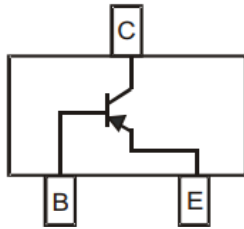


## PNP General Purpose Amplifier



**SOT-23**

### Features

- Epoxy meets UL-94 V-0 flammability rating and halogen free
- Moisture Sensitivity Level 1
- Part no. with suffix "Q" means AEC-Q101 qualified

### Applications

- Switching and linear amplification

### Mechanical Data

- **Case:** SOT-23
- **Terminals:** Tin plated leads, solderable per J-STD-002 and JESD22-B102
- **Marking:** 2L

### ■ Maximum Ratings (Ta=25°C unless otherwise noted)

Item	Symbol	Unit	Conditions	Value
Collector-Emitter Voltage	$V_{CEO}$	V		-160
Collector-Base Voltage	$V_{CBO}$	V		-180
Emitter-Base Voltage	$V_{EBO}$	V		-6.0
Collector Current -Continuous	$I_C$	mA		-600
Total Device Dissipation (*)	$P_D$	mW		300
Thermal Resistance Junction to Ambient (*)	$R_{thJA}$	K/W		417
Maximum Junction Temperature	$T_J$	°C		150
Storage Temperature	$T_{STG}$	°C		-55 to +150

(\*) Device mounted on FR-4 PCB 1.0 x 1.0 x 0.06 inch



## ■ Electrical Characteristics (Ta=25°C unless otherwise noted)

Item	Symbol	Unit	Conditions	Min	Max
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	V	$I_C = -1.0mA, I_B = 0$	-160	
Collector-base breakdown voltage	$V_{(BR)CBO}$	V	$I_C = -100\mu A, I_E = 0$	-180	
Emitter-base breakdown voltage	$V_{(BR)EBO}$	V	$I_E = -10\mu A, I_C = 0$	-6.0	
Collector cut-off current	$I_{CBO}$	nA	$V_{CB} = -120V$		-50
Collector cut-off current	$I_{EBO}$	nA	$V_{CE} = -4.0V$		-50
DC current gain	$h_{FE}$		$V_{CE} = -5.0V, I_C = -1.0mA$	80	
	$h_{FE}$		$V_{CE} = -5.0V, I_C = -10mA$	100	300
	$h_{FE}$		$V_{CE} = -5.0V, I_C = -50mA$	50	
Collector-emitter saturation voltage	$V_{CE(sat)}$	V	$I_C = -50mA, I_B = -5.0mA$		-0.5
Base-emitter saturation voltage	$V_{BE(sat)}$	V	$I_C = -50mA, I_B = -5.0mA$		-1.0
Transition frequency	$f_T$	MHz	$V_{CE} = -5V, I_C = -10mA, f = 30MHz$	100	300

## ■ Ordering Information (Example)

PREFERRED P/N	PACKING CODE	UNIT WEIGHT(g)	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
MMBT5401Q	F2	Approximate 0.01	3000	30000	120000	7" reel

