MMBT4401 Datasheet

DiGi Electronics Part Number	MMBT4401-DG
Manufacturer	HY Electronic (Cayman) Limited
Manufacturer Product Number	MMBT4401
Description	Small Signal Transistor
Detailed Description	Bipolar (BJT) Transistor NPN 40 V 600 mA 250MHz 300 mW Surface Mount SOT-23

Purchase and inquiry

Manufacturer Product Number:	Manufacturer:
MMBT4401	HY Electronic (Cayman) Limited
Series:	Product Status:
-	Active
Transistor Type:	Current - Collector (Ic) (Max):
NPN	600 mA
Voltage - Collector Emitter Breakdown (Max):	Vce Saturation (Max) @ Ib, Ic:
40 V	750mV @ 50mA, 500mA
Current - Collector Cutoff (Max):	DC Current Gain (hFE) (Min) @ Ic, Vce:
100nA	100 @ 150mA, 1V
Power - Max:	Frequency - Transition:
300 mW	250MHz
Operating Temperature:	Mounting Type:
150°C (TJ)	Surface Mount
Package / Case:	Supplier Device Package:
-	SOT-23

Environmental & Export classification

RoHS Status:	Moisture Sensitivity Level (MSL):
RoHS Compliant	1 (Unlimited)
REACH Status:	ECCN:
REACH Affected	EAR99
HTSUS:	
8541.21.0095	

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MMBT4401

Small Signal Transistor

60V NPN
SOT23

Features

- Power Dissipation of 300mW
- High Stability and High Reliability
- Moisture Sensitivity Level 1

Mechanical Data

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

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

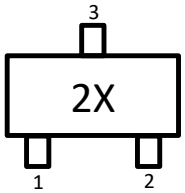
Ordering Information

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

Package Outline

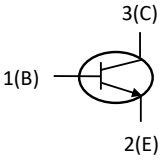
SOT23 Top View

Marking Information



"2X" = Product Type Marking Code

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_{CBO}	60	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	$R_{\theta JA}$	417	°C/W
Junction Temperature	Tj	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=100μA,I_E=0	$V_{(BR)CBO}$	60	-	V
Collector-Emitter Breakdown Voltage	I_C=1mA,I_B=0	$V_{(BR)CEO}$	40	-	
Emitter-Base Breakdown Voltage	I_E=100μA,I_C=0	$V_{(BR)EBO}$	6	-	
Collector Cut-Off Current	V_{CB}=50V,I_E=0	I_{CBO}	-	100	nA
Collector Cut-Off Current	V_{CE}=35V,$V_{EB(off)}$=0.4V	I_{CEX}	-	100	
Emitter Cut-Off Current	V_{EB}=5V,I_C=0	I_{EBO}	-	100	
DC Current Gain	V_{CE}=1V,I_C=0.1mA	$h_{FE(1)}$	20	-	-
	V_{CE}=1V,I_C=1mA	$h_{FE(2)}$	40	-	
	V_{CE}=1V,I_C=10mA	$h_{FE(3)}$	80	-	
	V_{CE}=1V,I_C=150mA	$h_{FE(4)}$	100	300	
	V_{CE}=1V,I_C=500mA	$h_{FE(5)}$	40	-	
Collector-Emitter Saturation Voltage	I_C=150mA,I_B=15mA	$V_{CE(sat)1}$	-	0.40	V
	I_C=500mA,I_B=50mA	$V_{CE(sat)2}$	-	0.75	
Base-Emitter Saturation Voltage	I_C=150mA,I_B=15mA	$V_{BE(sat)1}$	-	0.95	V
	I_C=500mA,I_B=50mA	$V_{BE(sat)2}$	-	1.20	
Transition Frequency	V_{CE}=10V,I_C=20mA,F=100MHz	f_T	250	-	MHz
Delay Time	V_{CC}=30V,$V_{BE(off)}$=-2V, I_C=150mA,I_{B1}=15mA	t_d	-	15	ns
Rise Time		t_r	-	20	ns
Storage Time	V_{CC}=30V,I_C=150mA, I_{B1}=I_{B2}=15mA	t_s	-	225	ns
Fall Time		t_f	-	60	ns

