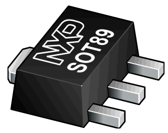


PXT2907A

60 V, 600 mA, PNP switching transistor

3 August 2015 — Product data sheet

1. General description

PNP switching transistor in a medium power flat lead SOT89 (SC-62/TO-243) Surface-Mounted Device (SMD) plastic package.

NPN complement: PXT2222A

2. Features and benefits

- High current: max. 600 mA
- Low voltage: max. 60 V
- AEC-Q101 qualified

3. Applications

- Switching and linear amplification

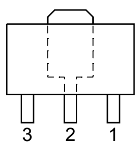
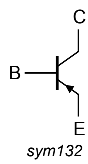
4. Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
V_{CEO}	collector-emitter voltage	open base		-	-	-60	V
I_C	collector current			-	-	-600	mA
h_{FE}	DC current gain	V_{CE} = -1 V; I_C = -10 mA; T_{amb} = 25 °C		100	-	-	

5. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	E	emitter	 SOT89	
2	C	collector		
3	B	base		

Scan or click this QR code to view the latest information for this product

6. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
PXT2907A	SOT89	plastic surface-mounted package; die pad for good heat transfer; 3 leads	SOT89

7. Marking

Table 4. Marking codes

Type number	Marking code [1]
PXT2907A	%2F

[1] % = placeholder for manufacturing site code

8. Limiting values

Table 5. Limiting values

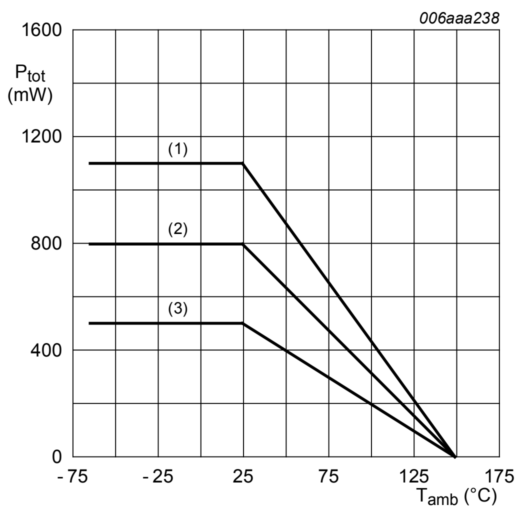
In accordance with the Absolute Maximum Rating System (IEC 60134).

Symbol	Parameter	Conditions		Min	Max	Unit
V_{CBO}	collector-base voltage	open emitter		-	-60	V
V_{CEO}	collector-emitter voltage	open base		-	-60	V
V_{EBO}	emitter-base voltage	open collector		-	-5	V
I_C	collector current			-	-600	mA
I_{CM}	peak collector current	single pulse; $t_p \leq 1$ ms		-	-800	mA
I_{BM}	peak base current			-	-200	mA
P_{tot}	total power dissipation	$T_{amb} \leq 25$ °C	[1]	-	0.5	W
			[2]	-	0.8	W
			[3]	-	1.1	W
T_j	junction temperature			-	150	°C
T_{amb}	ambient temperature			-65	150	°C
T_{stg}	storage temperature			-65	150	°C

[1] Device mounted on an FR4 Printed-Circuit Board (PCB), single-sided copper, tin-plated and standard footprint.

[2] Device mounted on an FR4 PCB, single-sided copper, tin-plated and mounting pad for collector 1 cm^2.

[3] Device mounted on an FR4 PCB, single-sided copper, tin-plated and mounting pad for collector 6 cm^2.



(1) FR4 PCB; 6 cm^2 mounting pad for collector.

(2) FR4 PCB; 1 cm^2 mounting pad for collector.

(3) FR4 PCB; standard footprint.

