Shandong Yiguang Electronic Joint stock Co., Ltd

SEMICONDUCTOR
TECHNICAL DATA

BCW69/70LT1

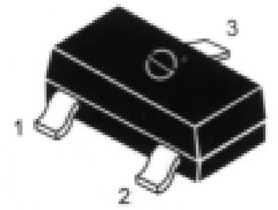
PNP EPITAXIAL SILICON TRANSISTOR

SURFACE MOUNT SMALL SIGNAL TRANSISTORS

ABSOLUTE MAXIMUM RATINGS at Ta=25℃

Characteristic	Symbol	Rating	Unit
Collector-Base Voltage	Vcbo	-50	V
Collector-Emitter Voltage	Vceo	-45	V
Emitter-Base Voltage	Vebo	-5.0	V
Collector Current	Ic	-100	mA
Peak Collector Current	I_{CM}	-200	mA
Peak Emitter Current	I_{EM}	-200	mA
Power Dissipation at T_{SB}=50℃(Note1)	P_D	310	mW
Junction Temperature	Tj	150	℃
Storage Temperature	Tstg	-65-150	℃

Package:SOT-23



PIN: / STYLE	1	2	3
NO.1	B	E	C

ELECTRICAL CHARACTERISTICS at Ta=25℃

Characteristic	Symbol	Min	Typ	Max	Unit	Test Conditions
DC Current Gain Current Gain Group A (Note2) BCW69 Current Gain Group A BCW70	Hfe	120 215	180	260 500		Vce=-5.0V Ic= -2.0mA
Collector-Emitter Saturation Voltage	Vce(sat)		-90 -250	300 650	mV	Ic= -10mA Ib= -0.5mA Ic= -100mA Ib= -5.0mA
Base-Emitter Saturation Voltage	Vbe(sat)		-700 -900		mV	Ic= -10mA Ib= -0.5mA Ic= -100mA Ib= -5.0mA
Base-Emitter Voltage	Vbe	-600	-660	-750 -800	mV	Vce= -5.0V Ic= -2.0mA Vce= -5.0V Ic= -10mA
Collector-Emitter Cutoff Current	Ices		-0.2	-15 -4.0	nA uA	Vce= -50V Vce= -50V,Tj=125℃
Gain Bandwidth Product	f_T		150		MHz	Vce=-5V Ic=-10mA f=100MHz
Collector-Base Capacitance	Ccbo			6.0	pF	Vcb= -10V f=1.0MHz
Noise Figure	NF		2.0	10	dB	Vce=-5VIc=-200uA R_G=2kΩ f=1MHz △f=200MHz

Note1:Device mounted on ceramic substrate 0.7mm x 2.5mm^2 area.

Note2: Current gain subgroup “c” is not available for BC856.

DEVICE MARKING:

BCW69LT1=H1

BCW70LT1=H2

BCW69/70LT1

TYPICAL NOISE CHARACTERISTICS

(V_{CE} = – 5.0 Vdc, T_A = 25°C)

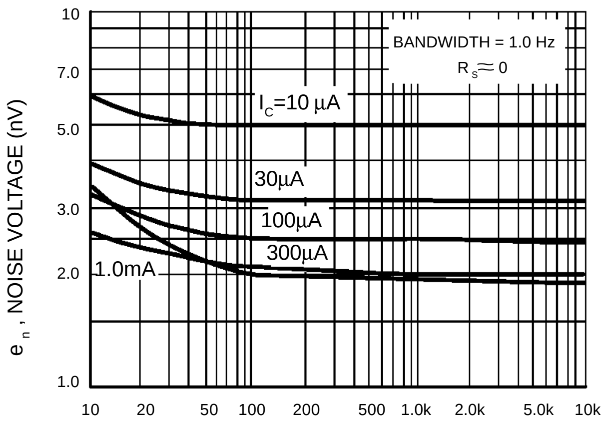


Figure 1. Noise Voltage

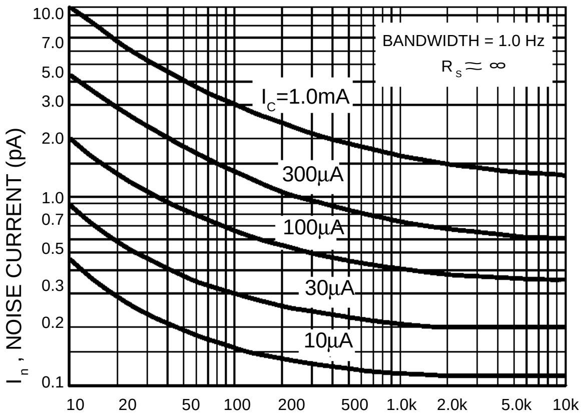


Figure 2. Noise Current

NOISE FIGURE CONTOURS

(V_{CE} = – 5.0 Vdc, T_A = 25°C)

