PHILIPS INTERNATIONAL 56E D 7110826 0041966 430 PHIN

T-33-17

SILICON PLANAR EPITAXIAL TRANSISTORS

P-N-P transistors in TO-39 metal envelopes for general purpose applications. N-P-N complements are BC140 and BC141.

QUICK REFERENCE DATA

			BC160	BC161	
Collector-emitter voltage (open base)	$-V_{CEO}$	max.	40	60	V
Collector current (d.c.)	$-I_C$	max.	1		A
Total power dissipation up to T_{case} = 45 °C	P_{tot}	max.	3,7		W
Junction temperature	T_j	max.	175		°C
Transition frequency at f = 20 MHz $-I_C$ = 50 mA; $-V_{CE}$ = 10 V	f_T	>	50		MHz

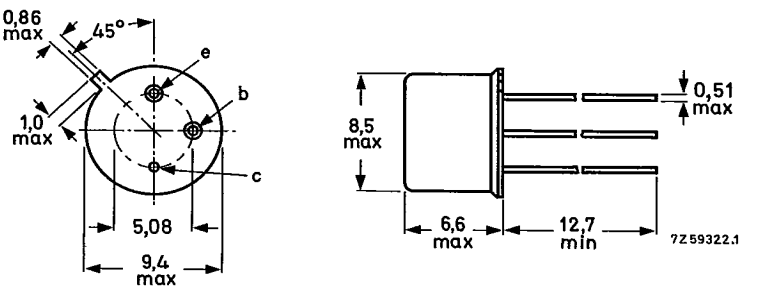
			BC160-10 BC161-10	BC160-16 BC161-16
D.C. current gain $-I_C$ = 100 mA; $-V_{CE}$ = 1 V	h_{FE}	>	63	100
		<	160	250

MECHANICAL DATA

Dimensions in mm

Fig. 1 TO-39.

Collector connected to case.



maximum lead diameter is guaranteed only for 12,7 mm.

Qualification approved to CECC 50 002-015/016

RATINGS

Limiting values in accordance with the Absolute Maximum System (IEC 134)

			BC160	BC161	
Collector-base voltage (open emitter)	$-V_{CBO}$	max.	40	60	V
Collector-emitter voltage (open base)	$-V_{CEO}$	max.	40	60	V
Emitter-base voltage (open collector)	$-V_{EBO}$	max.	5	5	V
Collector current (d.c.)	$-I_C$	max.	1		A
Base current (d.c.)	$-I_B$	max.	100		mA
Total power dissipation up to T_{case} = 45 °C	P_{tot}	max.	3,7		W
Storage temperature range	T_{stg}		−65 to + 150		°C
Junction temperature	T_j	max.	175		°C

THERMAL RESISTANCE

From junction to ambient in free air	$R_{th\ j\text{-}a}$	=	200	K/W
From junction to case	$R_{th\ j\text{-}c}$	=	35	K/W

CHARACTERISTICS

T_{amb} = 25 °C unless otherwise specfied

Collector cut-off current				
V_{BE} = 0; $-V_{CE}$ = $-V_{CEOmax}$	$-I_{CES}$	typ.	10	nA
		<	100	nA
V_{BE} = 0; $-V_{CE}$ = $-V_{CEOmax}$; T_{amb} = 150 °C	$-I_{CES}$	typ.	10	μA
		<	100	μA
Base-emitter voltage				
$-I_C$ = 1 A; $-V_{CE}$ = 1 V	$-V_{BE}$	typ.	1,0	V
		<	1,7	V
Saturation voltage				
$-I_C$ = 1 A; $-I_B$ = 100 mA	$-V_{CEsat}$	typ.	0,6	V
		<	1,0	V
Transition frequency at f = 20 MHz				
$-I_C$ = 50 mA; $-V_{CE}$ = 10 V	f_T	>	50	MHz
Collector capacitance at f = 1 MHz				
$I_E = I_e$ = 0; $-V_{CB}$ = 10 V	C_c	<	30	pF
Emitter capacitance at f = 1 MHz				
$I_C = I_c$ = 0; $-V_{EB}$ = 0,5 V	C_e	<	180	pF

			BC160-10 BC161-10	BC160-16 BC161-16
D.C. current gain				
$-I_C$ = 100 μA; $-V_{CE}$ = 1 V	h_{FE}	typ.	80	120
		>	63	100
$-I_C$ = 100 mA; $-V_{CE}$ = 1 V	h_{FE}	typ.	100	160
		<	160	250
$-I_C$ = 1 A; $-V_{CE}$ = 1 V	h_{FE}	typ.	20	30

CHARACTERISTICS (continued)

T_{amb} = 25 °C

Switching times

$-I_{Con}$ = 100 mA; $-I_{Bon} = I_{Boff}$ = 5 mA

Turn-on time	t_{on}	<	500 ns
Turn-off time	t_{off}	<	650 ns

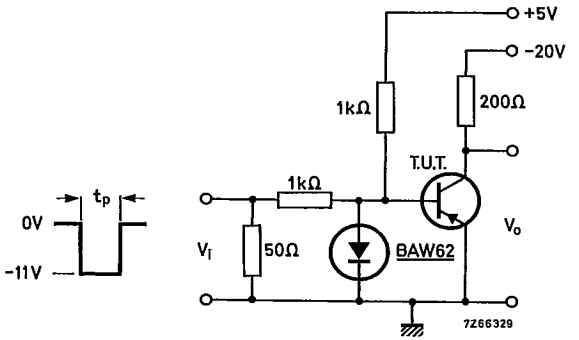


Fig. 2 Test circuit.

Pulse generator:		Oscilloscope:	
Pulse duration	t_p = 10 μs	Rise time	$t_r \leqslant$ 15 ns
Rise time	$t_r \leqslant$ 15 ns	Input impedance	$Z_i \geqslant$ 100 kΩ
Fall time	$t_f \leqslant$ 15 ns		
Source impedance.	Z_s = 50 Ω		