

# DATA SHEET

**BUJ105A**

**Silicon Diffused Power Transistor**

Product specification

February 2018

## Silicon Diffused Power Transistor

BUJ105A

## GENERAL DESCRIPTION

High-voltage, high-speed planar-passivated npn power switching transistor in TO220AB envelope intended for use in high frequency electronic lighting ballast applications, converters, inverters, switching regulators, motor control systems, etc.

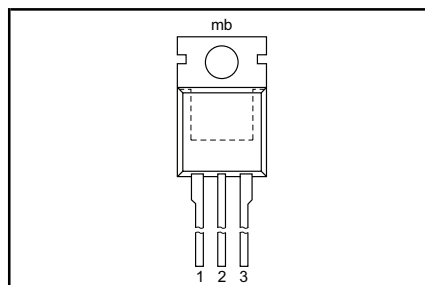
## QUICK REFERENCE DATA

SYMBOL	PARAMETER	CONDITIONS	TYP.	MAX.	UNIT
$V_{CESM}$	Collector-emitter voltage peak value	$V_{BE} = 0\text{ V}$	-	700	V
$V_{CBO}$	Collector-Base voltage (open emitter)		-	700	V
$V_{CEO}$	Collector-emitter voltage (open base)		-	400	V
$I_C$	Collector current (DC)		-	8	A
$I_{CM}$	Collector current peak value		-	16	A
$P_{tot}$	Total power dissipation	$T_{mb} \leq 25\text{ °C}$	-	80	W
$V_{CEsat}$	Collector-emitter saturation voltage	$I_C = 4.0\text{ A}; I_B = 0.8\text{ A}$	0.3	1.0	V
$h_{FEsat}$		$I_C = 4.0\text{ A}; V_{CE} = 5\text{ V}$	11	15	
$t_f$	Fall time	$I_C = 5\text{ A}; I_{B1} = 1\text{ A}$	20	50	ns

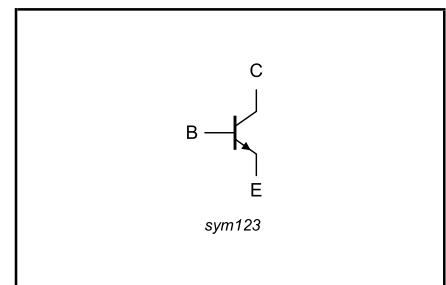
## PINNING - TO220AB

PIN	DESCRIPTION
1	base
2	collector
3	emitter
mb	collector

## PIN CONFIGURATION



## SYMBOL



## LIMITING VALUES

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
$V_{CESM}$	Collector to emitter voltage	$V_{BE} = 0\text{ V}$	-	700	V
$V_{CEO}$	Collector to emitter voltage (open base)		-	400	V
$V_{CBO}$	Collector to base voltage (open emitter)		-	700	V
$I_C$	Collector current (DC)		-	8	A
$I_{CM}$	Collector current peak value		-	16	A
$I_B$	Base current (DC)		-	4	A
$I_{BM}$	Base current peak value		-	8	A
$P_{tot}$	Total power dissipation	$T_{mb} \leq 25\text{ °C}$	-	80	W
$T_{stg}$	Storage temperature		-65	150	°C
$T_j$	Junction temperature		-	150	°C

## THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	TYP.	MAX.	UNIT
$R_{th\ j-mb}$	Junction to mounting base		-	1.56	K/W
$R_{th\ j-a}$	Junction to ambient	in free air	60	-	K/W

