

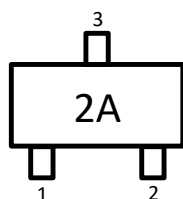
Small Signal Transistor

40V PNP SOT23

Features

- Power Dissipation of 200mW
- Epitaxial Planar Die Construction
- High Stability and High Reliability
- Complementary NPN Type Available (MMBT3904)

Marking Information



"2A" = Product Type Marking Code

Package Outline



SOT23 Top View

Mechanical Data

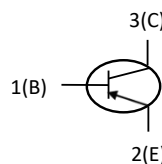
- Case: SOT23 Package
- Case Material: "Green" Molding Compound UL Flammability Classification Rating 94V-0
- Halogen Free

Note: Products with logo  or  are made by HY Electronic (Cayman) Limited.

Ordering Information

- Package :SOT23
- Reel Size :7 (inches)
- Quantity Per Reel :3,000 pcs
- Quantity One Box :45,000 pcs
- Quantity One Carton :180,000 pcs

Device Schematic & PIN Configuration



Pin Assignment	
1	Base
2	Emitter
3	Collector

Maximum Ratings (@TA = +25°C, unless otherwise specified.)

Parameter	Symbol	Value	Unit
Collector-Base Voltage	V_{CB0}	-40	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	°C/W
Junction Temperature	T_j	150	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C

Electrical Characteristics(@TA = +25°C, unless otherwise specified.)

Parameter	Test Conditions	Symbol	Min	Max	Unit
Collector-Base Breakdown Voltage	$I_C = -10\mu A, I_E = 0$	$V_{(BR)CBO}$	-40	-	V
Collector-Emitter Breakdown Voltage	$I_C = -1mA, I_B = 0$	$V_{(BR)CEO}$	-40	-	
Emitter-Base Breakdown Voltage	$I_E = -10\mu A, I_C = 0$	$V_{(BR)EBO}$	-5	-	
Collector Cut-Off Current	$V_{CB} = -40V, I_E = 0$	I_{CBO}	-	-50	nA
Collector Cut-Off Current	$V_{CE} = -30V, V_{EB(Off)} = -3V$	I_{CEX}	-	-100	
Emitter Cut-Off Current	$V_{EB} = -5V, I_C = 0$	I_{EBO}	-	-100	
DC Current Gain	$V_{CE} = -1V, I_C = -10mA$	$h_{FE(1)}$	100	300	-
	$V_{CE} = -1V, I_C = -50mA$	$h_{FE(2)}$	60	-	
	$V_{CE} = -1V, I_C = -100mA$	$h_{FE(3)}$	30	-	
Collector-Emitter Saturation Voltage	$I_C = -50mA, I_B = -5mA$	$V_{CE(sat)}$	-	-0.3	V
Base-Emitter Saturation Voltage	$I_C = -50mA, I_B = -5mA$	$V_{BE(sat)}$	-	-0.95	V
Transition Frequency	$V_{CE} = -20V, I_C = -10mA, F = 100MHz$	f_T	300	-	MHz
Delay Time	$V_{CC} = -3V, V_{BE(Off)} = -0.5V, I_C = -10mA, I_{B1} = -1mA$	t_d	-	35	ns
Rise Time		t_r	-	35	
Storage Time	$V_{CC} = -3V, I_C = -10mA, I_{B1} = I_{B2} = -1mA$	t_s	-	225	
Fall Time		t_f	-	75	



