FERRANTI semiconductors®

HT2

NPN Silicon Planar High Voltage Transistor

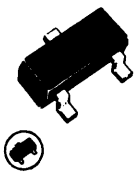
DESCRIPTION

This plastic encapsulated transistor is designed for any application requiring high voltage capability at relatively low collector currents.

Complementary to the HT3

Encapsulated in the popular SOT-23 package the device is designed specifically for use in thin and thick film hybrid circuits in both industrial and commercial applications.

The Ferranti SOT-23 package is formed by transfer moulding a SILICONE plastic specially selected to provide a rugged one piece encapsulation resistant to severe environments.



SOT-23
Actual size in inset

ABSOLUTE MAXIMUM RATINGS

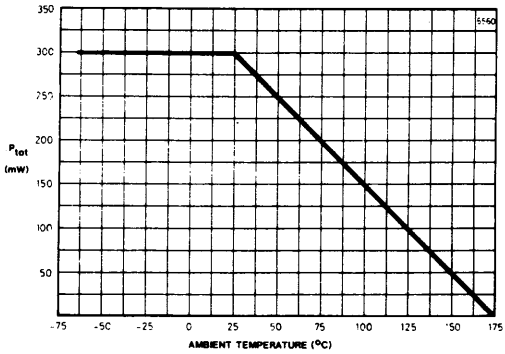
Parameter	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	90	V
Collector-Emitter Voltage	V_{CEO}	80	V
Emitter-Base Voltage	V_{EBO}	5	V
Collector Current	I_C	100	mA
Power Dissipation (at $T_{amb} = 25°C$)*	P_{tot}	300	mW
Operating and Storage Temperature Range		−65 to +175	°C

*Maximum power dissipation is calculated assuming that the device is mounted on a ceramic substrate measuring 10 × 8 × 0.6mm

HT2

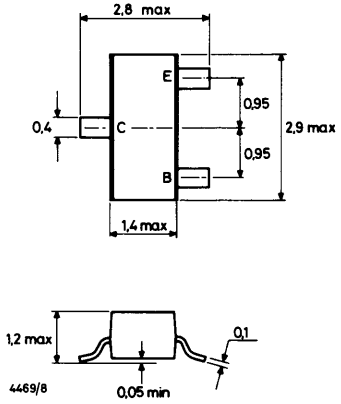
CHARACTERISTICS (at 25°C ambient temperature unless otherwise stated).

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	$V_{(BR)CBO}$	90	–	–	V	$I_C = 10\mu A$
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	80	–	–	V	$I_C = 2mA$
Emitter-base breakdown voltage	$V_{(BR)EBO}$	5	–	–	V	$I_E = 10\mu A$
Collector cut-off currents	I_{CBO}	–	–	100	nA	$V_{CB} = 80V$, $I_E = 0$
	I_{CES}	–	–	100	nA	$V_{CE} = 80V$, $V_{BE} = 0$
		–	–	5	μA	$V_{CE} = 80V$, $V_{BE} = 0$ $T_j = 125°C$
	I_{CEX}	–	–	10	μA	$V_{CE} = 80V$, $V_{BE} = 0.2V$ $T_j = 85°C$
	I_{EBO}	–	–	200	nA	$V_{EB} = 4V$
Static forward current transfer ratio	h_{FE}	25	–	–		$I_C = 100\mu A$, $V_{CE} = 1V$
		30	–	–		$I_C = 1mA$, $V_{CE} = 1V$
		50	–	–		$I_C = 10mA$, $V_{CE} = 1V$
		30	–	–		$I_C = 50mA$, $V_{CE} = 1V$
Collector-emitter saturation voltage	$V_{CE(sat)}$	–	–	750	mV	$I_C = 50mA$, $I_B = 5mA$
Base-emitter saturation voltage	$V_{BE(sat)}$	–	–	1.1	V	$I_C = 50mA$, $I_B = 5mA$
Output capacitance	C_{obo}	–	–	10	pF	$V_{CB} = 10V$, $I_E = 0$ $f = 1MHz$
Transition frequency	f_T	60	–	–	MHz	$V_{CE} = 5V$, $I_C = 10mA$ $f = 10MHz$
Switching times	t_{on}	–	–	500	ns	$I_C = 10mA$
	t_{off}	–	–	2000	ns	$I_{B1} = I_{B2} = 1mA$



DERATING CURVE

PACKAGE DETAILS



SOT-23
Dimensions in millimetres

Devices are identified by an alpha-numerical code stamped on the body of the device as follows:

HT2 .. .. 2T

FERRANTI semiconductors®

HT3

PNP Silicon Planar High Voltage Transistor

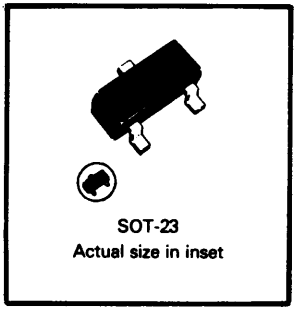
DESCRIPTION

This plastic encapsulated transistor is designed for any application requiring high voltage capability at relatively low collector currents.

