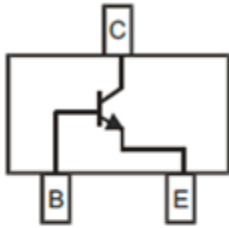


## NPN General Purpose Amplifier



**SOT-323**

### Features

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

### Mechanical Data

- Case: SOT-323
- Terminals: Tin plated leads, solderable per J-STD-002 and JESD22-B102
- Marking: K2N

### ■ Maximum Ratings (Ta=25°C 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		200
Thermal Resistance Junction to Ambient (*)	$R_{thJA}$	K/W		625
Junction Temperature	$T_J$	°C		-55 to +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	$V_{(BR)CEO}$	Vdc	$I_C = 1.0\text{mAdc}, I_B = 0$	40	
Collector-base breakdown voltage	$V_{(BR)CBO}$	Vdc	$I_C = 10\mu\text{Adc}, I_E = 0$	60	
Emitter-base breakdown voltage	$V_{(BR)EBO}$	Vdc	$I_E = 10\mu\text{Adc}, I_C = 0$	6.0	
Collector cut-off current	$I_{CBO}$	nAdc	$V_{CB} = 30\text{Vdc}, I_E = 0$		100
Collector cut-off current	$I_{CEX}$	nAdc	$V_{CE} = 30\text{Vdc}, V_{EB} = 3.0\text{Vdc}$		50
DC current gain	$h_{FE}$		$V_{CE} = 1\text{Vdc}, I_C = 0.1\text{mAdc}$	40	
	$h_{FE}$		$V_{CE} = 1\text{Vdc}, I_C = 1.0\text{mAdc}$	70	
	$h_{FE}$		$V_{CE} = 1\text{Vdc}, I_C = 10\text{mAdc}$	100	300
	$h_{FE}$		$V_{CE} = 1\text{Vdc}, I_C = 50\text{mAdc}$	60	
	$h_{FE}$		$V_{CE} = 1\text{Vdc}, I_C = 100\text{mAdc}$	30	
Collector-emitter saturation voltage	$V_{CE(sat)}$	Vdc	$I_C = 10\text{mAdc}, I_B = 1.0\text{mAdc}$		0.2
			$I_C = 50\text{mAdc}, I_B = 5.0\text{mAdc}$		0.3
Base-emitter saturation voltage	$V_{BE(sat)}$	Vdc	$I_C = 10\text{mAdc}, I_B = 1.0\text{mAdc}$	0.65	0.85
			$I_C = 50\text{mAdc}, I_B = 5.0\text{mAdc}$		0.95
Transition frequency	$f_T$	MHz	$V_{CE} = 20\text{V}, I_C = 10\text{mA}, f = 100\text{MHz}$	250	-
Delay time	$t_d$	ns	$V_{CC} = 3.0\text{Vdc}, V_{BE} = 0.5\text{Vdc}, I_C = 10\text{mAdc}, I_{B1} = 1.0\text{mAdc}$		35
Rise time	$t_r$	ns			35
Storage time	$t_s$	ns	$V_{CC} = 3.0\text{Vdc}, I_C = 10\text{mAdc}, I_{B1} = I_{B2} = 1.0\text{mAdc}$		200
Fall time	$t_f$	ns			50

## ■ Ordering Information (Example)

PREFERRED P/N	PACKING CODE	UNIT WEIGHT(g)	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
MMST3904Q	F2	Approximate 0.006	3000	30000	120000	7" reel

