



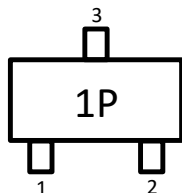
Small Signal Transistor

40V NPN
SOT23

Features

- Power Dissipation of 300mW
- Epitaxial Planar Die Construction
- High Stability and High Reliability
- Complementary PNP Type Available (MMBT2907A)

Marking Information



"1P" = Product Type Marking Code

Package Outline



SOT23 Top View

Mechanical Data

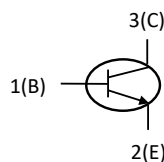
- Case: SOT23 Package
- Case Material: "Green" Molding Compound UL Flammability Classification Rating 94V-0
- Halogen Free

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}	75	V
Collector-Emitter Voltage	V _{CEO}	40	
Emitter-Base Voltage	V _{EBO}	6	
Collector Current-Continuous	I _C	600	mA
Collector Power Dissipation	P _C	300	mW
Thermal Resistance from Junction to Ambient	R _{θJA}	417	°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 = 10μA, I _E = 0	V _{(BR)CBO}	75	-	V
Collector-Emitter Breakdown Voltage	I _C = 10mA, I _B = 0	V _{(BR)CEO}	40	-	
Emitter-Base Breakdown Voltage	I _E = 10μA, I _C = 0	V _{(BR)EBO}	6	-	
Collector Cut-Off Current	V _{CB} = 60V, I _E = 0	I _{CBO}	-	100	nA
Collector Cut-Off Current	V _{CE} = 60V, V _{EB} (Off) = 3V	I _{CEX}	-	10	
Emitter Cut-Off Current	V _{EB} = 3V, I _C = 0	I _{EBO}	-	100	
DC Current Gain	V _{CE} = 10V, I _C = 150mA	h _{FE} (1)	100	300	-
	V _{CE} = 10V, I _C = 0.1mA	h _{FE} (2)	20	-	
	V _{CE} = 10V, I _C = 500mA	h _{FE} (3)	40	-	
Collector-Emitter Saturation Voltage	I _C = 150mA, I _B = 15mA	V _{CE(sat)1}	-	0.3	V
	I _C = 500mA, I _B = 50mA	V _{CE(sat)2}	-	1	
Base-Emitter Saturation Voltage	I _C = 150mA, I _B = 15mA	V _{BE(sat)1}	-	1.2	V
	I _C = 500mA, I _B = 50mA	V _{BE(sat)2}	-	2.00	
Transition Frequency	V _{CE} = 20V, I _C = 20mA, F = 100MHz	f _T	300	-	MHz
Delay Time	V _{CC} = 30V, V _{BE(off)} = -0.5V I _C = 150mA, I _{B1} = 15mA	t _d	-	15	ns
Rise Time		t _r	-	25	
Storage Time	V _{CC} = 30V I _C = 150mA, I _{B1} = I _{B2} = 15mA	t _s	-	225	
Fall Time		t _f	-	60	