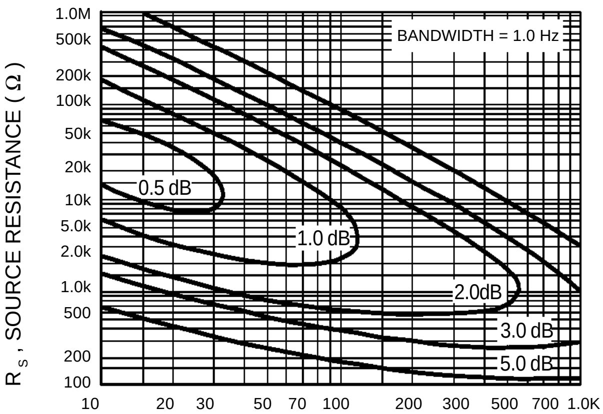


Figure 3. Narrow Band, 100 Hz

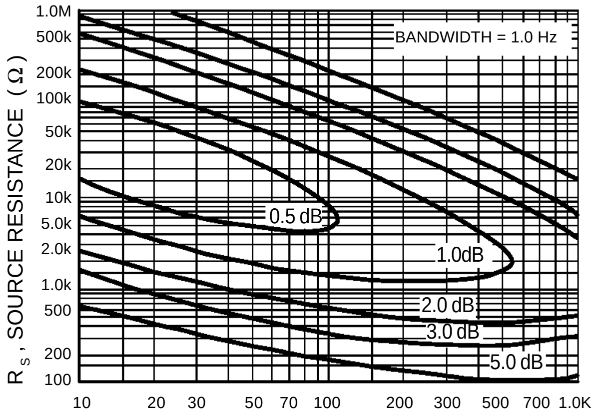


Figure 4. Narrow Band, 1.0 kHz

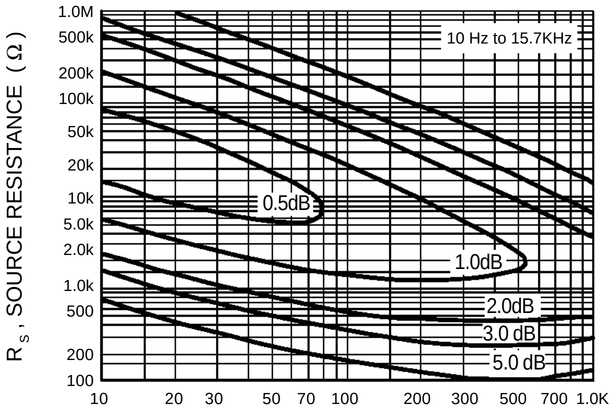


Figure 5. Wideband

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TYPICAL STATIC CHARACTERISTICS