## ■ Characteristics (Typical)

Fig.1 - Static Characteristic

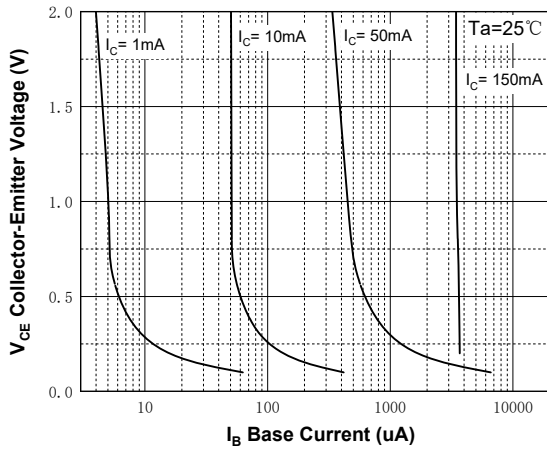


Fig.2 - DC Current Gain

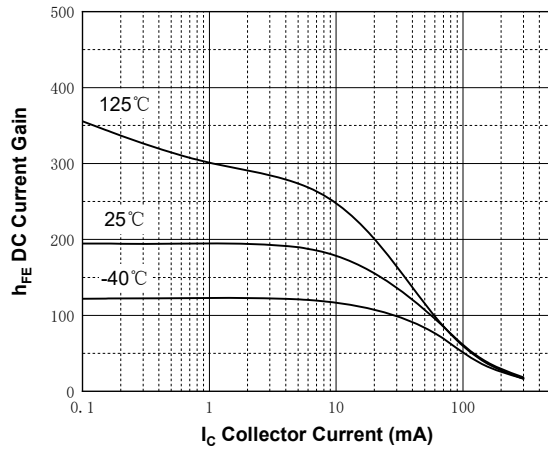


Fig.3 - Collector-Emitter Saturation Voltage

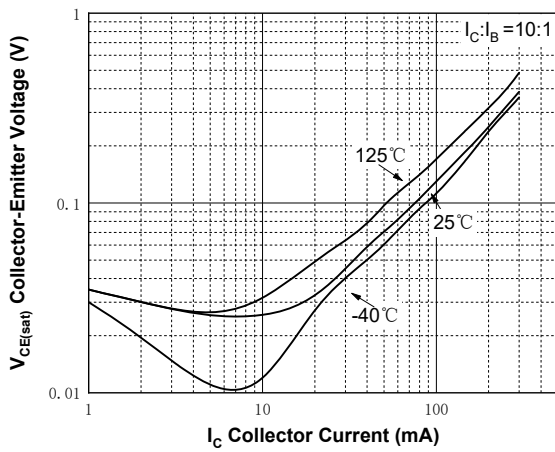


Fig.4 - Base-Emitter Saturation Voltage

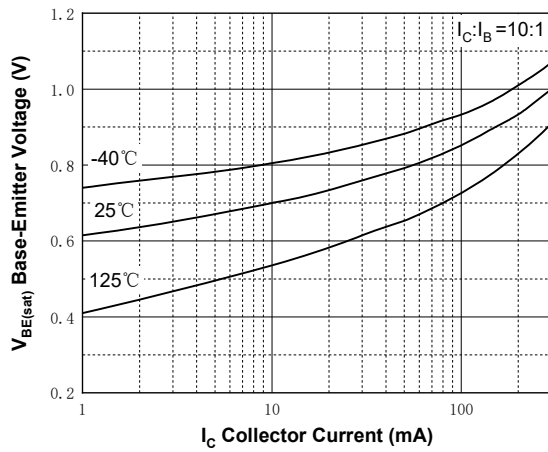
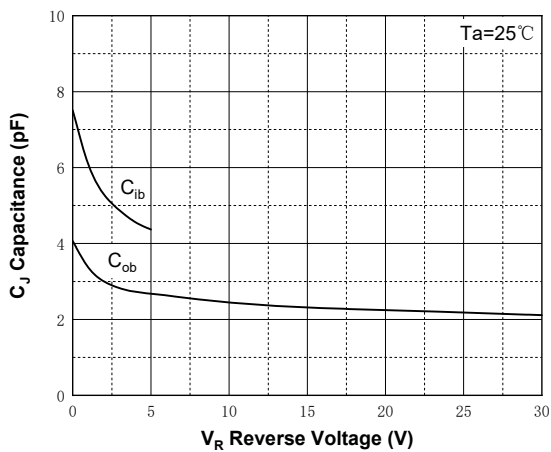
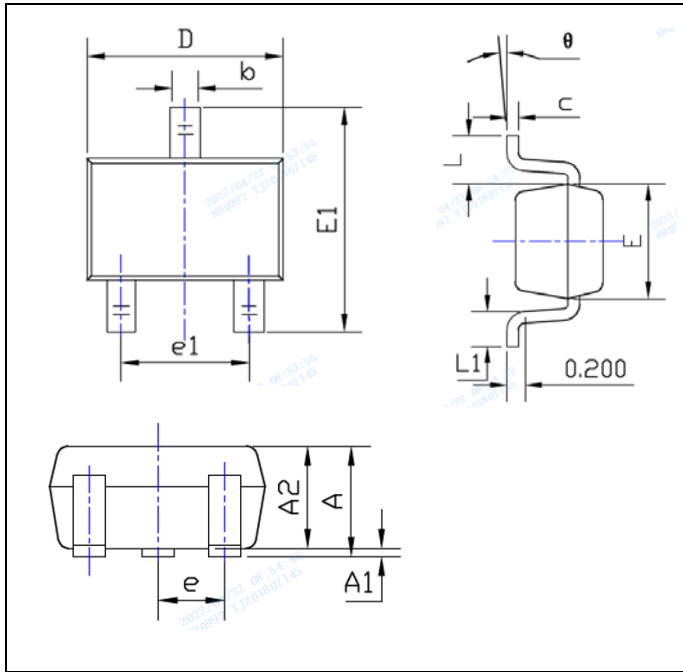


Fig.5 - Capacitance

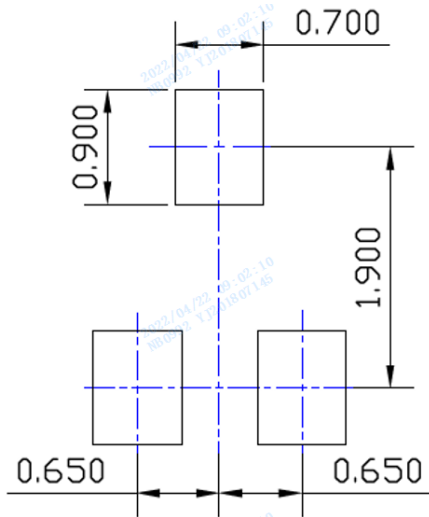


## ■ SOT-323 Package Outline Dimensions



SYMBOL	DIMENSIONS			
	INCHES		Millimeter	
	MIN.	MAX.	MIN.	MAX.
A	0.035	0.043	0.900	1.100
A1	0.000	0.004	0.000	0.100
A2	0.035	0.039	0.900	1.000
b	0.006	0.016	0.150	0.400
c	0.004	0.010	0.100	0.250
D	0.071	0.087	1.800	2.200
E	0.045	0.053	1.150	1.350
E1	0.085	0.096	2.150	2.450
e	0.026TYP		0.650TYP	
e1	0.047	0.055	1.200	1.400
L	0.021REF		0.525REF	
L1	0.010	0.018	0.260	0.460
θ	0°	8°	0°	8°

## ■ SOT-323 Suggested Pad Layout



Unit: mm



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