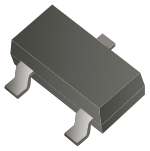
General Purpose Transistor

CTS2030N3-HF (NPN)

RoHS Device
Halogen Free



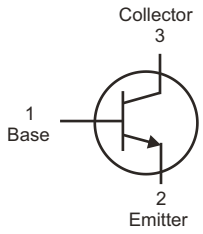
Features

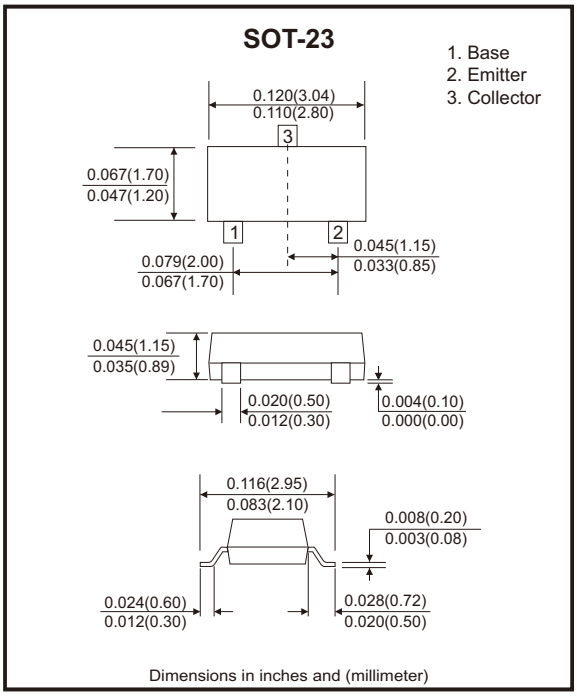
- High breakdown voltage, $BV_{CEO} \geq$ 200V.
- Large continuous collector current capability.
- Low collector saturation voltage.

Mechanical data

- Case: SOT-23, molded plastic.
- Mounting position: Any.

Circuit Diagram





Maximum Ratings (at T_A=25°C unless otherwise noted)

Parameter	Symbol	Value	Units
Collector-Base voltage	V_{CBO}	280	V
Collector-Emitter voltage	V_{CEO}	200	V
Emitter-Base voltage	V_{EBO}	6	V
Collector current	I_C	1	A
Base current	I_B	0.5	A
Power dissipation (T_A=25°C, Note 1)	P_D	225	mW
Power dissipation (T_C=25°C)	P_D	560	mW
Thermal resistance, junction to ambient (Note 1)	$R_{\theta JA}$	556	°C/W
Thermal resistance, junction to case	$R_{\theta JC}$	223	°C/W
Junction temperature	T_J	150	°C
Storage temperature range	T_{STG}	-55 to +150	°C

Notes:
1. Free air condition

Electrical Characteristics (at T_A=25°C unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Collector-Base breakdown voltage	$V_{(BR)CBO}$	I_C=100μA, I_E=0	280			V
Collector-Emitter breakdown voltage	$V_{(BR)CEO}$	I_C=10mA, I_B=0	200			V
Emitter-Base breakdown voltage	$V_{(BR)EBO}$	I_E=10μA, I_C=0	6			V
Collector cut-off current	I_{CBO}	V_{CB}=250V, I_E=0			100	nA
Emitter cut-off current	I_{EBO}	V_{EB}=6V, I_C=0			100	nA
DC current gain (Note 1)	$h_{FE(1)}$	V_{CE}=5V, I_C=1mA	100			
	$h_{FE(2)}$	V_{CE}=5V, I_C=0.2A	100		320	
	$h_{FE(3)}$	V_{CE}=5V, I_C=1A	10			
Collector-Emitter saturation voltage (Note 1)	$V_{CE(sat)1}$	I_C=100mA, I_B=10mA			0.1	V
	$V_{CE(sat)2}$	I_C=250mA, I_B=25mA			0.2	V
	$V_{CE(sat)3}$	I_C=500mA, I_B=50mA		0.2	0.5	V
Base-Emitter saturation voltage (Note 1)	$V_{BE(sat)}$	I_C=250mA, I_B=25mA			0.95	V
Base-Emitter on voltage (Note 1)	$V_{BE(on)}$	I_C=250mA, V_{CE}=5V			0.9	V
Output capacitance	C_{ob}	V_{CB}=10V, I_E=0A, f=1MHz			10	pF
Transition frequency	f_T	V_{CE}=10V, I_C=50mA f=100MHz	75			MHz

Notes:

1. Pulse test: Pulse Width ≤380μs, Duty Cycle ≤ 2%.

Rating and Characteristic Curves (CTS2030N3-HF)

