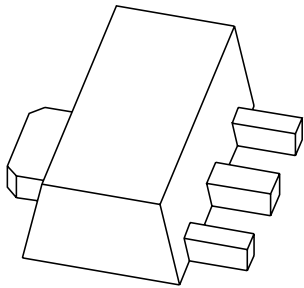


# DATA SHEET



## **PXT2907A** PNP switching transistor

Product data sheet  
Supersedes data of 2002 Mar 20

2004 Dec 09

# PNP switching transistor

# PXT2907A

### FEATURES

- High current (max. 600 mA)
- Low voltage (max. 60 V).

### APPLICATIONS

- Switching and linear amplification.

### DESCRIPTION

PNP switching transistor in a SOT89 plastic package.  
NPN complement: PXT2222A.

### MARKING

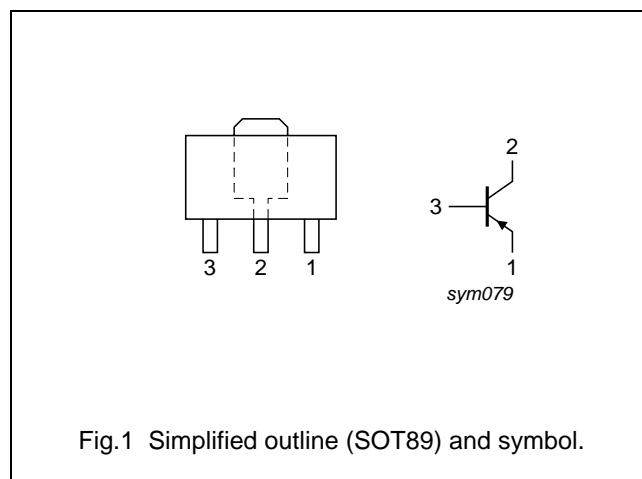
TYPE NUMBER	MARKING CODE <sup>(1)</sup>
PXT2907A	*2F

### Note

- \* = p: Made in Hong Kong.  
\* = t: Made in Malaysia.  
\* = W: Made in China.

### PINNING

PIN	DESCRIPTION
1	emitter
2	collector
3	base



### ORDERING INFORMATION

TYPE NUMBER	PACKAGE		
	NAME	DESCRIPTION	VERSION
PXT2907A	SC-62	plastic surface mounted package; collector pad for good heat transfer; 3 leads	SOT89

PNP switching transistor

PXT2907A

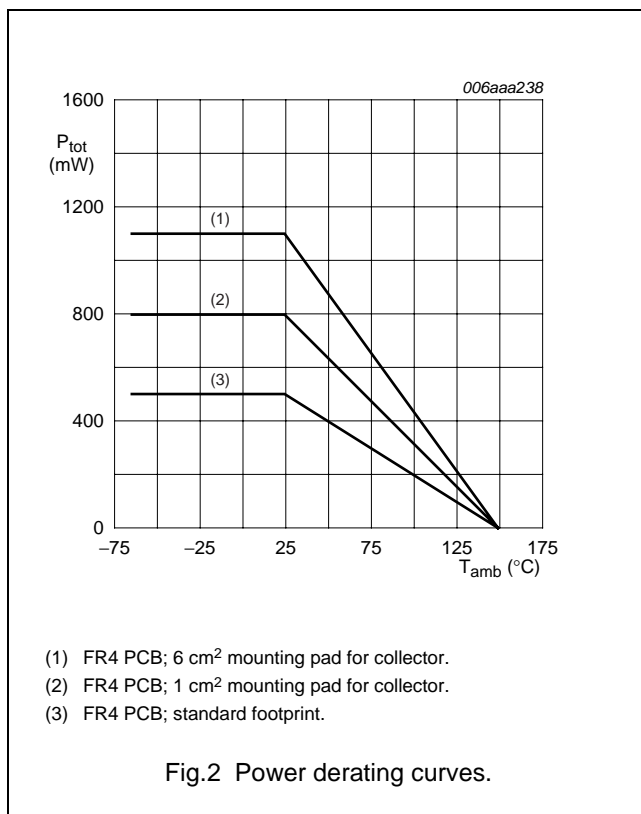
**LIMITING VALUES**

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V <sub>CBO</sub>	collector-base voltage	open emitter	–	–60	V
V <sub>CEO</sub>	collector-emitter voltage	open base	–	–60	V
V <sub>EBO</sub>	emitter-base voltage	open collector	–	–5	V
I <sub>C</sub>	collector current (DC)		–	–600	mA
I <sub>CM</sub>	peak collector current		–	–800	mA
I <sub>BM</sub>	peak base current		–	–200	mA
P <sub>tot</sub>	total power dissipation	T <sub>amb</sub> ≤ 25 °C note 1 note 2 note 3	–	0.5 0.8 1.1	W W W
T <sub>stg</sub>	storage temperature		–65	+150	°C
T <sub>j</sub>	junction temperature		–	150	°C
T <sub>amb</sub>	ambient temperature		–65	+150	°C

