NPN Transistor Bare Die, MMBTA29

Rev 1.0
26/11/24

Darlington construction transistor in bare die form

Features:

- Collector current up to 0.5A
- Very high current gain
- Enables high impedance circuitry
- Gold back metal
- High reliability tested grades for Military + Space

Ordering Information:

The following part suffixes apply:

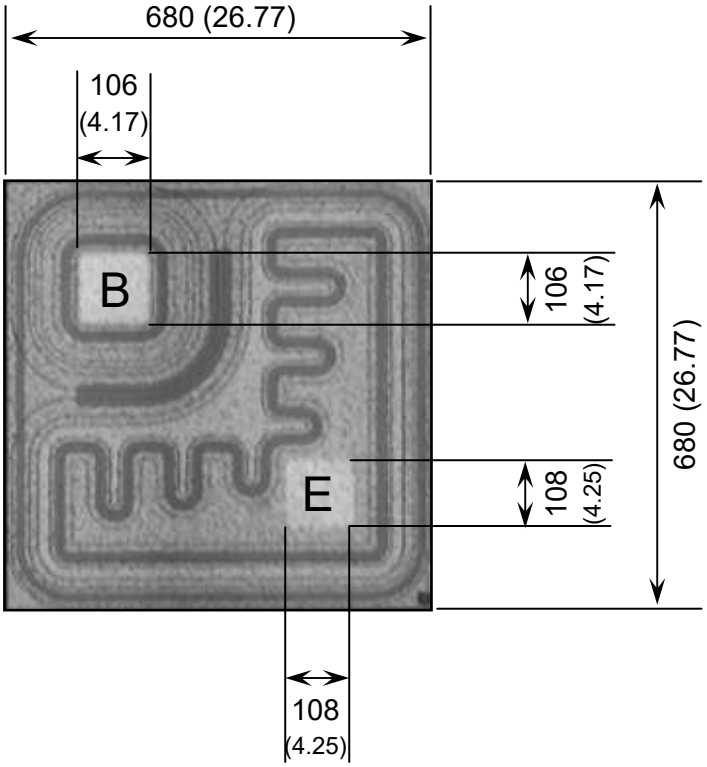
- No suffix - Commercial grade die
- "**H**" – Hi-rel grade die + MIL-STD-38534 Class H LAT
- "**K**" – Hi-rel grade die + MIL-STD-38534 Class K LAT.

LAT = Lot acceptance Test.

For information on Hi-Rel LAT flows please see below.

www.siliconsupplies.com\bare-die-lot-qualification

Die Dimensions in µm (mils)



DIE BACK = COLLECTOR

Supply Formats:

- Default – Die in Waffle Pack (400 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)	680 x 680 26.77 x 26.77	µm mils
Base Pad Size	106 x 106 4.17 x 4.17	µm mils
Emitter Pad Size	108 x 108 4.25 x 4.25	µm mils
Die Thickness	230 (±20) 9.06 (±0.79)	µm mils
Top Metal Composition	Al - 2µm	
Back Metal Composition	AuAs - 0.9µm	

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07/07/17

Absolute Maximum Ratings T_A = 25°C unless otherwise stated

PARAMETER	SYMBOL	VALUE	UNIT
Collector-Base Voltage	V_{CBO}	100	V
Collector-Emitter Voltage	V_{CEO}	100	V
Emitter-Base Voltage	V_{EBO}	12	V
Collector Current	I_C	500	mA
Junction Temperature	T_J	150	°C
Storage Temperature	T_{stg}	-55 to 150	°C

Electrical Characteristics T_A = 25°C unless otherwise stated

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C = 100µA, I_E = 0	100	-	-	V
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C = 100µA, I_B = 0	100	-	-	V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	I_E = 10µA, I_C = 0	12	-	-	V
Collector Cut-off Current	I_{CBO}	V_{CB} = 80V, I_E = 0	-	-	100	nA
	I_{CES}	V_{CE} = 80V, I_E = 0	-	-	500	nA
Emitter Cut-off Current	I_{EBO}	V_{EB} = 10V, I_C = 0	-	-	100	nA
ON CHARACTERISTICS[1]						
Forward-Current Transfer Ratio	h_{FE}	V_{CE} = 5V, I_C = 10mA	10000	-	-	-
		V_{CE} = 5V, I_C = 100mA	10000	-	-	-
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	I_C = 10mA, I_B = 0.01mA	-	-	1.2	V
		I_C = 100mA, I_B = 0.1mA	-	-	1.5	V
Base-Emitter On Voltage	$V_{BE(on)}$	I_C = 100mA, V_{CE} = 5V	-	-	2.0	V
SMALL SIGNAL CHARACTERISTICS[2]						
Transition Frequency	f_T	I_C = 15mA, V_{CE} = 5V, f = 100MHz	125	-	-	MHz
Output Capacitance	C_{obo}	V_{CB} = 10V, I_E = 0, f = 1MHz	-	-	8	pF

1. Pulse Test: Pulse Width ≤ 300µs, Duty Cycle ≤ 2% **2.** Not production testing in die form, characterized by chip design and tested in package