



## PBSS4140T NPN Transistor

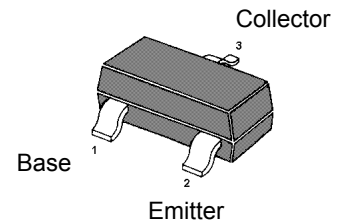
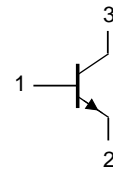
### FEATURES

- Low collector-emitter saturation voltage
- High current capabilities
- Improved device reliability due to reduced heat generation.

### APPLICATIONS

- General purpose switching and muting
- LCD backlighting
- Supply line switching circuits
- Battery driven equipment (mobile phones, video cameras and hand-held devices).

Marking : Z T



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### Absolute Maximum Ratings ( $T_a = 25\text{ }^\circ\text{C}$ )

Parameter		Symbol	Value	Unit
Collector Base Voltage		$V_{CBO}$	40	V
Collector Emitter Voltage		$V_{CEO}$	30	V
Emitter Base Voltage		$V_{EBO}$	5	V
Collector Current (DC)		$I_C$	1	A
Peak Collector Current		$I_{CM}$	2	A
Peak Base Current		$I_{BM}$	1	A
Total Power Dissipation	$T_{amb} \leq 25\text{ }^\circ\text{C}$ <sup>1)</sup>	$P_{tot}$	200	mW
	$T_{amb} \leq 25\text{ }^\circ\text{C}$ <sup>2)</sup>		450	
Junction Temperature		$T_j$	150	$^\circ\text{C}$
Storage Temperature Range		$T_s$	-65 to +150	$^\circ\text{C}$
Thermal Resistance From Junction to Ambient	In free air <sup>1)</sup>	$R_{th\ j-a}$	417	K/W
	In free air <sup>2)</sup>		278	
Operating Ambient Temperature		$T_{amb}$	-65 to +150	$^\circ\text{C}$

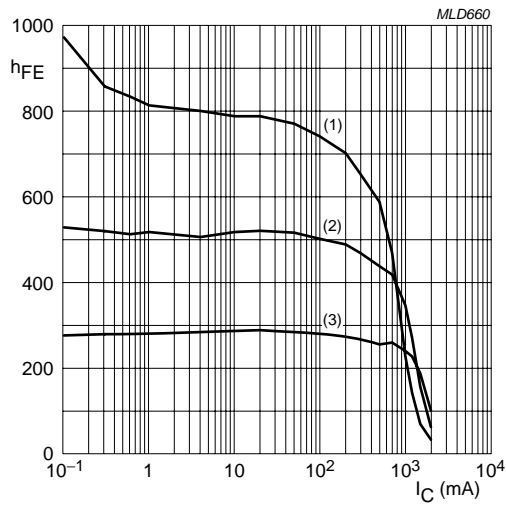
<sup>1)</sup> Device mounted on a printed-circuit board; single sided copper; tinplated; standard footprint.

<sup>2)</sup> Device mounted on a printed-circuit board; single sided copper; tinplated; mounting pad for collector 1cm<sup>2</sup>.



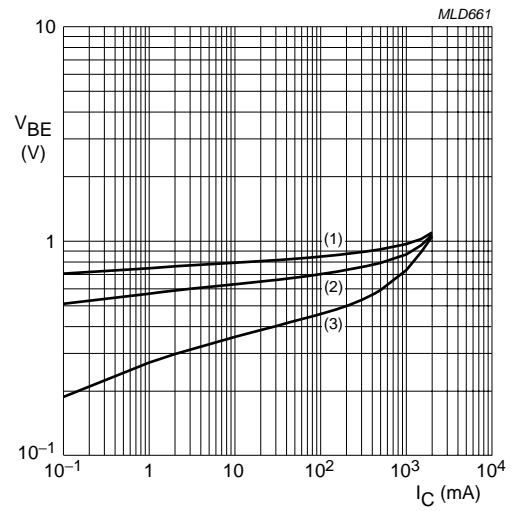
## Characteristics at $T_{amb}=25\text{ }^{\circ}\text{C}$