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**STATIC CHARACTERISTICS** $T_{mb} = 25\text{ °C}$  unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$I_{CES}, I_{CBO}$ $I_{CES}$	Collector cut-off current <sup>1</sup>	$V_{BE} = 0\text{ V}; V_{CE} = V_{CESMmax}$ $V_{BE} = 0\text{ V}; V_{CE} = V_{CESMmax}$ $T_j = 125\text{ °C}$	-	-	0.2 0.5	mA mA
$I_{CEO}$ $I_{EBO}$ $V_{CEOsust}$	Collector cut-off current Emitter cut-off current Collector-emitter sustaining voltage	$V_{CEO} = V_{CEOMmax} (400V)$ $V_{EB} = 9\text{ V}; I_C = 0\text{ A}$ $I_B = 0\text{ A}; I_C = 10\text{ mA};$ $L = 25\text{ mH}$	-	-	0.1 1 -	mA mA V
$V_{CEsat}$ $V_{BEsat}$	Collector-emitter saturation voltage Base-emitter saturation voltage	$I_C = 4.0\text{ A}; I_B = 0.8\text{ A}$ $I_C = 4.0\text{ A}; I_B = 0.8\text{ A}$	-	0.3 1.0	1.0 1.5	V V
$h_{FE}$ $h_{FE}$ $h_{FEsat}$	DC current gain	$I_C = 1\text{ mA}; V_{CE} = 5\text{ V}$ $I_C = 500\text{ mA}; V_{CE} = 5\text{ V}$ $I_C = 4.0\text{ A}; V_{CE} = 5\text{ V}$	10 13 8	14 23 11	34 36 15	

