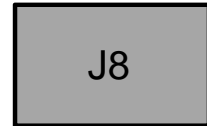
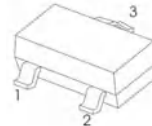




FEATURES

- High Collector Current.
- Excellent hFE Linearity.

SOT-23



- 1.BASE
2.EMITTER
3.COLLECTOR

MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector–Emitter Voltage	V_{CEO}	15	Vdc
Collector–Base Voltage	V_{CBO}	30	Vdc
Emitter–Base Voltage	V_{EBO}	5.0	Vdc
Collector Current — Continuous	I_c	50	mAdc

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Total Device Dissipation FR– 5 Board, (1) $T_A = 25^\circ\text{C}$	P_D	200	mW
Junction and Storage Temperature	T_J, T_{stg}	- 55 to +150	$^\circ\text{C}$

CLASSIFICATION OF hFE

Rank	L	H
Range	70-100	100-200

ELECTRICAL CHARACTERISTICS (TA = 25°C unless otherwise noted.)

OFF CHARACTERISTICS

Characteristic	Symbol	Min	Max	Unit
Collector–Emitter Breakdown Voltage(3) (Ic = 1.0 mA _{dc} , I _B = 0)	V _{(BR)CEO}	15	–	V _{dc}
Collector–Base Breakdown Voltage (Ic = 100 μA _{dc} , I _E = 0)	V _{(BR)CBO}	30	–	V _{dc}
Emitter–Base Breakdown Voltage (I _E = 100 μA _{dc} , Ic = 0)	V _{(BR)EBO}	5.0	–	V _{dc}
Collector cut-off current (V _{CB} = 12 V _{dc} , I _E = 0)	I _{CBO}	–	0.05	μA _{dc}
Collector cut-off current (V _{CE} = 12 V _{dc} , I _B = 0)	I _{CEO}	–	0.1	μA _{dc}
Emitter cut-off current (V _{EB} = 3V _{dc} , Ic = 0)	I _{EBO}	–	0.1	μA _{dc}

1. FR–5 = 1.0 x 0.75 x 0.062 in.
2. Alumina = 0.4 x 0.3 x 0.024 in. 99.5% alumina.
3. Pulse Test: Pulse Width <300 μs, Duty Cycle <2.0%.

ON CHARACTERISTICS

Characteristic	Symbol	Min	Max	Unit
DC Current Gain	h _{FE}			—
(Ic = 1.0 mA _{dc} , V _{CE} = 5 V _{dc})		70	200	
Collector–Emitter Saturation Voltage	V _{CE(sat)}			V _{dc}
(Ic = 10 mA _{dc} , I _B = 1 mA _{dc})(3)		—	0.5	
Base–Emitter Saturation Voltage(3)	V _{BE(sat)}			V _{dc}
(Ic = 10 mA _{dc} , I _B = 1 mA _{dc})		—	1.4	

SMALL–SIGNAL CHARACTERISTICS

Current–Gain — Bandwidth Product (Ic = 5 mA _{dc} , V _{CE} = 5.0V _{dc} , f = 400MHz)	f _T	800(typ)	MHz
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RATING AND CHARACTERISTIC CURVES

