



# PDTD1xxxU series

500 mA, 50 V NPN resistor-equipped transistors

Rev. 1 — 13 May 2014

Product data sheet

## 1. Product profile

### 1.1 General description

NPN Resistor-Equipped Transistor (RET) family in a very small SOT323 (SC-70) Surface-Mounted Device (SMD) plastic package.

Table 1. Product overview

Type number	Package			PNP complement	Package configuration
	Nexperia	JEITA	JEDEC		
PDTD113EU	SOT323	SC-70	-	PDTB113EU	very small
PDTD113ZU				PDTB113ZU	
PDTD123EU				PDTB123EU	
PDTD123YU				PDTB123YU	
PDTD143EU				PDTB143EU	
PDTD143XU				PDTB143XU	
PDTD114EU				PDTB114EU	

### 1.2 Features

- 500 mA output current capability
- Built-in bias resistors
- Simplifies circuit design
- Reduces component count
- $\pm 10\%$  resistor ratio tolerance
- AEC-Q101 qualified
- High temperature applications up to 175 °C

### 1.3 Applications

- IC inputs control
- Cost-saving alternative to BC807 or BC817 series transistors in digital applications
- Switching loads

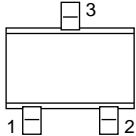
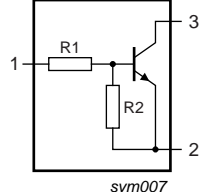
## 1.4 Quick reference data

Table 2. Quick reference data

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$V_{CE0}$	collector-emitter voltage	open base	-	-	50	V
$I_O$	output current		-	-	500	mA
R1	bias resistor 1 (input)					
	PDTD113EU			1		k $\Omega$
	PDTD113ZU			1		k $\Omega$
	PDTD123EU			2.2		k $\Omega$
	PDTD123YU			2.2		k $\Omega$
	PDTD143EU			4.7		k $\Omega$
	PDTD143XU			4.7		k $\Omega$
	PDTD114EU			10		k $\Omega$
R2	bias resistor 2 (base-emitter)					
	PDTD113EU			1		k $\Omega$
	PDTD113ZU			10		k $\Omega$
	PDTD123EU			2.2		k $\Omega$
	PDTD123YU			10		k $\Omega$
	PDTD143EU			4.7		k $\Omega$
	PDTD143XU			10		k $\Omega$
	PDTD114EU			10		k $\Omega$

## 2. Pinning information

Table 3. Pinning

Pin	Description	Simplified outline	Graphic symbol
1	input (base)		 sym007
2	GND (emitter)		
3	output (collector)		

## 3. Ordering information

Table 4. Ordering information

Type number	Package		
	Name	Description	Version
PDTD1xxxU series	SC-70	plastic surface-mounted package; 3 leads	SOT323

## 4. Marking

Table 5. Marking codes

Type number	Marking code <sup>[1]</sup>
PDTD113EU	ZP*
PDTD113ZU	ZQ*
PDTD123EU	ZR*
PDTD123YU	ZS*
PDTD143EU	ZT*
PDTD143XU	ZU*
PDTD114EU	ZV*

[1] \* = placeholder for manufacturing site code

## 5. Limiting values

Table 6. 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	-	50	V
$V_{CEO}$	collector-emitter voltage	open base	-	50	V
$V_{EBO}$	emitter-base voltage	open collector			
	PDTD113EU		-	10	V
	PDTD113ZU		-	5	V
	PDTD123EU		-	10	V
	PDTD123YU		-	5	V
	PDTD143EU		-	10	V
	PDTD143XU		-	7	V
	PDTD114EU		-	10	V
$V_I$	input voltage				
	PDTD113EU		-10	+10	V
	PDTD113ZU		-5	+10	V
	PDTD123EU		-10	+12	V
	PDTD123YU		-5	+12	V
	PDTD143EU		-10	+30	V
	PDTD143XU		-7	+30	V
	PDTD114EU		-10	+50	V
$I_O$	output current		-	500	mA

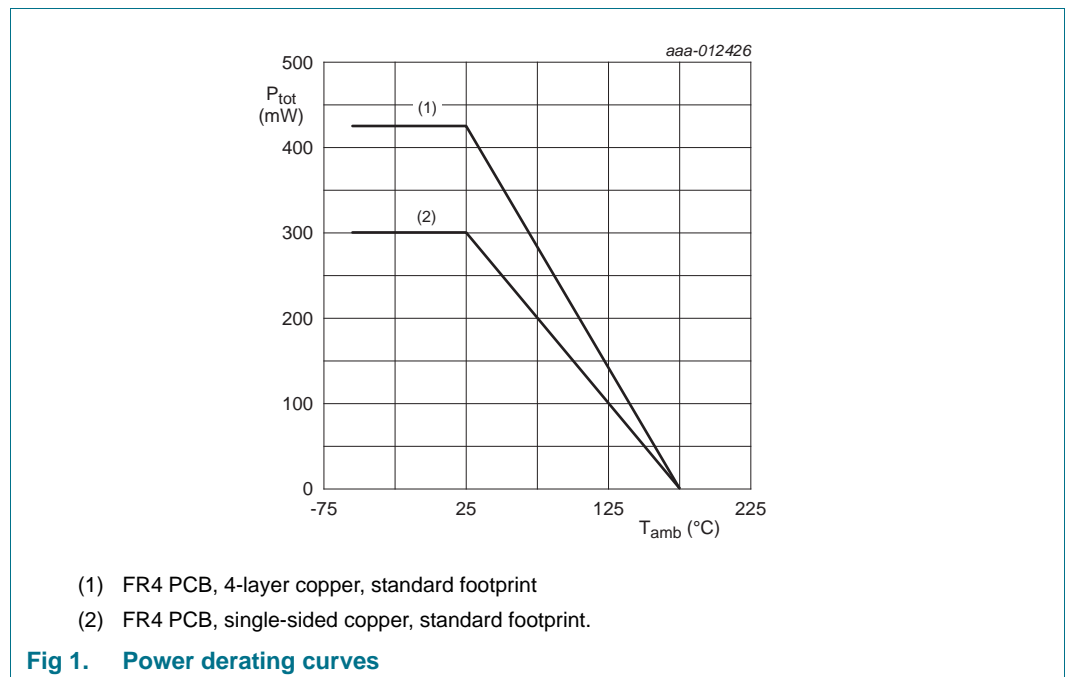
**Table 6. Limiting values ...continued**

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

Symbol	Parameter	Conditions	Min	Max	Unit
P <sub>tot</sub>	total power dissipation	T <sub>amb</sub> ≤ 25 °C	[1]	300	mW
			[2]	425	mW
T <sub>j</sub>	junction temperature		-	175	°C
T <sub>amb</sub>	ambient temperature		-55	+175	°C
T <sub>stg</sub>	storage temperature		-55	+175	°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, 4-layer copper, tin-plated and standard footprint.



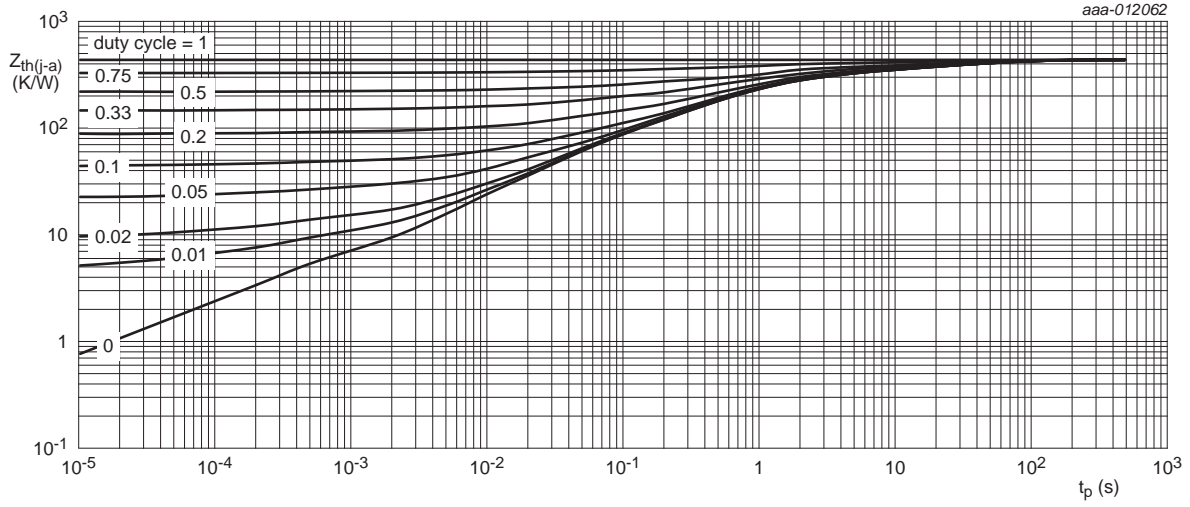
## 6. Thermal characteristics

**Table 7. Thermal characteristics**

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
R <sub>th(j-a)</sub>	thermal resistance from junction to ambient	in free air	[1]	-	500	K/W
			[2]	-	353	K/W

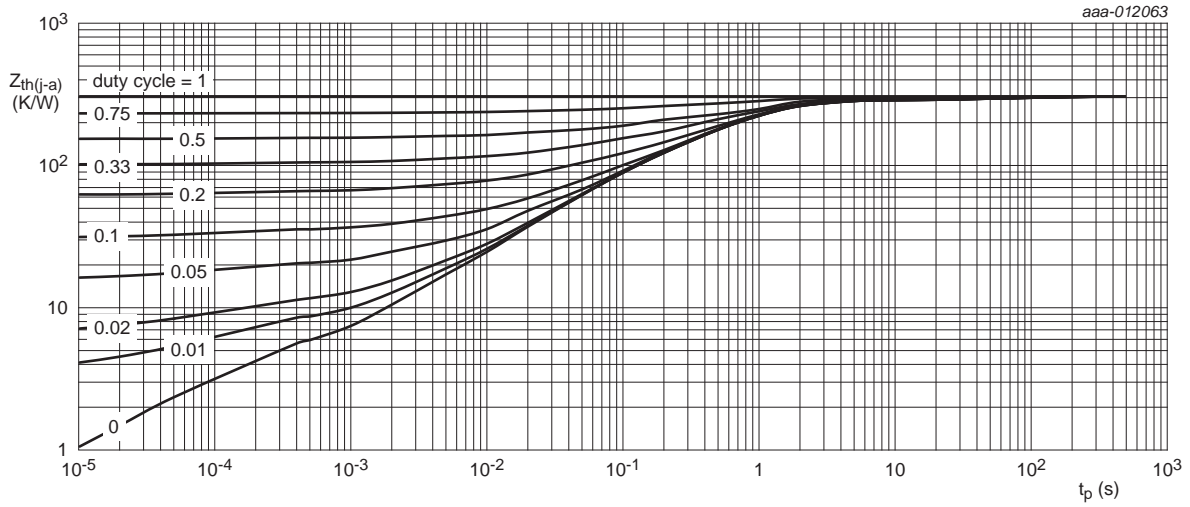
[1] Device mounted on an FR4 PCB, single-sided copper, tin-plated and standard footprint.