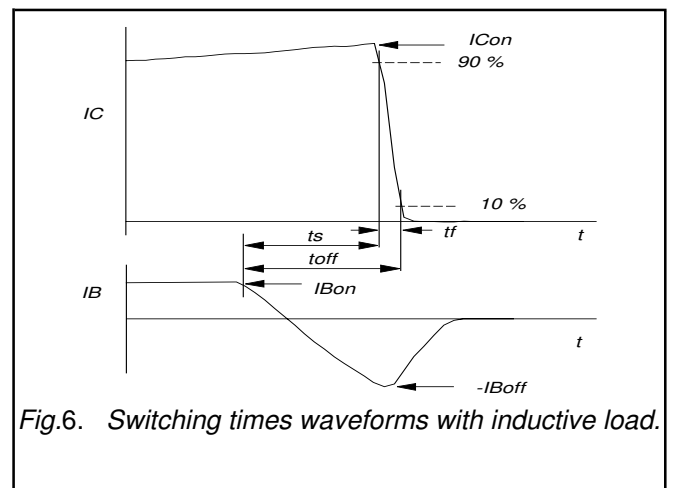
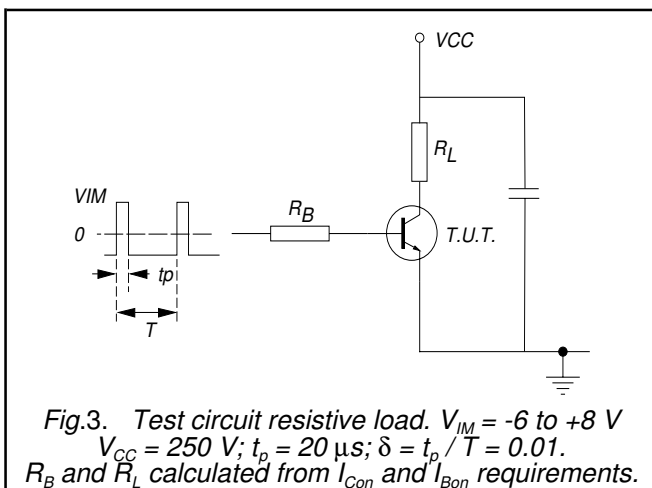
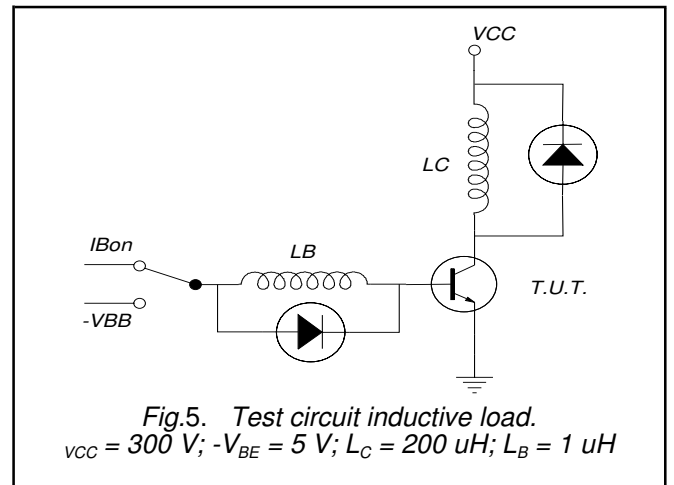
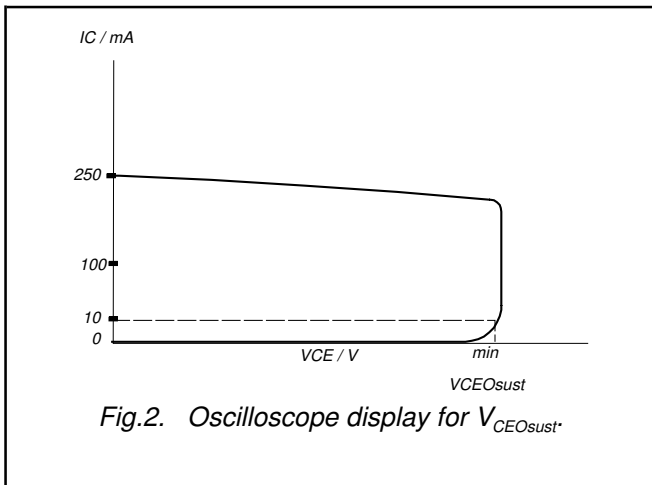
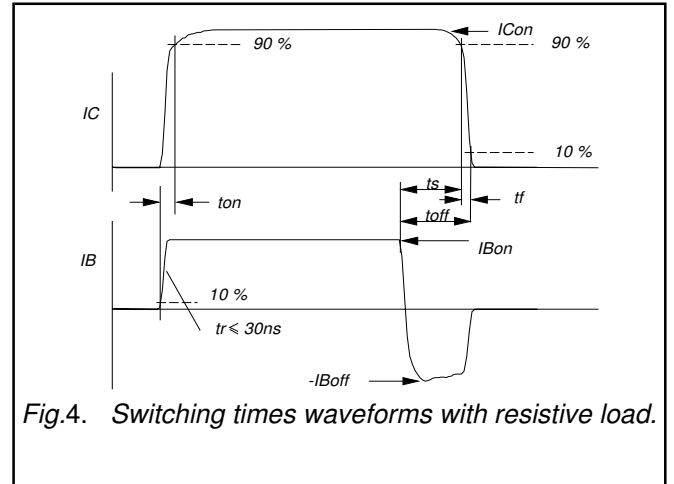
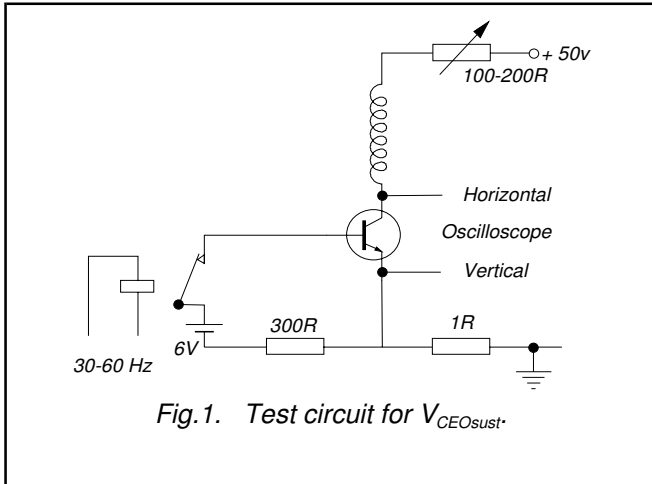
**DYNAMIC CHARACTERISTICS** $T_{mb} = 25\text{ °C}$  unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	TYP.	MAX.	UNIT
$t_{on}$ $t_s$ $t_f$	Switching times (resistive load) Turn-on time Turn-off storage time Turn-off fall time	$I_{Con} = 5\text{ A}; I_{Bon} = -I_{Boff} = 1\text{ A};$ $R_L = 75\text{ ohms}; V_{BB2} = 4\text{ V};$	0.65 1.8 0.3	1 2.5 0.5	$\mu\text{s}$ $\mu\text{s}$ $\mu\text{s}$
$t_s$ $t_f$	Switching times (inductive load) Turn-off storage time Turn-off fall time	$I_{Con} = 5\text{ A}; I_{Bon} = 1\text{ A}; L_B = 1\text{ }\mu\text{H};$ $-V_{BB} = 5\text{ V}$	1.2 20	1.7 50	$\mu\text{s}$ ns
$t_s$ $t_f$	Switching times (inductive load) Turn-off storage time Turn-off fall time	$I_{Con} = 5\text{ A}; I_{Bon} = 1\text{ A}; L_B = 1\text{ }\mu\text{H};$ $-V_{BB} = 5\text{ V}; T_j = 100\text{ °C}$	1.4 25	1.9 100	$\mu\text{s}$ ns