Rating and Characteristic Curves

FIG.1 - Static Characteristic

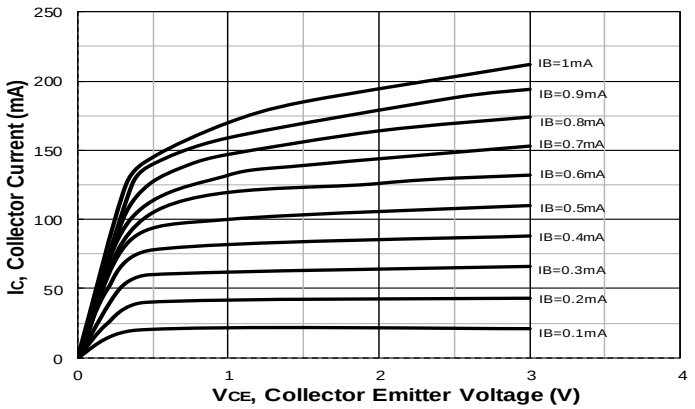


FIG.2 - h_{FE} - I_C

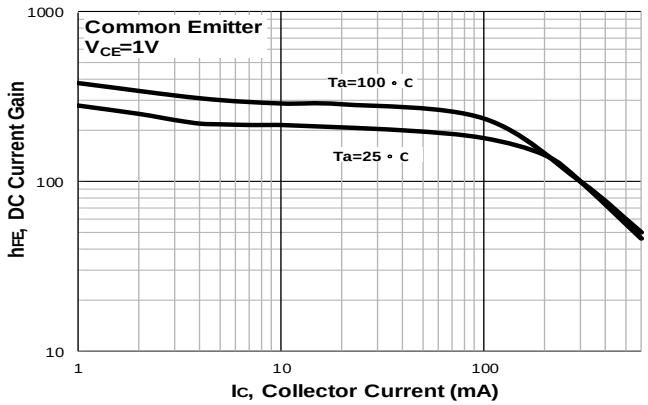


FIG.3 - V_{CEsat} - I_C

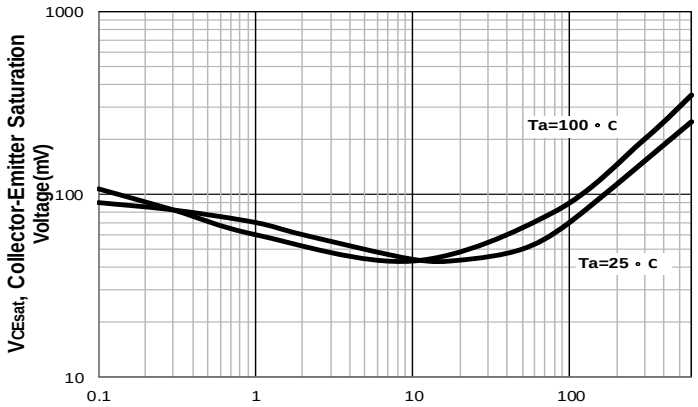