Parameter	Symbol	Min.	Typ.	Max.	Unit
DC Current Gain					
at $V_{CE}=5\text{V}$ , $I_C=1\text{mA}$	$h_{FE}$	300	-	-	
at $V_{CE}=5\text{V}$ , $I_C=500\text{mA}$	$h_{FE}$	300	-	900	
at $V_{CE}=5\text{V}$ , $I_C=1\text{A}$	$h_{FE}$	200	-	-	
Collector-Base Cutoff Current					
at $V_{CB}=40\text{V}$	$I_{CBO}$	-	-	100	nA
at $V_{CB}=40\text{V}$ , $T_{amb}=150\text{ }^{\circ}\text{C}$		-	-	50	$\mu\text{A}$
Collector-Emitter Cutoff Current					
at $V_{CE}=30\text{V}$	$I_{CEO}$	-	-	100	nA
Emitter-Base Cutoff Current					
at $V_{EB}=5\text{V}$	$I_{EBO}$	-	-	100	nA
Collector-Emitter Saturation Voltage					
at $I_C=100\text{mA}$ , $I_B=1\text{mA}$	$V_{CE(sat)}$	-	-	200	mV
at $I_C=500\text{mA}$ , $I_B=50\text{mA}$		-	-	250	
at $I_C=1\text{A}$ , $I_B=100\text{mA}$		-	-	500	
Base-Emitter Saturation Voltage					
at $I_C=1\text{A}$ , $I_B=100\text{mA}$	$V_{BE(sat)}$	-	-	1.2	V
Base-Emitter Turn-on Voltage					
at $V_{CE}=5\text{V}$ , $I_C=1\text{A}$	$V_{BE(on)}$	-	-	1.1	V
Transition Frequency					
at $V_{CE}=10\text{V}$ , $I_C=50\text{mA}$ , $f=100\text{MHz}$	$f_T$	150	-	-	HMz
Collector Capacitance					
at $V_{CB}=10\text{V}$ , $f=1\text{MHz}$	$C_C$	-	-	10	pF



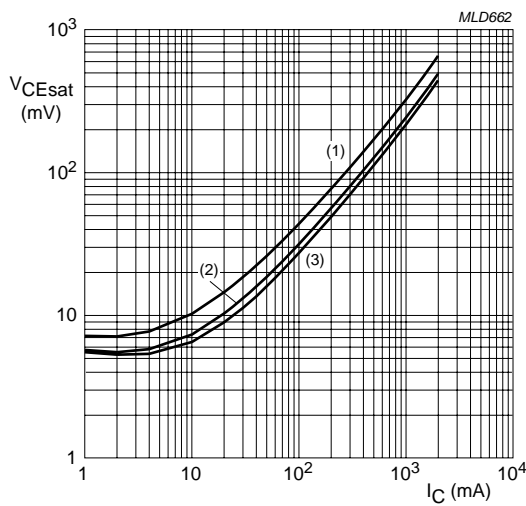
$V_{CE} = 5\text{ V}$ .  
 (1)  $T_{amb} = 150^\circ\text{C}$ .  
 (2)  $T_{amb} = 25^\circ\text{C}$ .  
 (3)  $T_{amb} = -55^\circ\text{C}$ .

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



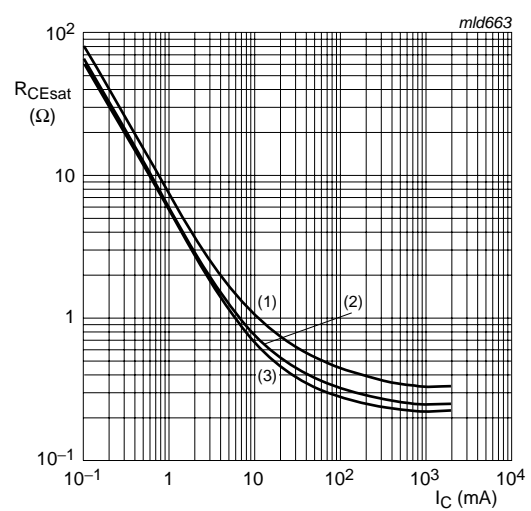
$V_{CE} = 5\text{ V}$ .  
 (1)  $T_{amb} = -55^\circ\text{C}$ .  
 (2)  $T_{amb} = 25^\circ\text{C}$ .  
 (3)  $T_{amb} = 150^\circ\text{C}$ .