Fig. 1. Power derating curves

9. Thermal characteristics

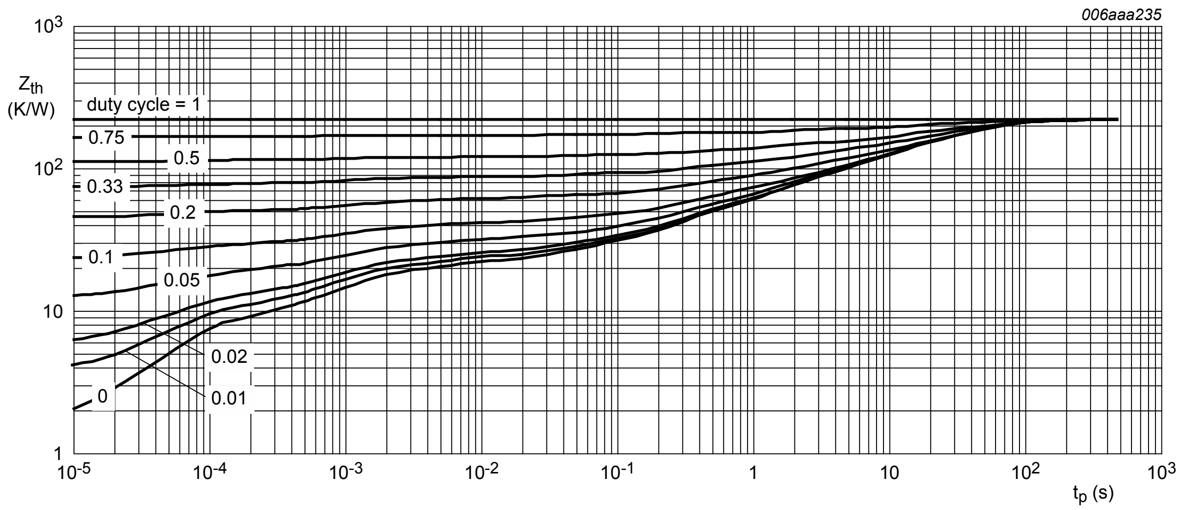
Table 6. Thermal characteristics

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
$R_{th(j-a)}$	thermal resistance from junction to ambient	in free air	[1]	-	-	250	K/W
			[2]	-	-	156	K/W
			[3]	-	-	113	K/W
$R_{th(j-sp)}$	thermal resistance from junction to solder point			-	-	30	K/W

[1] Device mounted on an FR4 PCB, single-sided copper, tin-plated and standard footprint.

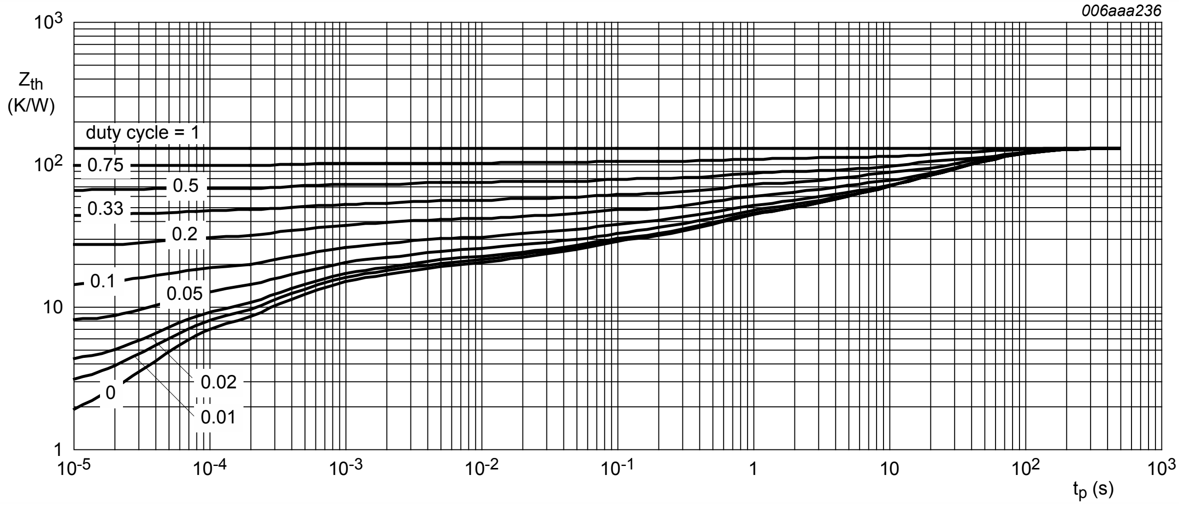
[2] Device mounted on an FR4 PCB, single-sided copper, tin-plated and mounting pad for collector 1 cm^2.