Fig.1 Power Derating Curve

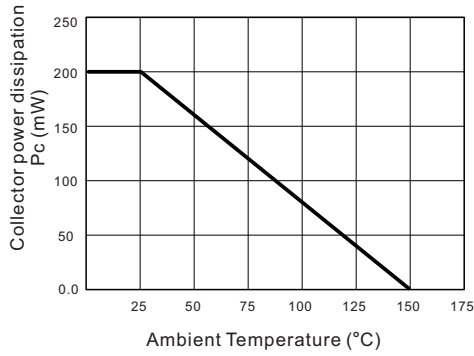


Fig.2 Static characteristics

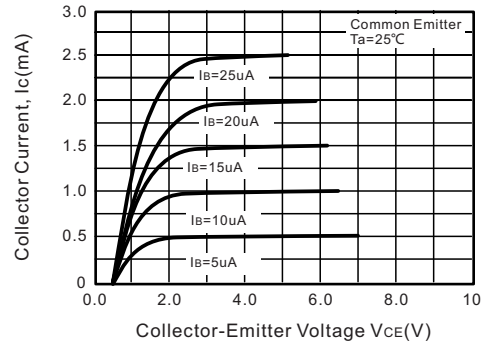


Fig.3 hFE--Ic

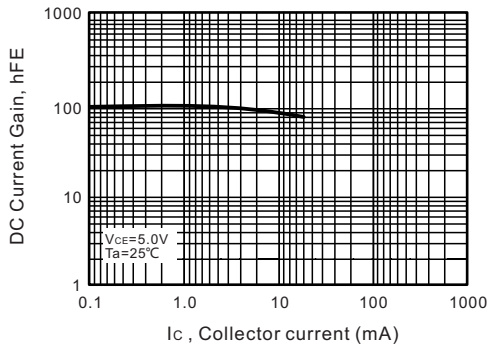


Fig.4 Ic--VBE

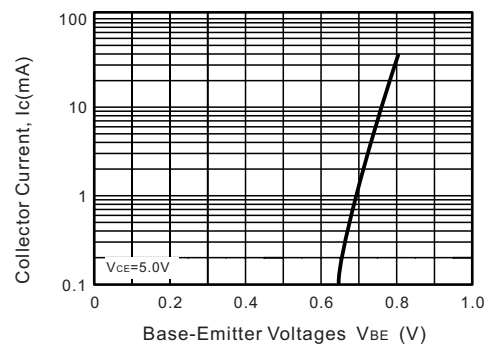


Fig.5 VBEsat--Ic

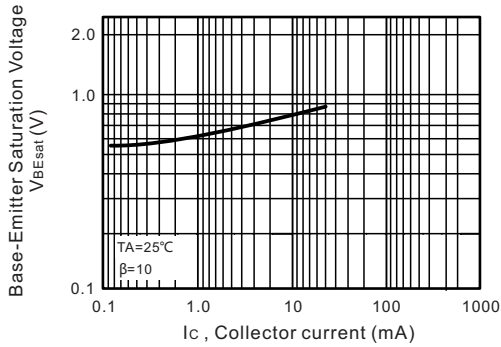


Fig.6 VCEsat--Ic

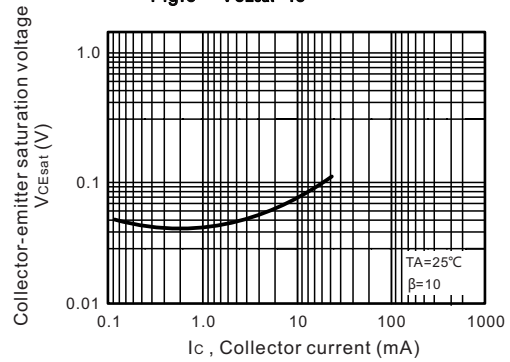


Fig.7 ft--Ic

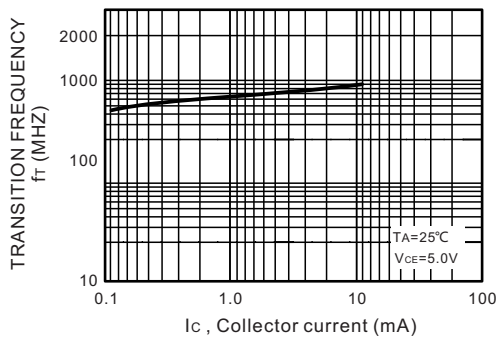
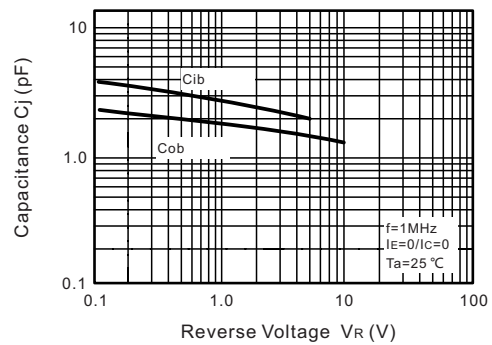