Rating and Characteristic Curves

FIG.1 - Static Characteristic

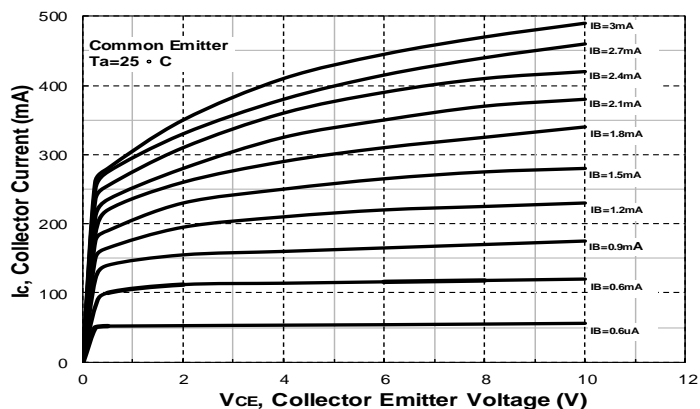


FIG.2 - h_{FE} - I_C

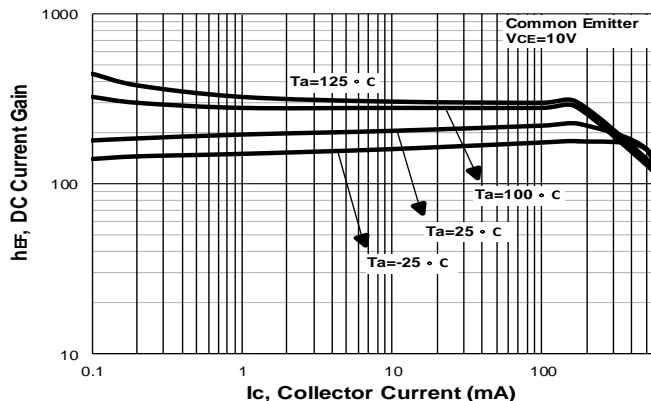


FIG.3 - V_{CEsat} - I_C

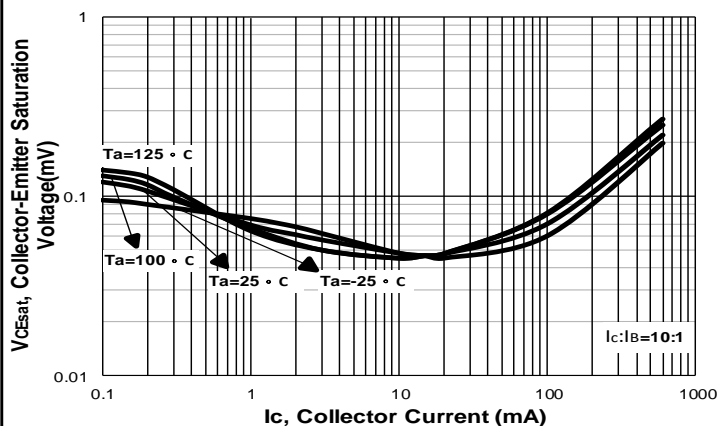


FIG.4 - V_{BEsat} - I_C

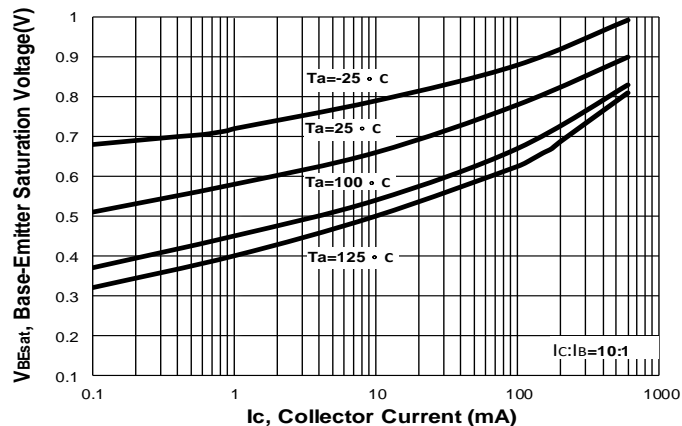


FIG.5 - I_C - V_{BE}

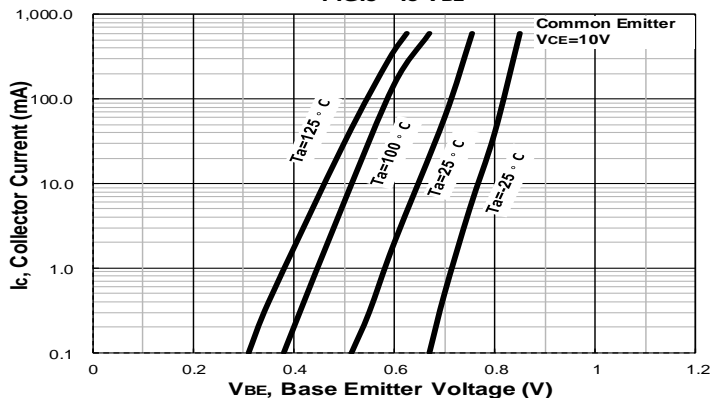
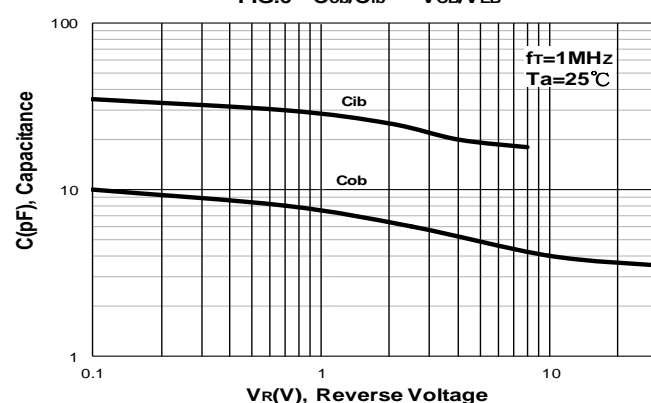