[3] Device mounted on an FR4 PCB, single-sided copper, tin-plated and mounting pad for collector 6 cm^2.



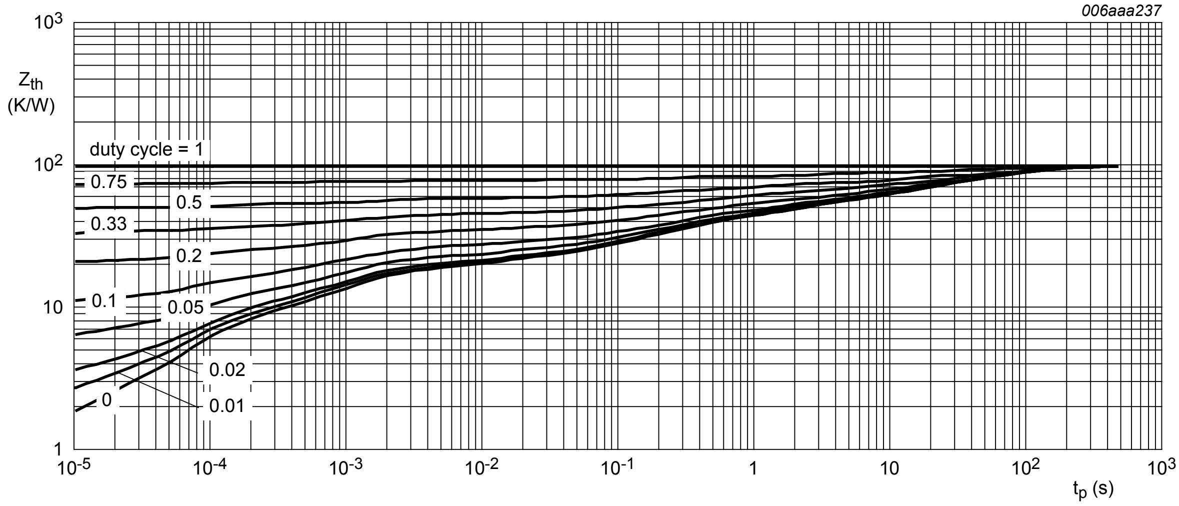
Mounted on FR4 PCB; standard footprint.

Fig. 2. Transient thermal impedance as a function of pulse time; typical values



Mounted on FR4 PCB; mounting pad for collector 1 cm^2.

Fig. 3. Transient thermal impedance as a function of pulse time; typical values



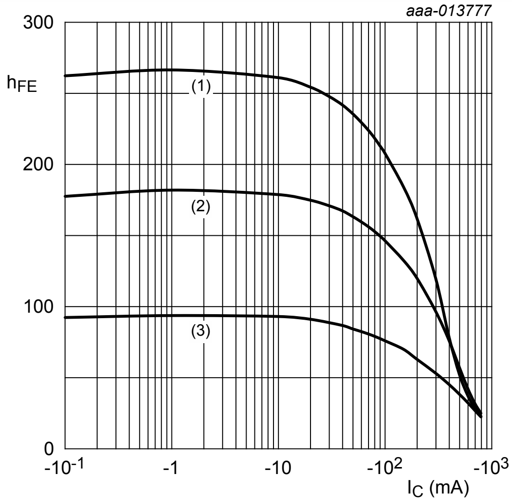
Mounted on FR4 PCB; mounting pad for collector 6 cm^2.