**Notes**

1. Device mounted on a printed-circuit board, single-sided copper, tin-plated and standard footprint.
2. Device mounted on a printed-circuit board, single-sided copper, tin-plated and mounting pad for collector 1 cm<sup>2</sup>.
3. Device mounted on a printed-circuit board, single-sided copper, tin-plated and mounting pad for collector 6 cm<sup>2</sup>.



PNP switching transistor

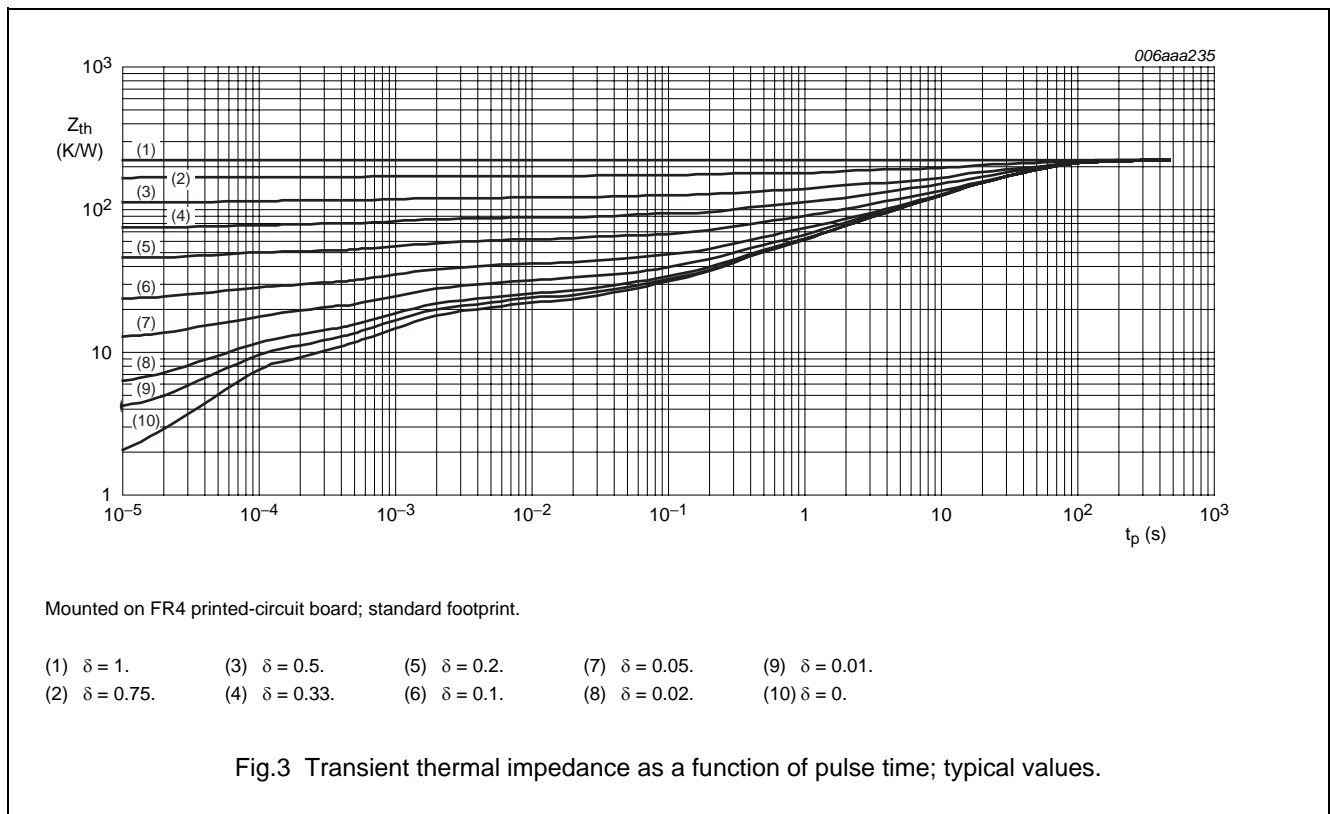
PXT2907A

**THERMAL CHARACTERISTICS**

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
R <sub>th(j-a)</sub>	thermal resistance from junction to ambient	in free air		
		note 1	250	K/W
		note 2	156	K/W
		note 3	113	K/W
R <sub>th(j-s)</sub>	thermal resistance from junction to soldering point		30	K/W

