.434	177.94	2.949	72.99	0.056	75.36	0.566	23.76
700	0.441	172.60	2.558	68.36	0.064	77.18	0.566	26.43
800	0.454	167.70	2.257	64.14	0.073	80.34	0.573	29.43
900	0.468	163.21	2.026	60.20	0.084	82.23	0.576	32.58
1000	0.478	159.35	1.833	56.21	0.094	82.82	0.579	35.40
V_{CE} = 5 V, I_C = 20 mA, Z_O = 50 Ω								
100	0.473	110.94	15.555	113.24	0.018	48.75	0.651	18.99
200	0.420	144.96	8.504	96.80	0.025	55.46	0.577	16.75
300	0.412	160.51	5.806	88.35	0.032	64.32	0.556	16.94
400	0.412	170.47	4.415	81.97	0.040	69.43	0.553	18.38
500	0.423	177.81	3.567	76.52	0.047	73.49	0.552	20.62
600	0.434	176.33	2.998	72.06	0.054	76.85	0.554	23.22
700	0.443	171.32	2.597	67.40	0.064	79.43	0.555	25.76
800	0.457	166.61	2.289	62.99	0.075	80.21	0.562	28.77
900	0.470	162.56	2.044	58.98	0.084	82.61	0.567	31.92
1000	0.484	159.03	1.849	54.97	0.095	83.62	0.572	34.90
V_{CE} = 5 V, I_C = 30 mA, Z_O = 50 Ω								
1001.849								

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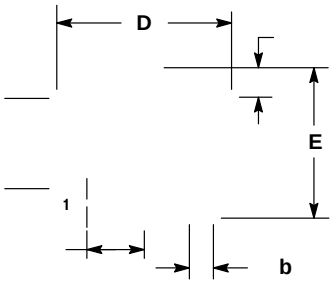

DIM	MILLIMETERS MIN	MAX
A