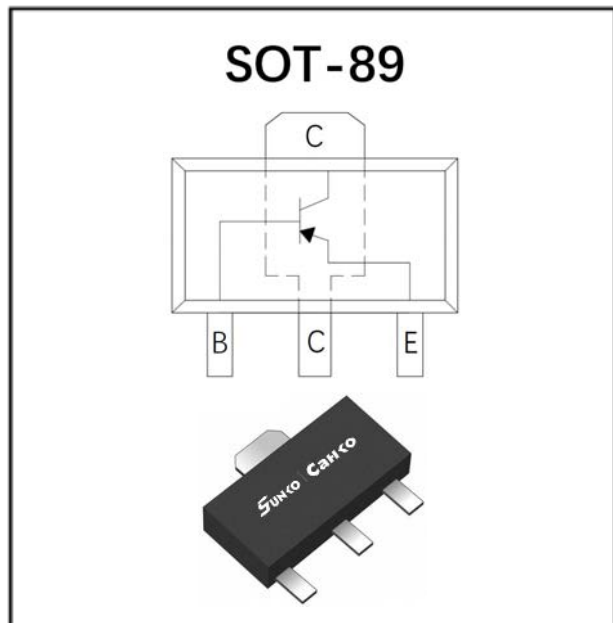


PNP General Purpose Amplifier



Features

- Epoxy meets UL-94 V-0 flammability rating
- Halogen free available upon request by adding suffix "HF"
- Moisture sensitivity level 1
- Low collector-emitter saturation voltage

Mechanical Data

- **Package:** SOT-89
Molding compound meets UL 94 V-0 flammability rating, -compliant, halogen-free
- **Terminals:** Tin plated leads, solderable per J-STD-002 and JESD22-B102
- **Marking:** A1013

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

Item	Symbol	Unit	Conditions	Value
Minimum Collector-Emitter Voltage	V_{CEO}	V	$I_C = -10mA, I_B = 0$	-160
Minimum Collector-Base Voltage	V_{CBO}	V	$I_C = -100uA, I_E = 0$	-160
Minimum Emitter-Base Voltage	V_{EBO}	V	$I_E = -100uA, I_C = 0$	-6
Collector Current	I_C	A		-1
Collector Power Dissipation	P_C	mW		500
Thermal Resistance From Junction To Ambient	$R_{\theta JA}$	°C/W		250
Operation Junction Temperature	T_j	°C		-55 to +150
Storage Temperature	T_{stg}	°C		-55 to +150

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

Item	Symbol	Unit	Conditions	Min	Max
Collector-Emitter Voltage	V_{CEO}	V	$I_C=-10mA, I_B=0$	-160	
Collector-Base Voltage	V_{CBO}	V	$I_C=-100\mu A, I_E=0$	-160	
Emitter-Base Voltage	V_{EBO}	V	$I_E=-100\mu A, I_C=0$	-6	
Collector-base Cut-off Current	I_{CBO}	μA	$V_{CB}=-150V$		-1
Base-emitter Cut-off Current	I_{EBO}	μA	$V_{EB}=-6V$		-1
DC Current Gain	h_{FE}		$I_C=-200mA, V_{CE}=-5V$	60	320
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	V	$I_C=-500mA, I_B=-50mA$		-1.5
Base-Emitter Turn-On Voltage	$V_{BE(on)}$	V	$I_C=-5mA, V_{CE}=-5V$	-0.45	-0.75
Transition frequency	f_T	MHz	$I_C=-200mA, V_{CE}=-5V$	15	
Collector Capacitance	C_{ob}	pF	$V_{CB}=-10V, I_E=0, f=1MHz$		35

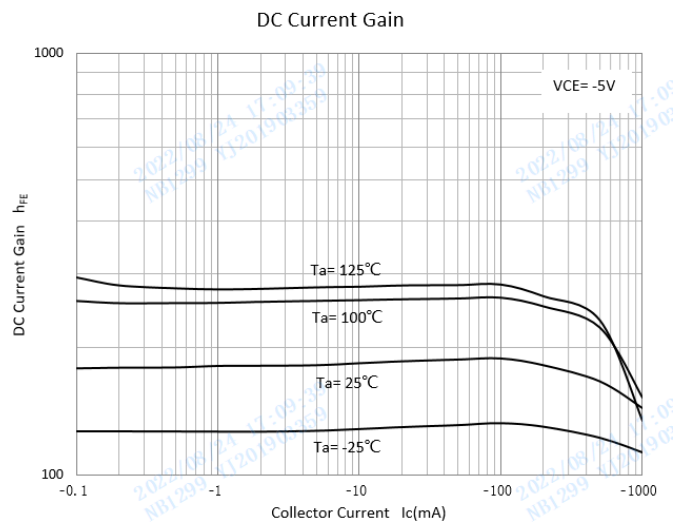
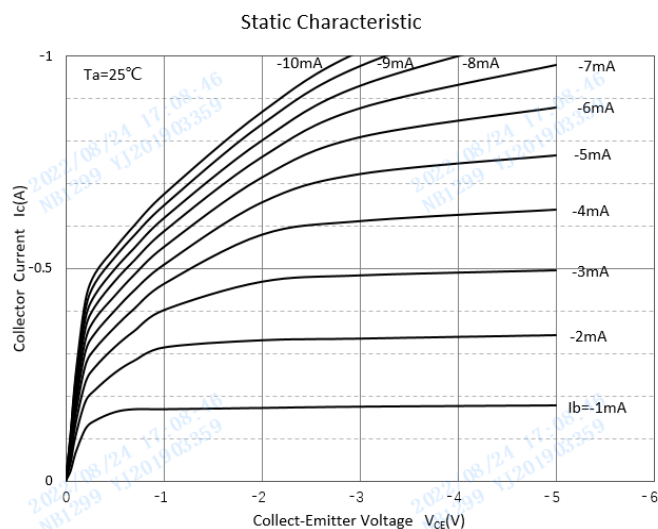
■Ordering Information (Example)

