

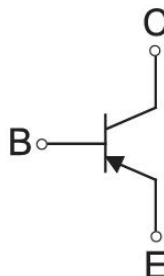
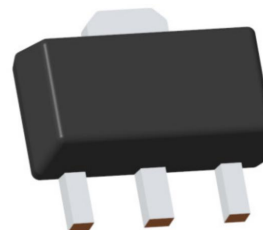
## PNP Plastic-Encapsulate Transistors

### General Description

$V_{CE0}$	$I_c$	$V_{CE(sat)}$	$f_T$	$T_{jMax}$
-50V	-3A	-390mV@ $I_C=3A$	100MHz	150°C

### Features

- SOT-89 Package
- Epoxy meets UL-94 V-0 flammability rating and halogen free
- Moisture Sensitivity Level 3
- High temperature soldering guaranteed 260°C/10seconds  
at terminals



### Package Marking and Ordering Information

Product ID	Package	Marking	Qty(PCS)
PBSS5350X	SOT-89	S46	1000

### Absolute Maximum Ratings (Ta=25°C unless otherwise noted)

Parameter	Symbols	Value	Units	
Collector-Base Voltage	VCBO	-50	V	
Collector-Emitter Voltage	VCEO	-50	V	
Emitter -Base Voltage	VEBO	-5	V	
Collector Current-Continuous	IC	-3	A	
Peak Collector Current,single pulse;tp≤1ms	ICM	-5	A	
Collector Power Dissipation	PC	(Note1)	0.55	W
		(Note2)	1	
		(Note3、 4)	1.4	
		(Note5)	1.6	
Junction Temperature	Tj	150	°C	
Storage Temperature	Tstg	-65-+150	°C	
Thermal resistance from junction to ambient	RθJA	(Note1)	225	°C/W
		(Note2)	125	
		(Note3、 4)	90	
		(Note5)	80	

Note:1.Device mounted on an FR4 Printed-Circuit Board (PCB), 35 μm single-sided copper, tin-plated and standard footprint.

2.Device mounted on an FR4 PCB, 35 μm single-sided copper, tin-plated, mounting pad for collector 1 cm<sup>2</sup> .

3.Device mounted on an FR4 PCB, 35 μm single-sided copper, tin-plated, mounting pad for collector 6 cm<sup>2</sup> .

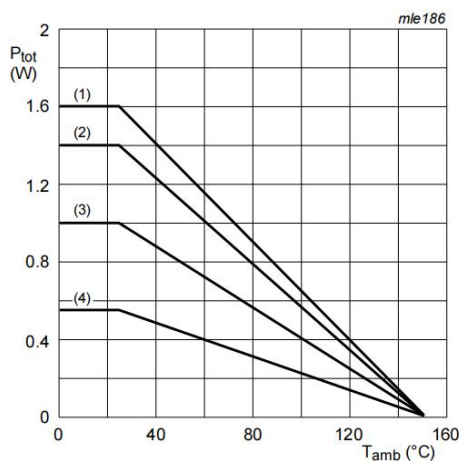
4.Device mounted on an FR4 PCB, 70 μm single-sided copper, tin-plated, mounting pad for collector 1 cm<sup>2</sup> .

5..Device mounted on an FR4 PCB, 70 μm single-sided copper, tin-plated, mounting pad for collector 6 cm<sup>2</sup> .

## Electrical Characteristics(Ta=25°C unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
Collector-base breakdown voltage	V(BR)CBO	IC=-100uA, IE=0	-50			V
Collector-emitter breakdown voltage	V(BR)CEO	IC=-10mA, IB=0	-50			V
Emitter-base breakdown voltage	V(BR)EBO	IE=-100uA, IC=0	-5			V
Collector cut-off current	ICBO	VCB=-50V, IE=0			-100	nA
		VCB=-50V, IE=0, Tj=150°C			-50	uA
Emitter cut-off current	IEBO	VEB=-5V, IC=0			-100	nA
DC current gain	hFE1	VCE=-2V, IC=-100mA	200			
	hFE2	VCE=-2V, IC=-500mA	200			
	hFE3	VCE=-2V, IC=-1A	200		450	
	hFE4	VCE=-2V, IC=-2A	130			
	hFE5	VCE=-2V, IC=-3A	80			
Collector-emitter saturation voltage	VCE(sat)	IC=-500mA, IB=-50mA			-90	mV
		IC=-1A, IB=-50mA			-180	
		IC=-2A, IB=-100mA			-320	
		IC=-2A, IB=-200mA			-270	
		IC=-3A, IB=-300mA			-390	
Collector-emitter saturation resistance	RCE(sat)	IC=-2A, IB=-200mA		90	135	mΩ
Base -emitter saturation voltage	VBE(sat)	IC=-2A, IB=-100mA			-1.1	V
		IC=-3A, IB=-300mA			-1.2	
Base -emitter turn-on voltage	VBE(on)	VCE=-2V, IC=-1A			-1.1	V
Transition frequency	fT	VCE=-5V, IC=-100mA, f=100MHz	100			MHz
Collector capacitance	Cc	VCB=-10V, IE=0; ie=0A, f=1MHz			35	pF

