DATA SHEET

PUMX1
Dual NPN transistor

Preliminary specification
File under Discrete Semiconductors, SC04

1995 Dec 07

Philips
Semiconductors

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Dual NPN transistor PUMX1

FEATURES

- Two transistors in one SC70 package
- Reduces number of components and boardspace
- No mutual interference between the transistors.

APPLICATIONS

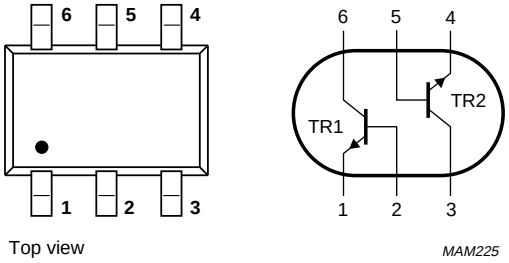
- General purpose switching
- Small signal amplification.

DESCRIPTION

Two NPN transistors in a plastic six lead SC70-6 (S-mini) package.

PINNING

PIN	DESCRIPTION
1	emitter TR1
2	base TR1
3	collector TR2
4	emitter TR2
5	base TR2
6	collector TR1



Marking code: ZZ.

Fig.1 Simplified outline (SC70-6), pin configuration and symbol.

QUICK REFERENCE DATA

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
Per transistor					
V_{CBO}	collector-base voltage	open emitter	–	50	V
V_{CEO}	collector-emitter voltage	open base	–	40	V
V_{EBO}	emitter-base voltage	open collector	–	5	V
I_C	collector current (DC)		–	100	mA
h_{FE}	DC current gain	I_C = 1 mA; V_{CE} = 6 V	120	–	
f_T	transition frequency	I_C = 2 mA; V_{CE} = 12 V; f = 100 MHz; T_{amb} = 25 °C	100	–	MHz
Per package					
P_{tot}	total power dissipation	up to T_{amb} = 25 °C	–	300	mW

LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
Per transistor					
V_{CBO}	collector-base voltage	open emitter	–	50	V
V_{CEO}	collector-emitter voltage	open base	–	40	V
V_{EBO}	emitter-base voltage	open collector	–	5	V
I_C	collector current (DC)		–	100	mA
P_{tot}	total power dissipation		–	200	mW
T_{amb}	operating ambient temperature		–65	+150	°C
T_{stg}	storage temperature		–65	+150	°C
T_j	junction temperature		–	150	°C
Per package					
P_{tot}	total power dissipation	up to T_{amb} = 25 °C; note 1	–	300	mW

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j\text{-}a}$	thermal resistance from junction to ambient	in free air; note 1	416	K/W

Note to the 'Limiting values' and 'Thermal characteristics'

1. In accordance with standard mounting conditions SC70, six lead version.

ELECTRICAL CHARACTERISTICS

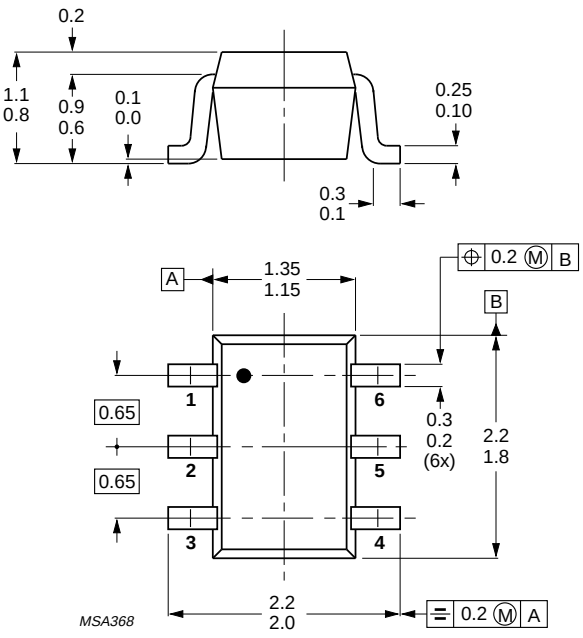
T_{amb} = 25 °C unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
Per transistor					
$V_{(BR)CBO}$	collector-base breakdown voltage	open emitter; I_C = 50 μA; I_E = 0	50	–	V
$V_{(BR)CEO}$	collector-emitter breakdown voltage	open base; I_C = 1 mA; I_B = 0	40	–	V
$V_{(BR)EBO}$	emitter-base breakdown voltage	open collector; I_E = 50 μA; I_C = 0	5	–	V
V_{CEsat}	collector-emitter saturation voltage	I_C = 50 mA; I_B = 5 mA; note 1	–	200	mV
I_{CBO}	collector-base cut-off current	V_{CB} = 30 V; I_E = 0	–	100	nA
		V_{CB} = 30 V; I_E = 0; T_j = 150 °C	–	10	μA
I_{EBO}	emitter-base cut-off current	V_{EB} = 4 V; I_C = 0	–	100	nA
h_{FE}	DC current gain	I_C = 1 mA; V_{CE} = 6 V	120	–	
f_T	transition frequency	I_C = 2 mA; V_{CE} = 12 V; f = 100 MHz	100	–	MHz
C_c	collector capacitance	$I_E = i_e$ = 0; V_{CB} = 12 V; f = 1 MHz	–	2.2	pF

Note to the 'Electrical characteristics'

1. Pulse test: $t_p \leq 300$ μs; $\delta \leq 0.02$.

PACKAGE OUTLINE



Dimensions in mm.

Fig.2 SC70-6.

DEFINITIONS

Data sheet status	
Objective specification	This data sheet contains target or goal specifications for product development.
Preliminary specification	This data sheet contains preliminary data; supplementary data may be published later.
Product specification	This data sheet contains final product specifications.
Limiting values	
Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 134). Stress above one or more of the limiting values may cause permanent damage to the device. These are stress ratings only and operation of the device at these or at any other conditions above those given in the Characteristics sections of the specification is not implied. Exposure to limiting values for extended periods may affect device reliability.	
Application information	
Where application information is given, it is advisory and does not form part of the specification.	

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Printed in The Netherlands

113062/1100/01/pp8 Date of release: 1995 Dec 07

Document order number: 12NC

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