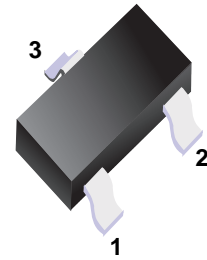


■ NPN Transistor

■ Features

- Small Package
- Complementary to MMBT3906T



1.Base
2.Emitter
3.Collector

■ Simplified outline(SOT-523)

■ Marking

Marking	1N
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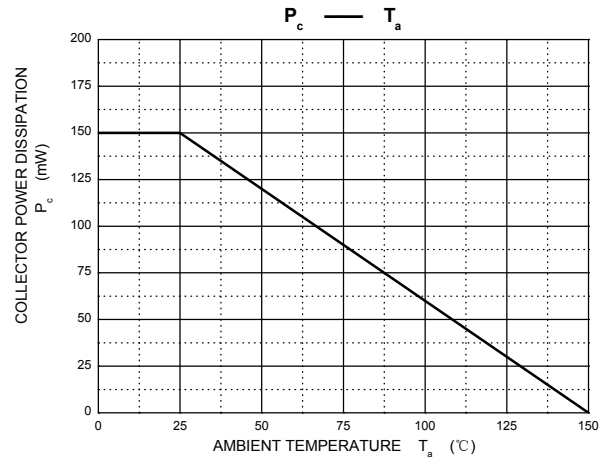