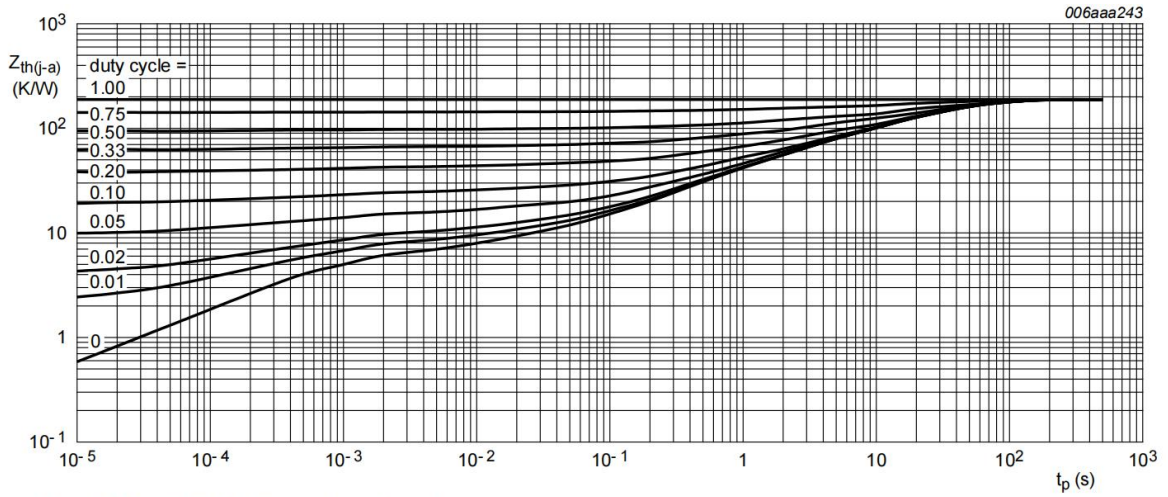
## Typical characteristics



- (1) Ceramic PCB; 7 cm<sup>2</sup> mounting pad for collector
- (2) FR4 PCB; 6 cm<sup>2</sup> copper mounting pad for collector
- (3) FR4 PCB; 1 cm<sup>2</sup> copper mounting pad for collector
- (4) Standard footprint

