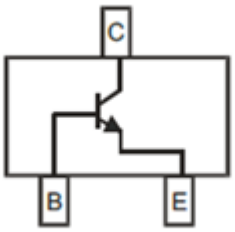
NPN General Purpose Amplifier



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

Mechanical Data

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

1AM = Product Type Marking Code
Y=Date Code Marking

Date code （2 years a cycle）

Year	Odd years(eg 2019)											
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	J	O	L	C	K	B	P	D	M	E	G	F

Year	Even years(eg 2018)											
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	W	N	Y	T	R	H	A	I	U	X	Z	S

■ Maximum Ratings (Ta=25℃ unless otherwise noted)

Item	Symbol	Unit	Conditions	Value
Collector-Base Voltage	V_{CBO}	V		60
Collector-Emitter Voltage	V_{CEO}	V		40
Emitter-Base Voltage	V_{EBO}	V		6.0
Collector Current -Continuous	I_C	mA		200
Total Device Dissipation	P_D	mW		300
Thermal Resistance Junction to Ambient	R_{thJA}	K/W		357
Junction Temperature	T_j	℃		-55 to +150
Storage Temperature	T_{STG}	℃		-55 to +150

■ Electrical Characteristics (Ta=25℃ unless otherwise noted)

Item	Symbol	Unit	Conditions	Min	Max
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	Vdc	I_C =1.0mAdc,I_B=0	40	
Collector-base breakdown voltage	$V_{(BR)CBO}$	Vdc	I_C=10uAdc,I_E=0	60	
Emitter-base breakdown voltage	$V_{(BR)EBO}$	Vdc	I_E=10μAdc,I_C=0	6.0	
Collector cut-off current	I_{CBO}	nAdc	V_{CB}=60Vdc, I_E =0		50
Collector cut-off current	I_{CEX}	nAdc	V_{CE}=30VdcC, V_{EB}=3.0Vdc		50
DC current gain	h_{FE}		V_{CE}=1Vdc,I_C=0.1mAdc	40	
	h_{FE}		V_{CE}=1Vdc,I_C=1.0mAdc	70	
	h_{FE}		V_{CE}=1Vdc,I_C=10mAdc	100	300
	h_{FE}		V_{CE}=1Vdc,I_C=50mAdc	60	
	h_{FE}		V_{CE}=1Vdc,I_C=100mAdc	30	
Collector-emitter saturation voltage	$V_{CE(sat)}$	Vdc	I_C=10mAdc,I_B=1.0mAdc		0.2
			I_C=50mAdc,I_B=5.0mAdc		0.3
Base-emitter saturation voltage	$V_{BE(sat)}$	Vdc	I_C=10mAdc,I_B=1.0mAdc	0.65	0.85
			I_C=50mAdc,I_B=5.0mAdc		0.95
Ouput Capacitance	Cobo	pF	V_{CB}=5.0Vdc,f=1.0MHz,I_E=0		4.0
Input Capacitance	Cibo	pF	V_{EB}=0.5Vdc,f=1.0MHz,I_C=0		8.0
Delay time	t_d	ns	V_{CC}=3.0Vdc, V_{BE}=0.5Vdc, I_C=10mAdc,I_{B1}=1.0mAdc		35
Rise time	t_r	ns			35
Storage time	t_s	ns	V_{CC}=3.0Vdc, I_C=10mAdc,I_{B1}=I_{B2}=1.0mAdc		200
Fall time	t_f	ns			50

■ Ordering Information (Example)

PREFERED P/N	PACKING CODE	UNIT WEIGHT(g)	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
MMBT3904Q	F2	Approximate 0.01	3000	30000	120000	7” reel

■ **Characteristics** (Typical)