Fig. 4. Transient thermal impedance as a function of pulse time; typical values

10. Characteristics

Table 7. Characteristics

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
I_{CBO}	collector-base cut-off current	V_{CB} = -50 V; I_E = 0 A; T_{amb} = 25 °C		-	-	-10	nA
		V_{CB} = -50 V; I_E = 0 A; T_j = 125 °C		-	-	-10	μA
I_{EBO}	emitter-base cut-off current	V_{EB} = -5 V; I_C = 0 A; T_{amb} = 25 °C		-	-	-50	nA
h_{FE}	DC current gain	V_{CE} = -1 V; I_C = -0.1 mA; T_{amb} = 25 °C		75	-	-	
		V_{CE} = -1 V; I_C = -1 mA; T_{amb} = 25 °C		100	-	-	
		V_{CE} = -1 V; I_C = -10 mA; T_{amb} = 25 °C		100	-	-	
		V_{CE} = -2 V; I_C = -150 mA; T_{amb} = 25 °C		100	-	300	
		V_{CE} = -10 V; I_C = -500 mA; T_{amb} = 25 °C		50	-	-	
V_{CEsat}	collector-emitter saturation voltage	I_C = -150 mA; I_B = -15 mA; T_{amb} = 25 °C		-	-	-400	mV
		I_C = -500 mA; I_B = -50 mA; T_{amb} = 25 °C		-	-	-1.6	V
V_{BEsat}	base-emitter saturation voltage	I_C = -150 mA; I_B = -15 mA; T_{amb} = 25 °C		-	-	-1.3	V
		I_C = -500 mA; I_B = -50 mA; T_{amb} = 25 °C		-	-	-2.6	V
t_d	delay time	I_C = -150 mA; I_{Bon} = -15 mA; I_{Boff} = 15 mA; T_{amb} = 25 °C		-	-	12	ns
t_r	rise time			-	-	30	ns
t_{on}	turn-on time			-	-	40	ns
t_s	storage time			-	-	300	ns
t_f	fall time			-	-	65	ns
t_{off}	turn-off time			-	-	365	ns
C_C	collector capacitance	V_{CB} = -10 V; I_E = 0 A; i_e = 0 A; f = 1 MHz; T_{amb} = 25 °C		-	-	8	pF
C_E	emitter capacitance	V_{EB} = -500 mV; I_C = 0 A; i_c = 0 A; f = 1 MHz; T_{amb} = 25 °C		-	-	35	pF
f_T	transition frequency	V_{CE} = -20 V; I_C = -50 mA; f = 100 MHz; T_{amb} = 25 °C		200	-	-	MHz



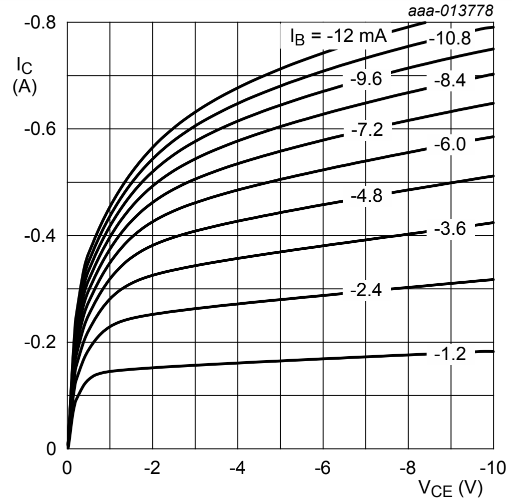
V_{CE} = -2 V

(1) T_{amb} = 100 °C

(2) T_{amb} = 25 °C

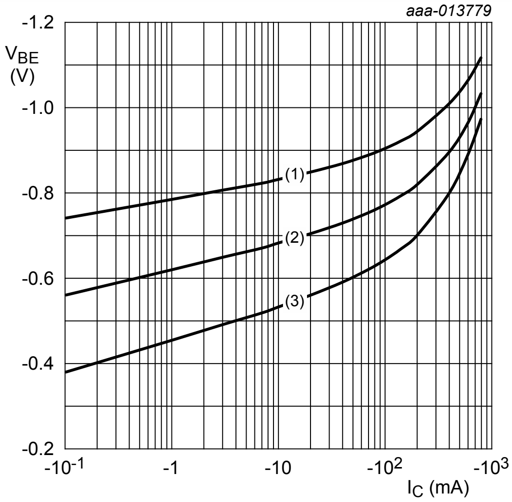
(3) T_{amb} = −55 °C

Fig. 5. DC current gain as a function of collector current; typical values



T_{amb} = 25 °C

Fig. 6. Collector current as a function of collector-emitter voltage; typical values