PREFERRED P/N	PACKING CODE	UNIT WEIGHT(g)	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
2SA1013	F2	Approximate 0.055	1000	8000	32000	7" reel

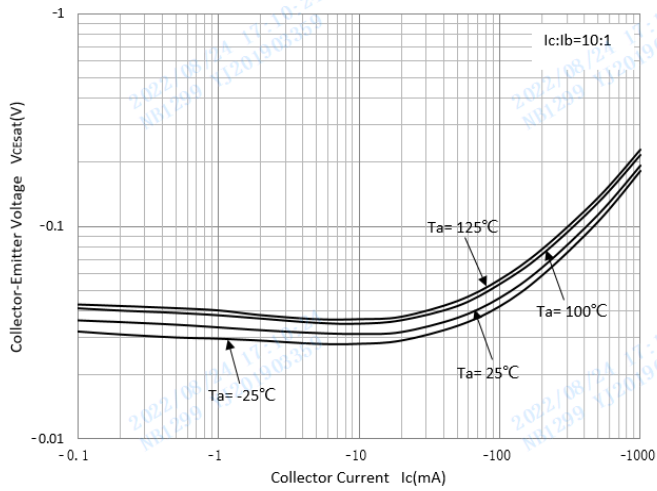
■CLASSIFICATION OF HFE

Rank	O	P
Range	100-200	160-320

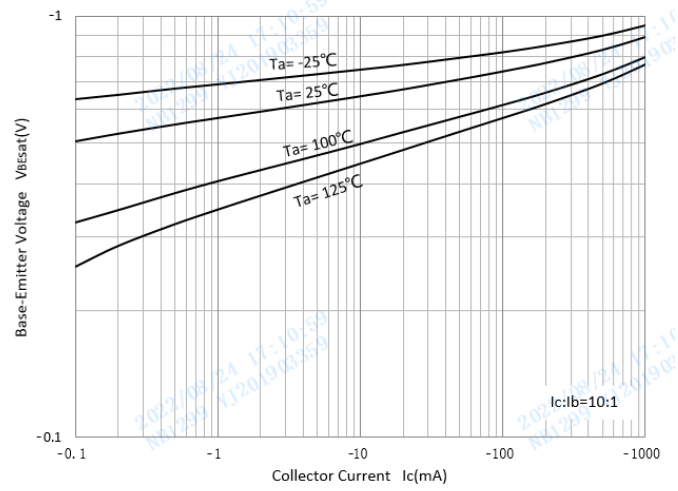
■Characteristics (Typical)



