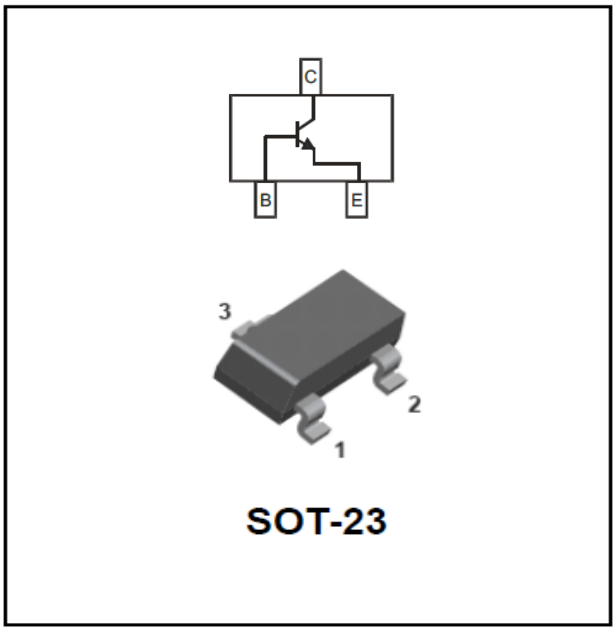
NPN Transistor



Features

- Epoxy meets UL-94 V-0 flammability rating
- Halogen free available upon request by adding suffix ”HF”
- Moisture Sensitivity Level 1
- High Conductance
- Surface mount package ideally Suited for Automatic Insertion

Mechanical Data

- **Package**: SOT-23

Molding compound meets UL 94 V-0 flammability rating, RoHS-compliant, halogen-free

- **Terminals:** Tin plated leads, solderable per J-STD-002 and JESD22-B102
- **Marking**: 9A

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

Item	Symbol	Unit	Value
Collector-Base Voltage	V_{CBO}	V	40
Collector-Emitter Voltage	V_{CEO}	V	40
Emitter-Base Voltage	V_{EBO}	V	5
Collector Current	I_C	A	1
Collector Power Dissipation	Pc	mW	300
Junction Temperature	Tj	℃	150
Storage Temperature	T_{stg}	℃	-55 to +150

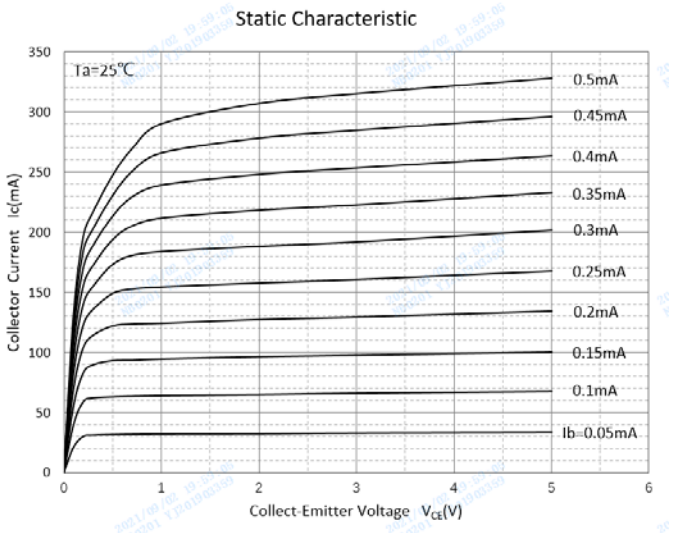
■ Ordering Information (Example)