## ■ Characteristics (Typical)

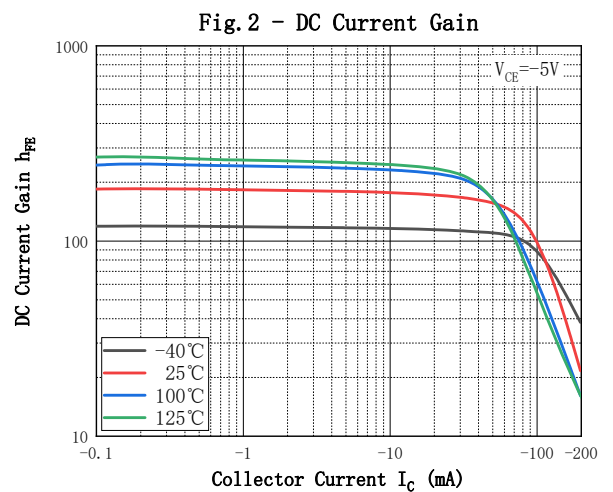
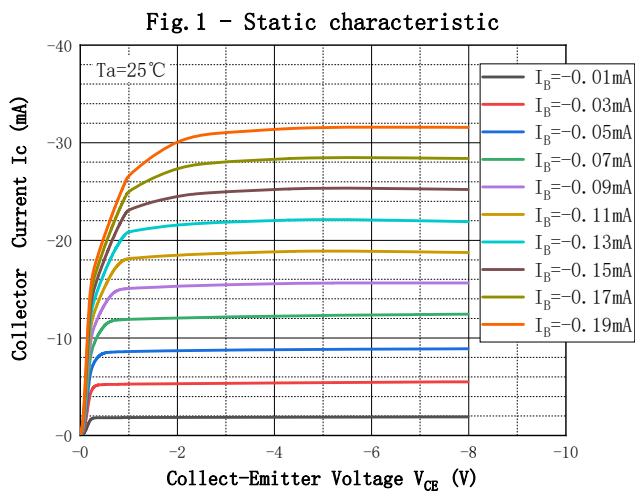