Fig.1 - Power Derating Curve

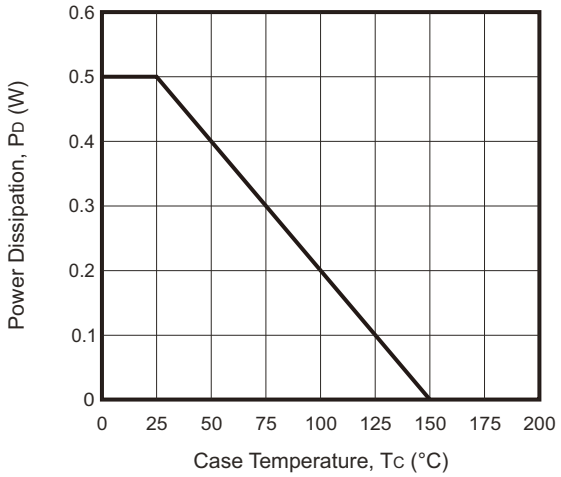


Fig.2 - Saturation Voltage vs. Collector Current

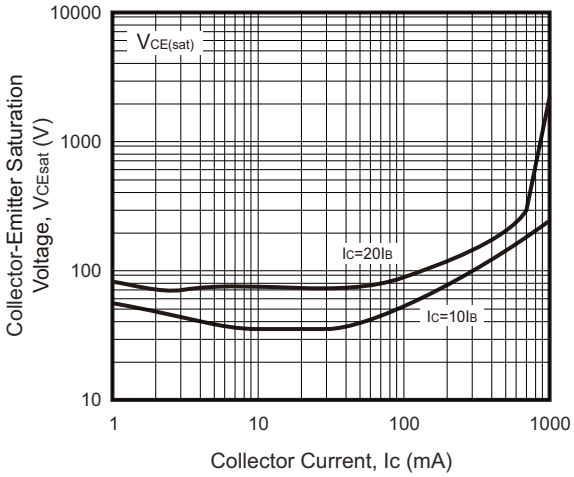


Fig.3 - Saturation Voltage vs. Collector Current

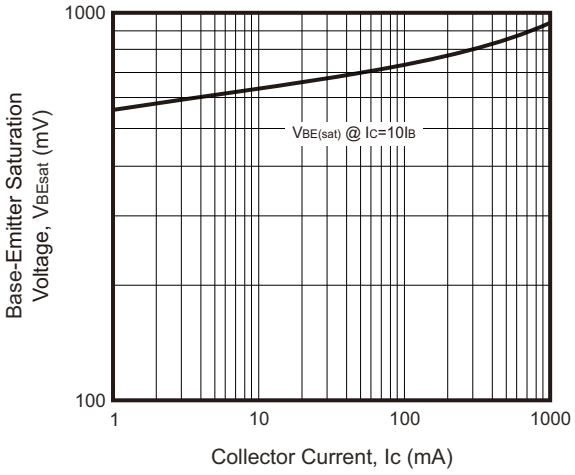
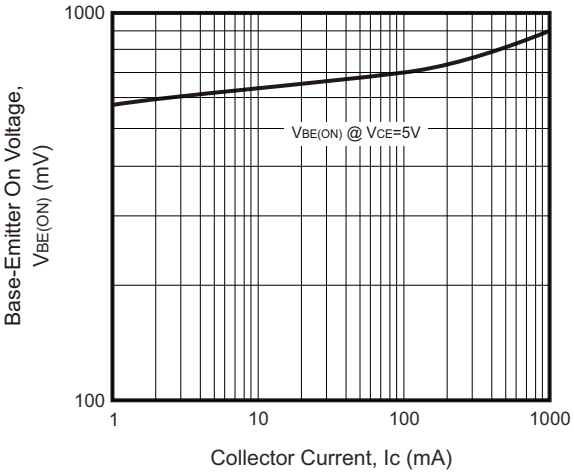
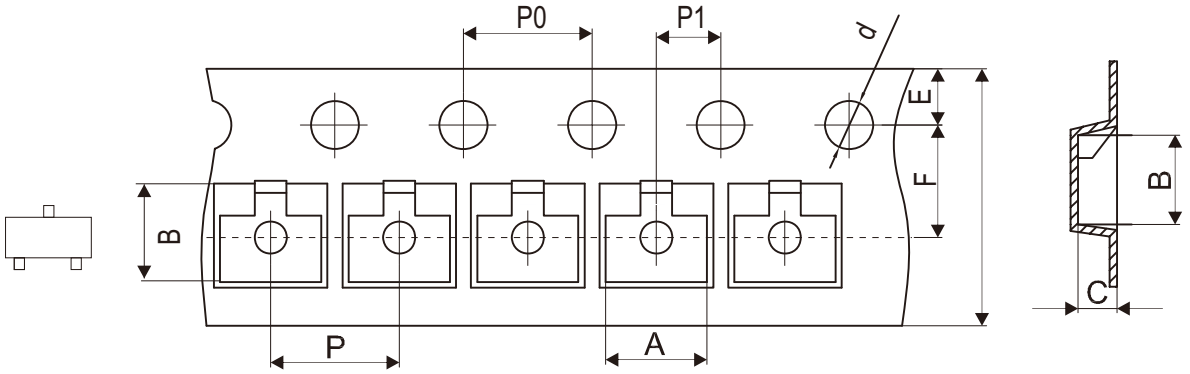
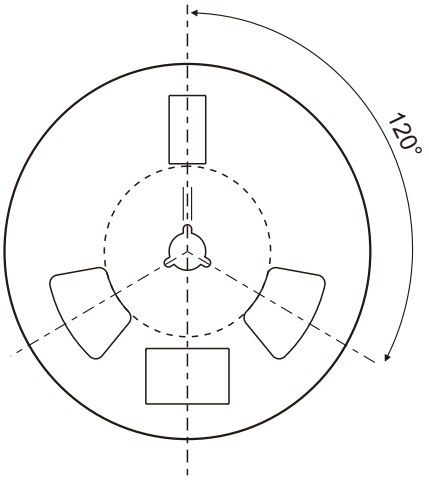