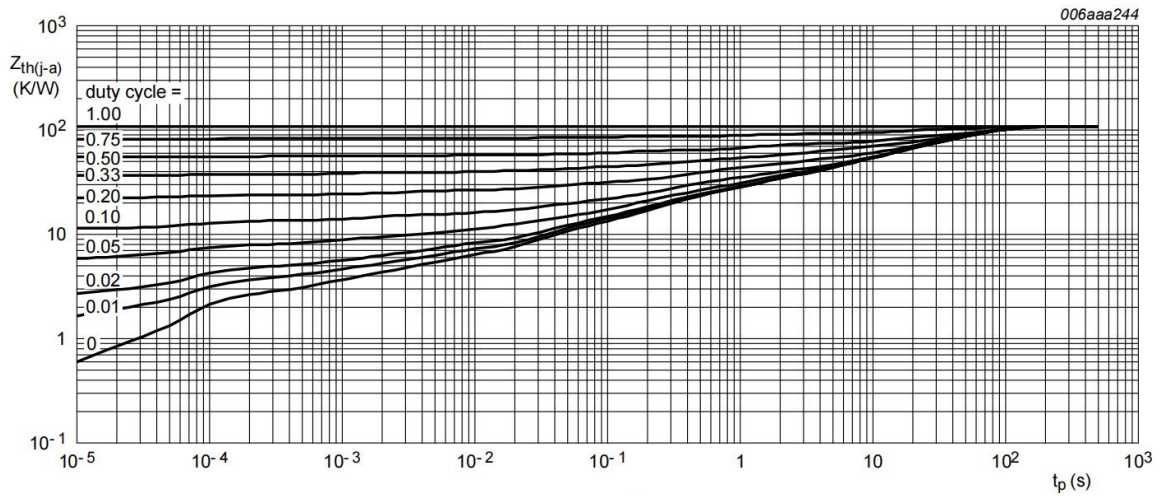
Fig. 1. Power derating curves

# Typical Characteristics



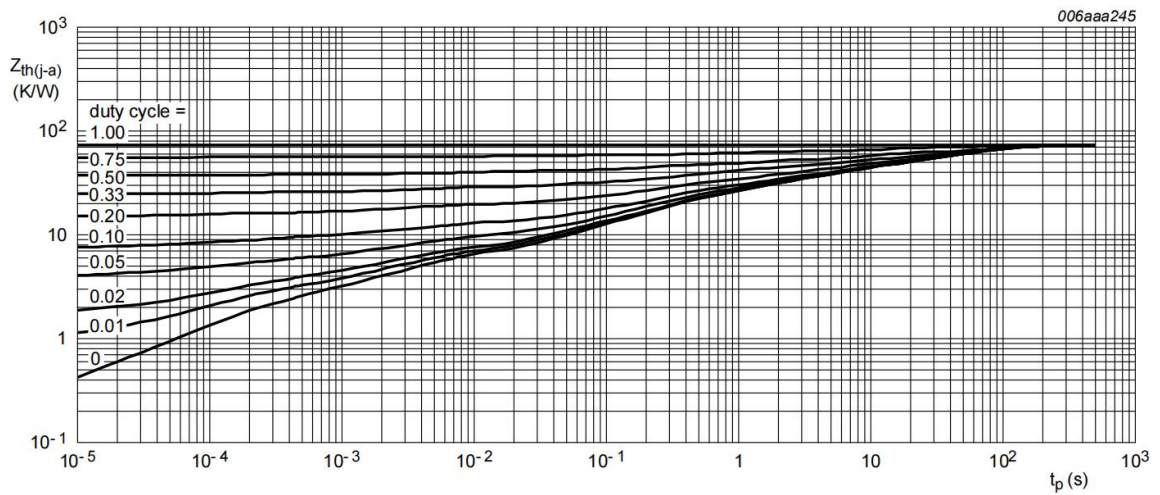
Mounted on FR4 PCB; standard footprint.

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



Mounted on FR4 PCB; mounting pad for collector 1 cm<sup>2</sup>

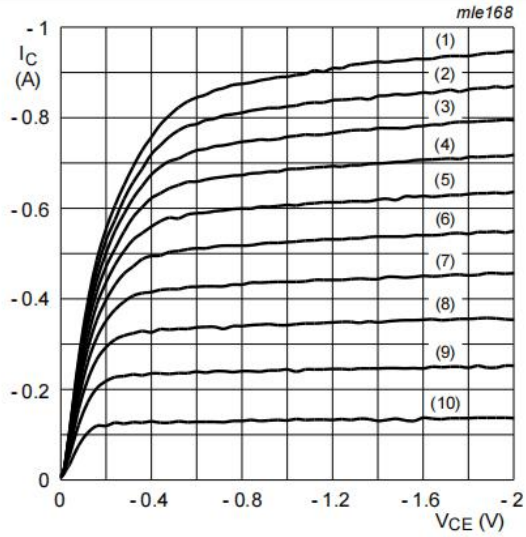
Fig. 3. Transient thermal impedance as a function of pulse duration; typical values



Mounted on FR4 PCB; mounting pad for collector 6 cm<sup>2</sup>

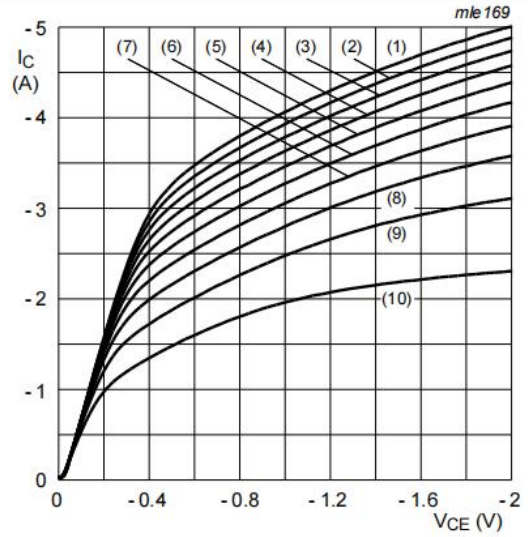
Fig. 4. Transient thermal impedance as a function of pulse duration; typical values