Fig. 3 - Collect-Emitter Saturation Voltage

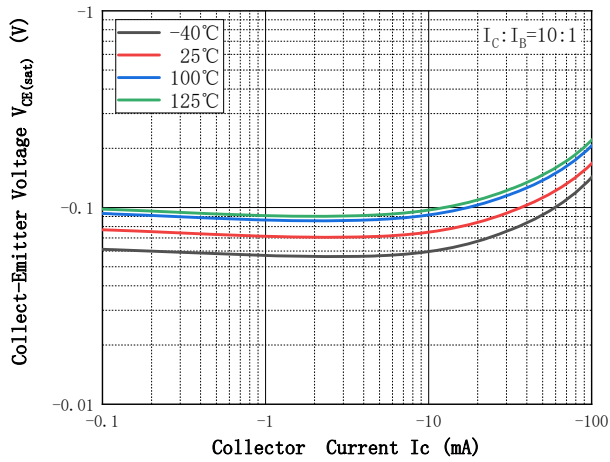


Fig. 4 - Base-Emitter Voltage

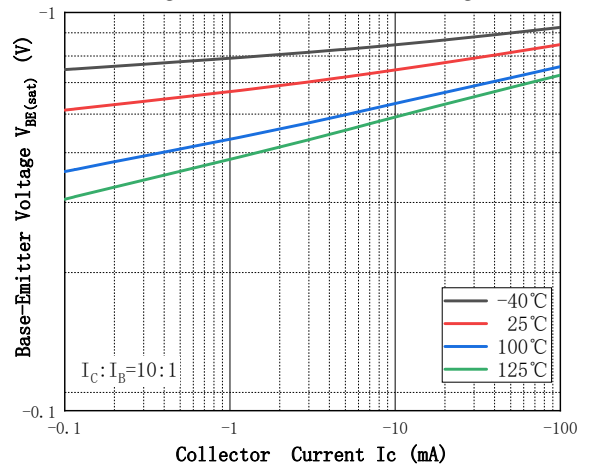


Fig. 5 - Base-Emitter On Voltage

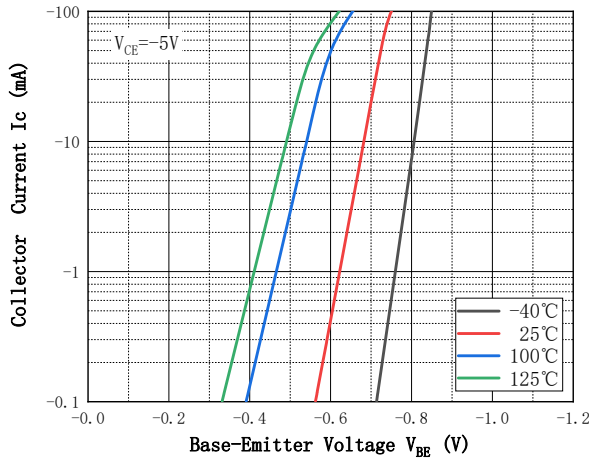
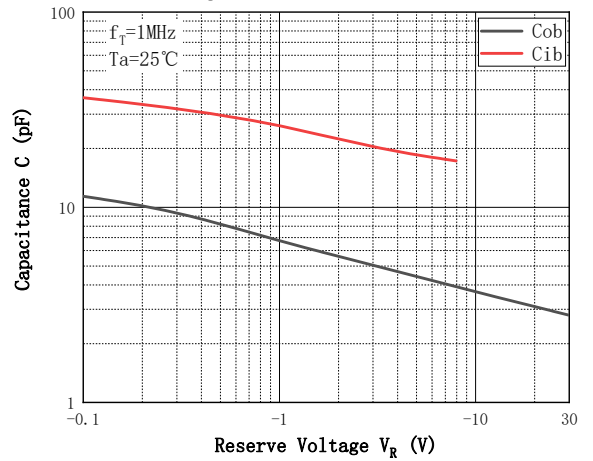
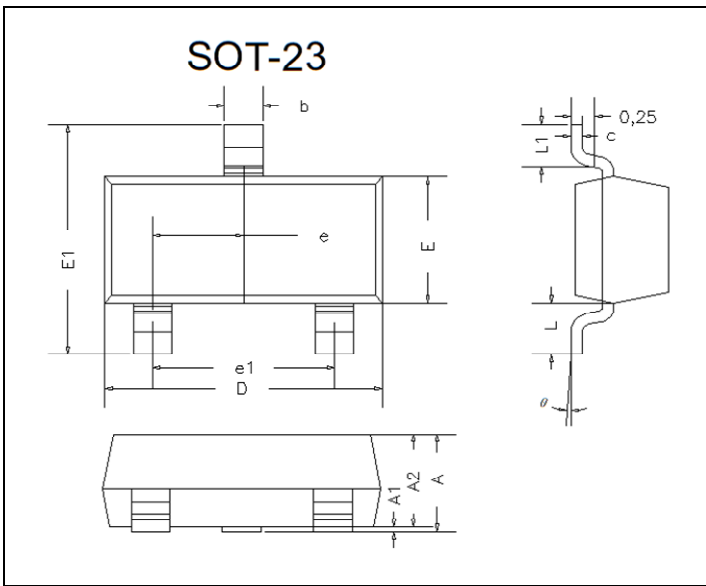


Fig. 6 - Cob/Cib—VCB/VEB

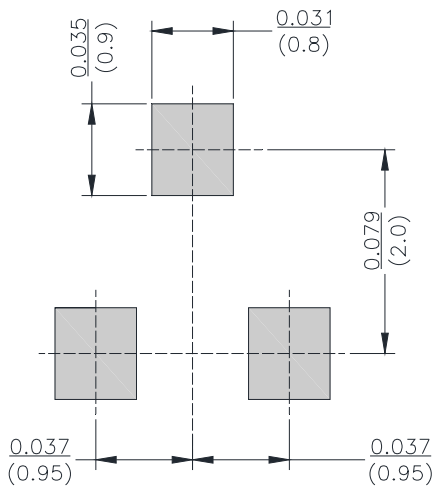


## ■ SOT-23 Package Outline Dimensions



DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.035	0.045	0.90	1.15	
A1	0.000	0.004	0.00	0.10	
A2	0.035	0.041	0.90	1.05	
b	0.012	0.020	0.30	0.50	
c	0.004	0.008	0.10	0.20	
D	0.110	0.118	2.80	3.00	
E	0.047	0.055	1.20	1.40	
E1	0.089	0.100	2.25	2.55	
e	0.370TYP		0.95TYP		
e1	0.071	0.079	1.80	2.00	
L	0.220REF		0.55REF		
L1	0.012	0.020	0.30	0.50	
theta	0°	8°	0°	8°	

## ■ SOT-23 Suggested Pad Layout



Unit:  $\frac{\text{inch}}{\text{mm}}$



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