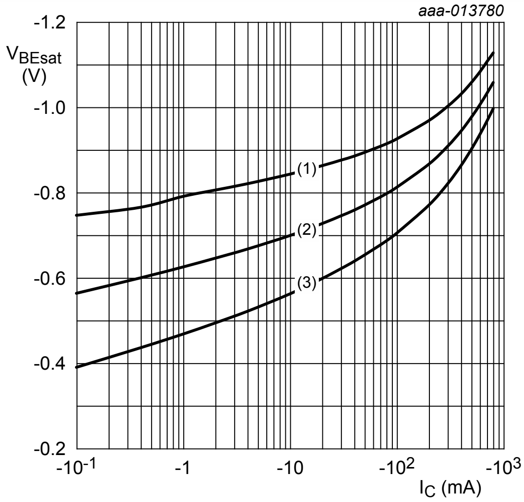
V_{CE} = -2 V

(1) T_{amb} = −55 °C

(2) T_{amb} = 25 °C

(3) T_{amb} = 100 °C

Fig. 7. Base-emitter voltage as a function of collector current; typical values



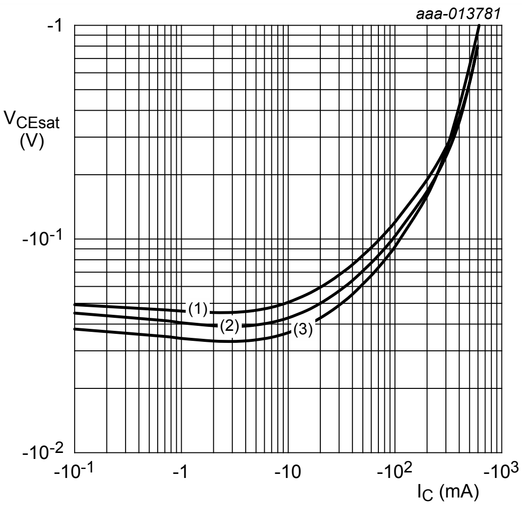
I_C/I_B = 10

(1) T_{amb} = −55 °C

(2) T_{amb} = 25 °C

(3) T_{amb} = 100 °C

Fig. 8. Base-emitter saturation voltage as a function of collector current; typical values



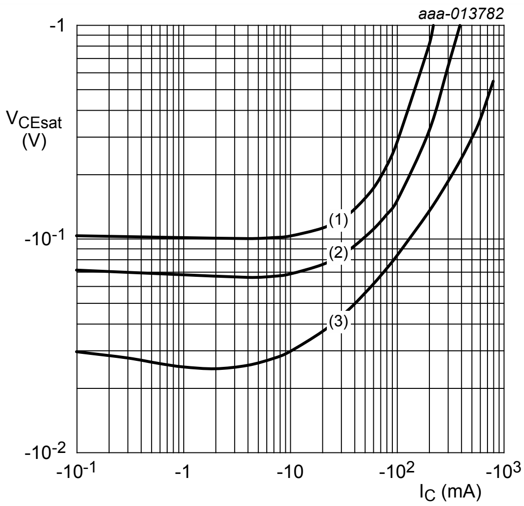
$I_C/I_B = 20$

(1) T_{amb} = 100 °C

(2) T_{amb} = 25 °C

(3) T_{amb} = −55 °C

Fig. 9. Collector-emitter saturation voltage as a function of collector current; typical values



T_{amb} = 25 °C

(1) $I_C/I_B = 100$

(2) $I_C/I_B = 50$

(3) $I_C/I_B = 10$

Fig. 10. Collector-emitter saturation voltage as a function of collector current; typical values