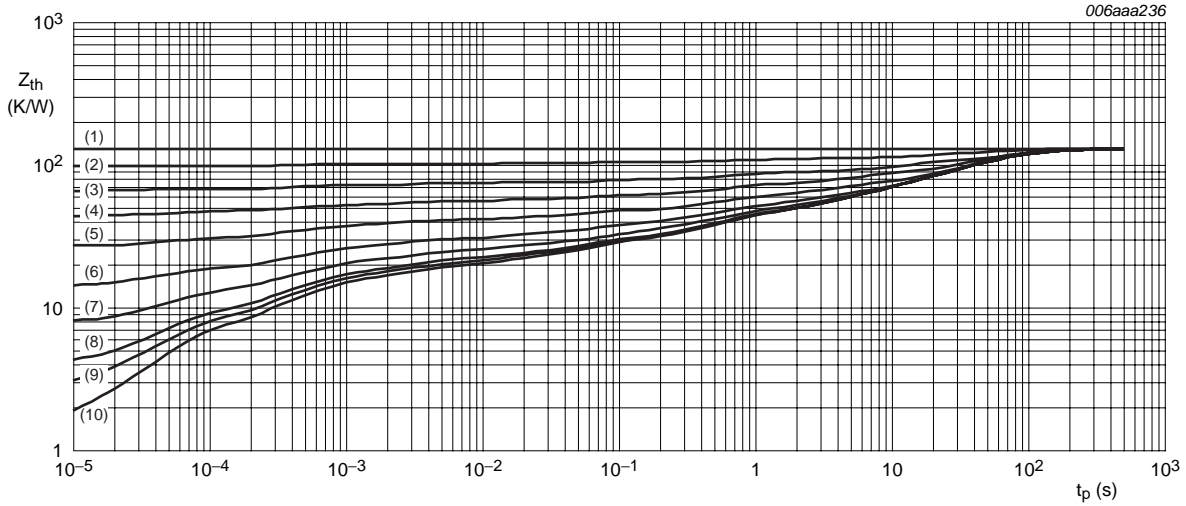
**Notes**

1. Device mounted on a printed-circuit board, single-sided copper, tin-plated and standard footprint.
2. Device mounted on a printed-circuit board, single-sided copper, tin-plated and mounting pad for collector 1 cm<sup>2</sup>.
3. Device mounted on a printed-circuit board, single-sided copper, tin-plated and mounting pad for collector 6 cm<sup>2</sup>.



PNP switching transistor

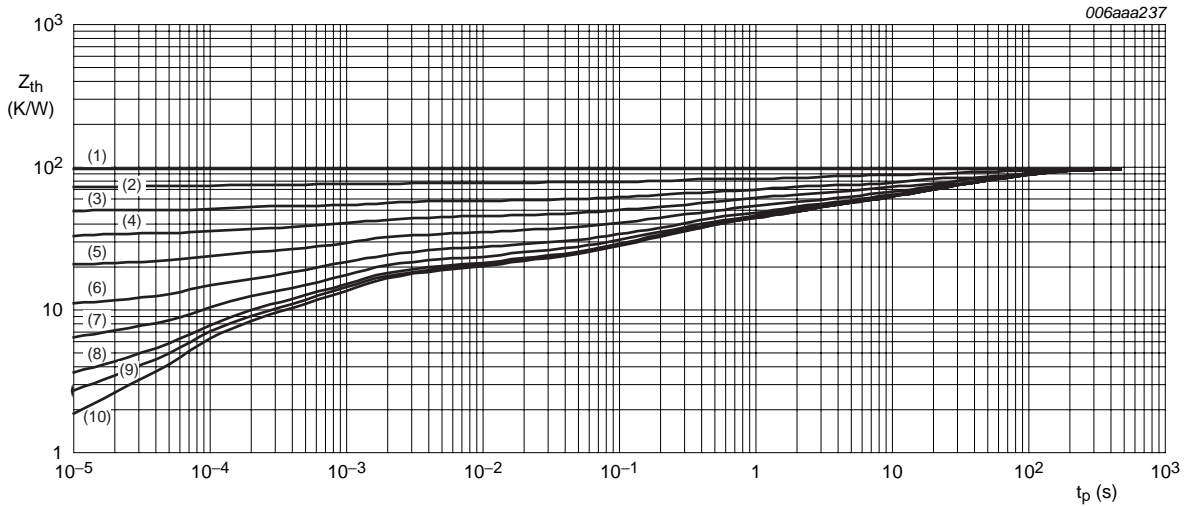
PXT2907A



Mounted on FR4 printed-circuit board; mounting pad for collector 1 cm<sup>2</sup>.

