



NPN Transistor Bare Die - SiS853

Rev 1.1
13/10/23

General purpose high voltage amplifier in bare die form
Complement to PNP SiS953

Features:

- 100 Volt V_{CE0}
- Very low $V_{CE(sat)}$
- High gain across wide current range
- High reliability gold back metal
- High reliability tested grades for Military + Space

Ordering Information:

The following part suffixes apply:

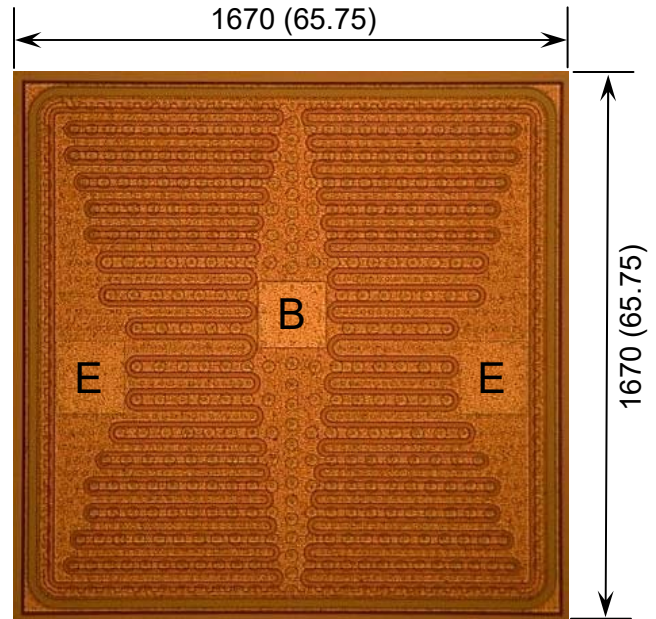
- No suffix - MIL-STD-750 /2072 Visual Inspection
- "H" - MIL-STD-750 /2072 Visual Inspection
+ MIL-STD-38534 Class H LAT
- "K" - MIL-STD-750 /2072 Visual Inspection
+ MIL-STD-38534 Class K LAT

LAT = Lot Acceptance Test.

For further information on LAT process flows see below.

www.siliconsupplies.com/quality/bare-die-lot-qualification

Die Dimensions in μm (mils)



E = EMITTER B = BASE

DIE BACK = COLLECTOR

Supply Formats:

- Default – Die in Waffle Pack (100 per tray capacity)
- Sawn Wafer on Tape – Specific request
- Unsawn Wafer – Specific request
- With additional electrical selection – Specific request
- Sawn as pairs or adjacent pair pick – Specific request

Mechanical Specification

Die Size (Excluding Saw Street)	1670 x 1670 65.75 x 65.75	μm mils
Base Pad Size	200 x 200 7.87 x 7.87	μm mils
Emitter Pad Size	200 x 220 7.87 x 8.66	
Die Thickness	230 (± 20) 9.06 (± 0.79)	μm mils
Top Metal Composition	Al-Si	
Back Metal Composition	Au	





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Absolute Maximum Ratings $T_A = 25^\circ\text{C}$ unless otherwise stated

PARAMETER	SYMBOL	VALUE	UNIT
Collector-Base Voltage	V_{CBO}	200	V
Collector-Emitter Voltage	V_{CEO}	100	V
Emitter-Base Voltage	V_{EBO}	6	V
Collector Current	I_C	6	A
Collector Current Pulsed	I_{CM}	10	A
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature	T_{stg}	-55 to 150	$^\circ\text{C}$

Electrical Characteristics $T_A = 25^\circ\text{C}$ unless otherwise stated

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C = 100\mu\text{A}$	200	220	-	V
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = 10\text{mA}$	100	110	-	V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E = 100\mu\text{A}$	6	8	-	V
Collector Cut-off Current	I_{CBO}	$V_{CB} = 150\text{V}$	-	-	6	nA
Emitter Cut-off Current	I_{EBO}	$V_{EB} = 6\text{V}$	-	-	6	nA
ON CHARACTERISTICS						
Forward-Current Transfer Ratio	h_{FE}	$V_{CE} = 2\text{V}, I_C = 10\text{mA}$	140	-	-	-
		$V_{CE} = 2\text{V}, I_C = 2\text{A}$	140	200	300	-
		$V_{CE} = 2\text{V}, I_C = 4\text{A}$	60	100	-	-
		$V_{CE} = 2\text{V}, I_C = 10\text{A}$	-	30	-	-
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 100\text{mA}, I_B = 5\text{mA}$	-	22	45	mV
		$I_C = 2\text{A}, I_B = 100\text{mA}$	-	135	160	mV
		$I_C = 5\text{A}, I_B = 250\text{mA}$	-	300	380	mV
Base Saturation Voltage	$V_{BE(sat)}$	$I_C = 5\text{A}, I_B = 250\text{mA}$	-	1.00	1.10	V
	$V_{BE(on)}$	$V_{CE} = 2\text{V}, I_C = 5\text{A}$	-	1.10	1.15	V
SMALL SIGNAL CHARACTERISTICS¹						
Transition Frequency	f_T	$V_{CE} = 10\text{V}, I_E = -100\text{mA}$	-	190	-	MHz
Collector Output Capacitance	C_{obo}	$V_{CB} = 10\text{V}, I_E = 0, f = 1\text{MHz}$	-	38	-	pF

Note 1: Not production testing in die form. Characterized by chip design and package test.

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