Rating and Characteristic Curves

FIG.1 - Static Characteristic

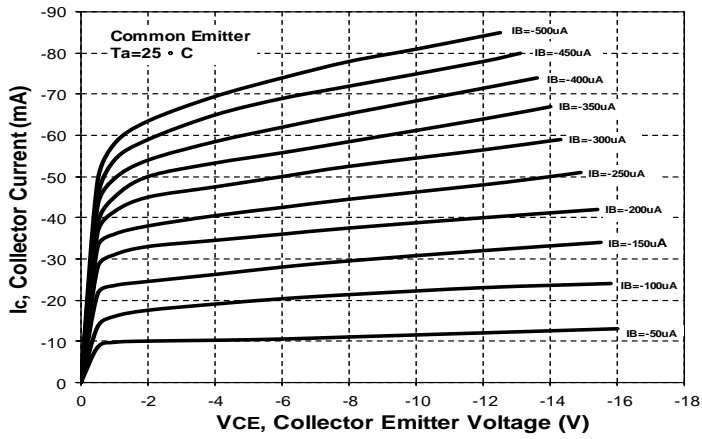


FIG.2 - $h_{FE}-I_c$

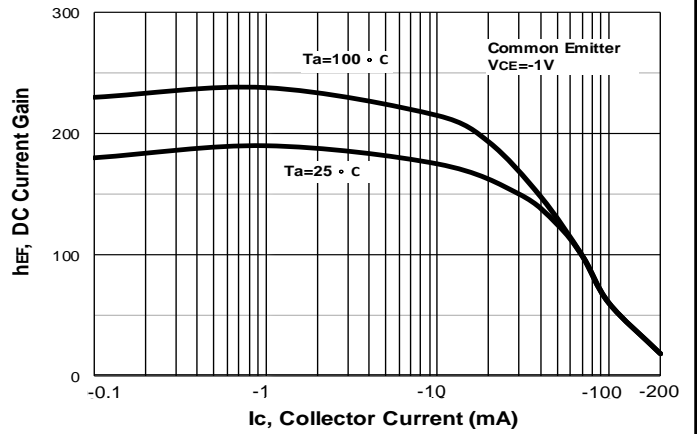


FIG.3 - $V_{CEsat}-I_c$

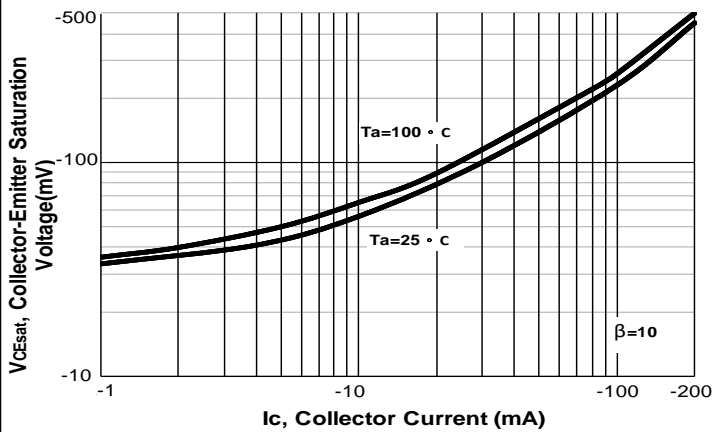


FIG.4 - $V_{BEsat}-I_c$

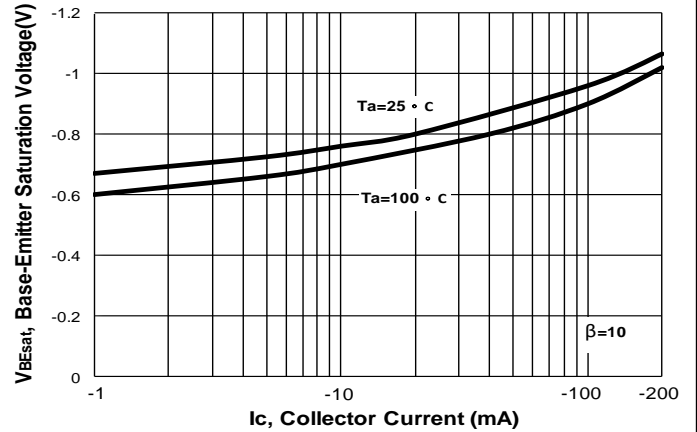


FIG.5 - I_c-V_{BE}

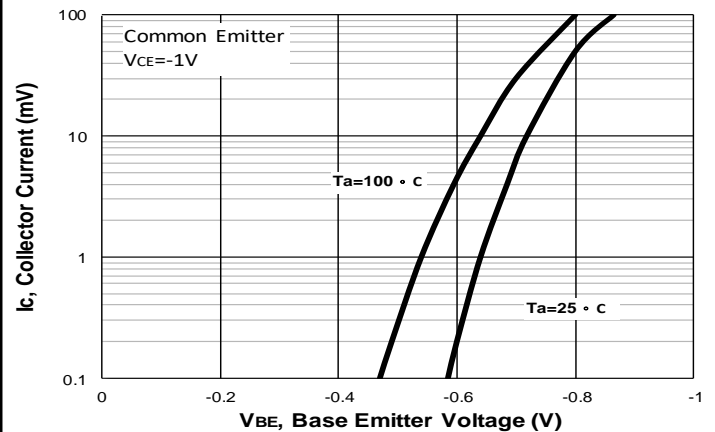
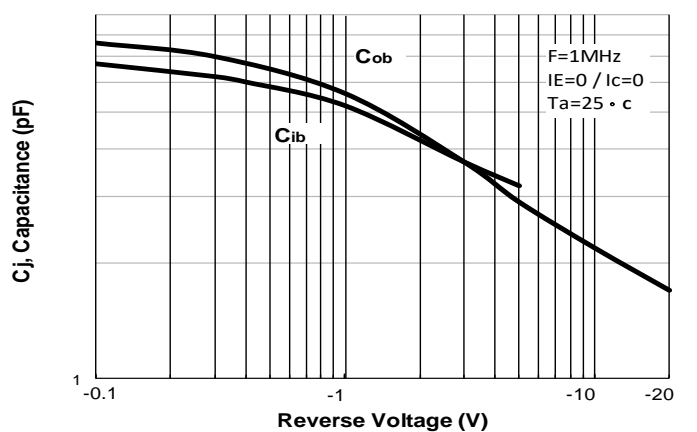
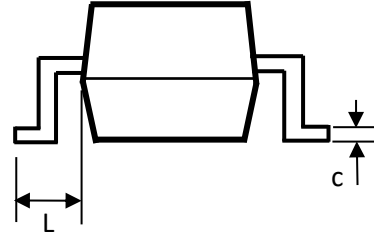
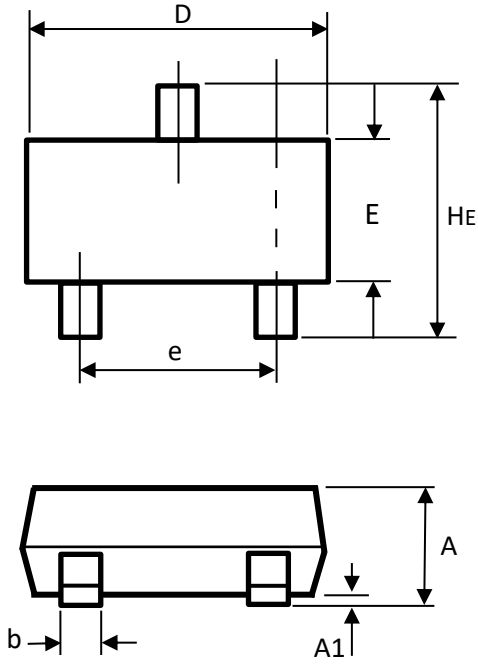