- (1)  $\delta = 1.$       (3)  $\delta = 0.5.$       (5)  $\delta = 0.2.$       (7)  $\delta = 0.05.$       (9)  $\delta = 0.01.$
- (2)  $\delta = 0.75.$       (4)  $\delta = 0.33.$       (6)  $\delta = 0.1.$       (8)  $\delta = 0.02.$       (10)  $\delta = 0.$

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



Mounted on FR4 printed-circuit board; mounting pad for collector 6 cm<sup>2</sup>.

- (1)  $\delta = 1.$       (3)  $\delta = 0.5.$       (5)  $\delta = 0.2.$       (7)  $\delta = 0.05.$       (9)  $\delta = 0.01.$
- (2)  $\delta = 0.75.$       (4)  $\delta = 0.33.$       (6)  $\delta = 0.1.$       (8)  $\delta = 0.02.$       (10)  $\delta = 0.$

Fig.5 Transient thermal impedance as a function of pulse time; typical values.

## PNP switching transistor

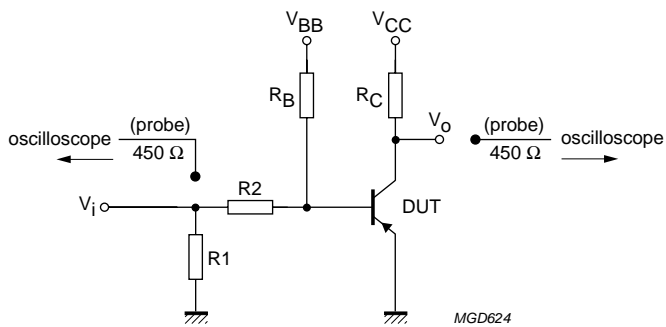
PXT2907A

**CHARACTERISTICS** $T_{amb} = 25\text{ °C}$  unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
$I_{CBO}$	collector-base cut-off current	$I_E = 0\text{ A}; V_{CB} = -50\text{ V}$	–	–10	nA
		$I_E = 0\text{ A}; V_{CB} = -50\text{ V}; T_{amb} = 125\text{ °C}$	–	–10	$\mu\text{A}$
$I_{EBO}$	emitter-base cut-off current	$I_C = 0\text{ A}; V_{EB} = -5\text{ V}$	–	–50	nA
$h_{FE}$	DC current gain	$I_C = -0.1\text{ mA}; V_{CE} = -1\text{ V}$	75	–	
		$I_C = -1\text{ mA}; V_{CE} = -1\text{ V}$	100	–	
		$I_C = -10\text{ mA}; V_{CE} = -1\text{ V}$	100	–	
		$I_C = -150\text{ mA}; V_{CE} = -2\text{ V}$	100	300	
		$I_C = -500\text{ mA}; V_{CE} = -10\text{ V}$	50	–	
$V_{CEsat}$	collector-emitter saturation voltage	$I_C = -150\text{ mA}; I_B = -15\text{ mA}$	–	–400	mV
		$I_C = -500\text{ mA}; I_B = -50\text{ mA}$	–	–1.6	V
$V_{BEsat}$	base-emitter saturation voltage	$I_C = -150\text{ mA}; I_B = -15\text{ mA}$	–	–1.3	V
		$I_C = -500\text{ mA}; I_B = -50\text{ mA}$	–	–2.6	V
$C_c$	collector capacitance	$I_E = i_e = 0\text{ A}; V_{CB} = -10\text{ V}; f = 1\text{ MHz}$	–	8	pF
$C_e$	emitter capacitance	$I_C = i_c = 0\text{ A}; V_{EB} = -500\text{ mV}; f = 1\text{ MHz}$	–	35	pF
$f_T$	transition frequency	$I_C = -20\text{ mA}; V_{CE} = -10\text{ V}; f = 100\text{ MHz}$	200	–	MHz
<b>Switching times (between 10% and 90% levels); (see Fig.6)</b>					
$t_{on}$	turn-on time	$I_{Con} = -150\text{ mA}; I_{Bon} = -15\text{ mA}; I_{Boff} = 15\text{ mA}$	–	40	ns
$t_d$	delay time		–	12	ns
$t_r$	rise time		–	30	ns
$t_{off}$	turn-off time		–	365	ns
$t_s$	storage time		–	300	ns
$t_f$	fall time		–	65	ns