Figure 1.Static Characteristics

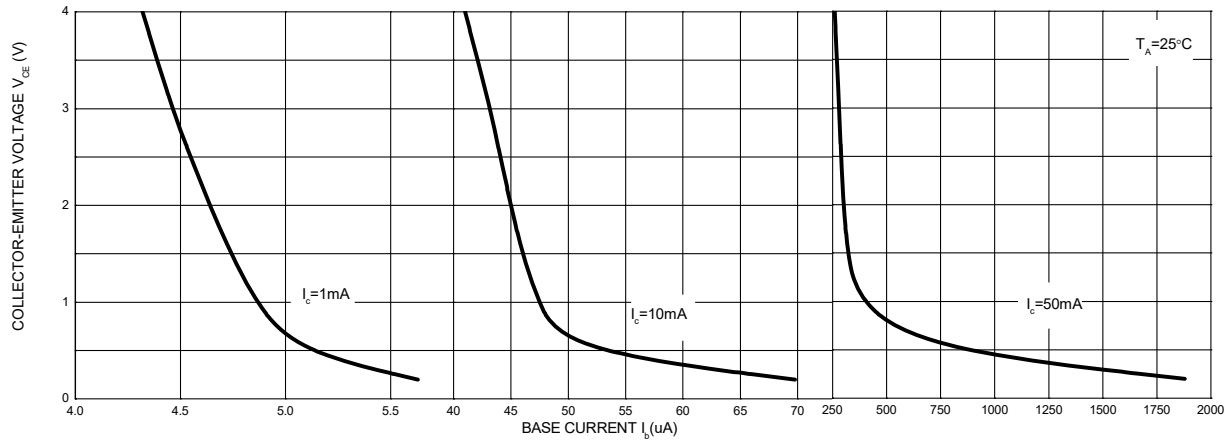


Figure 2. H_{FE}-I_C

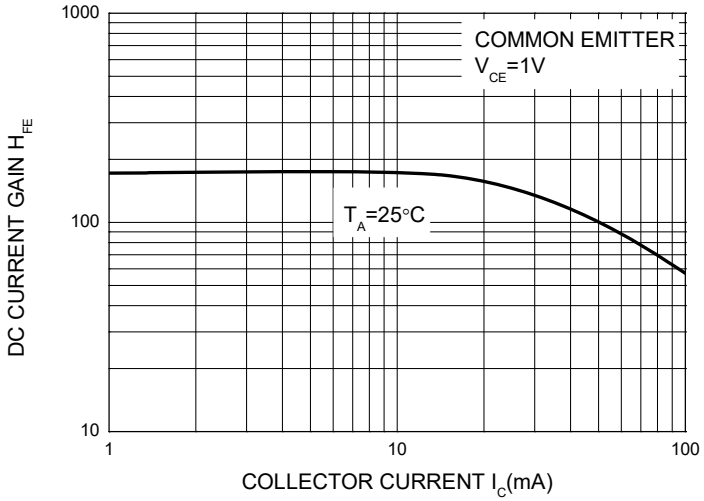


Figure 3.V_{BESAT}-I_C

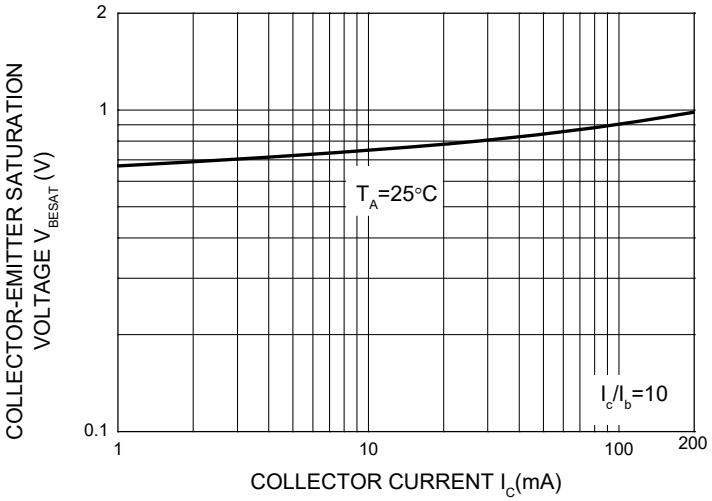
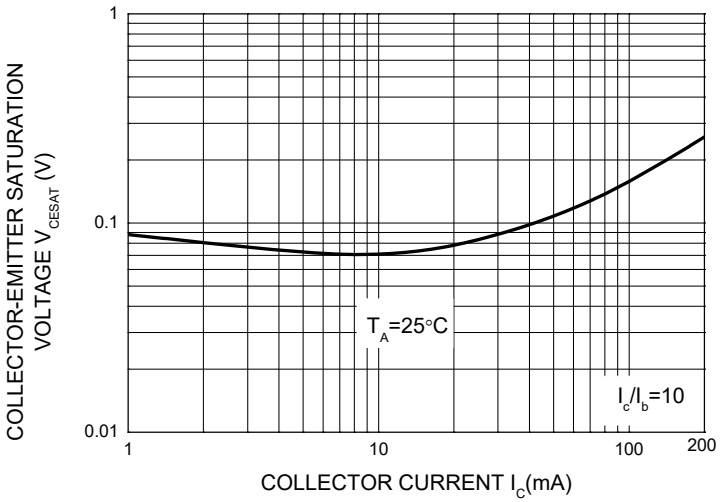
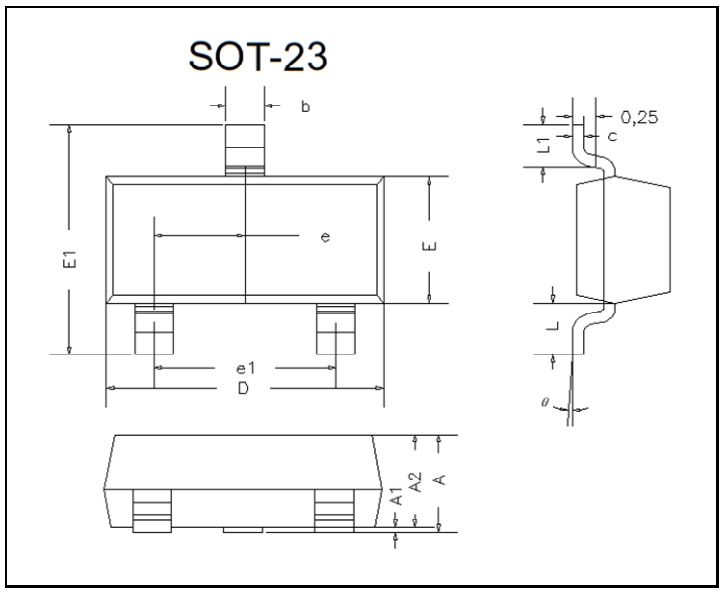


Figure 4.V_{CESAT}-I_C

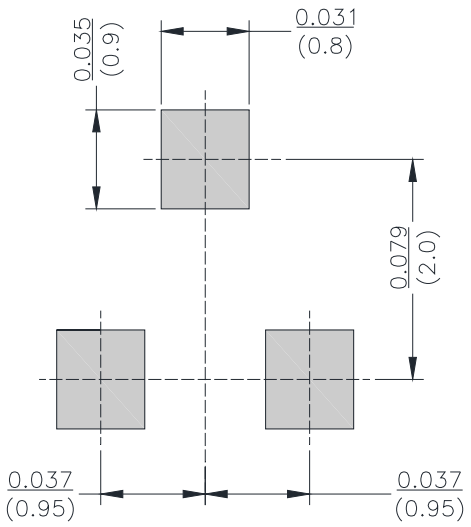


■SOT-23 Package Outline Dimensions



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	
θ	0°	8°	0°	8°	

■ SOT-23 Suggested Pad Layout



Unit: inch / mm

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