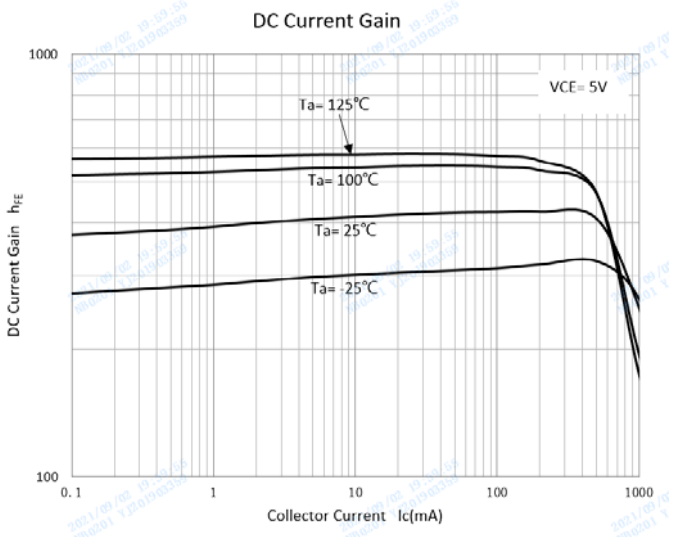
PREFERED P/N	PACKING CODE	UNIT WEIGHT(g)	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
PMMT491A	F2	Approximate 0.008	3000	30000	120000	7” reel

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

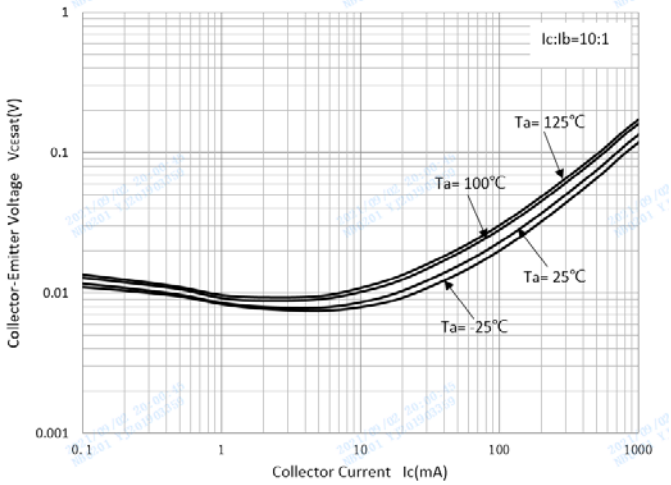
Item	Symbol	Unit	Conditions	Min	Typ	Max
Collector-base breakdown voltage	V_{CBO}	V	IC=10uA,IE=0	40		
Collector-emitter breakdown voltage	V_{CEO*}	V	IC=1mA,IB=0	40		
Emitter-base breakdown voltage	V_{EBO}	V	IE=10μA,IC=0	5		
Collector-emitter cut-off current	I_{CEO}	nA	VCE=30V, IB =0			100
Collector-base cut-off current	I_{CBO}	nA	VCB=30V, IE =0			100
Emitter-base cut-off current	I_{EBO}	nA	VEB=5 V, IC =0			100
DC current gain	h_{FE}		VCE= 5V,IC= 1mA	300		
	h_{FE}		VCE= 5V,IC= 500mA	300		900
	h_{FE}		VCE= 5V,IC= 1A	200		
Collector-emitter saturation voltage	$V_{CE(sat)}$	V	IC=100mA,IB=1mA			0.2
	$V_{CE(sat)}$	V	IC=500mA,IB=50mA			0.3
	$V_{CE(sat)}$	V	IC=1A,IB=100mA			0.5
Base-emitter saturation voltage	$V_{BE(sat)}$	V	IC=1A,IB=100mA			1.2
Base-emitter voltage	V_{BE}	V	VCE= 5V,IC= 1A			1.1
Collector-base output capacitance	Cob	pF	VCB=10V,f=1MHz			10
Transition frequency	f_T	MHz	VCE=10V,IC=50mA,f=100MHz	150		

■ Characteristics (Typical)