PNP switching transistor

PXT2907A



$V_i = -9.5 \text{ V}$ ;  $T = 500 \text{ } \mu\text{s}$ ;  $t_p = 10 \text{ } \mu\text{s}$ ;  $t_r = t_f \leq 3 \text{ ns}$ .  
 $R_1 = 68 \text{ } \Omega$ ;  $R_2 = 325 \text{ } \Omega$ ;  $R_B = 325 \text{ } \Omega$ ;  $R_C = 160 \text{ } \Omega$ .  
 $V_{BB} = 3.5 \text{ V}$ ;  $V_{CC} = -29.5 \text{ V}$ .  
 Oscilloscope input impedance  $Z_i = 50 \text{ } \Omega$ .

Fig.6 Test circuit for switching times.

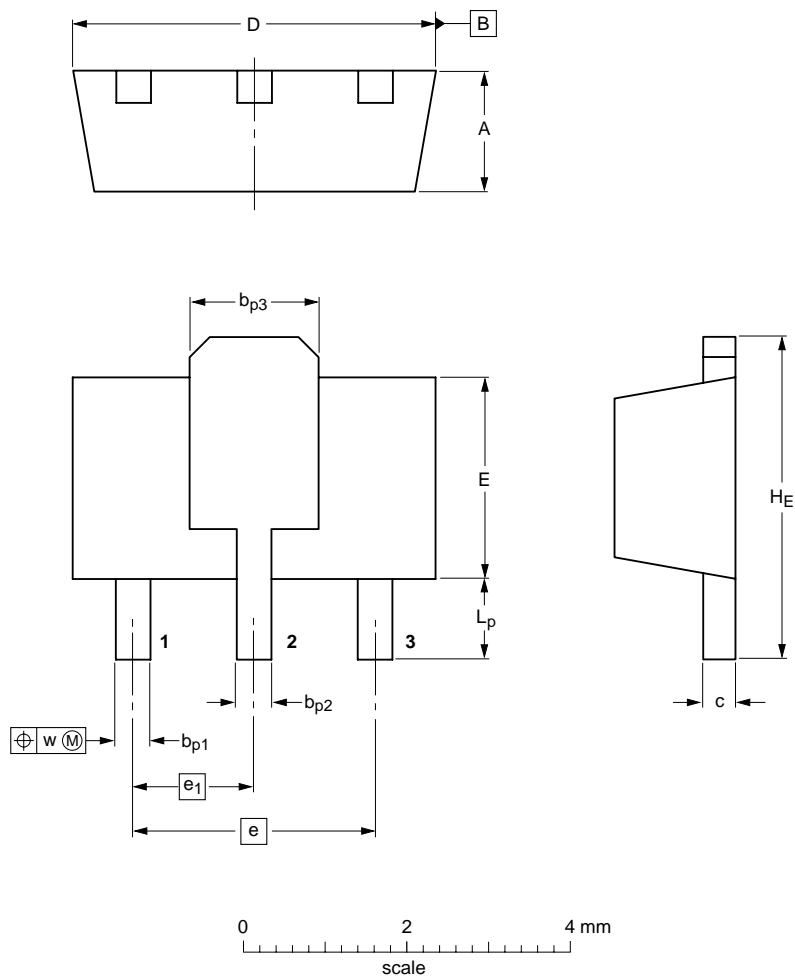
PNP switching transistor

PXT2907A

PACKAGE OUTLINE

Plastic surface-mounted package; collector pad for good heat transfer; 3 leads

SOT89



DIMENSIONS (mm are the original dimensions)

UNIT	A	b <sub>p1</sub>	b <sub>p2</sub>	b <sub>p3</sub>	c	D	E	e	e <sub>1</sub>	H <sub>E</sub>	L <sub>p</sub>	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			04-08-03 06-03-16



PNP switching transistor

PXT2907A

**DATA SHEET STATUS**

DOCUMENT STATUS <sup>(1)</sup>	PRODUCT STATUS <sup>(2)</sup>	DEFINITION
Objective data sheet	Development	This document contains data from the objective specification for product development.
Preliminary data sheet	Qualification	This document contains data from the preliminary specification.
Product data sheet	Production	This document contains the product specification.

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This data sheet was changed to reflect the new company name NXP Semiconductors, including new legal definitions and disclaimers. No changes were made to the technical content, except for package outline drawings which were updated to the latest version.

## **Contact information**

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