[2] Device mounted on an FR4 PCB, 4-layer copper, tin-plated and standard footprint.



FR4 PCB, single-sided copper, tin-plated and standard footprint

**Fig 2. Transient thermal impedance from junction to ambient as a function of pulse duration for SOT323/SC-70; typical values**



FR4 PCB, 4-layer copper, tin-plated and standard footprint.

**Fig 3. Transient thermal impedance from junction to ambient as a function of pulse duration for SOT323/SC-70; typical values**

## 7. Characteristics

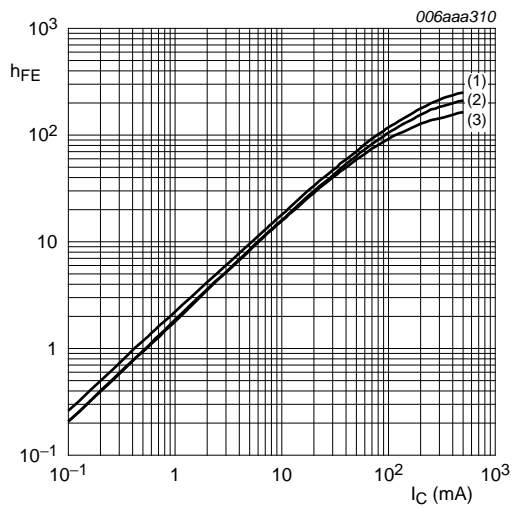
**Table 8. Characteristics**
 $T_{amb} = 25\text{ }^{\circ}\text{C}$  unless otherwise specified.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
I <sub>CBO</sub>	collector-base cut-off current	V <sub>CB</sub> = 40 V; I <sub>E</sub> = 0 A	-	-	100	nA
		V <sub>CB</sub> = 50 V; I <sub>E</sub> = 0 A	-	-	100	nA
I <sub>CEO</sub>	collector-emitter cut-off current	V <sub>CE</sub> = 50 V; I <sub>B</sub> = 0 A	-	-	0.5	μA
I <sub>EBO</sub>	emitter-base cut-off current	V <sub>EB</sub> = 5 V; I <sub>C</sub> = 0 A				
	PDTD113EU		-	-	4.0	mA
	PDTD113ZU		-	-	0.8	mA
	PDTD123EU		-	-	2.0	mA
	PDTD123YU		-	-	0.65	mA
	PDTD143EU		-	-	0.9	mA
	PDTD143XU		-	-	0.6	mA
	PDTD114EU		-	-	0.4	mA
h <sub>FE</sub>	DC current gain	V <sub>CE</sub> = 5 V; I <sub>C</sub> = 50 mA				
	PDTD113EU		33	-	-	
	PDTD113ZU		70	-	-	
	PDTD123EU		40	-	-	
	PDTD123YU		70	-	-	
	PDTD143EU		60	-	-	
	PDTD143XU		70	-	-	
	PDTD114EU		70	-	-	
V <sub>CEsat</sub>	collector-emitter saturation voltage	I <sub>C</sub> = 50 mA; I <sub>B</sub> = 2.5 mA	-	-	100	mV
V <sub>I(off)</sub>	off-state input voltage	V <sub>CE</sub> = 5 V; I <sub>C</sub> = 100 μA				
	PDTD113EU		0.6	1.1	1.5	V
	PDTD113ZU		0.3	0.6	1.0	V
	PDTD123EU		0.6	1.1	1.8	V
	PDTD123YU		0.4	0.6	1.0	V
	PDTD143EU		0.6	0.9	1.5	V
	PDTD143XU		0.5	0.75	1.1	V
	PDTD114EU		0.6	1.0	1.5	V
V <sub>I(on)</sub>	on-state input voltage	V <sub>CE</sub> = 0.3 V; I <sub>C</sub> = 20 mA				
	PDTD113EU		1.0	1.4	1.8	V
	PDTD113ZU		0.4	0.8	1.4	V
	PDTD123EU		1.0	1.5	2.0	V
	PDTD123YU		0.5	1.0	1.4	V
	PDTD143EU		1.0	1.6	2.2	V
	PDTD143XU		1.0	1.25	2.0	V
	PDTD114EU		1.0	1.9	3.0	V

**Table 8. Characteristics ...continued**  
 $T_{amb} = 25\text{ }^{\circ}\text{C}$  unless otherwise specified.

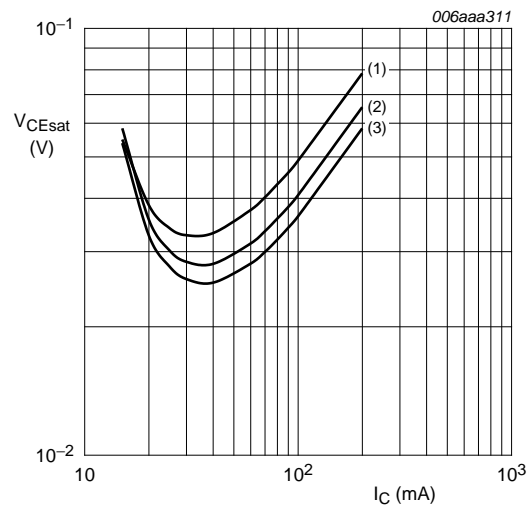
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
R1	bias resistor 1 (input)					
	PDTD113EU		0.7	1.0	1.3	k $\Omega$
	PDTD113ZU		0.7	1.0	1.3	k $\Omega$
	PDTD123EU		1.54	2.2	2.86	k $\Omega$
	PDTD123YU		1.54	2.2	2.86	k $\Omega$
	PDTD143EU		3.3	4.7	6.1	k $\Omega$
	PDTD143XU		3.3	4.7	6.1	k $\Omega$
	PDTD114EU		7.0	10	13	k $\Omega$
R2/R1	bias resistor ratio					
	PDTD113EU		0.9	1.0	1.1	
	PDTD113ZU		9.0	10	11	
	PDTD123EU		0.9	1.0	1.1	
	PDTD123YU		4.1	4.55	5.0	
	PDTD143EU		0.9	1	1.1	
	PDTD143XU		1.91	2.13	2.34	
	PDTD114EU		0.9	1.0	1.1	
C <sub>c</sub>	collector capacitance	V <sub>CB</sub> = 10 V; I <sub>E</sub> = i <sub>e</sub> = 0 A; f = 1 MHz	-	7	-	pF
f <sub>T</sub>	transition frequency	V <sub>CE</sub> = 5 V; I <sub>C</sub> = 50 mA; f = 100 MHz	[1]	225	-	MHz

[1] Characteristics of built-in transistor.



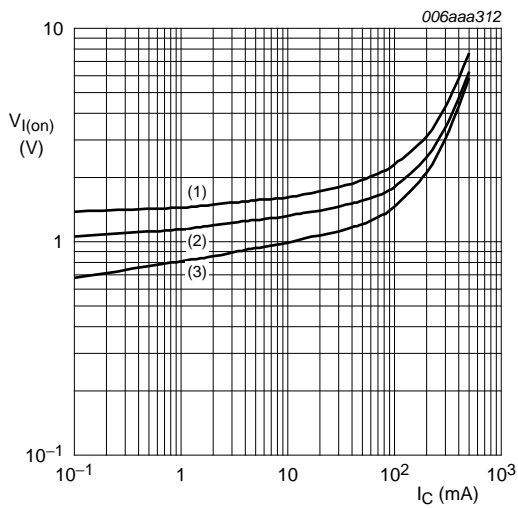
$V_{CE} = 5 \text{ V}$   
 (1)  $T_{amb} = 100 \text{ }^\circ\text{C}$   
 (2)  $T_{amb} = 25 \text{ }^\circ\text{C}$   
 (3)  $T_{amb} = -40 \text{ }^\circ\text{C}$

**Fig 4. PDTD113EU: DC current gain as a function of collector current; typical values**



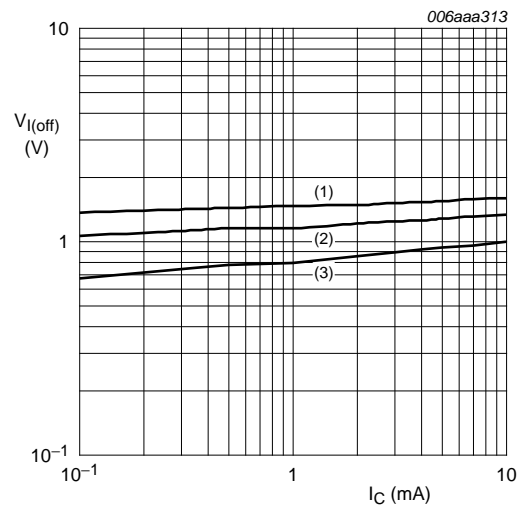
$I_C/I_B = 20$   
 (1)  $T_{amb} = 100 \text{ }^\circ\text{C}$   
 (2)  $T_{amb} = 25 \text{ }^\circ\text{C}$   
 (3)  $T_{amb} = -40 \text{ }^\circ\text{C}$