Fig.8 Cob/Cib--Vcb/VEb



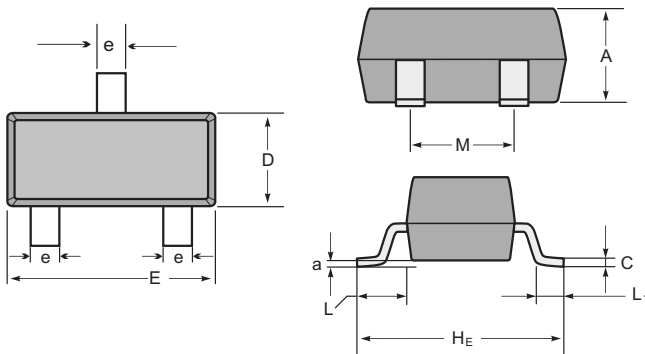
Soldering parameters

Reflow Condition		Pb-Free assembly (see as below)
Pre Heat	-Temperature Min ($T_{s(min)}$)	+150°C
	-Temperature Max ($T_{s(max)}$)	+200°C
	-Time (Min to Max) (ts)	60-180 secs.
Average ramp up rate (Liquid us Temp (T_L) to peak)		3°C/sec. Max
$T_{s(max)}$ to T_L - Ramp-up Rate		3°C/sec. Max
Reflow	-Temperature (T_L) (Liquid us)	+217°C
	-Temperature (t_L)	60-150 secs.
Peak Temp (T_P)		+260(+0/-5)°C
Time within 5°C of actual Peak Temp (t_p)		30 secs. Max
Ramp-down Rate		6°C/sec. Max
Time 25°C to Peak Temp (T_P)		8 min. Max
Do not exceed		+260°C



Package Dimensions & Suggested Pad Layout

SOT23



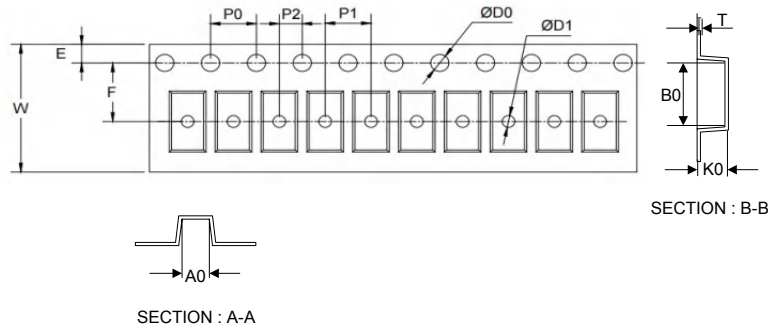
SOT-23 mechanical data

UNIT	A	C	D	E	He	e	M	L	L1	a	
mm	max	1.1	0.15	1.4	3.0	2.6	0.5	1.95	0.55 (ref)	0.36 (ref)	0.0
	min	0.9	0.08	1.2	2.8	2.2	0.3	1.7			0.15
mil	max	43	6	55	118	102	20	77	22 (ref)	14 (ref)	0.0
	min	35	3	47	110	87	12	67			6

Dimensions	SOT23
Z	2.9
X	0.8
Y	0.9
C	2.0
E	1.35

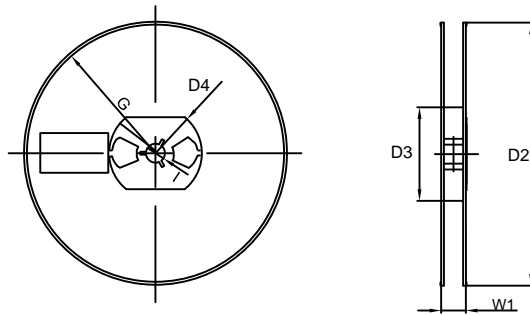
Tape & reel specification

Tape



Symbol	Dimension (mm)
P0	4.00±0.10
P1	4.00±0.10
P2	2.00±0.10
D0	1.55±0.10
D1	1.05±0.10
E	1.55±0.10
F	3.60±0.10
W	8.00±0.10
A0	3.80±0.20
B0	3.25±0.20
K0	1.45±0.10
T	0.25±0.05
D2	178.0±3.0
D3	55Min.
D4	R24.0±3.0
G	R82.0±3.0
I	13.0±2.0
W1	11.0±3.0

7" Reel



Quantity: 3000PCS