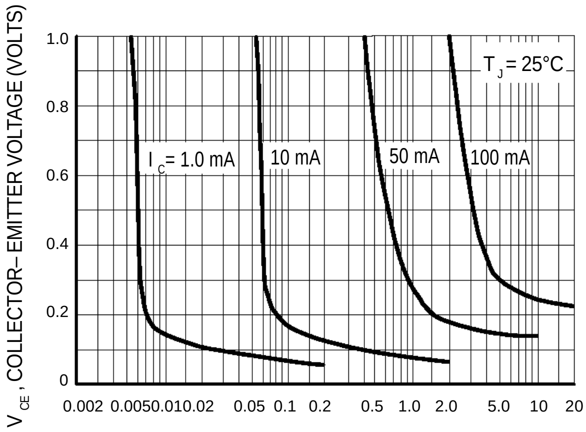

Figure 6. Collector Saturation Region

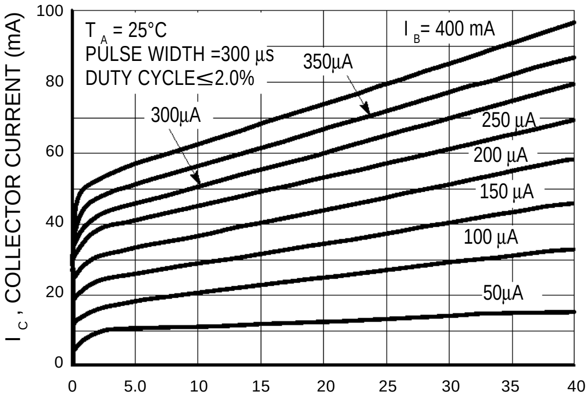

Figure 7. Collector Characteristics

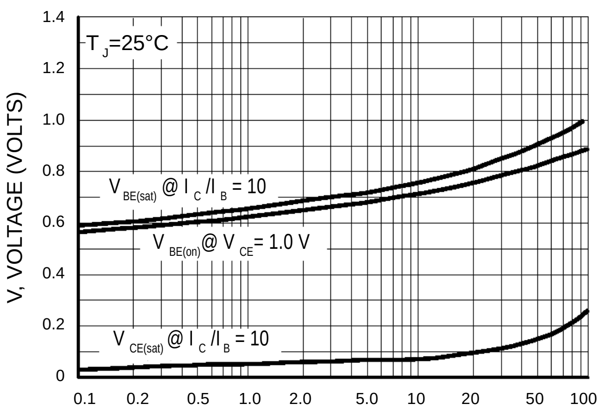

Figure 10. "On" Voltages

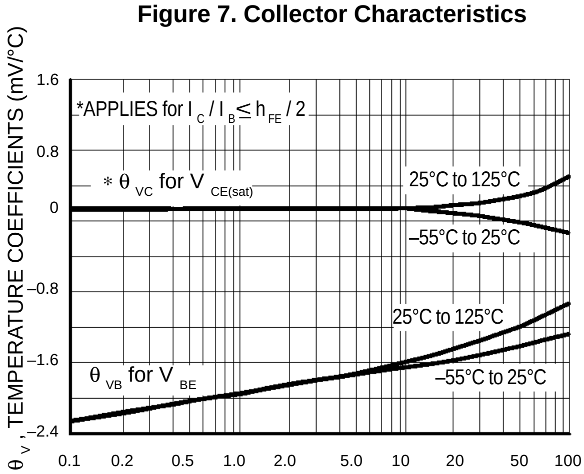

Figure 11. Temperature Coefficients

BCW69LT1 BCW70LT1

TYPICAL DYNAMIC CHARACTERISTICS

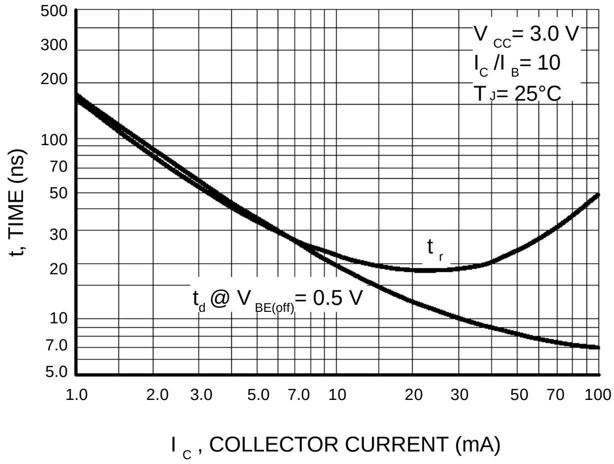

Figure 10. Turn–On Time

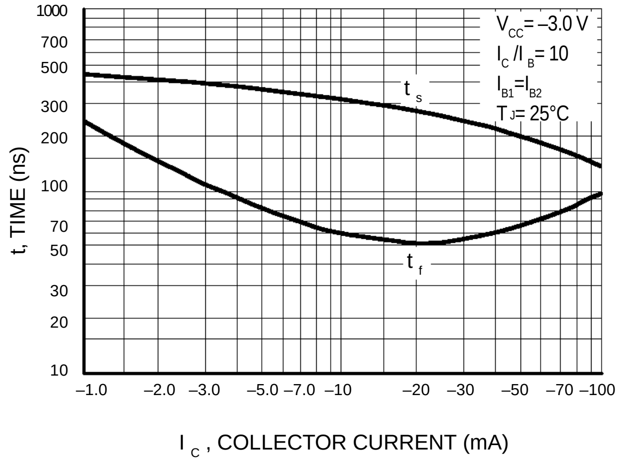

Figure 11. Turn–Off Time

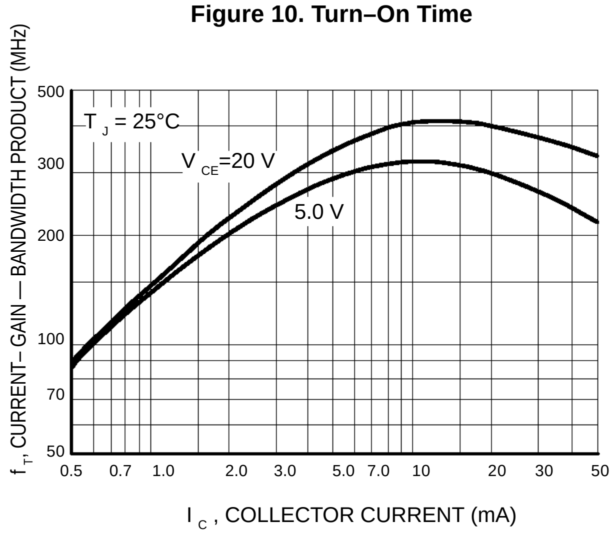

Figure 12. Current–Gain — Bandwidth Product

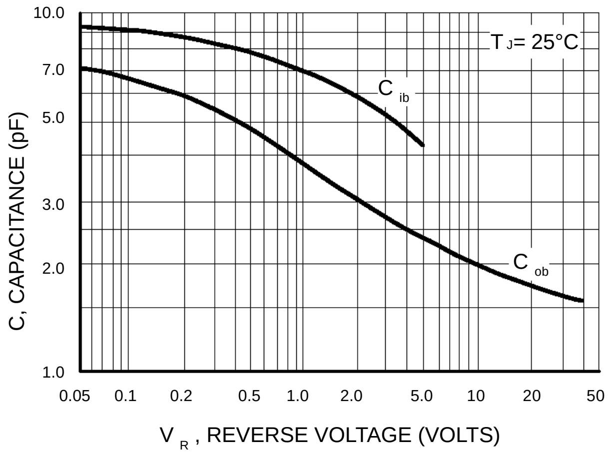

Figure 13. Capacitance

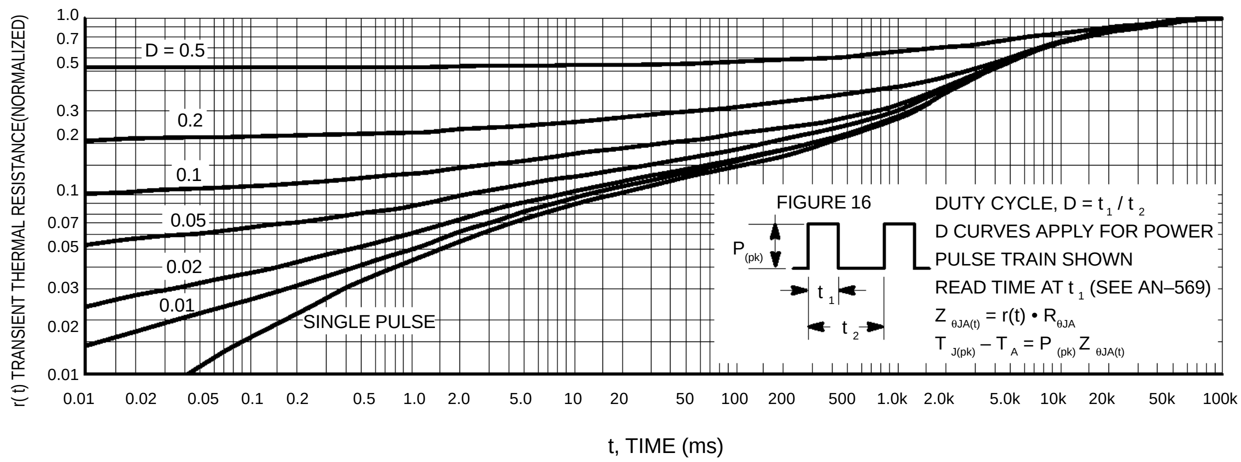

Figure 14. Thermal Response

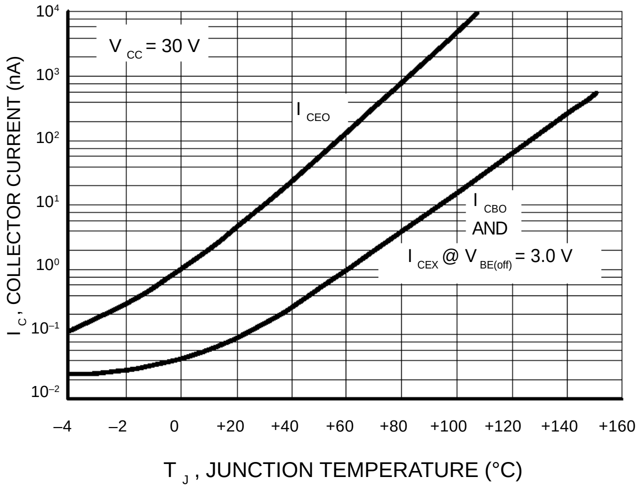

Figure 15. Typical Collector Leakage Current

DESIGN NOTE: USE OF THERMAL RESPONSE DATA

A train of periodical power pulses can be represented by the model as shown in Figure 16. Using the model and the device thermal response the normalized effective transient thermal resistance of Figure 14 was calculated for various duty cycles.

To find $Z_{\theta JA(t)}$, multiply the value obtained from Figure 14 by the steady state value $R_{\theta JA}$.

Example:

Dissipating 2.0 watts peak under the following conditions:

t_1 = 1.0 ms, t_2 = 5.0 ms. (D = 0.2)

Using Figure 14 at a pulse width of 1.0 ms and D = 0.2, the reading of r(t) is 0.22.

The peak rise in junction temperature is therefore

$\Delta T = r(t) \times P_{(pk)} \times R_{\theta JA} = 0.22 \times 2.0 \times 200 = 88°C$.

For more information, see AN–569.