**Fig 5. PDTD113EU: Collector-emitter saturation voltage as a function of collector current; typical values**



$V_{CE} = 0.3 \text{ V}$   
 (1)  $T_{amb} = -40 \text{ }^\circ\text{C}$   
 (2)  $T_{amb} = 25 \text{ }^\circ\text{C}$   
 (3)  $T_{amb} = 100 \text{ }^\circ\text{C}$

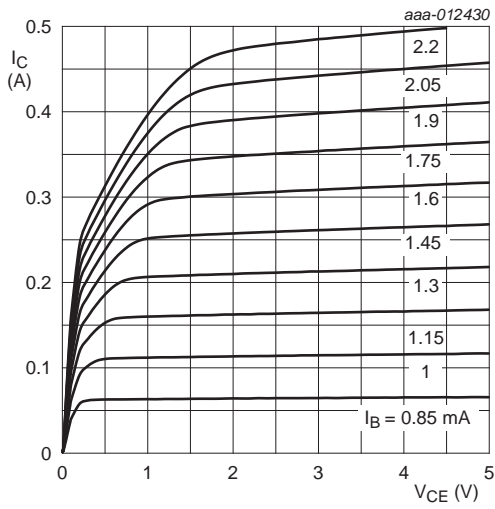
**Fig 6. PDTD113EU: On-state input voltage as a function of collector current; typical values**



$V_{CE} = 5 \text{ V}$   
 (1)  $T_{amb} = -40 \text{ }^\circ\text{C}$   
 (2)  $T_{amb} = 25 \text{ }^\circ\text{C}$   
 (3)  $T_{amb} = 100 \text{ }^\circ\text{C}$

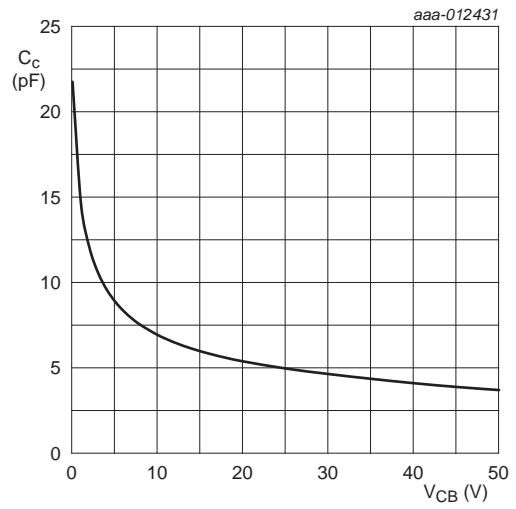
**Fig 7. PDTD113EU: Off-state input voltage as a function of collector current; typical values**





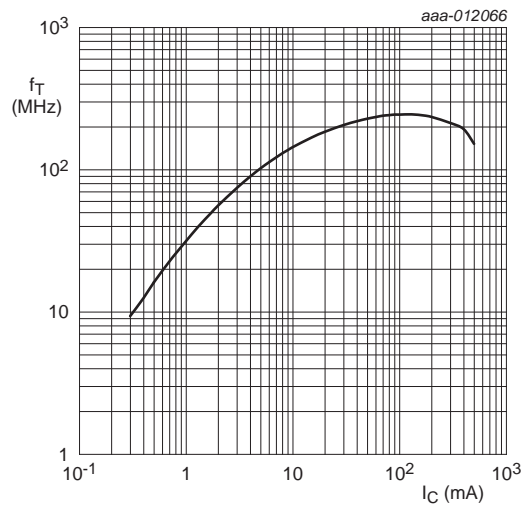
$T_{amb} = 25\text{ }^\circ\text{C}$

Fig 8. PDTD113EU: Collector current as a function of collector-emitter voltage; typical values



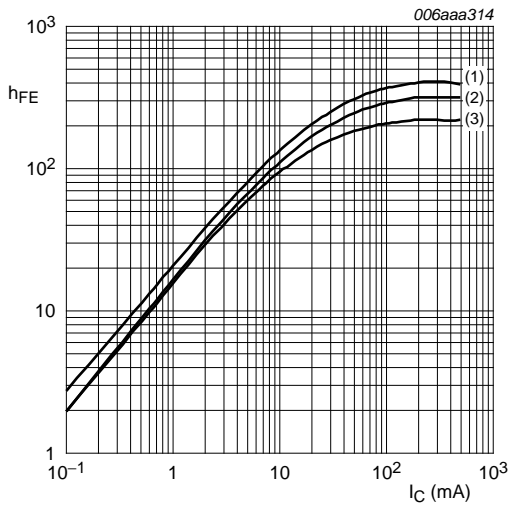
$f = 1\text{ MHz}; T_{amb} = 25\text{ }^\circ\text{C}$

Fig 9. PDTD113EU: Collector capacitance as a function of collector-base voltage; typical values



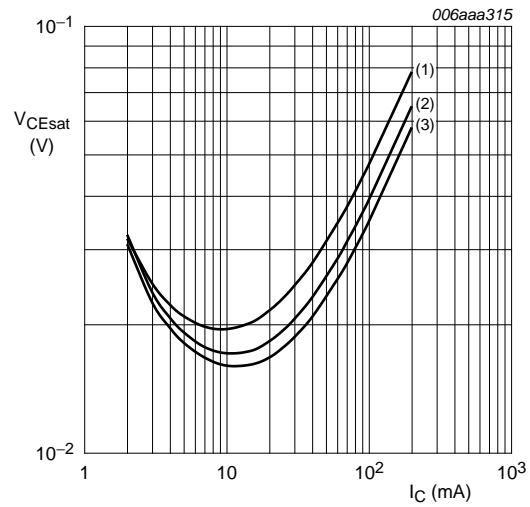
$V_{CE} = 5\text{ V}; T_{amb} = 25\text{ }^\circ\text{C}$

Fig 10. PDTD113EU: Transition frequency as a function of collector current; typical values of built-in transistor



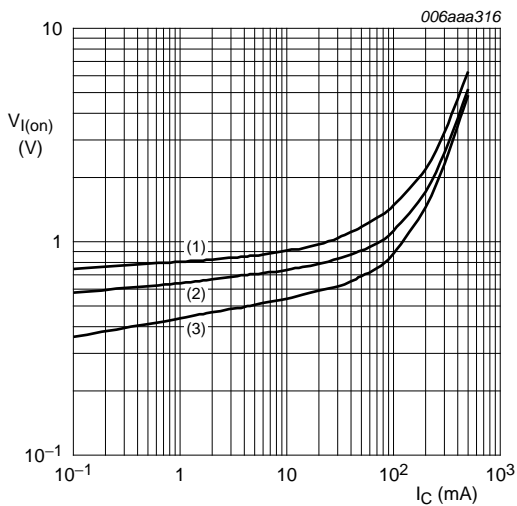
$V_{CE} = 5 \text{ V}$   
 (1)  $T_{amb} = 100 \text{ }^\circ\text{C}$   
 (2)  $T_{amb} = 25 \text{ }^\circ\text{C}$   
 (3)  $T_{amb} = -40 \text{ }^\circ\text{C}$

**Fig 11. PDTD113ZU: DC current gain as a function of collector current; typical values**



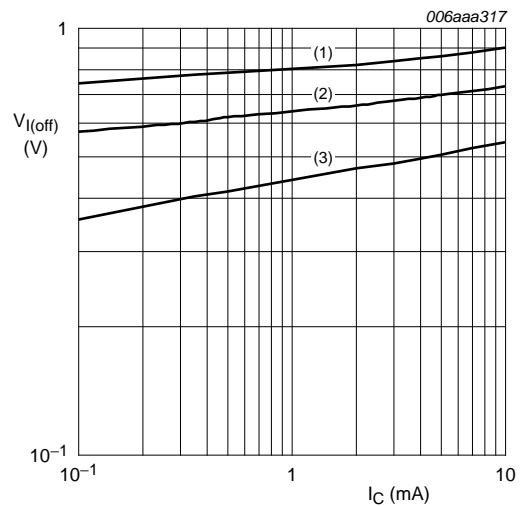
$I_C/I_B = 20$   
 (1)  $T_{amb} = 100 \text{ }^\circ\text{C}$   
 (2)  $T_{amb} = 25 \text{ }^\circ\text{C}$   
 (3)  $T_{amb} = -40 \text{ }^\circ\text{C}$

**Fig 12. PDTD113ZU: Collector-emitter saturation voltage as a function of collector current; typical values**



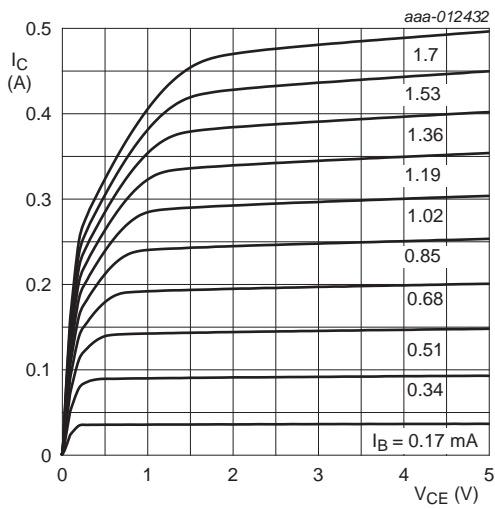
$V_{CE} = 0.3 \text{ V}$   
 (1)  $T_{amb} = -40 \text{ }^\circ\text{C}$   
 (2)  $T_{amb} = 25 \text{ }^\circ\text{C}$   
 (3)  $T_{amb} = 100 \text{ }^\circ\text{C}$

