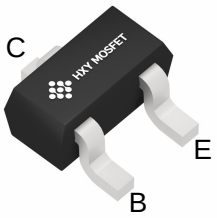
HMMBT3904WT1G

NPN Plastic-Encapsulate Transistors

Features

- Collector Current Capability I_C=0.2A
- Collector Emitter Voltage V_{CEO}=40V



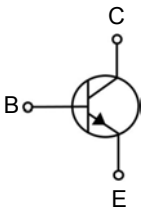
SOT-323

Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
HMMBT3904WT1G	SOT-323	K2N	3000

Maximum Ratings (Ta=25℃unless otherwise noted)

Parameter	Symbol	Rating	Unit
Collector - Base Voltage	V_{CBO}	60	V
Collector - Emitter Voltage	V_{CEO}	40	
Emitter - Base Voltage	V_{EBO}	5	
Collector Current - Continuous	I_C	200	mA
Collector Power Dissipation	P_C	200	mW
Thermal Resistance From Junction To Ambient	$R_{\Theta JA}$	625	℃/W
Junction Temperature	T_J	150	℃
Storage Temperature Range	T_{stg}	-55 to 150	

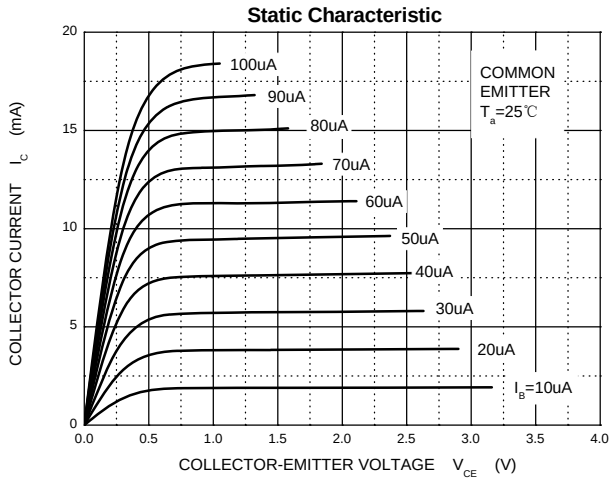


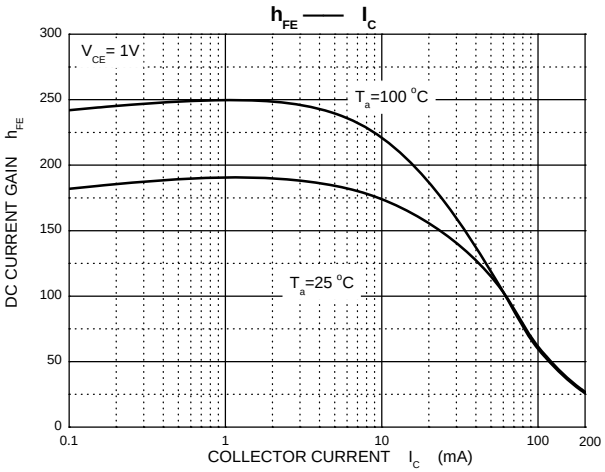
Electrical Characteristics(Ta=25℃unless otherwise specified)