# Typical Characteristics



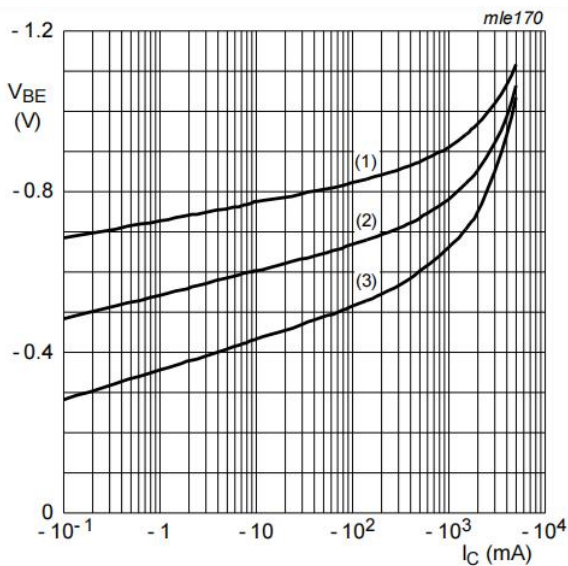
$T_{amb} = 25\text{ }^{\circ}\text{C}$   
 (1)  $I_B = -3500\text{ }\mu\text{A}$   
 (2)  $I_B = -3150\text{ }\mu\text{A}$   
 (3)  $I_B = -2800\text{ }\mu\text{A}$   
 (4)  $I_B = -2450\text{ }\mu\text{A}$   
 (5)  $I_B = -2100\text{ }\mu\text{A}$   
 (6)  $I_B = -1750\text{ }\mu\text{A}$   
 (7)  $I_B = -1400\text{ }\mu\text{A}$   
 (8)  $I_B = -1050\text{ }\mu\text{A}$   
 (9)  $I_B = -700\text{ }\mu\text{A}$   
 (10)  $I_B = -350\text{ }\mu\text{A}$

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



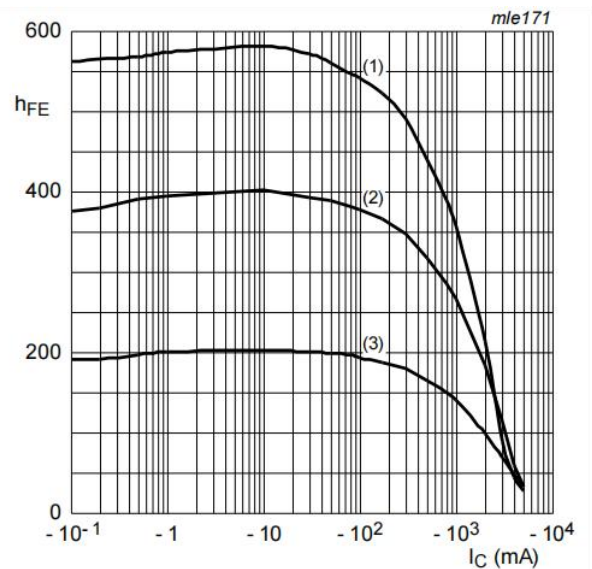
$T_{amb} = 25\text{ }^{\circ}\text{C}$   
 (1)  $I_B = -140\text{ mA}$   
 (2)  $I_B = -126\text{ mA}$   
 (3)  $I_B = -112\text{ mA}$   
 (4)  $I_B = -98\text{ mA}$   
 (5)  $I_B = -84\text{ mA}$   
 (6)  $I_B = -70\text{ mA}$   
 (7)  $I_B = -56\text{ mA}$   
 (8)  $I_B = -42\text{ mA}$   
 (9)  $I_B = -28\text{ mA}$   
 (10)  $I_B = -14\text{ mA}$

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



$V_{CE} = -2\text{ V}$   
 (1)  $T_{amb} = -55\text{ }^{\circ}\text{C}$   
 (2)  $T_{amb} = 25\text{ }^{\circ}\text{C}$   
 (3)  $T_{amb} = 100\text{ }^{\circ}\text{C}$