**Fig 13. PDTD113ZU: On-state input voltage as a function of collector current; typical values**



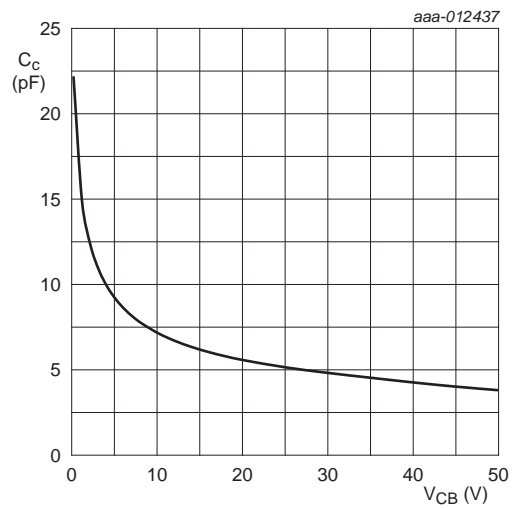
$V_{CE} = 5 \text{ V}$   
 (1)  $T_{amb} = -40 \text{ }^\circ\text{C}$   
 (2)  $T_{amb} = 25 \text{ }^\circ\text{C}$   
 (3)  $T_{amb} = 100 \text{ }^\circ\text{C}$

**Fig 14. PDTD113ZU: Off-state input voltage as a function of collector current; typical values**



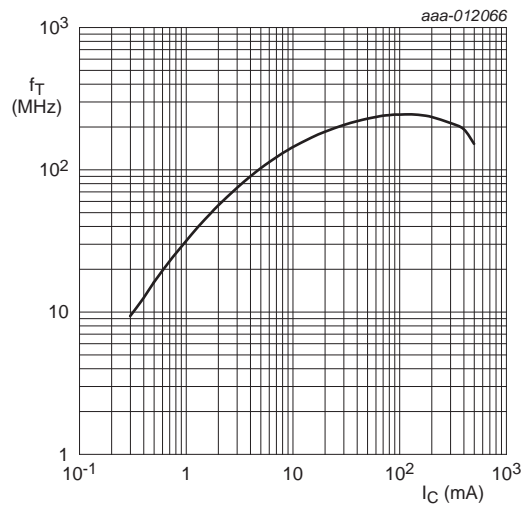
$T_{amb} = 25\text{ }^\circ\text{C}$

**Fig 15. PDTD113ZU: Collector current as a function of collector-emitter voltage; typical values**



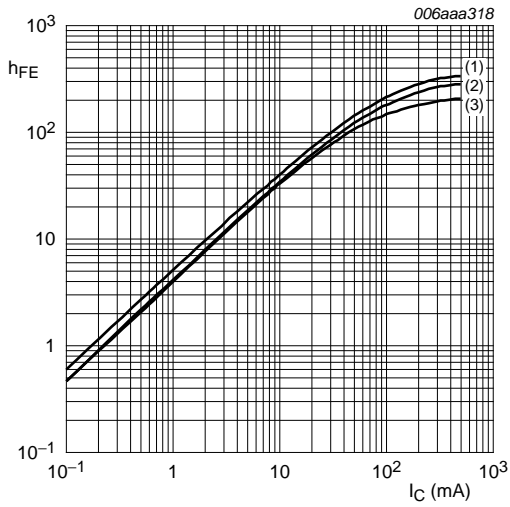
$f = 1\text{ MHz}; T_{amb} = 25\text{ }^\circ\text{C}$

**Fig 16. PDTD113ZU: Collector capacitance as a function of collector-base voltage; typical values**



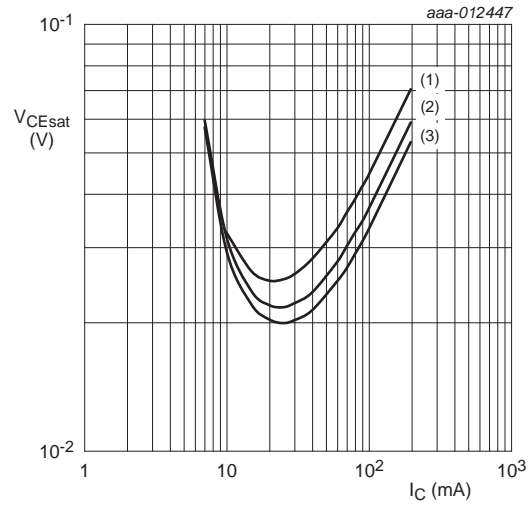
$V_{CE} = 5\text{ V}; T_{amb} = 25\text{ }^\circ\text{C}$

**Fig 17. PDTD113ZU: Transition frequency as a function of collector current; typical values of built-in transistor**



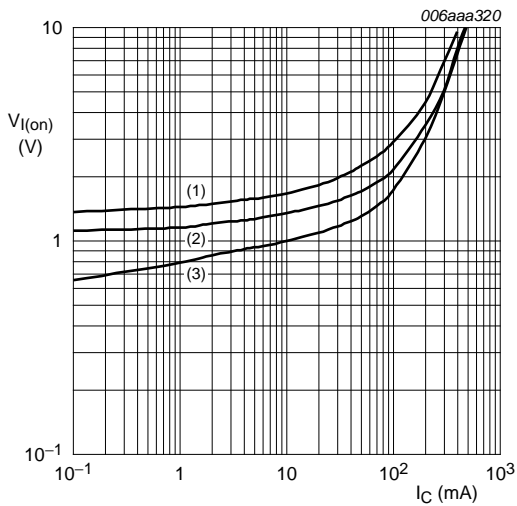
$V_{CE} = 5 \text{ V}$   
 (1)  $T_{amb} = 100 \text{ }^\circ\text{C}$   
 (2)  $T_{amb} = 25 \text{ }^\circ\text{C}$   
 (3)  $T_{amb} = -40 \text{ }^\circ\text{C}$

**Fig 18. PDTD123EU: DC current gain as a function of collector current; typical values**



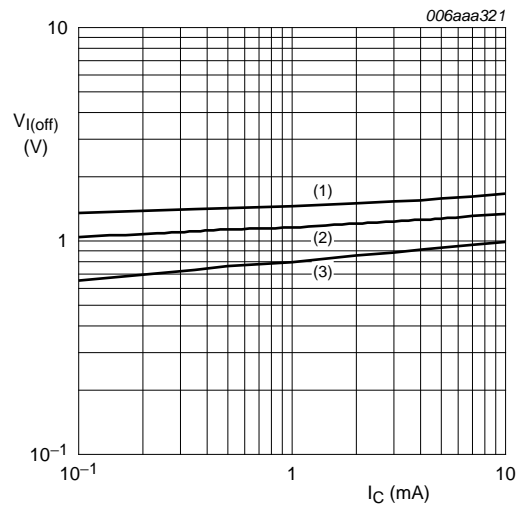
$I_C/I_B = 20$   
 (1)  $T_{amb} = 100 \text{ }^\circ\text{C}$   
 (2)  $T_{amb} = 25 \text{ }^\circ\text{C}$   
 (3)  $T_{amb} = -40 \text{ }^\circ\text{C}$

**Fig 19. PDTD123EU: Collector-emitter saturation voltage as a function of collector current; typical values**



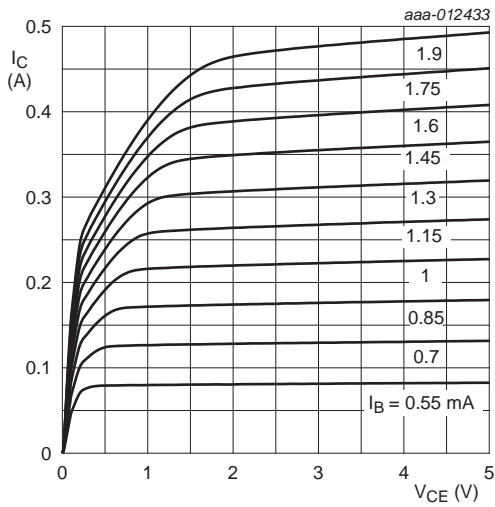
$V_{CE} = 0.3 \text{ V}$   
 (1)  $T_{amb} = -40 \text{ }^\circ\text{C}$   
 (2)  $T_{amb} = 25 \text{ }^\circ\text{C}$   
 (3)  $T_{amb} = 100 \text{ }^\circ\text{C}$

**Fig 20. PDTD123EU: On-state input voltage as a function of collector current; typical values**



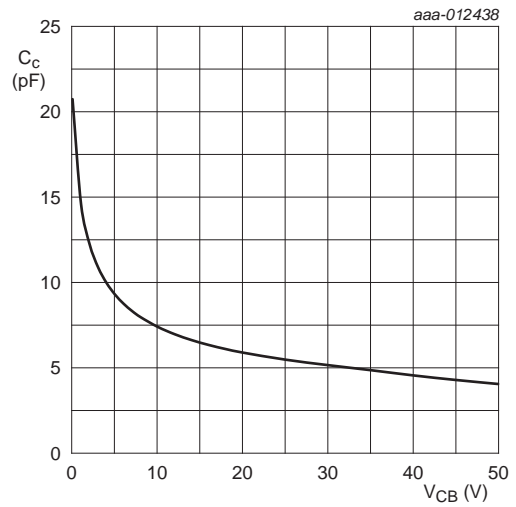
$V_{CE} = 5 \text{ V}$   
 (1)  $T_{amb} = -40 \text{ }^\circ\text{C}$   
 (2)  $T_{amb} = 25 \text{ }^\circ\text{C}$   
 (3)  $T_{amb} = 100 \text{ }^\circ\text{C}$

**Fig 21. PDTD123EU: Off-state input voltage as a function of collector current; typical values**



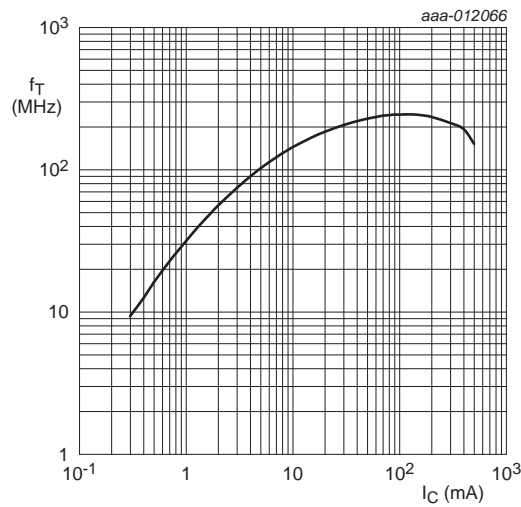
$T_{amb} = 25\text{ }^\circ\text{C}$

Fig 22. PDTD123EU: Collector current as a function of collector-emitter voltage; typical values