11. Test information

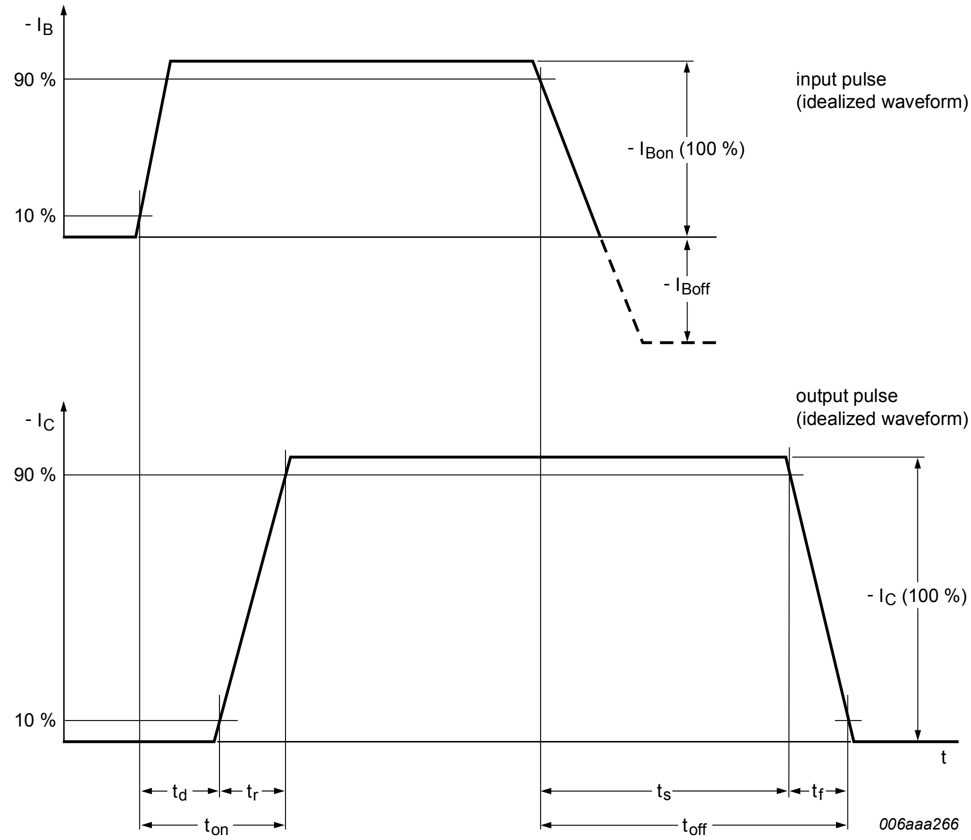


Fig. 11. BISS transistor switching time definition

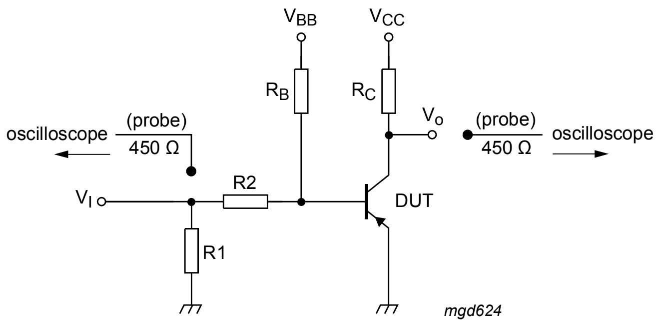


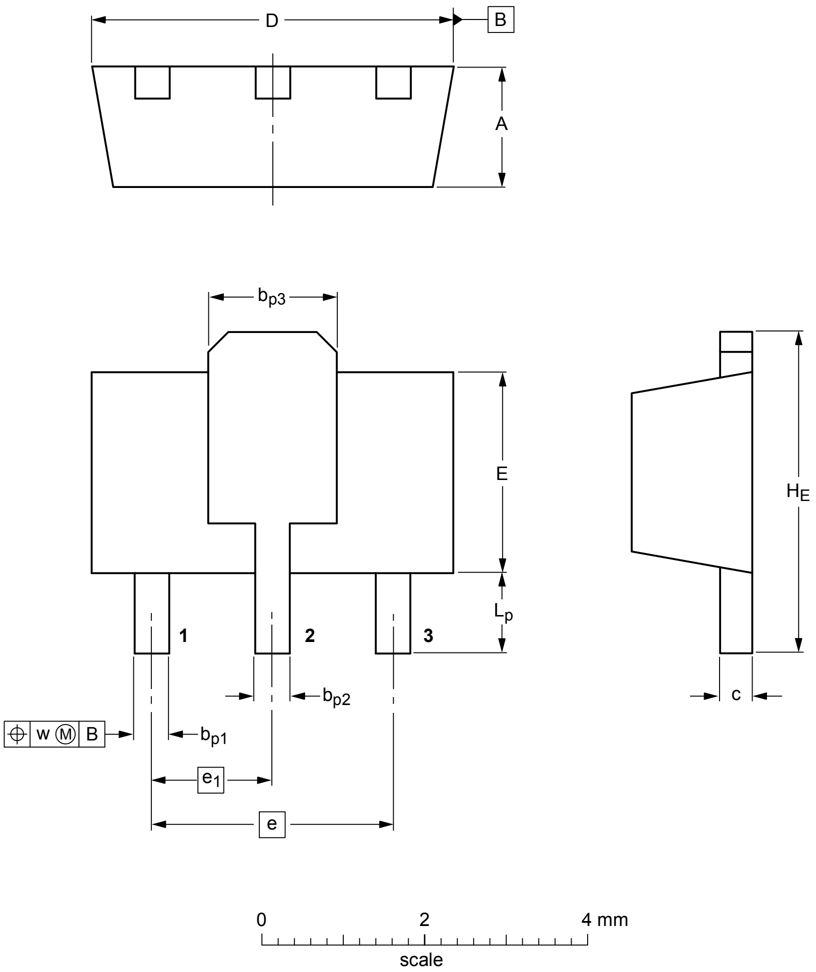
Fig. 12. Test circuit for switching times

11.1 Quality information

This product has been qualified in accordance with the Automotive Electronics Council (AEC) standard *Q101 - Stress test qualification for discrete semiconductors*, and is suitable for use in automotive applications.

12. Package outline

Plastic surface-mounted package; exposed die pad for good heat transfer; 3 leads **SOT89**



DIMENSIONS (mm are the original dimensions)

UNIT	A	b_{p1}	b_{p2}	b_{p3}	c	D	E	e	e_1	H_E	L_p	w
mm	1.6 1.4	0.48 0.35	0.53 0.40	1.8 1.4	0.44 0.23	4.6 4.4	2.6 2.4	3.0	1.5	4.25 3.75	1.2 0.8	0.13

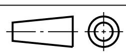
OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	JEITA			
SOT89		TO-243	SC-62			~~06-03-16~~ 06-08-29