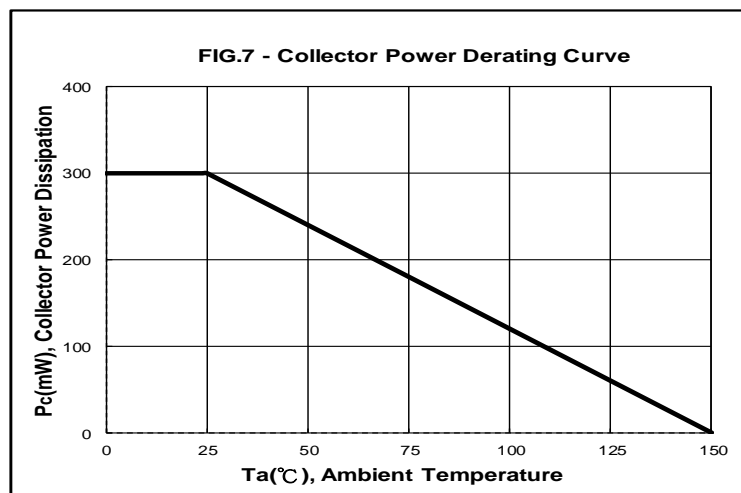


FIG.6 - C_{ob}/C_{ib} — V_{CB}/V_{EB}



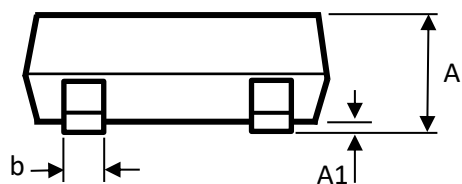
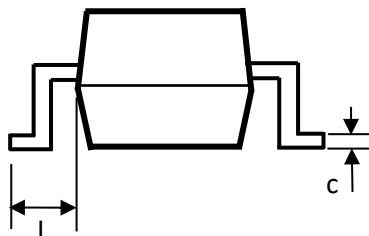
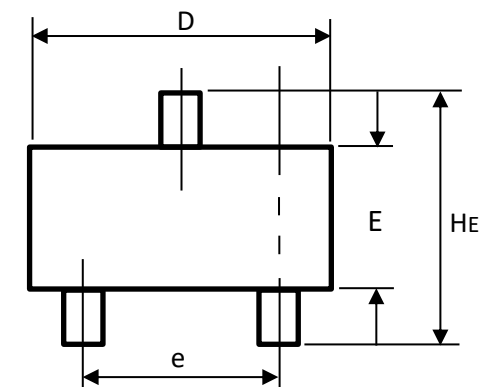


Rating and Characteristic Curves



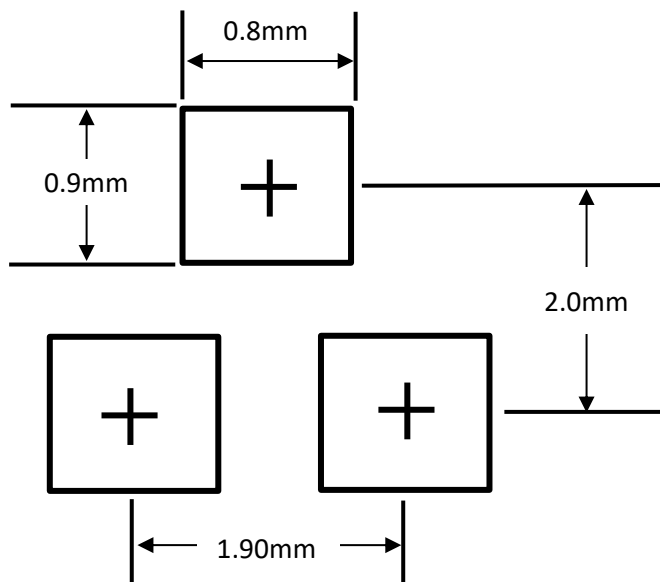


Package Outline Dimensions



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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