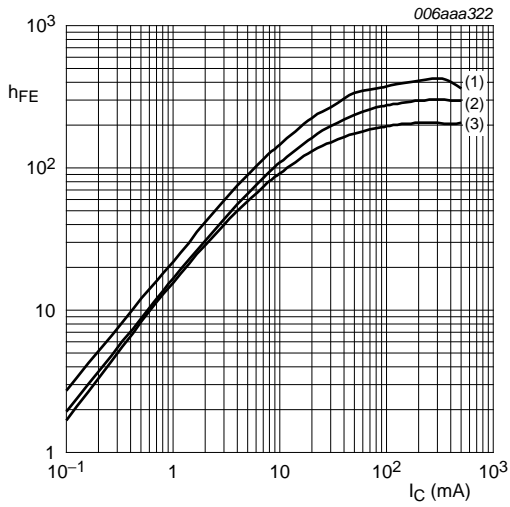
$f = 1\text{ MHz}; T_{amb} = 25\text{ }^\circ\text{C}$

Fig 23. PDTD123EU: Collector capacitance as a function of collector-base voltage; typical values



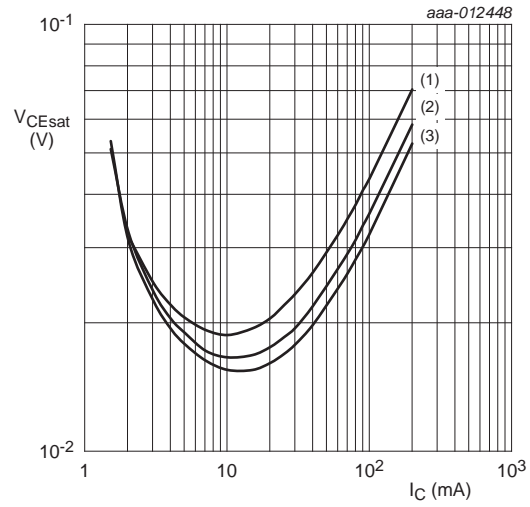
$V_{CE} = 5\text{ V}; T_{amb} = 25\text{ }^\circ\text{C}$

Fig 24. PDTD123EU: Transition frequency as a function of collector current; typical values of built-in transistor



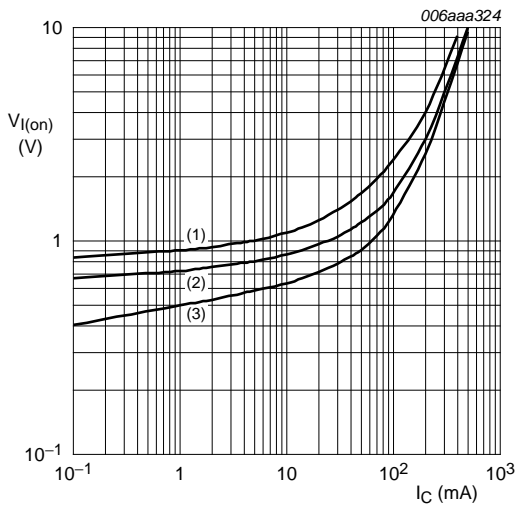
$V_{CE} = 5 \text{ V}$   
 (1)  $T_{amb} = 100 \text{ }^\circ\text{C}$   
 (2)  $T_{amb} = 25 \text{ }^\circ\text{C}$   
 (3)  $T_{amb} = -40 \text{ }^\circ\text{C}$

**Fig 25. PDTD123YU: DC current gain as a function of collector current; typical values**



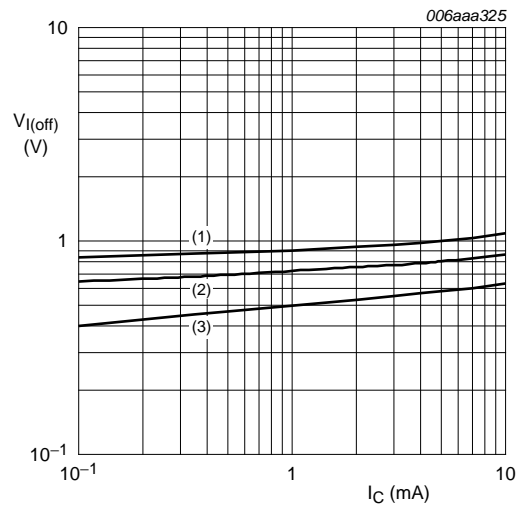
$I_C/I_B = 20$   
 (1)  $T_{amb} = 100 \text{ }^\circ\text{C}$   
 (2)  $T_{amb} = 25 \text{ }^\circ\text{C}$   
 (3)  $T_{amb} = -40 \text{ }^\circ\text{C}$

**Fig 26. PDTD123YU: Collector-emitter saturation voltage as a function of collector current; typical values**



$V_{CE} = 0.3 \text{ V}$   
 (1)  $T_{amb} = -40 \text{ }^\circ\text{C}$   
 (2)  $T_{amb} = 25 \text{ }^\circ\text{C}$   
 (3)  $T_{amb} = 100 \text{ }^\circ\text{C}$

**Fig 27. PDTD123YU: On-state input voltage as a function of collector current; typical values**



$V_{CE} = 5 \text{ V}$   
 (1)  $T_{amb} = -40 \text{ }^\circ\text{C}$   
 (2)  $T_{amb} = 25 \text{ }^\circ\text{C}$   
 (3)  $T_{amb} = 100 \text{ }^\circ\text{C}$

**Fig 28. PDTD123YU: Off-state input voltage as a function of collector current; typical values**

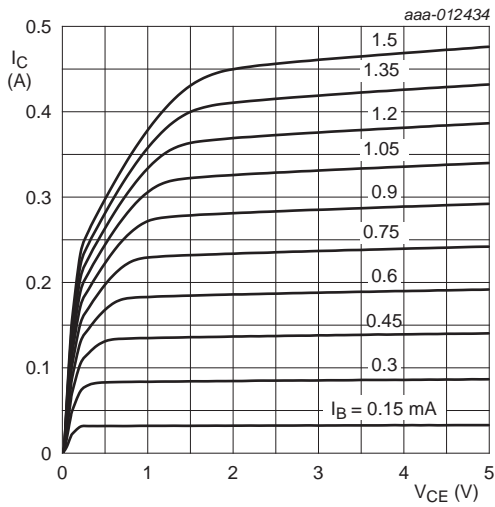


Fig 29. PDTD123YU: Collector current as a function of collector-emitter voltage; typical values

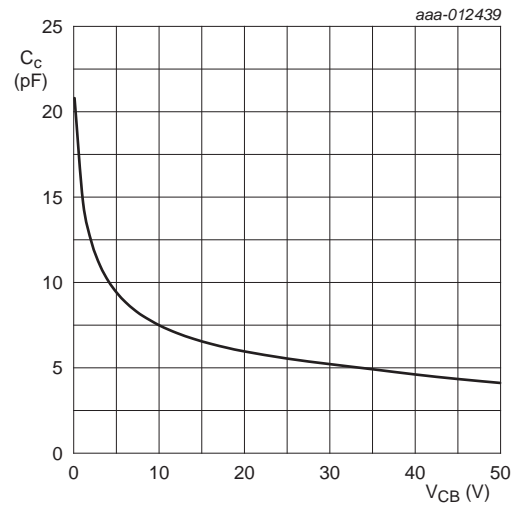
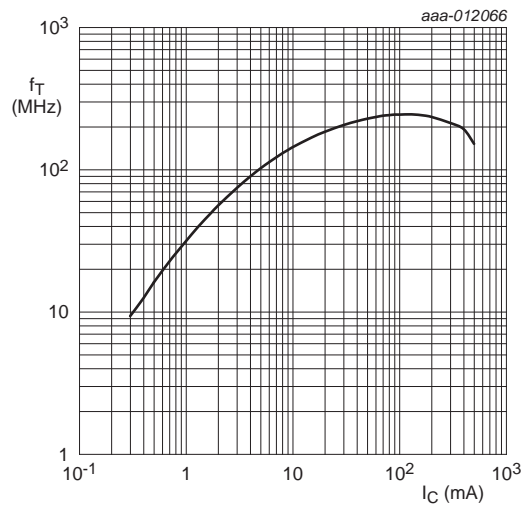
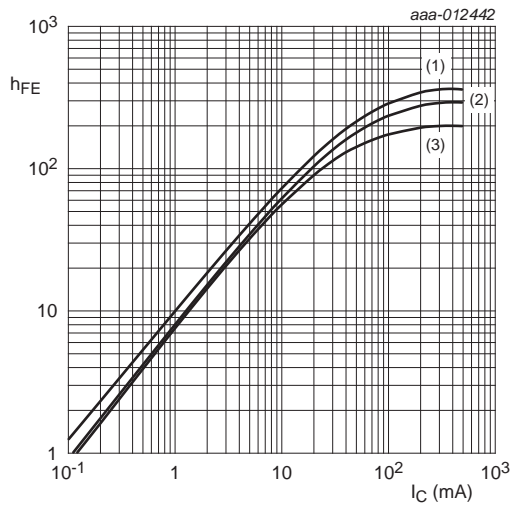


Fig 30. PDTD123YU: Collector capacitance as a function of collector-base voltage; typical values