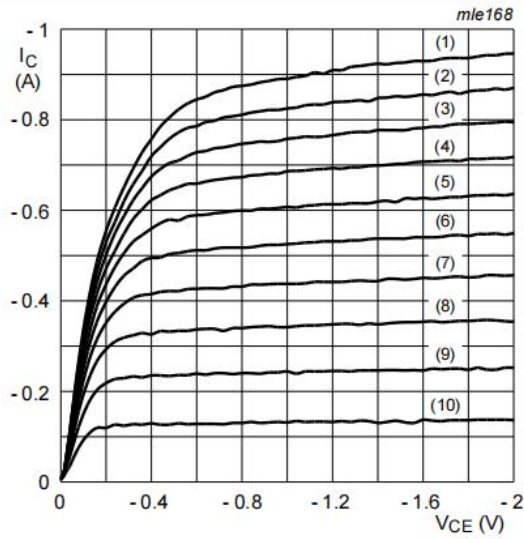
**Fig. 7. Base-emitter voltage as a function of collector current; typical values**



$V_{CE} = -2\text{ V}$   
 (1)  $T_{amb} = 100\text{ }^{\circ}\text{C}$   
 (2)  $T_{amb} = 25\text{ }^{\circ}\text{C}$   
 (3)  $T_{amb} = -55\text{ }^{\circ}\text{C}$

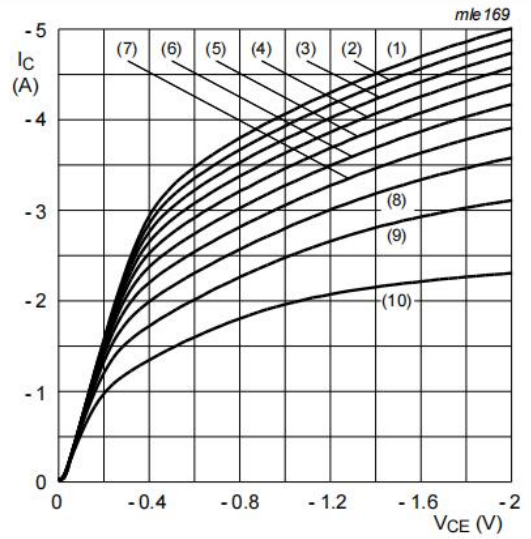
**Fig. 8. DC current gain as a function of collector current; typical values**

# Typical Characteristics



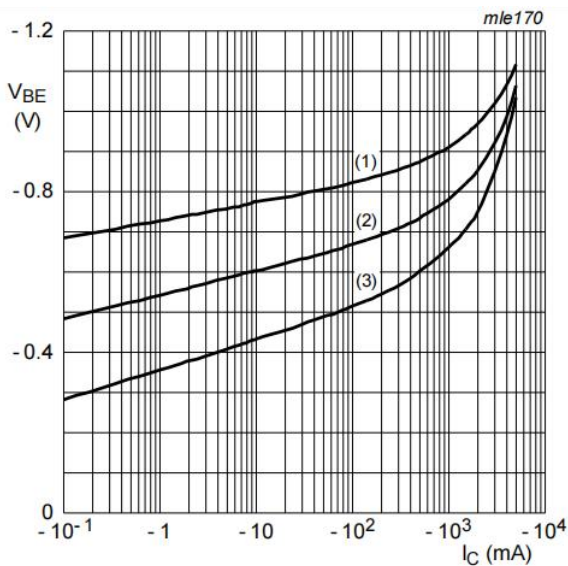
$T_{amb} = 25\text{ }^{\circ}\text{C}$   
 (1)  $I_B = -3500\text{ }\mu\text{A}$   
 (2)  $I_B = -3150\text{ }\mu\text{A}$   
 (3)  $I_B = -2800\text{ }\mu\text{A}$   
 (4)  $I_B = -2450\text{ }\mu\text{A}$   
 (5)  $I_B = -2100\text{ }\mu\text{A}$   
 (6)  $I_B = -1750\text{ }\mu\text{A}$   
 (7)  $I_B = -1400\text{ }\mu\text{A}$   
 (8)  $I_B = -1050\text{ }\mu\text{A}$   
 (9)  $I_B = -700\text{ }\mu\text{A}$   
 (10)  $I_B = -350\text{ }\mu\text{A}$