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



$I_C/I_B = 10$ .  
 (1)  $T_{amb} = 150^\circ\text{C}$ .  
 (2)  $T_{amb} = 25^\circ\text{C}$ .  
 (3)  $T_{amb} = -55^\circ\text{C}$ .

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



$I_C/I_B = 10$ .  
 (1)  $T_{amb} = 150^\circ\text{C}$ .  
 (2)  $T_{amb} = 25^\circ\text{C}$ .  
 (3)  $T_{amb} = -55^\circ\text{C}$ .

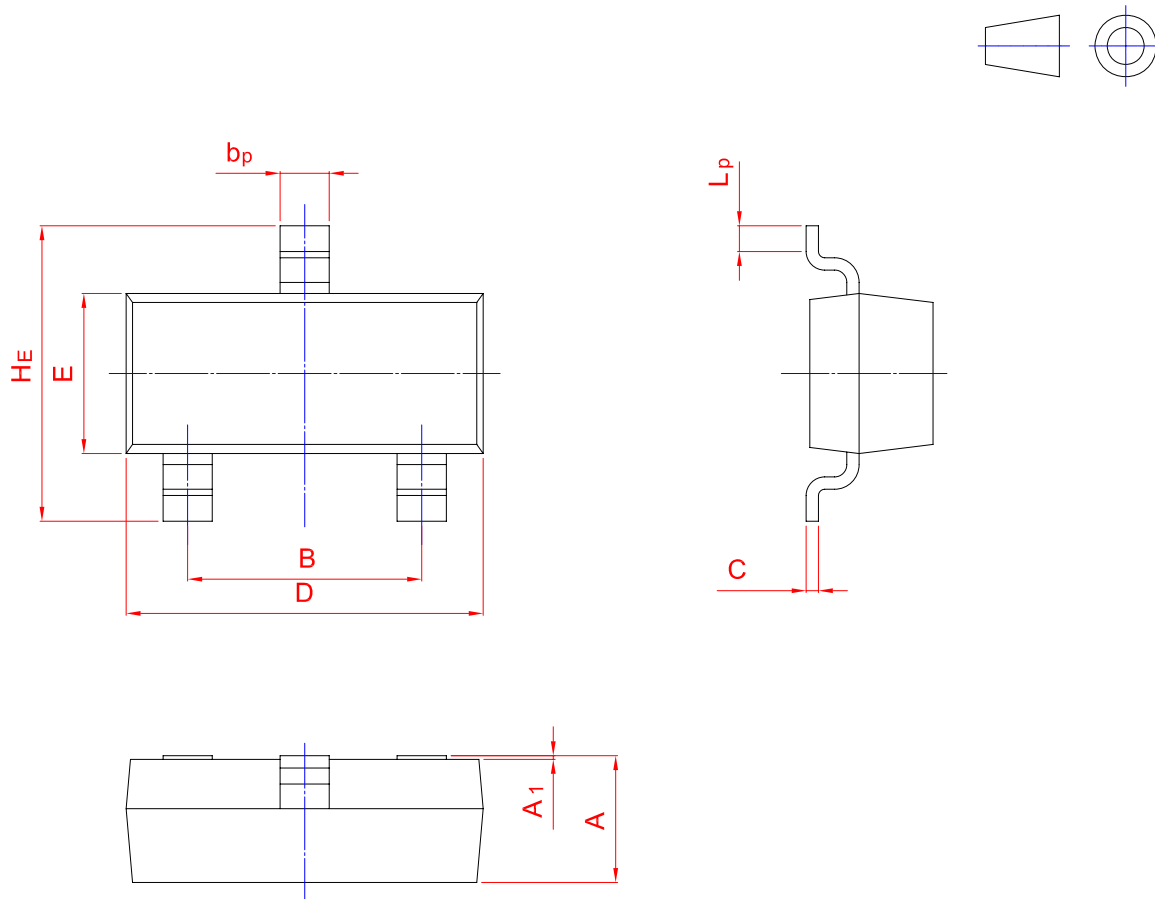
Equivalent on-resistance as a function of collector current; typical values.



## PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

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UNIT	A	B	$b_p$	C	D	E	$H_E$	$A_1$	$L_p$
mm	1.40	2.04	0.50	0.19	3.10	1.65	3.00	0.100	0.50
	0.95	1.78	0.35	0.08	2.70	1.20	2.20	0.013	0.20