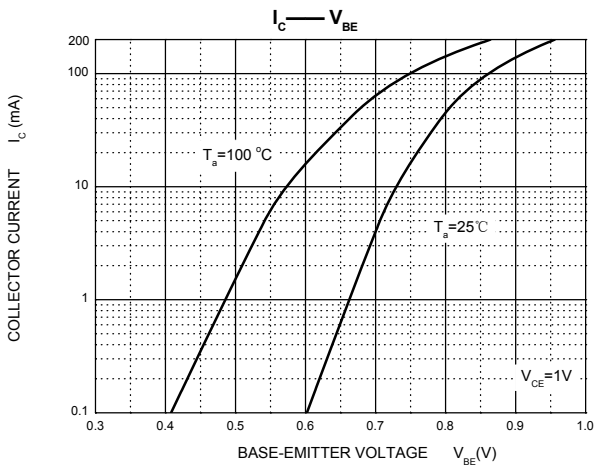
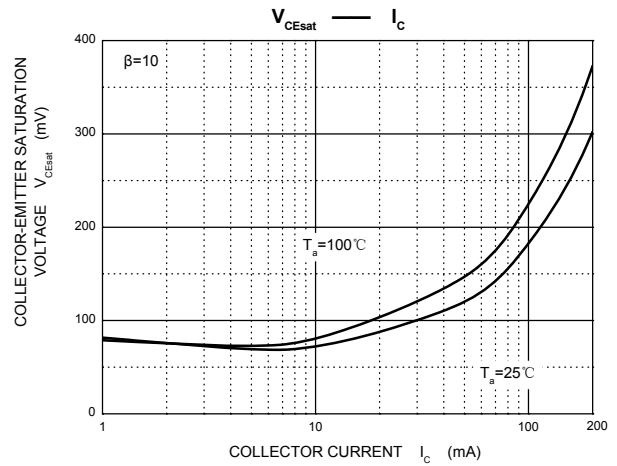
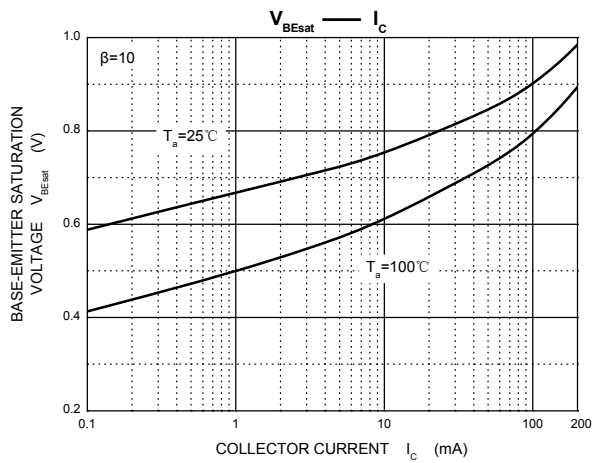
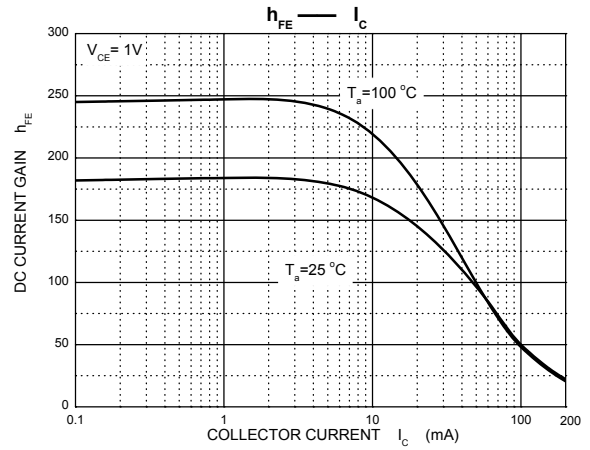
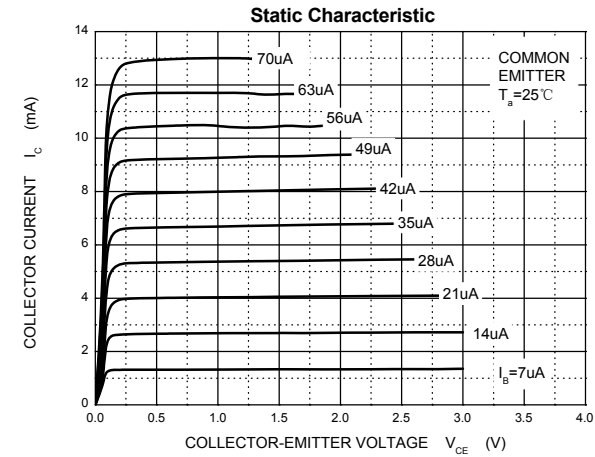
■ Absolute Maximum Ratings Ta = 25°C