FIG.4 - V_{BEsat} - I_C

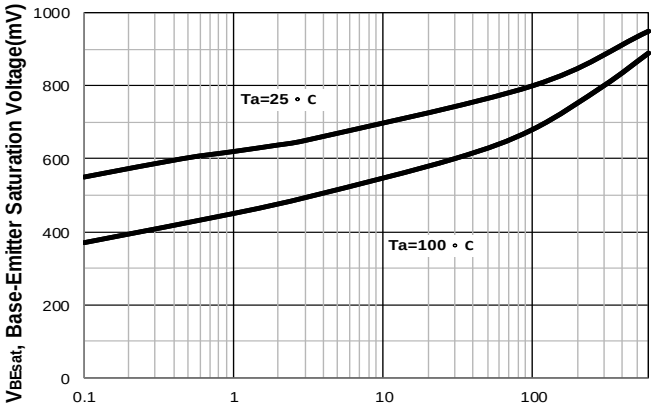


FIG.5 - I_C - V_{BE}

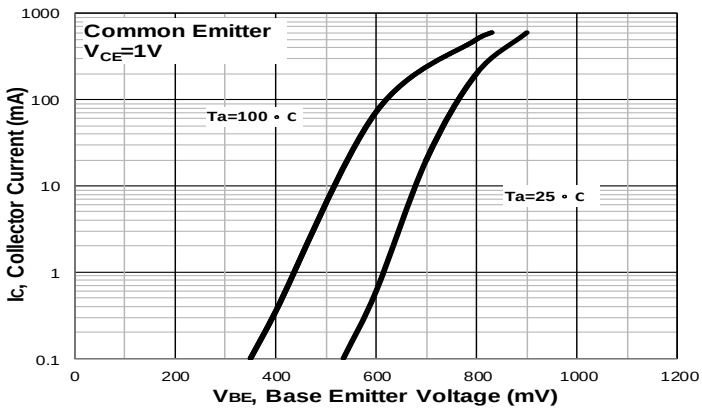
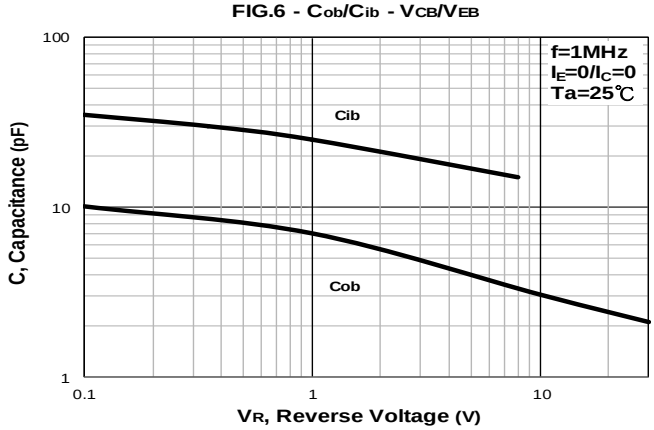
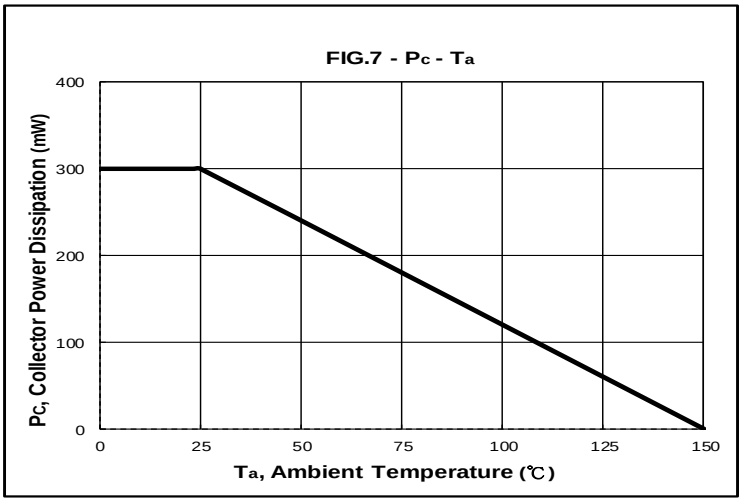