Complementary to the HT2

Encapsulated in the popular SOT-23 package the device is designed specifically for use in thin and thick film hybrid circuits in both industrial and commercial applications.

The Ferranti SOT-23 package is formed by transfer moulding a SILICONE plastic specially selected to provide a rugged one piece encapsulation resistant to severe environments.



SOT-23
Actual size in inset

ABSOLUTE MAXIMUM RATINGS

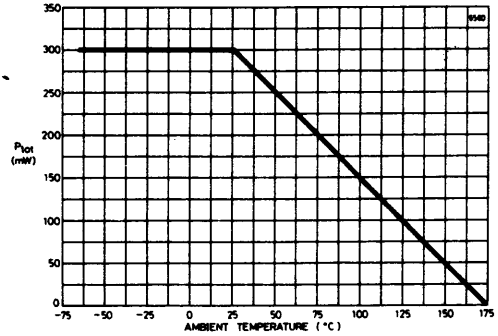
Parameter	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	−90	V
Collector-Emitter Voltage	V_{CEO}	−80	V
Emitter-Base Voltage	V_{EBO}	−5	V
Collector Current	I_C	100	mA
Power Dissipation (at $T_{amb} = 25°C$)*	P_{tot}	300	mW
Operating and Storage Temperature Range		−65 to +175	°C

*Maximum power dissipation is calculated assuming that the device is mounted on a ceramic substrate measuring 10 × 8 × 0.6mm

HT3

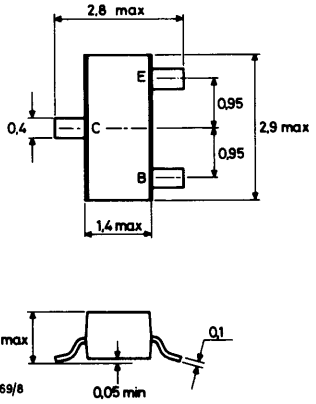
CHARACTERISTICS (at 25°C ambient temperature unless otherwise stated).

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	$V_{(BR)CBO}$	−90	–	–	V	$I_C = -10\mu A$
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	−80	–	–	V	$I_C = -2mA$
Emitter-base breakdown voltage	$V_{(BR)EBO}$	−5	–	–	V	$I_E = -10\mu A$
Collector cut-off currents	I_{CBO}	–	–	−100	nA	$V_{CB} = -80V$, $I_E = 0$
	I_{CES}	– –	– –	−100 −5	nA μA	$V_{CE} = -80V$, $V_{BE} = 0$ $V_{CE} = -80V$ $V_{BE} = 0$ $T_j = 125°C$
	I_{CEX}	–	–	−10	μA	$V_{CE} = -80V$ $V_{BE} = -0.2V$, $T_j = 85°C$
	I_{EBO}	–	–	−200	nA	$V_{BE} = -4V$
Static forward current transfer ratio	h_{FE}	30 35 50 30	– – – –	– – – –		$I_C = -100\mu A$, $V_{CE} = -1V$ $I_C = -1mA$, $V_{CE} = -1V$ $I_C = -10mA$, $V_{CE} = -1V$ $I_C = -50mA$, $V_{CE} = -1V$
Collector-emitter saturation voltage	$V_{CE(sat)}$	–	–	−750	mV	$I_C = -50mA$, $I_B = -5mA$
Base-emitter saturation voltage	$V_{BE(sat)}$	–	–	−1.1	V	$I_C = -50mA$, $I_B = -5mA$
Output capacitance	C_{obo}	–	–	10	pF	$V_{CB} = -10V$, $I_E = 0$ $f = 1MHz$
Transition frequency	f_T	50	–	–	MHz	$V_{CE} = -5V$, $I_C = -10mA$ $f = 10MHz$
Switching times	t_{on} t_{off}	– –	– –	500 1000	ns ns	$I_C = -10mA$ $I_{B1} = I_{B2} = -1mA$



DERATING CURVE

PACKAGE DETAILS



SOT-23
Dimensions in millimetres

Devices are identified by an alpha-numerical code stamped on the body of the device as follows:

HT3 .. .. 3T