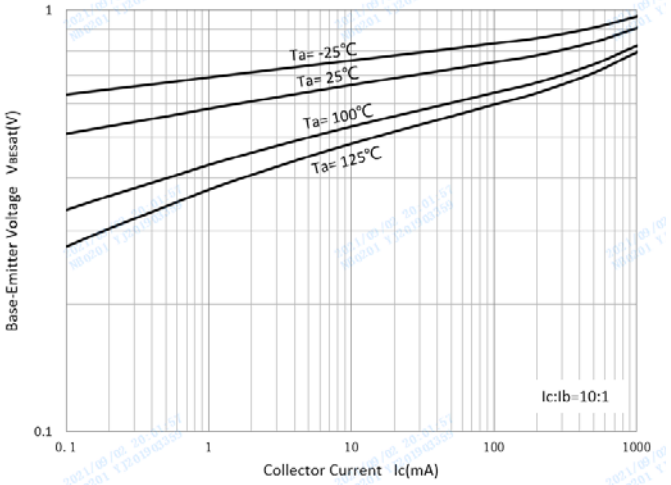




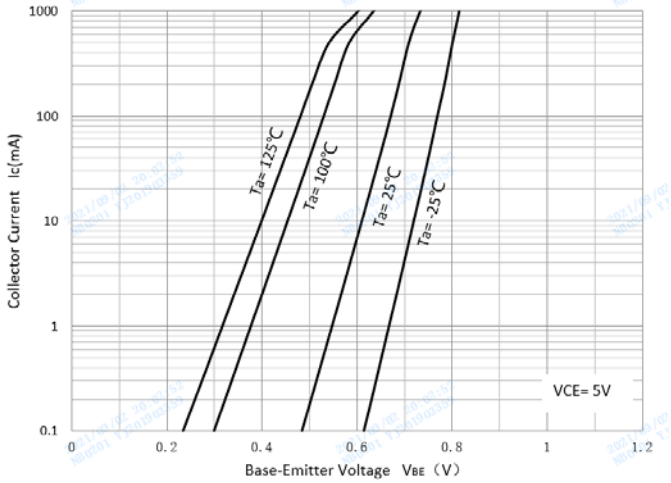
Collector-Emitter Saturation Voltage



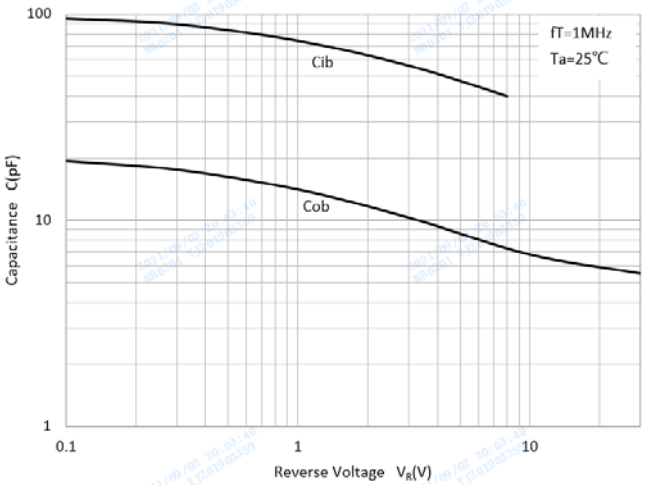
Base-Emitter Saturation Voltage



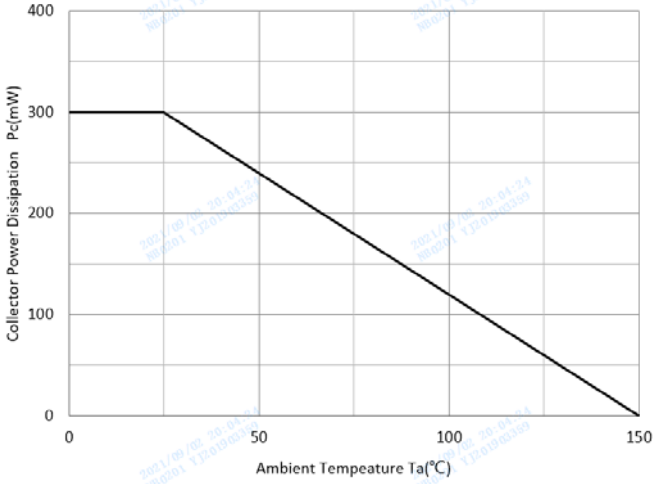
Base-Emitter On Voltage



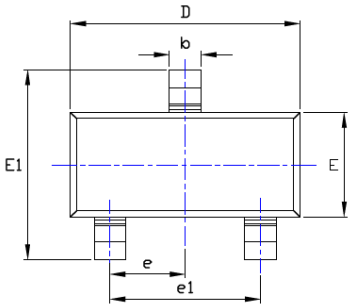
Cob/Cib-V_{CB}/V_{EB}



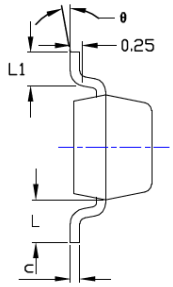
Collector Power Derating Curve



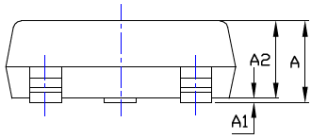
■SOT-23 Package Outline Dimensions



TOP VIEW



SIDE VIEW

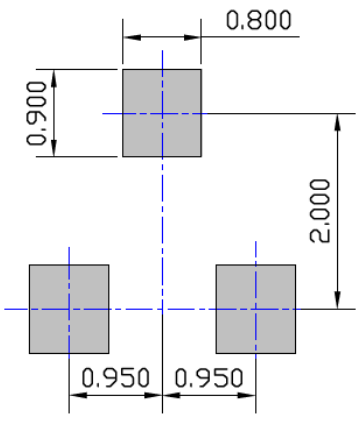


SIDE VIEW

SYMBOL	DIMENSIONS			
	INCHES		Millimeter	
	MIN.	MAX.	MIN.	MAX.
A	0.035	0.045	0.900	1.150
A1	0.000	0.004	0.000	0.100
A2	0.035	0.041	0.900	1.050
b	0.012	0.020	0.300	0.500
c	0.004	0.008	0.100	0.200
D	0.110	0.118	2.800	3.000
E	0.047	0.055	1.200	1.400
E1	0.089	0.100	2.250	2.550
e	0.037TYP		0.950TYP	
e1	0.071	0.079	1.800	2.000
L	0.022REF		0.550REF	
L1	0.012	0.020	0.300	0.500
θ	0°	8°	0°	8°

Note:
1. All dimensions are in millimeters (mm) unless otherwise specified.