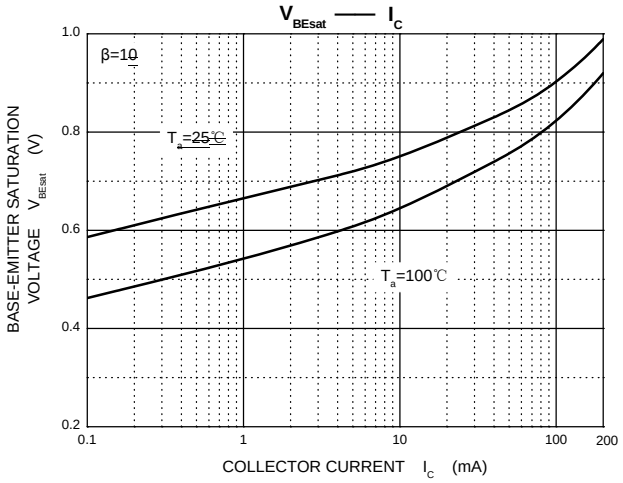
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector- base breakdown voltage	V_{CBO}	I_C= 100 μA, I_E= 0 (Note.1)	60			V
Collector- emitter breakdown voltage	V_{CEO}	I_C= 1 mA, I_B= 0 (Note.1)	40			
Emitter - base breakdown voltage	V_{EBO}	I_E= 100 μA, I_C= 0 (Note.1)	5			
Collector-base cut-off current	I_{CBO}	V_{CB}= 60 V , I_E= 0 (Note.1)			60	nA
Collector- emitter cut-off current	I_{CEO}	V_{CE}= 40 V , I_E= 0 (Note.1)			700	
Collector- emitter cut-off current	I_{CEX}	V_{CE}= 30 V ,$V_{BE(off)}$= 3V			50	
Emitter cut-off current	I_{EBO}	V_{EB}= 5V , I_C=0			100	
Collector-emitter saturation voltage (Note.1)	$V_{CE(sat)}$	I_C=10 mA, I_B=1 mA			0.25	V
		I_C=50 mA, I_B=5 mA			0.3	
Base - emitter saturation voltage (Note.1)	$V_{BE(sat)}$	I_C=10 mA, I_B=1 mA			0.85	
		I_C=50 mA, I_B=5 mA			0.95	
DC current gain (Note.1)	$h_{FE(1)}$	V_{CE}= 1V, I_C= 100 uA	40			
	$h_{FE(2)}$	V_{CE}= 1V, I_C= 1 mA	70			
	$h_{FE(3)}$	V_{CE}= 1V, I_C= 10 mA	100		300	
	$h_{FE(4)}$	V_{CE}= 1V, I_C= 50 mA	60			
Delay time	t_d	V_{CC}=3V, $V_{BE(off)}$=0.5V I_C=10mA, I_{B1}=1mA			35	nS
Rise time	t_r				35	
Storage time	t_s	V_{CC}=3V, I_C=10mA, I_{B1}= I_{B2}=1mA			225	
Fall time	t_f				75	
Collector input capacitance	C_{ib}	V_{EB}= 0.5V, I_E= 0,f=1MHz			8	pF
Collector output capacitance	C_{ob}	V_{CB}= 5V, I_E= 0,f=1MHz			4	
Transition frequency	f_T	V_{CE}= 20V, I_C= 10mA,f=100MHz	300			MHz

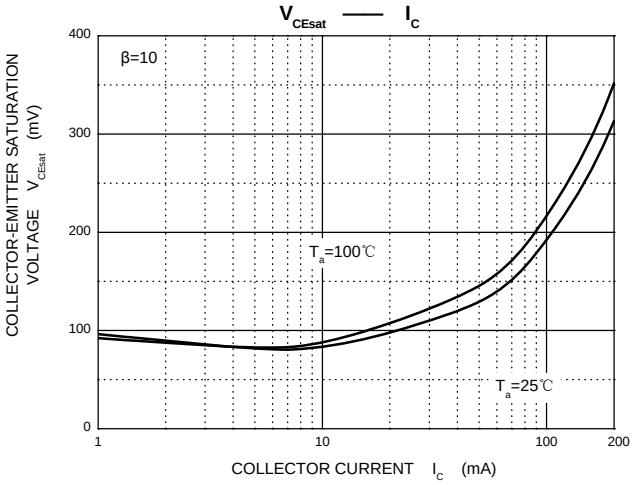
Note.1: Pulse test: pulse width ≤300μs duty cycle≤ 2.0%.