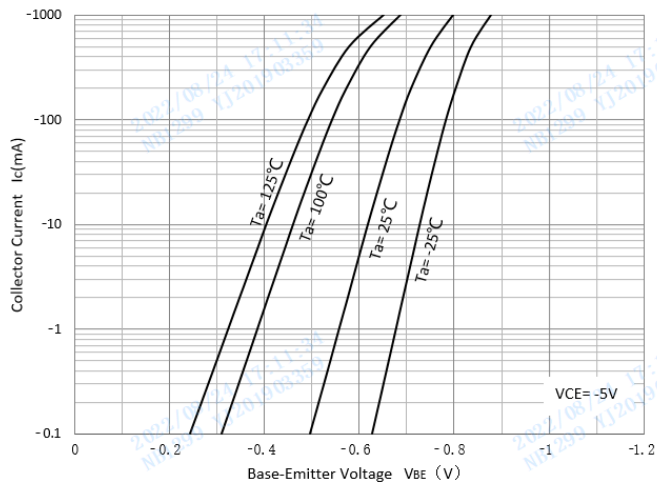
Collector-Emitter Saturation Voltage



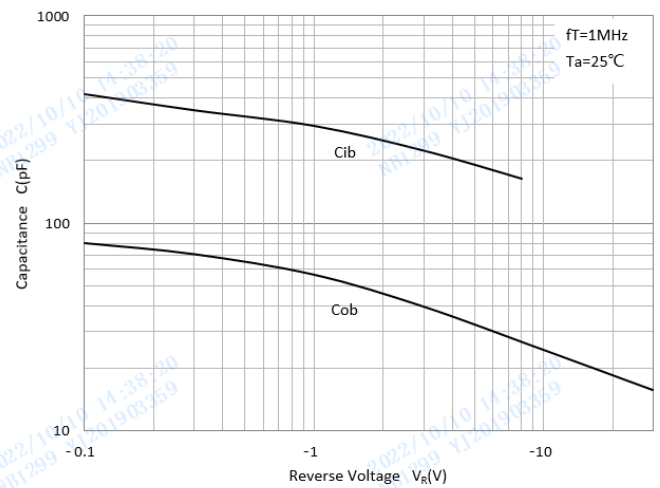
Base-Emitter Saturation Voltage



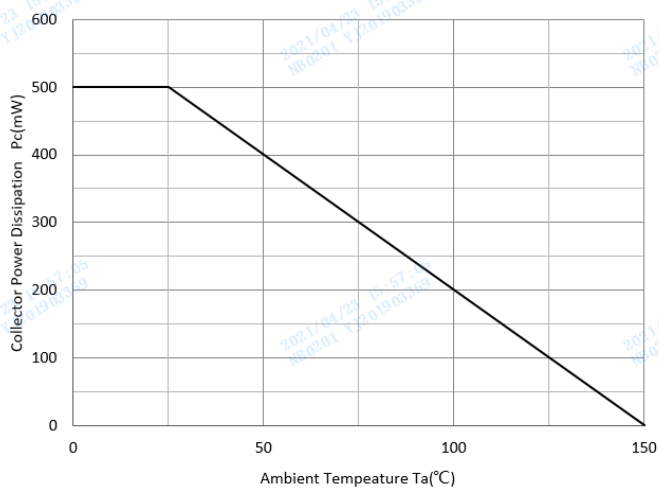
Base-Emitter On Voltage



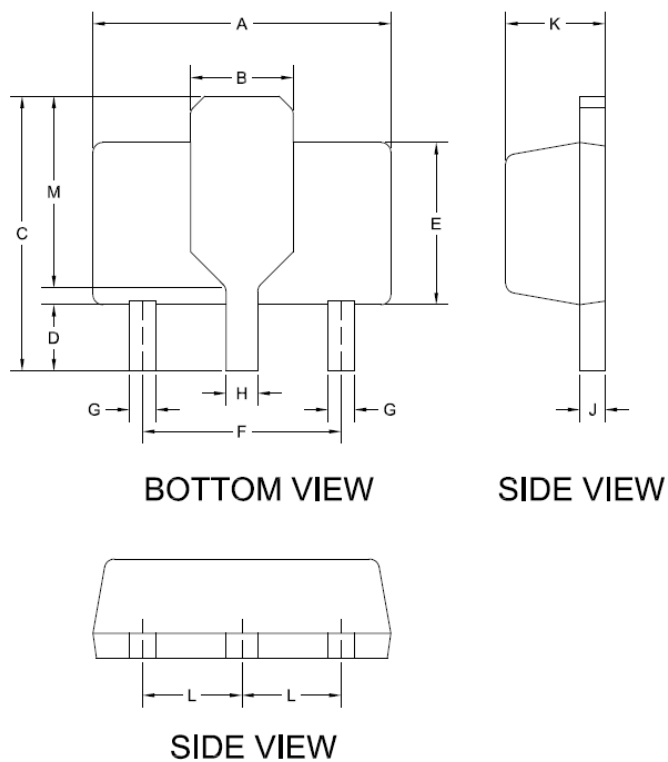
$C_{ob}/C_{ib}-V_{CB}/V_{EB}$



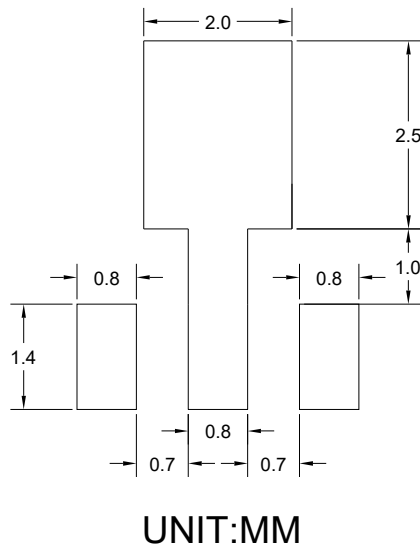
Collector Power Derating Curve



■SOT-89 Package Outline Dimensions



■SOT-89 Suggested Pad Layout



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