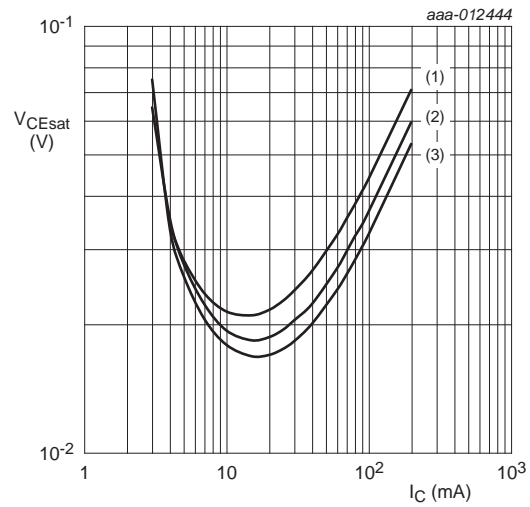
$V_{CE} = 5\text{ V}; T_{amb} = 25^\circ\text{C}$

Fig 31. PDTD123YU: Transition frequency as a function of collector current; typical values of built-in transistor



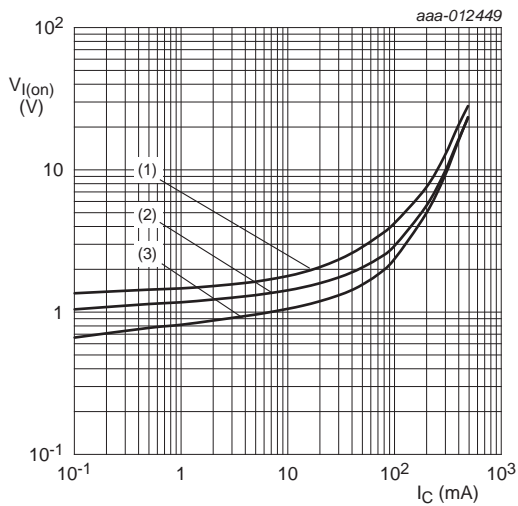
$V_{CE} = 5 \text{ V}$   
 (1)  $T_{amb} = 100 \text{ }^\circ\text{C}$   
 (2)  $T_{amb} = 25 \text{ }^\circ\text{C}$   
 (3)  $T_{amb} = -40 \text{ }^\circ\text{C}$

**Fig 32. PDTD143EU: DC current gain as a function of collector current; typical values**



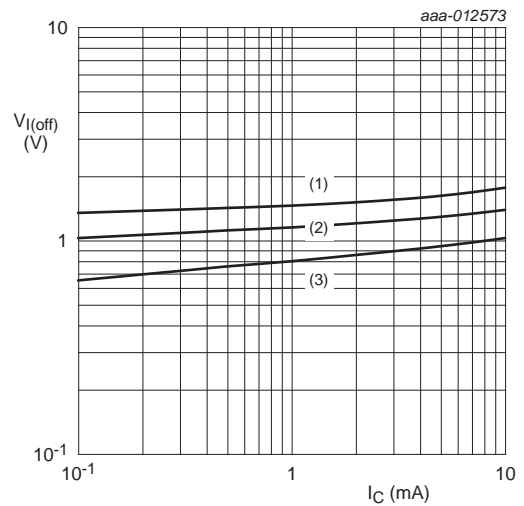
$I_C/I_B = 20$   
 (1)  $T_{amb} = 100 \text{ }^\circ\text{C}$   
 (2)  $T_{amb} = 25 \text{ }^\circ\text{C}$   
 (3)  $T_{amb} = -40 \text{ }^\circ\text{C}$

**Fig 33. PDTD143EU: Collector-emitter saturation voltage as a function of collector current; typical values**



$V_{CE} = 0.3 \text{ V}$   
 (1)  $T_{amb} = -40 \text{ }^\circ\text{C}$   
 (2)  $T_{amb} = 25 \text{ }^\circ\text{C}$   
 (3)  $T_{amb} = 100 \text{ }^\circ\text{C}$

**Fig 34. PDTD143EU: On-state input voltage as a function of collector current; typical values**



$V_{CE} = 5 \text{ V}$   
 (1)  $T_{amb} = -40 \text{ }^\circ\text{C}$   
 (2)  $T_{amb} = 25 \text{ }^\circ\text{C}$   
 (3)  $T_{amb} = 100 \text{ }^\circ\text{C}$

**Fig 35. PDTD143EU: Off-state input voltage as a function of collector current; typical values**



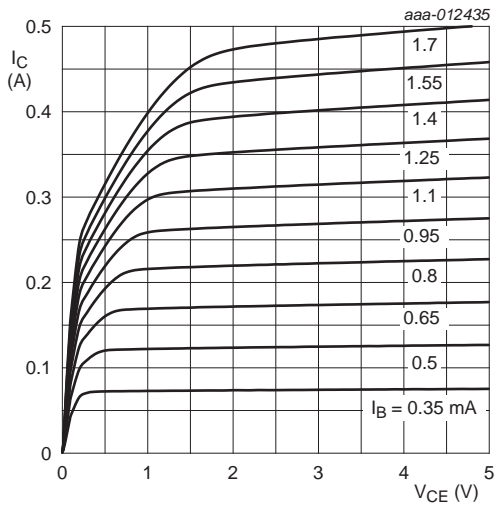


Fig 36. PDTD143EU: Collector current as a function of collector-emitter voltage; typical values

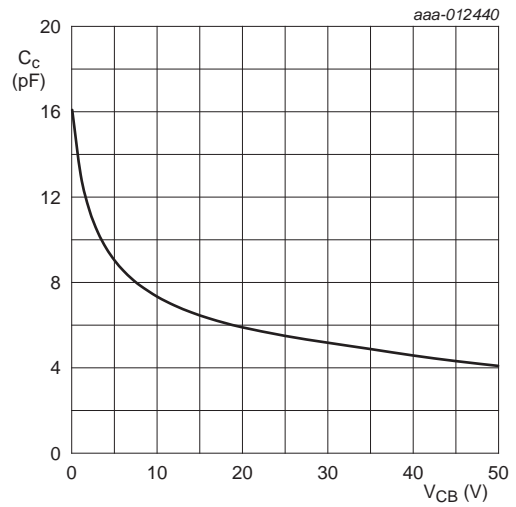
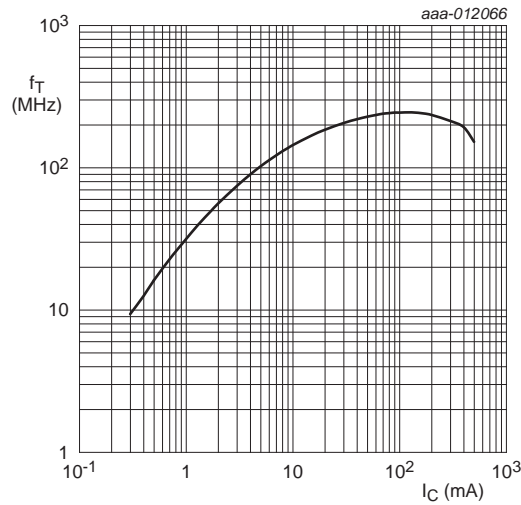
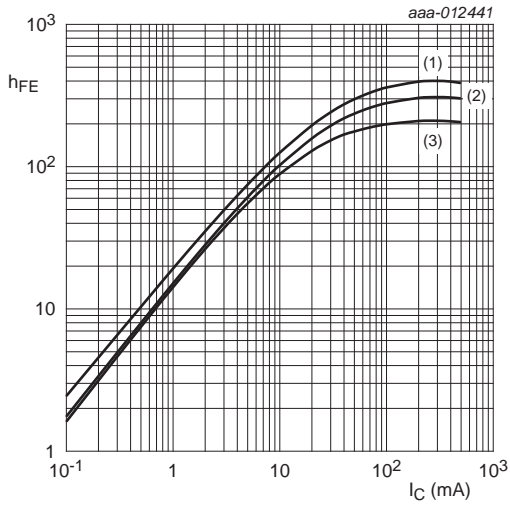


Fig 37. PDTD143EU: Collector capacitance as a function of collector-base voltage; typical values



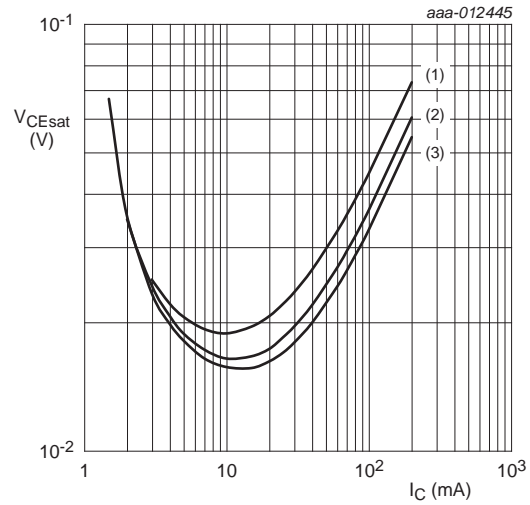
$V_{CE} = 5\text{ V}$ ;  $T_{amb} = 25\text{ }^\circ\text{C}$

Fig 38. PDTD143EU: Transition frequency as a function of collector current; typical values of built-in transistor



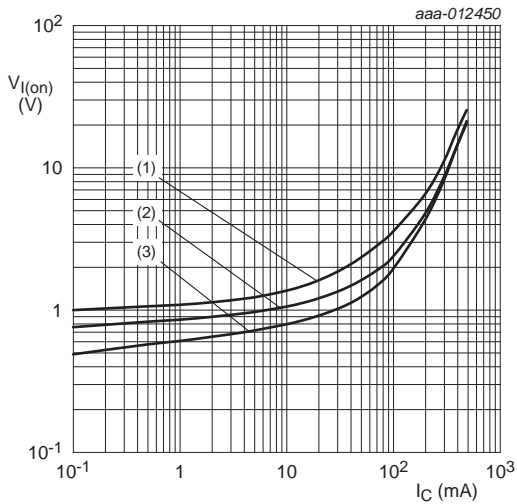
$V_{CE} = 5\text{ V}$   
 (1)  $T_{amb} = 100\text{ }^{\circ}\text{C}$   
 (2)  $T_{amb} = 25\text{ }^{\circ}\text{C}$   
 (3)  $T_{amb} = -40\text{ }^{\circ}\text{C}$