Parameter	Symbol	Rating	Unit
Collector - Base Voltage	V _{CB0}	60	V
Collector - Emitter Voltage	V _{CE0}	40	
Emitter - Base Voltage	V _{EB0}	6	
Collector Current - Continuous	I _c	200	mA
Collector Power Dissipation	P _c	150	mW
Thermal Resistance, Junction to Ambient	R _{θJA}	833	°C/W
Junction Temperature	T _J	150	°C
Storage Temperature Range	T _{stg}	-55 to 150	

■ Electrical Characteristics Ta = 25°C

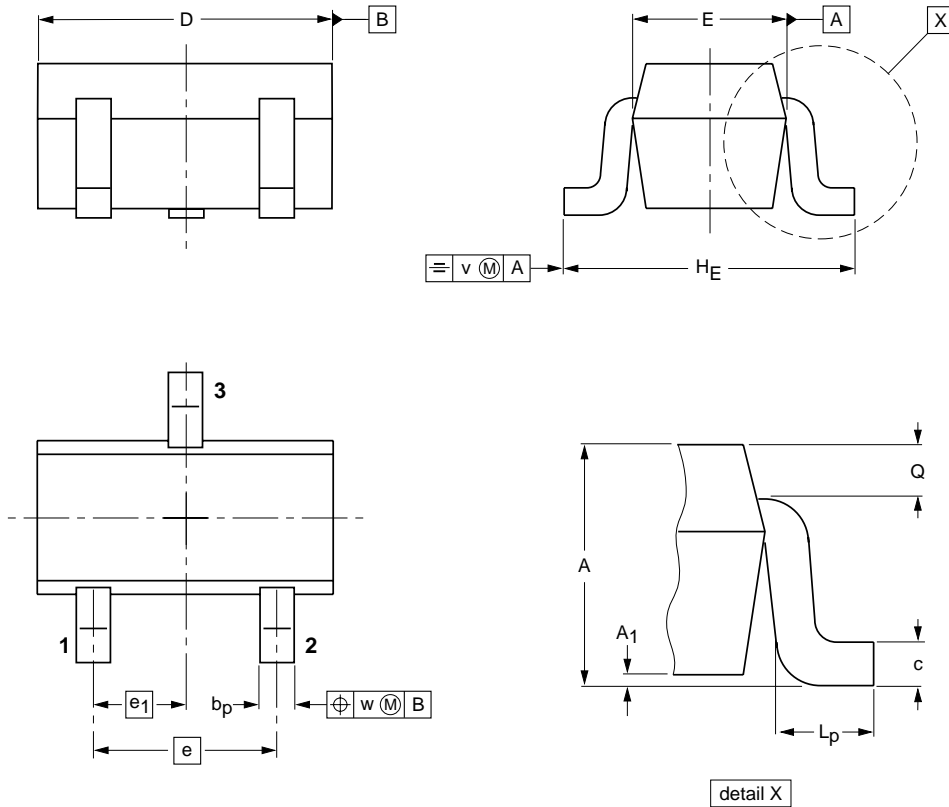
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector- base breakdown voltage	V_{CB0}	$I_C = 100 \mu A, I_E = 0$	60			V
Collector- emitter breakdown voltage	V_{CEO}	$I_C = 1 mA, I_B = 0$	40			
Emitter - base breakdown voltage	V_{EBO}	$I_E = 100 \mu A, I_C = 0$	6			
Collector-base cut-off current	I_{CBO}	$V_{CB} = 60 V, I_E = 0$			100	nA
Collector cut-off current	I_{CEX}	$V_{CE} = 30 V, V_{EB(off)} = 3V$			50	
Emitter cut-off current	I_{EBO}	$V_{EB} = 5V, I_C = 0$			100	
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = 10 mA, I_B = 1mA$			0.2	V
		$I_C = 50 mA, I_B = 5mA$			0.3	
Base - emitter saturation voltage	$V_{BE(sat)}$	$I_C = 10 mA, I_B = 1mA$	0.65		0.85	
		$I_C = 50 mA, I_B = 5mA$			0.95	
DC current gain	$h_{FE(1)}$	$V_{CE} = 10V, I_C = 0.1mA$	40			
	$h_{FE(2)}$	$V_{CE} = 10V, I_C = 1mA$	70			
	$h_{FE(3)}$	$V_{CE} = 10V, I_C = 10mA$	100		300	
	$h_{FE(4)}$	$V_{CE} = 10V, I_C = 50mA$	60			
Delay time	t_d	$V_{CC} = 3V, V_{BE(off)} = -0.5V$			35	nS
Rise time	t_r	$I_C = 10mA, I_B = 1mA$			35	
Storage time	t_s	$V_{CC} = 3V, I_C = 10mA, I_{B1} = I_{B2} = 1mA$			200	
Fall time	t_f				50	
Collector output capacitance	C_{ob}	$V_{CB} = 5V, I_E = 0, f = 1MHz$			4	pF
Base input capacitance	C_{ib}	$V_{EB} = 0.5V, I_C = 0, f = 1MHz$			8	
Transition frequency	f_T	$V_{CE} = 20V, I_C = 10mA, f = 100MHz$	300			MHz

■ Typical Characteristics



Package Outline

SOT-523



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	0.95 0.60	0.1	0.30 0.15	0.25 0.10	1.8 1.4	0.9 0.7	1	0.5	1.75 1.45	0.45 0.15	0.23 0.13	0.2	0.2

Summary of Packing Options

Package	Packing Description	Packing Quantity	Industry Standard
SOT-523	Tape/Reel, 7" reel	3000	EIA-481-1