SILICON TRANSISTOR

High voltage n-p-n transistor in a TO-39 metal envelope with the collector connected to the case. It is intended for use in high performance amplifier, oscillator and switching applications.

QUICK REFERENCE DATA

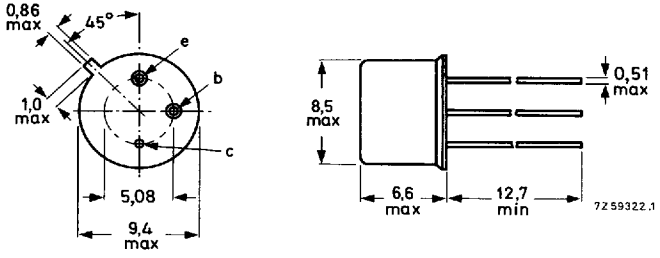
Collector-base voltage (open emitter)	V_{CBO}	max.	120	V
Collector-emitter voltage ($R_{BE} \leqslant 10\ \Omega$)	V_{CER}	max.	100	V
Collector current (d.c.)	I_C	max.	500	mA
Total power dissipation up to T_{case} = 25 °C	P_{tot}	max.	3,0	W
Junction temperature	T_j	max.	200	°C
D.C. current gain				
I_C = 0,1 mA; V_{CE} = 10 V	h_{FE}	>	20	
I_C = 10 mA; V_{CE} = 10 V; T = −55 °C	h_{FE}	>	20	
I_C = 10 mA; V_{CE} = 10 V	h_{FE}	>	35	
I_C = 150 mA; V_{CE} = 10 V	h_{FE}	40	to 120	

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 50 002-104

RATINGS

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

Collector-base voltage (open emitter)	V_{CBO}	max.	120	V
Collector-emitter voltage (open base)	V_{CEO}	max.	80	V
Collector-emitter voltage ($R_{BE} \leqslant 10\ \Omega$)	V_{CER}	max.	100	V
Emitter-base voltage (open collector)	V_{EBO}	max.	7	V
Collector current (d.c.)	I_C	max.	500	mA
Total power dissipation				
up to T_{amb} = 25 °C	P_{tot}	max.	0,8	W
up to T_{case} = 100 °C	P_{tot}	max.	1,7	W
up to T_{case} = 25 °C	P_{tot}	max.	3,0	W
Storage temperature range	T_{stg}		−65 to +150	°C
Junction temperature	T_j	max.	200	°C

THERMAL RESISTANCE

From junction to ambient in free air	$R_{th\ j\text{-}a}$	=	219	K/W
From junction to case	$R_{th\ j\text{-}c}$	=	58,3	K/W

CHARACTERISTICS

T_{amb} = 25 °C unless otherwise specified

Collector cut-off current			
$I_E = 0$; $V_{CB} = 90$ V	I_{CBO}	<	10 nA
$I_E = 0$; $V_{CB} = 90$ V; $T_{amb} = 150$ °C	I_{CBO}	<	15 μA
Emitter cut-off current			
$I_C = 0$; $V_{EB} = 5$ V	I_{EBO}	<	10 nA
Collector-emitter sustaining voltage *			
$I_C = 100$ mA; $R_{BE} \geqslant 10\ \Omega$	$V_{CERsust}$	>	100 V
$I_C = 30$ mA; $I_B = 0$	$V_{CEOsust}$	>	80 V
Saturation voltages *			
$I_C = 150$ mA; $I_B = 15$ mA	V_{CEsat}	<	0.5 V
	V_{BEsat}	<	1.3 V
$I_C = 50$ mA; $I_B = 5$ mA	V_{CEsat}	<	0.9 V
	V_{BEsat}	<	1.2 V
Breakdown voltages			
$I_E = 0$; $I_C = 100$ μA	$V_{(BR)CBO}$	>	120 V
$I_C = 0$; $I_E = 100$ μA	$V_{(BR)EBO}$	>	7,0 V
D.C. current gain			
$I_C = 0{,}1$ mA; $V_{CE} = 10$ V	h_{FE}	>	20
$I_C = 10$ mA; $V_{CE} = 10$ V; T = −55 °C	h_{FE}	>	20
$I_C = 10$ mA; $V_{CE} = 10$ V *	h_{FE}	>	35
$I_C = 150$ mA; $V_{CE} = 10$ V *	h_{FE}		40 to 120

* Measured under pulsed conditions to avoid excessive dissipation.
Pulse duration $t \leqslant 300$ μs, duty cycle $\delta < 0{,}02$.

CHARACTERISTICS (continued)

h parameters at f = 1 kHz (common base)

I_C = 1 mA; V_{CE} = 5 V

Input impedance	h_{ib}		20 to 30 Ω
Reverse voltage transfer ratio	h_{rb}		$1{,}25\ 10^{-4}$
Output conductance	h_{ob}		0,5 μS

I_C = 5 mA; V_{CE} = 10 V

Input impedance	h_{ib}		4 to 8 Ω
Reverse voltage transfer ratio	h_{rb}		$1{,}50\ 10^{-4}$
Output conductance	h_{ob}		0,5 μS

Small signal current gain (common emitter)

I_C = 1 mA; V_{CE} = 5 V; f = 1 kHz	h_{fe}		30 to 100
I_C = 5 mA; V_{CE} = 10 V; f = 1 kHz	h_{fe}	>	45
I_C = 50 mA; V_{CE} = 10 V; f = 20 MHz	h_{fe}	>	2,5
Collector capacitance $I_E = I_e = 0$; V_{CB} = 10 V	C_c	<	15 pF
Emitter capacitance $I_C = I_c = 0$; V_{EB} = 0,5 V	C_e	<	85 pF