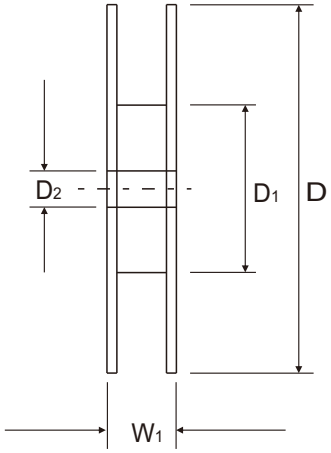
Fig.4 - On Voltage vs. Collector Current

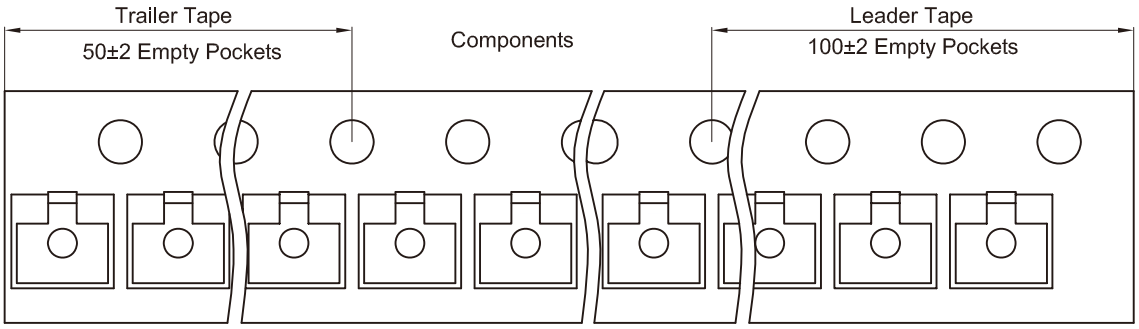


Reel Taping Specification







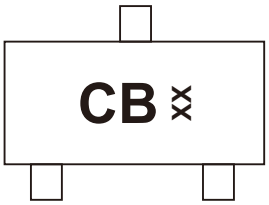


	SYMBOL	A	B	C	d	D	D1	D2
SOT-23	(mm)	3.17 ± 0.10	3.23 ± 0.10	1.37 ± 0.10	1.50 + 0.10	178.00 ± 1.00	55.00 ± 1.00	13.00 ± 0.50
	(inch)	0.125 ± 0.004	0.127 ± 0.004	0.054 ± 0.004	0.059 + 0.004	7.008 ± 0.039	2.165 ± 0.039	0.512 ± 0.020

	SYMBOL	E	F	P	P0	P1	W	W1
SOT-23	(mm)	1.75 ± 0.10	3.50 ± 0.05	4.00 ± 0.10	4.00 ± 0.10	2.00 ± 0.05	8.00 + 0.30 / - 0.10	12.00 ± 0.50
	(inch)	0.069 ± 0.004	0.138 ± 0.002	0.157 ± 0.004	0.157 ± 0.004	0.079 ± 0.002	0.315 + 0.012 / - 0.004	0.472 ± 0.020

Marking Code

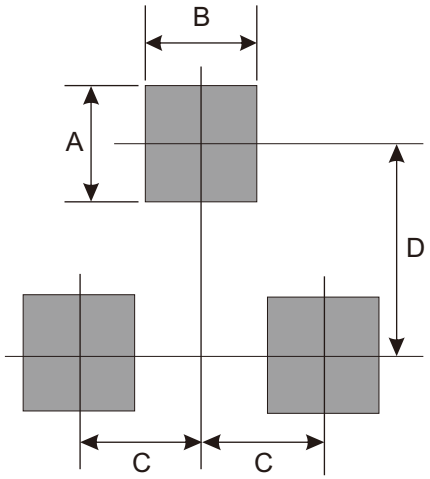
Part Number	Marking Code
CTS2030N3-HF	CB



XX = Control code

Suggested P.C.B. PAD Layout

SIZE	SOT-23	
	(mm)	(inch)
A	0.90	0.035
B	0.80	0.031
C	0.95	0.037
D	2.00	0.079



Note:The pad layout is for reference purposes only.

Standard Packaging

Case Type	REEL PACK	
	REEL (pcs)	Reel Size (inch)
SOT-23	3,000	7