Fig. 13. Package outline SOT89

13. Soldering

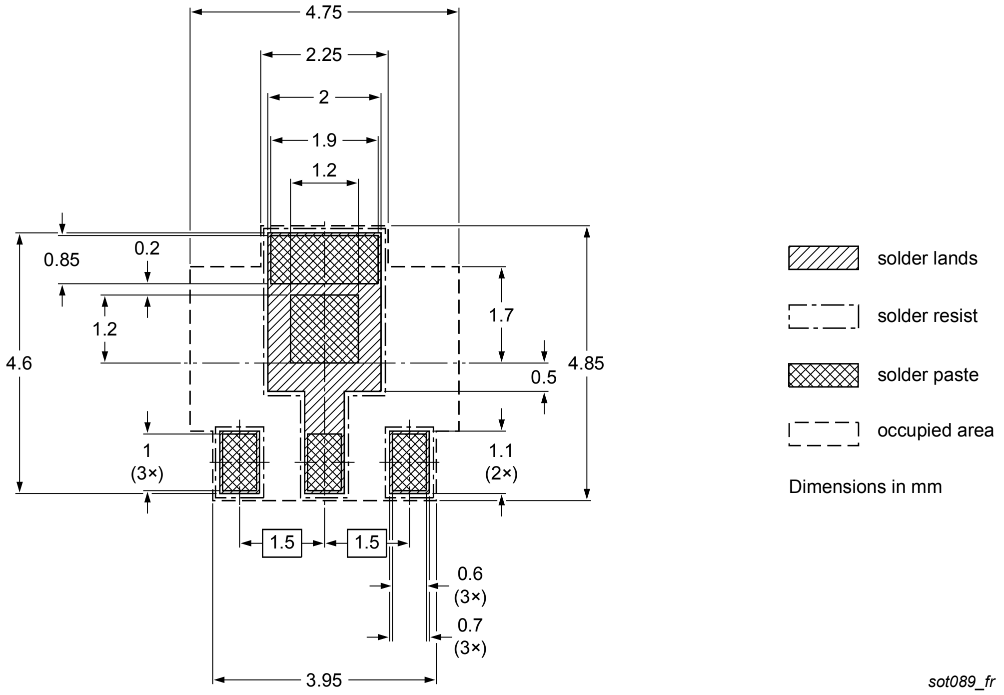


Fig. 14. Reflow soldering footprint for SOT89

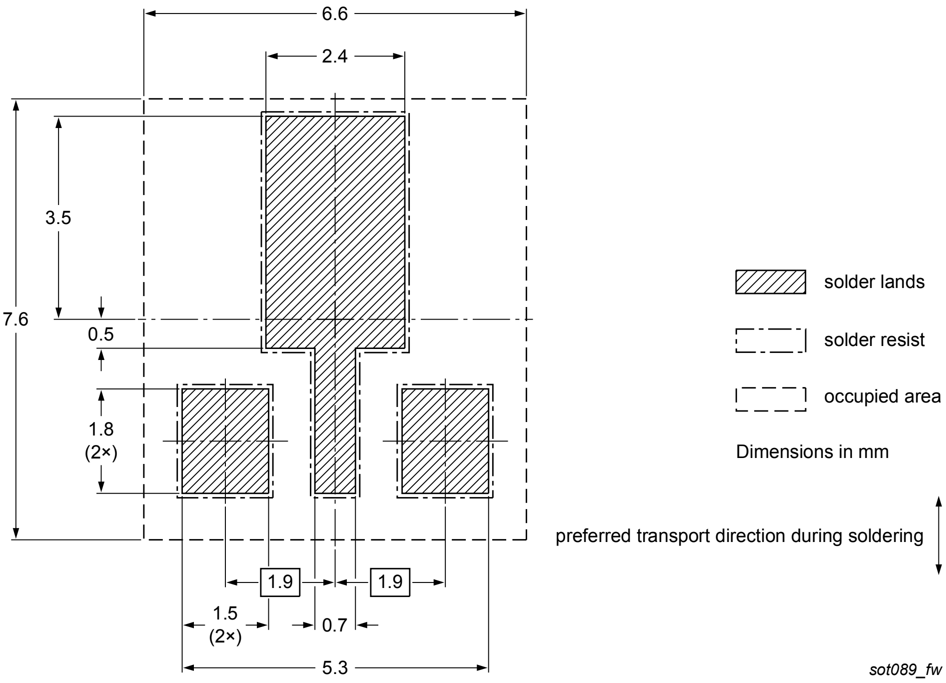


Fig. 15. Wave soldering footprint for SOT89

14. Revision history

Table 8. Revision history

Data sheet ID	Release date	Data sheet status	Change notice	Supersedes
PXT2907A v.7	20150803	Product data sheet	-	PXT2907A v.6
Modifications:	• Marking code corrected			
PXT2907A v.6	20141010	Product data sheet	-	PXT2907A v.5
PXT2907A v.5	20041209	Product data sheet	-	PXT2907A v.4
PXT2907A v.4	20020320	Product data sheet	-	-

15. Legal information

15.1 Data sheet status

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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[2] The term 'short data sheet' is explained in section "Definitions".
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Date of release: 3 August 2015