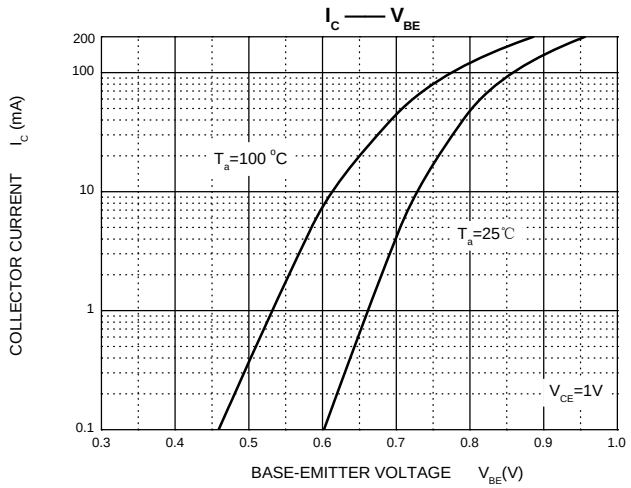
Typical Characteristics

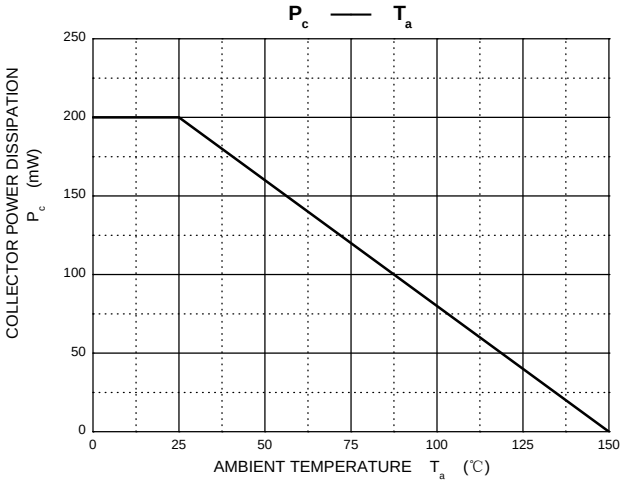




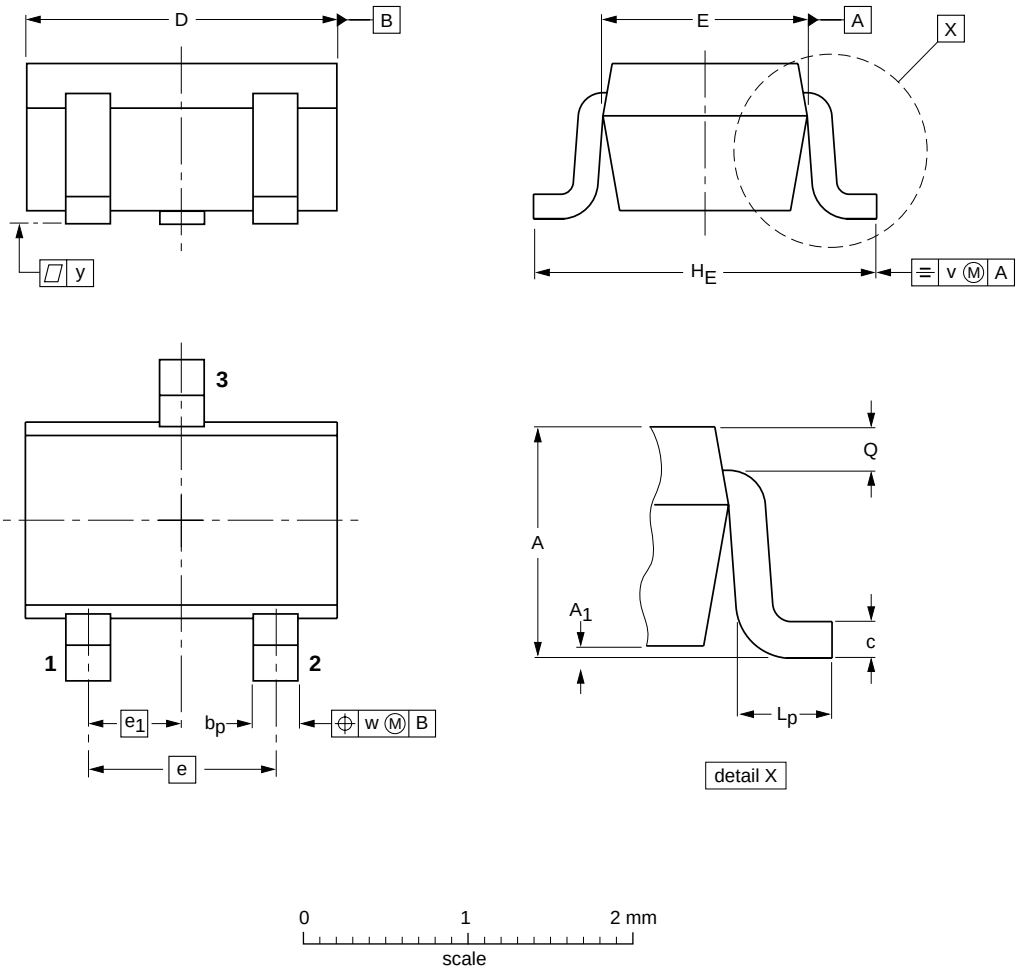








SOT-323 Package Outline Dimensions



DIMENSIONS (mm are the original dimensions)

UNIT	A	A_1 max	b_p	c	D	E	e	e_1	H_E	L_p	Q	v	w
mm	1.1 0.8	0.1	0.4 0.3	0.25 0.10	2.2 1.8	1.35 1.15	1.3	0.65	2.2 2.0	0.45 0.15	0.23 0.13	0.2	0.2

Attention

■ Any and all HUA XUAN YANG ELECTRONICS products described or contained herein do not have specifications that can handle applications that require extremely high levels of reliability, such as life-support systems, aircraft's control systems, or other applications whose failure can be reasonably expected to result in serious physical and/or material damage. Consult with your HUA XUAN YANG ELECTRONICS representative nearest you before using any HUA XUAN YANG ELECTRONICS products described or contained herein in such applications.

■ HUA XUAN YANG ELECTRONICS assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all HUA XUAN YANG ELECTRONICS products described or contained herein.

■ Specifications of any and all HUA XUAN YANG ELECTRONICS products described or contained herein stipulate the performance, characteristics, and functions of the described products in the independent state, and are not guarantees of the performance, characteristics, and functions of the described products as mounted in the customer's products or equipment. To verify symptoms and states that cannot be evaluated in an independent device, the customer should always evaluate and test devices mounted in the customer's products or equipment.

■ HUA XUAN YANG ELECTRONICS CO.,LTD. strives to supply high-quality high-reliability products. However, any and all semiconductor products fail with some probability. It is possible that these probabilistic failures could
give rise to accidents or events that could endanger human lives, that could give rise to smoke or fire, or that could cause damage to other property. When designing equipment, adopt safety measures so that these kinds of accidents or events cannot occur. Such measures include but are not limited to protective circuits and error prevention circuits for safe design, redundant design, and structural design.

■ In the event that any or all HUA XUAN YANG ELECTRONICS products(including technical data, services) described or contained herein are controlled under any of applicable local export control laws and regulations, such products must not be exported without obtaining the export license from the authorities concerned in accordance with the above law.

■ Information (including circuit diagrams and circuit parameters) herein is for example only ; it is not guaranteed for volume production. HUA XUAN YANG ELECTRONICS believes information herein is accurate and reliable, but no guarantees are made or implied regarding its use or any infringements of intellectual property rights or other rights of third parties.

■ Any and all information described or contained herein are subject to change without notice due to product/technology improvement, etc. When designing equipment, refer to the "Delivery Specification" for the HUA XUAN YANG ELECTRONICS product that you intend to use.