**Fig 39. PDTD143XU: DC current gain as a function of collector current; typical values**



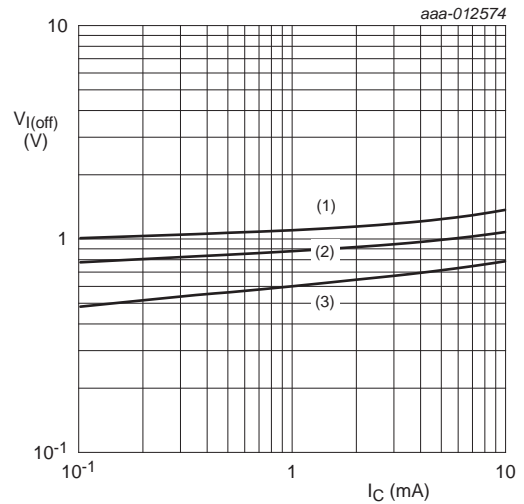
$I_C/I_B = 20$   
 (1)  $T_{amb} = 100\text{ }^{\circ}\text{C}$   
 (2)  $T_{amb} = 25\text{ }^{\circ}\text{C}$   
 (3)  $T_{amb} = -40\text{ }^{\circ}\text{C}$

**Fig 40. PDTD143XU: Collector-emitter saturation voltage as a function of collector current; typical values**



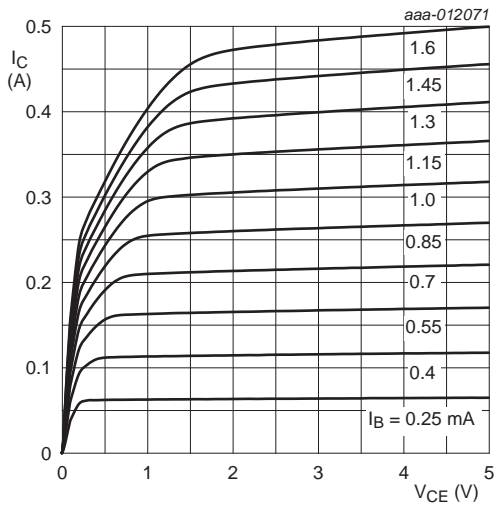
$V_{CE} = 0.3\text{ V}$   
 (1)  $T_{amb} = -40\text{ }^{\circ}\text{C}$   
 (2)  $T_{amb} = 25\text{ }^{\circ}\text{C}$   
 (3)  $T_{amb} = 100\text{ }^{\circ}\text{C}$

**Fig 41. PDTD143XU: On-state input voltage as a function of collector current; typical values**



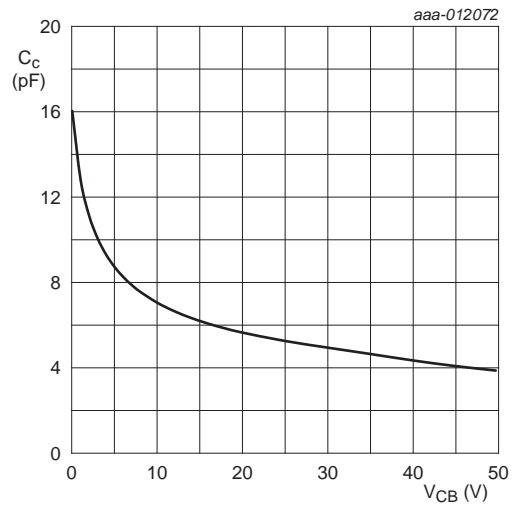
$V_{CE} = 5\text{ V}$   
 (1)  $T_{amb} = -40\text{ }^{\circ}\text{C}$   
 (2)  $T_{amb} = 25\text{ }^{\circ}\text{C}$   
 (3)  $T_{amb} = 100\text{ }^{\circ}\text{C}$

**Fig 42. PDTD143XU: Off-state input voltage as a function of collector current; typical values**



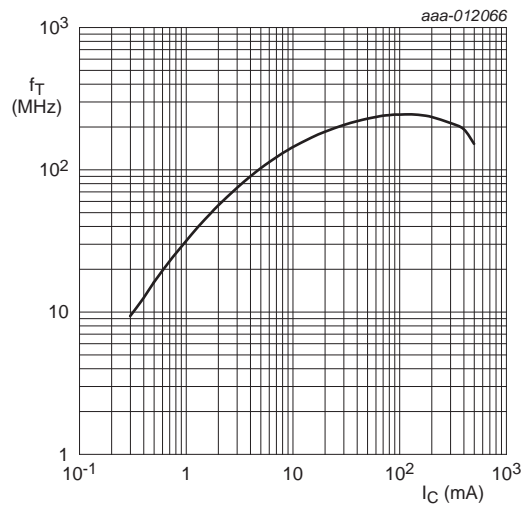
$T_{amb} = 25\text{ }^\circ\text{C}$

**Fig 43. PDTD143XU: Collector current as a function of collector-emitter voltage; typical values**



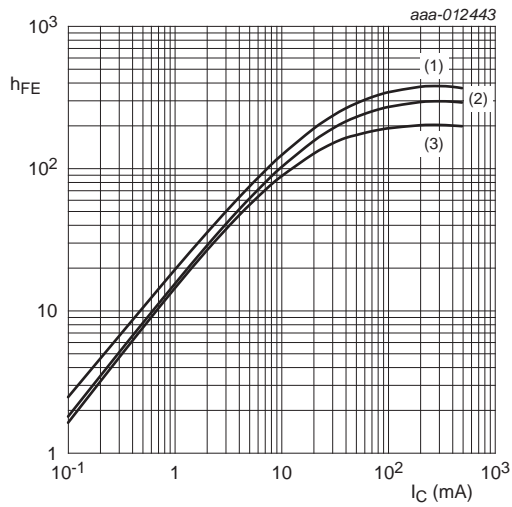
$f = 1$  MHz;  $T_{amb} = 25\text{ }^\circ\text{C}$

**Fig 44. PDTD143XU: Collector capacitance as a function of collector-base voltage; typical values**



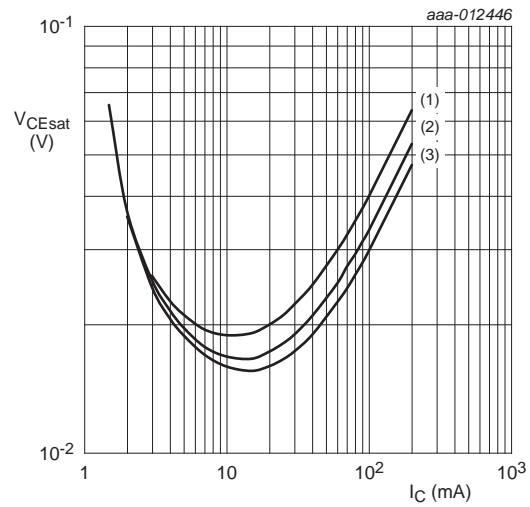
$V_{CE} = 5$  V;  $T_{amb} = 25\text{ }^\circ\text{C}$

**Fig 45. PDTD143XU: Transition frequency as a function of collector current; typical values of built-in transistor**



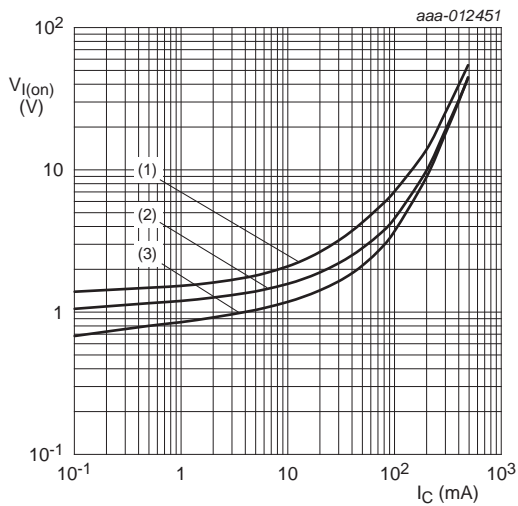
- $V_{CE} = 5 \text{ V}$
- (1)  $T_{amb} = 100 \text{ }^\circ\text{C}$
  - (2)  $T_{amb} = 25 \text{ }^\circ\text{C}$
  - (3)  $T_{amb} = -40 \text{ }^\circ\text{C}$

Fig 46. PDTD114EU: DC current gain as a function of collector current; typical values



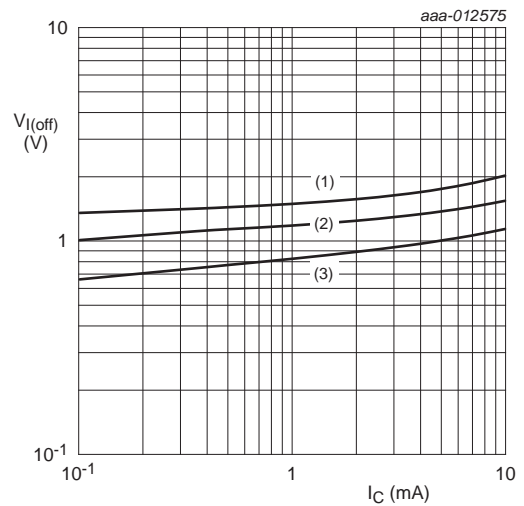
- $I_C/I_B = 20$
- (1)  $T_{amb} = 100 \text{ }^\circ\text{C}$
  - (2)  $T_{amb} = 25 \text{ }^\circ\text{C}$
  - (3)  $T_{amb} = -40 \text{ }^\circ\text{C}$

Fig 47. PDTD114EU: Collector-emitter saturation voltage as a function of collector current; typical values