<sup>1</sup> Measured with half sine-wave voltage (curve tracer).

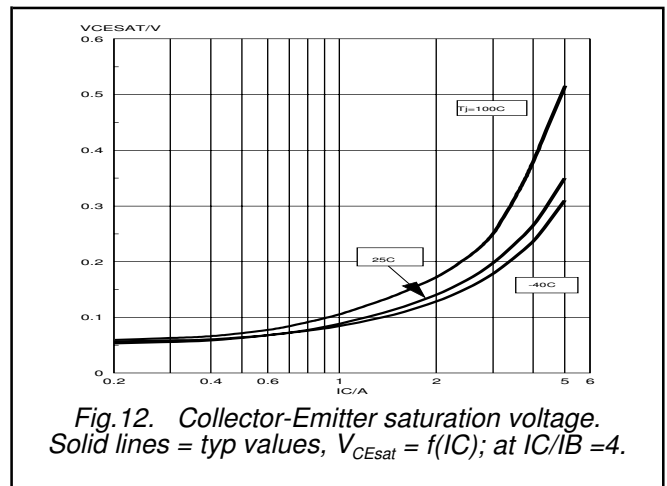
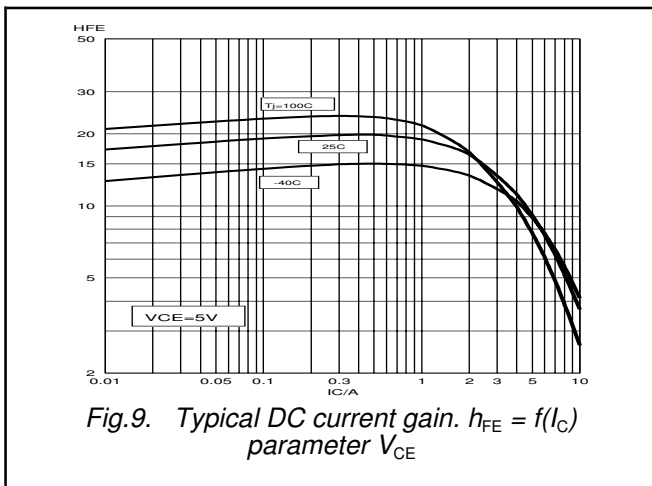
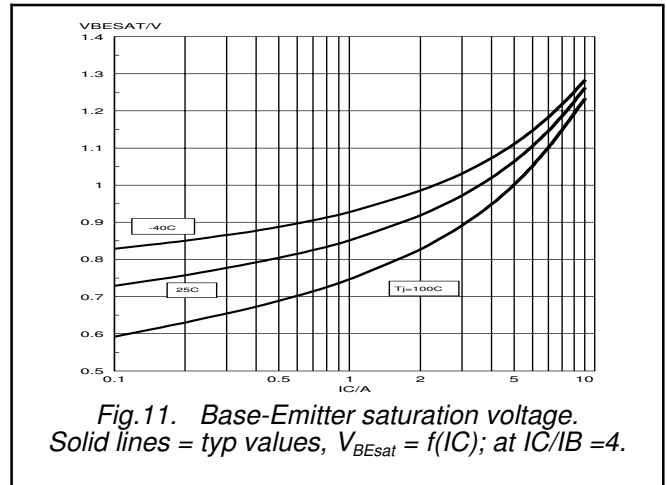
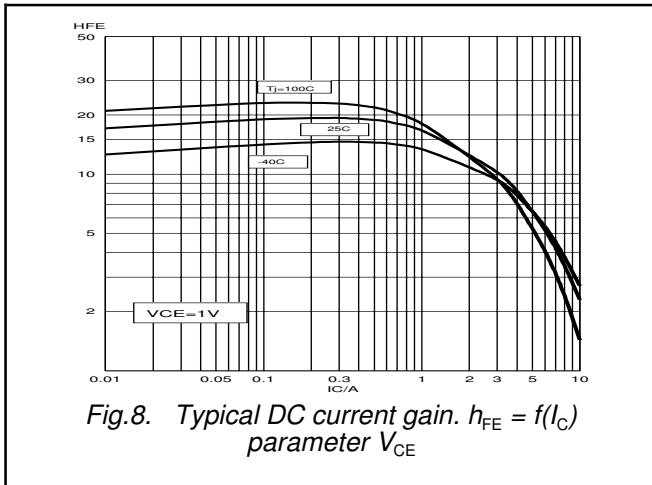
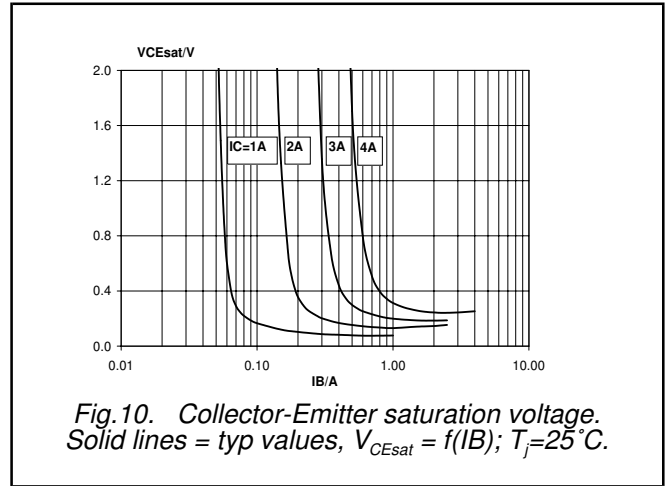
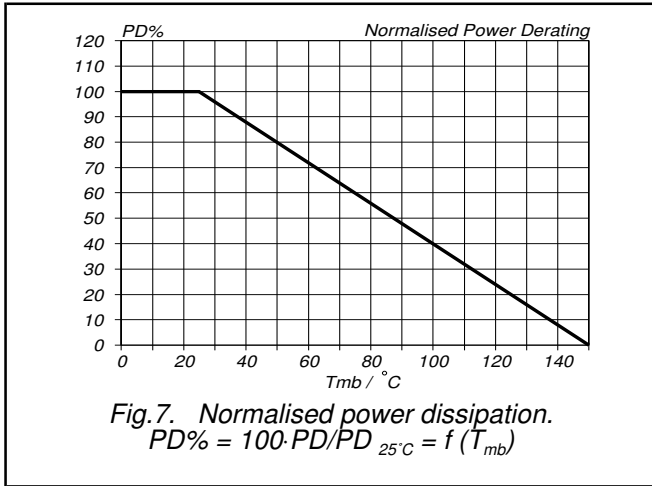
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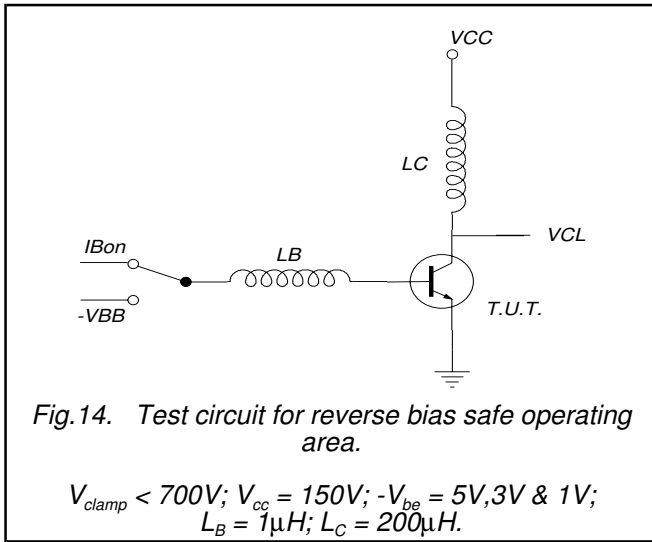
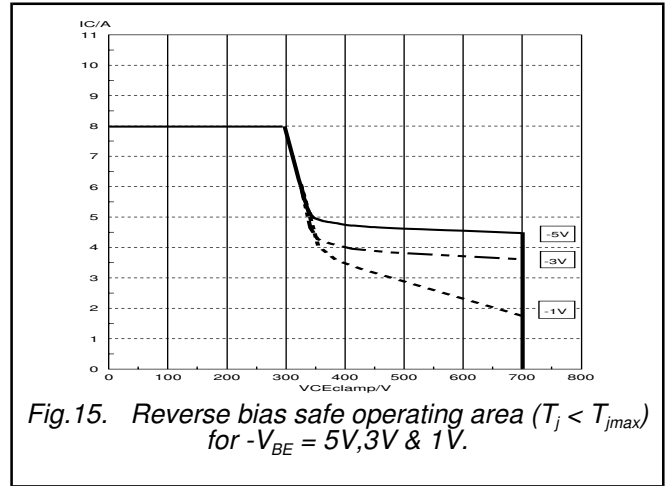
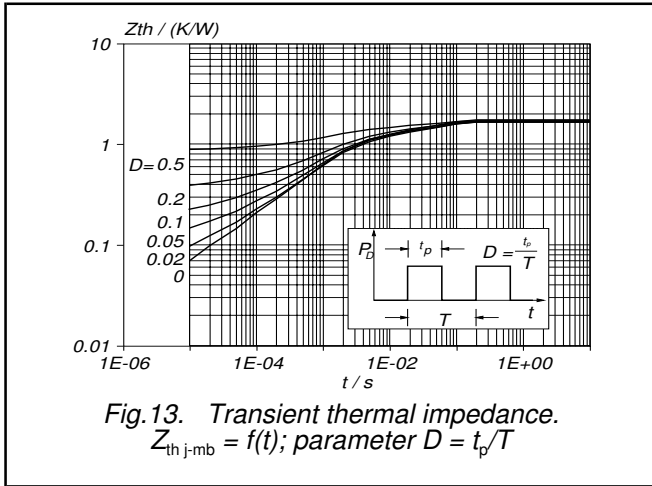
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## Legal information

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Document status [1][2]	Product status [3]	Definition
Objective [short] data sheet	Development	This document contains data from the objective specification for product development.
Preliminary [short] data sheet	Qualification	This document contains data from the preliminary specification.
Product [short] data sheet	Production	This document contains the product specification.

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