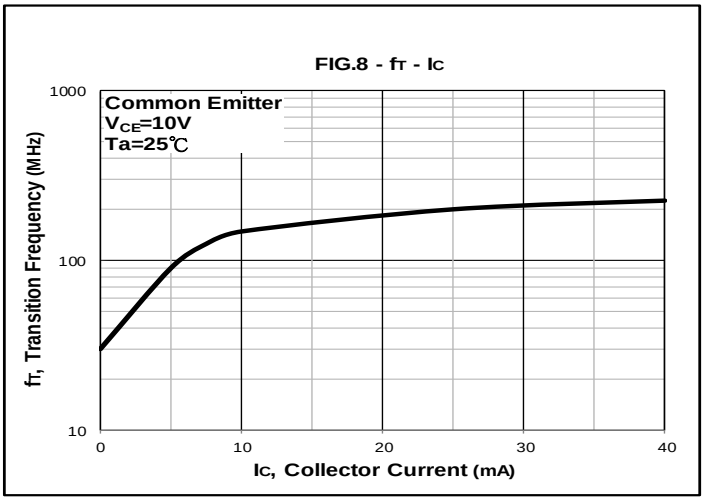
FIG.6 - C_{ob}/C_{ib} - V_{CB}/V_{EB}



The curve above is for reference only.

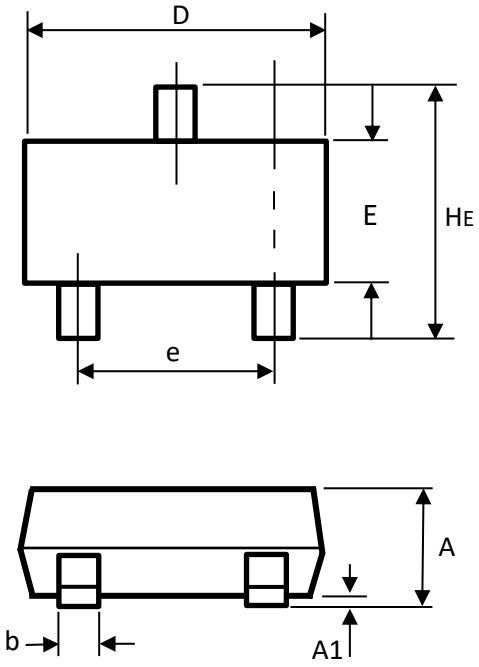
Rating and Characteristic Curves

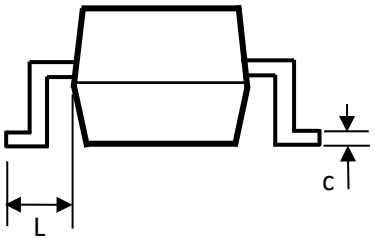




The curve above is for reference only.

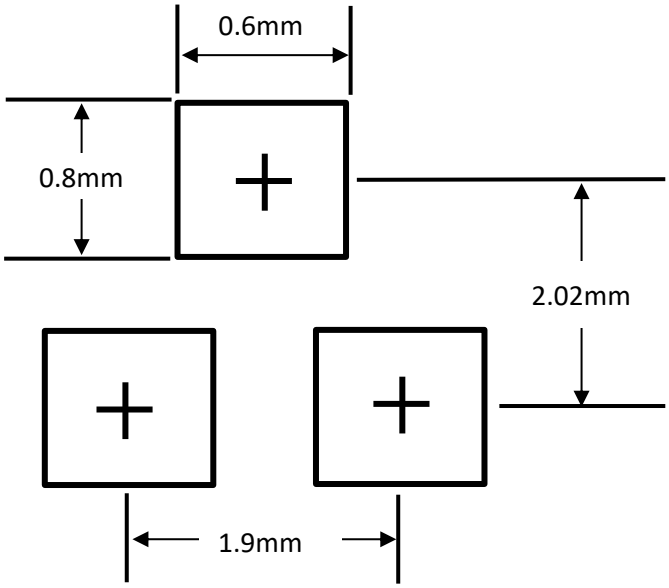
Package Outline Dimensions





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 ±0.05mm

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