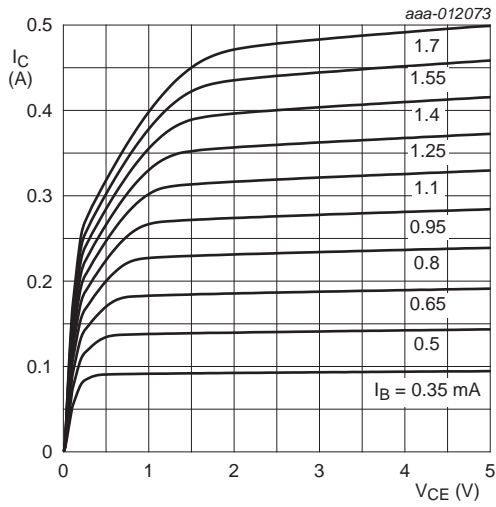
- $V_{CE} = 0.3 \text{ V}$
- (1)  $T_{amb} = -40 \text{ }^\circ\text{C}$
  - (2)  $T_{amb} = 25 \text{ }^\circ\text{C}$
  - (3)  $T_{amb} = 100 \text{ }^\circ\text{C}$

Fig 48. PDTD114EU: On-state input voltage as a function of collector current; typical values



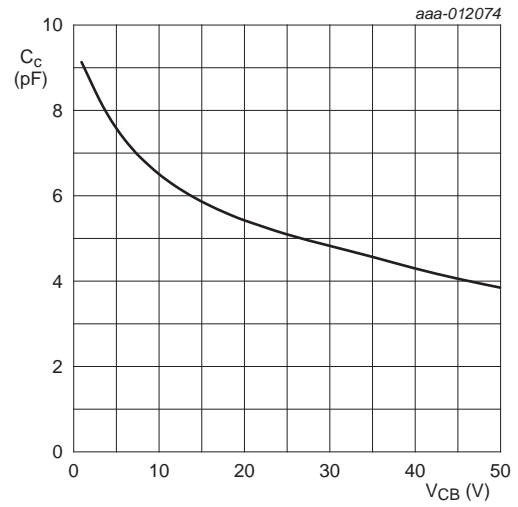
- $V_{CE} = 5 \text{ V}$
- (1)  $T_{amb} = -40 \text{ }^\circ\text{C}$
  - (2)  $T_{amb} = 25 \text{ }^\circ\text{C}$
  - (3)  $T_{amb} = 100 \text{ }^\circ\text{C}$

Fig 49. PDTD114EU: Off-state input voltage as a function of collector current; typical values



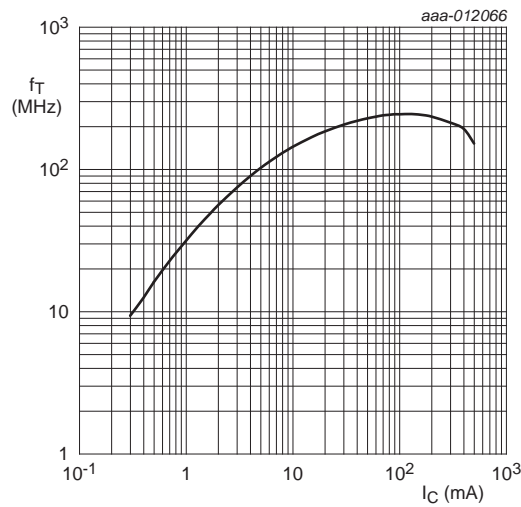
$T_{amb} = 25^\circ\text{C}$

**Fig 50. PDTD114EU: Collector current as a function of collector-emitter voltage; typical values**



$f = 1$  MHz;  $T_{amb} = 25^\circ\text{C}$

**Fig 51. PDTD114EU: Collector capacitance as a function of collector-base voltage; typical values**



$V_{CE} = 5$  V;  $T_{amb} = 25^\circ\text{C}$

**Fig 52. PDTD114EU: Transition frequency as a function of collector current; typical values of built-in transistor**

## 8. Test information

### 8.1 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.

## 9. Package outline

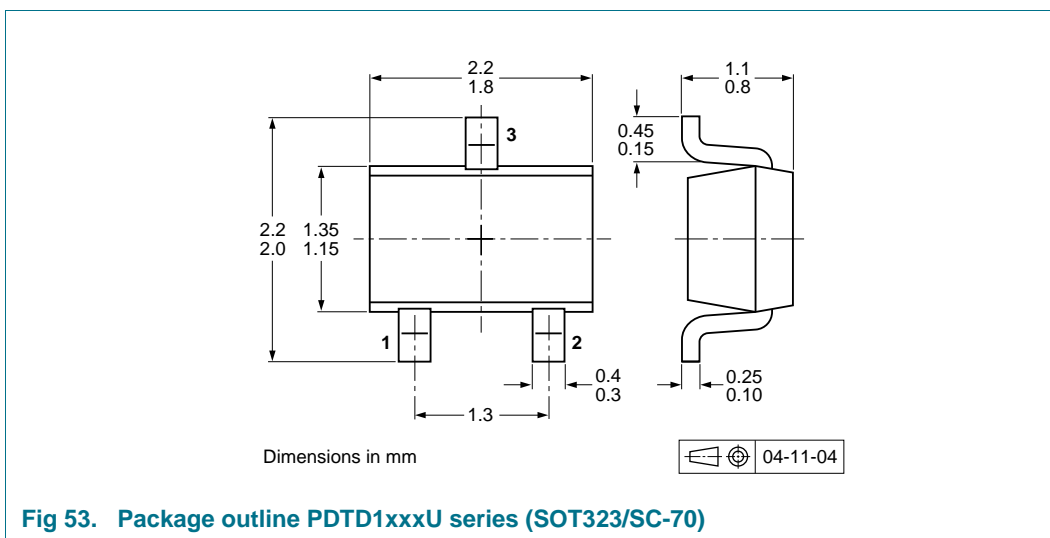


Fig 53. Package outline PDTD1xxxU series (SOT323/SC-70)

10. Soldering

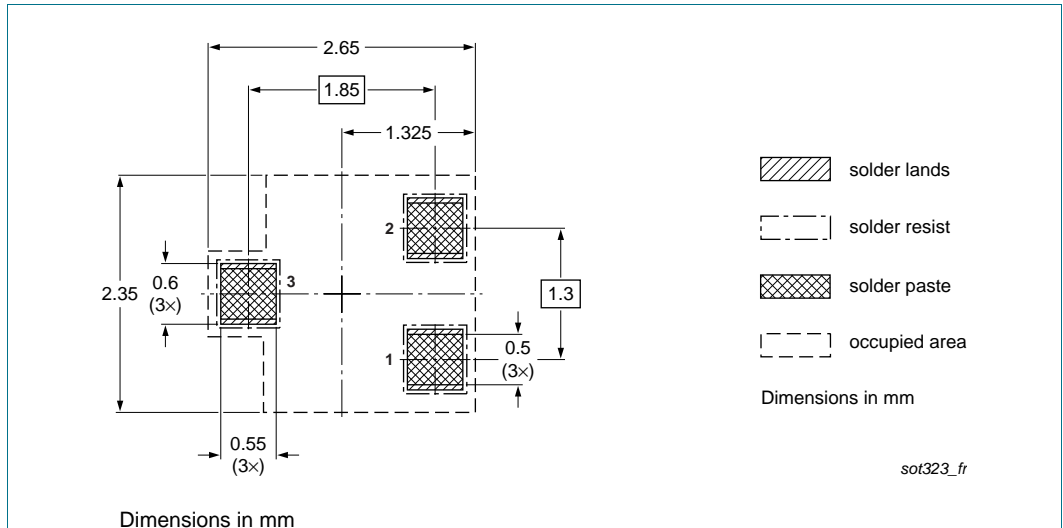


Fig 54. Reflow soldering footprint PDTD1xxxU series (SOT323/SC-70)

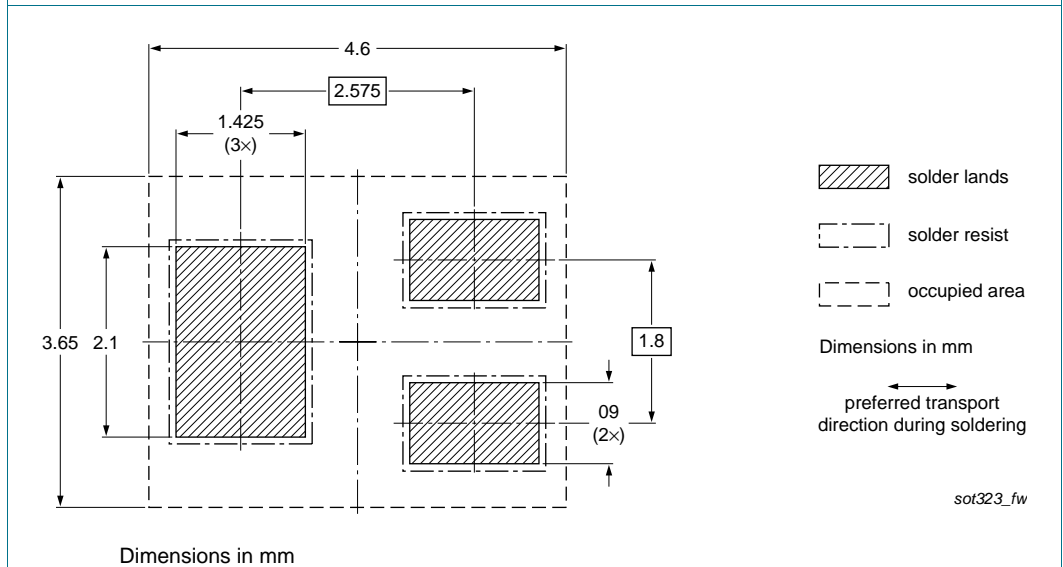


Fig 55. Wave soldering footprint PDTD1xxxU series (SOT323/SC-70)

## 11. Revision history

Table 9. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
PDTD1XXXU_SER v.1	20140513	Product data sheet	-	-



## 12. Legal information

### 12.1 Data sheet status

Document status <sup>[1][2]</sup>	Product status <sup>[3]</sup>	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.

[1] Please consult the most recently issued document before initiating or completing a design.

[2] The term 'short data sheet' is explained in section "Definitions".

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