FIG.6 - $C_{ob}/C_{ib}-V_{CB}/V_{EB}$



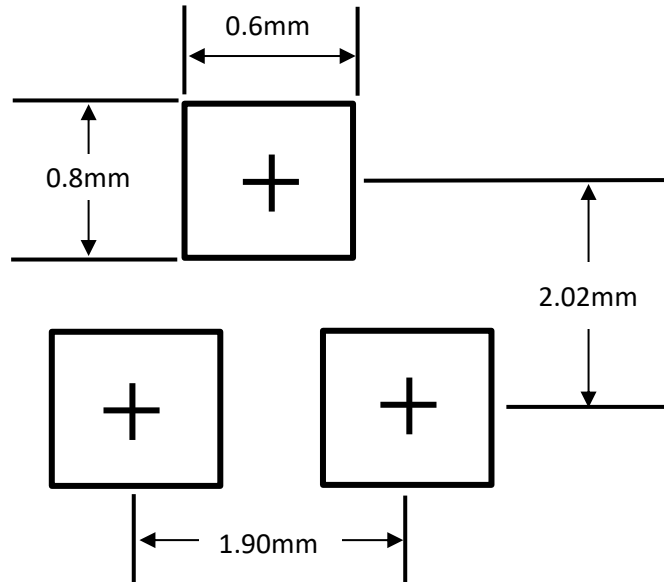


Package Outline Dimensions



SOT23 Package		
Dim	Min	Max
A	0.90	1.15
A1	0.00	0.10
b	0.30	0.50
c	0.08	0.15
D	2.80	3.00
E	1.20	1.40
e	1.80	2.00
L	0.55 REF	
HE	2.25	2.55
All Dimensions in mm		

Suggested Soldering Pad Layout



Note:

- 1.The pad layout is for reference purposes only.
- 2.General tolerance $\pm 0.05\text{mm}$



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