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



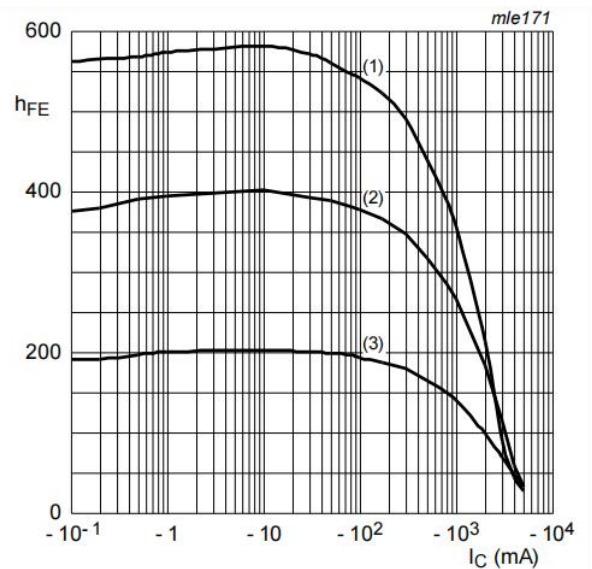
$T_{amb} = 25\text{ }^{\circ}\text{C}$   
 (1)  $I_B = -140\text{ mA}$   
 (2)  $I_B = -126\text{ mA}$   
 (3)  $I_B = -112\text{ mA}$   
 (4)  $I_B = -98\text{ mA}$   
 (5)  $I_B = -84\text{ mA}$   
 (6)  $I_B = -70\text{ mA}$   
 (7)  $I_B = -56\text{ mA}$   
 (8)  $I_B = -42\text{ mA}$   
 (9)  $I_B = -28\text{ mA}$   
 (10)  $I_B = -14\text{ mA}$

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



$V_{CE} = -2\text{ V}$   
 (1)  $T_{amb} = -55\text{ }^{\circ}\text{C}$   
 (2)  $T_{amb} = 25\text{ }^{\circ}\text{C}$   
 (3)  $T_{amb} = 100\text{ }^{\circ}\text{C}$

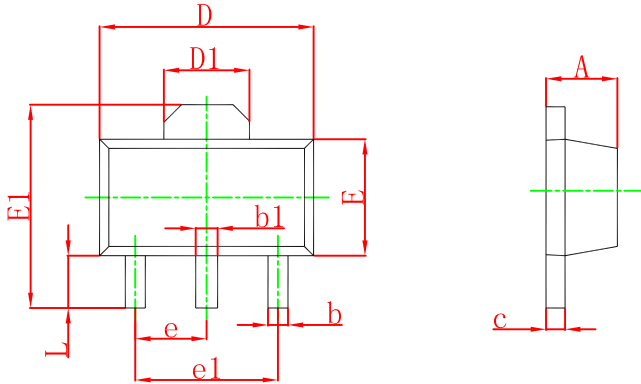
**Fig. 7. Base-emitter voltage as a function of collector current; typical values**



$V_{CE} = -2\text{ V}$   
 (1)  $T_{amb} = 100\text{ }^{\circ}\text{C}$   
 (2)  $T_{amb} = 25\text{ }^{\circ}\text{C}$   
 (3)  $T_{amb} = -55\text{ }^{\circ}\text{C}$

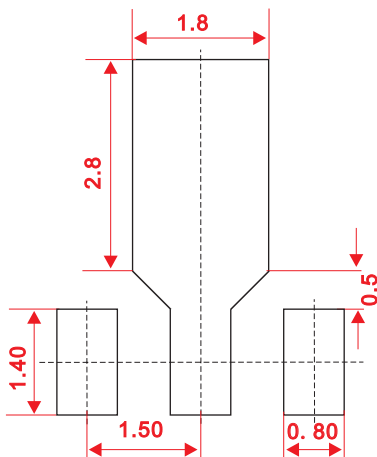
**Fig. 8. DC current gain as a function of collector current; typical values**

## SOT-89-3L Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.400	1.600	0.055	0.063
b	0.320	0.520	0.013	0.020
b1	0.400	0.580	0.016	0.023
c	0.350	0.440	0.014	0.017
D	4.400	4.600	0.173	0.181
D1	1.550 REF.		0.061 REF.	
E	2.300	2.600	0.091	0.102
E1	3.940	4.250	0.155	0.167
e	1.500 TYP.		0.060 TYP.	
e1	3.000 TYP.		0.118 TYP.	
L	0.900	1.200	0.035	0.047

## SOT-89-3L Suggested Pad Layout



Note:

1. Controlling dimension: in millimeters.
2. General tolerance:  $\pm 0.05$  mm.
3. The pad layout is for reference purposes only.

### NOTICE

JSHD reserve the right to make modifications, enhancements, improvements, corrections or other changes without further notice to any product herein. JSHD does not assume any liability arising out of the application or use of any product described herein.