[所有尺寸均以毫米为单位，除非另有说明]
2. General tolerances: ±0.10mm unless otherwise specified.
[通用公差为±0.10mm，除非另有说明]
3. Dimensions and tolerances per ASME Y14.5M-2018.
[尺寸和公差遵循 ASME Y14.5M-2018 标准]
4.All dimensions shown are exclusive of burrs and gate residues. Burrs and gate vestiges shall not exceed 0.15 mm in maximum.
[所有尺寸均不包括毛刺和浇口残留。毛刺与浇口残留的尺寸最大不得超过 0.15mm]
5.Dimension b does not include dambar protrusion of max 0.100 mm per side.
[尺寸b不包括单边最大0.100 MM的中筋凸出部分]
6.Dimensions D and E are the overall extreme outer dimensions of the mold compound. These dimensions exclude mold flash, lead flash, protrusions and burrs but include the maximum allowable mold mismatch.
[D和E是塑封体的外部极限尺寸，不包括包封溢料、内引线溢料、凸出部分以及胶体毛刺，但是包含了包封错位的最大尺寸]
7.Formed leads shall be planar with respect to one another within a maximum of 0.076 mm relative to the seating plane.
[成型的管脚应为同一平面，共面性最大为0.1mm]
8. ★It is the key size.
[★ 标记为关键尺寸]

■SOT-23 Soldering Footprint



UNIT：mm

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