

Descriptions

Silicon NPN transistor in a SOT-23 Plastic Package.

Features

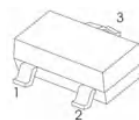
Low $V_{CE(sat)}$, high current.

Applications

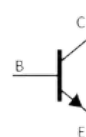
General purpose switching and muting
LCD back-lighting
Supply line switching circuits.

HZC

SOT-23



1.BASE
2.EMITTER
3.COLLECTOR



SOT-23

Absolute Maximum Rating

Parameter	Symbol	Rating	Unit
Collector to Base Voltage	V_{CBO}	50	V
Collector to Emitter Voltage	V_{CEO}	50	V
Emitter to Base Voltage	V_{EBO}	5	V
Collector Current	I_C	2	A
Peak Collector Current	I_{CM}	5	A
Base Current	I_B	0.5	A
Total Power Dissipation	$P_{tot(1)}$	300	mW
	$P_{tot(2)}$	1.2	W
Junction Temperature	T_j	150	°C
Storage Temperature Range	T_{stg}	-65~150	°C

Electrical Characteristics (TA=25°C unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector Cut-Off Current	I_{CBO}	$V_{CB}=50V$ $I_E=0$			100	nA
		$V_{CB}=50V$ $I_E=0$ $T_J=150^{\circ}C$			50	μA
Emitter Cut-Off Current	I_{EBO}	$V_{EB}=5.0V$ $I_C=0$			100	nA
DC Current Gain	$h_{FE(1)}$	$V_{CE}=2.0V$ $I_C=100mA$	300			
	$h_{FE(2)}$	$V_{CE}=2.0V$ $I_C=500mA$	300			
	$h_{FE(3)*}$	$V_{CE}=2.0V$ $I_C=1.0A$	300			
	$h_{FE(4)*}$	$V_{CE}=2.0V$ $I_C=2.0A$	200			
	$h_{FE(5)*}$	$V_{CE}=2.0V$ $I_C=3.0A$	100			
Collector-Emitter Saturation Voltage	$V_{CE(sat)(1)}$	$I_C=500mA$ $I_B=50mA$			80	mV
	$V_{CE(sat)(2)*}$	$I_C=2.0A$ $I_B=100mA$			280	mV
Equivalent On-Resistance	$R_{CE(sat)*}$	$I_C=2.0A$ $I_B=200mA$		100	130	$m\Omega$
Base-Emitter Saturation Voltage	$V_{BE(sat)*}$	$I_C=2.0A$ $I_B=100mA$			1.1	V
		$I_C=3.0A$ $I_B=300mA$			1.2	V
Base-Emitter Voltage	$V_{BE(ON)*}$	$V_{CE}=2.0V$ $I_C=1.0A$			1.2	V
Transition Frequency	f_T	$V_{CE}=5.0V$ $I_C=100mA$ $f=100MHz$	100			MHz
Collector Capacitance	C_C	$V_{CB}=10V$ $I_E=0$ $f=1.0MHz$			25	pF

RATING AND CHARACTERISTIC CURVES

Fig 1. HFE vs. IC

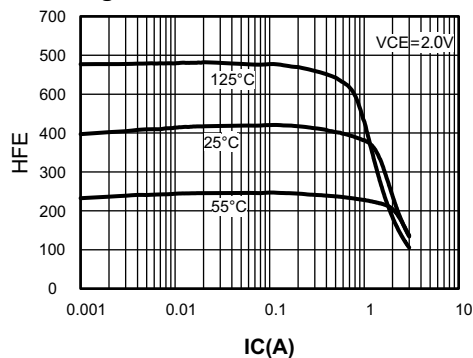


Fig 2. IC vs. VCE

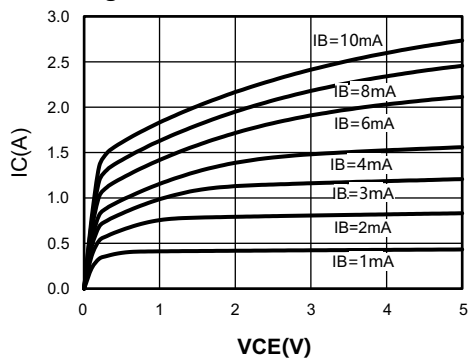


Fig 3. VCE vs. IB

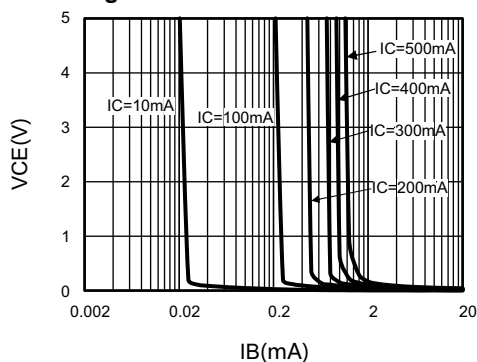


Fig 4. VBE(on) vs. IC

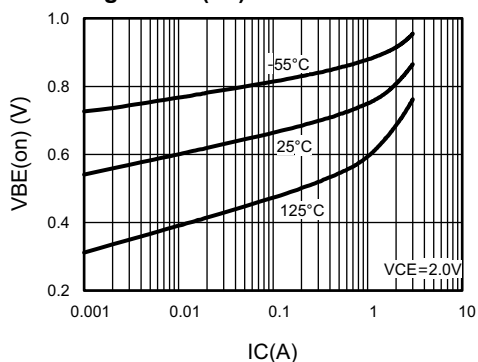


Fig 5. VBE(sat) vs. IC

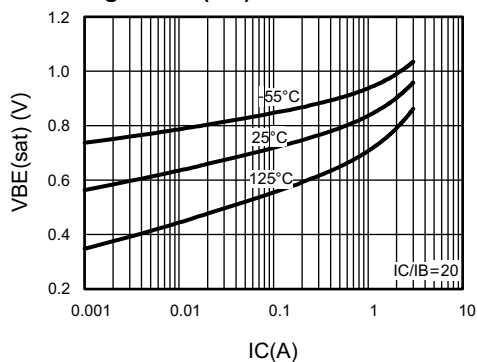


Fig 6. VCE(sat) vs. IC

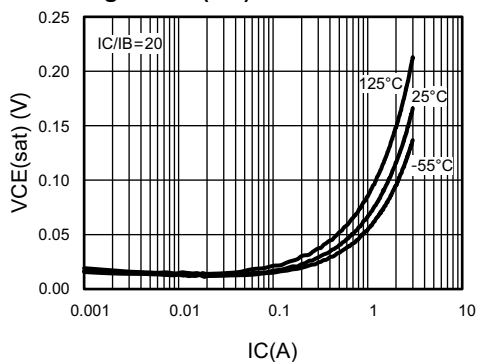
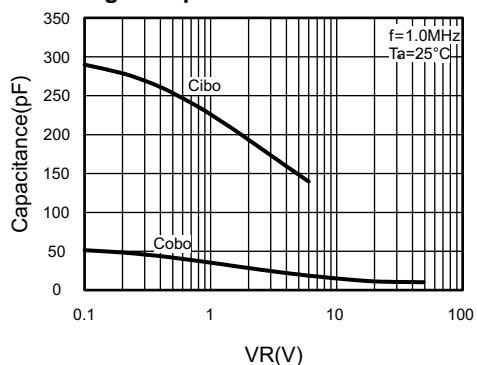
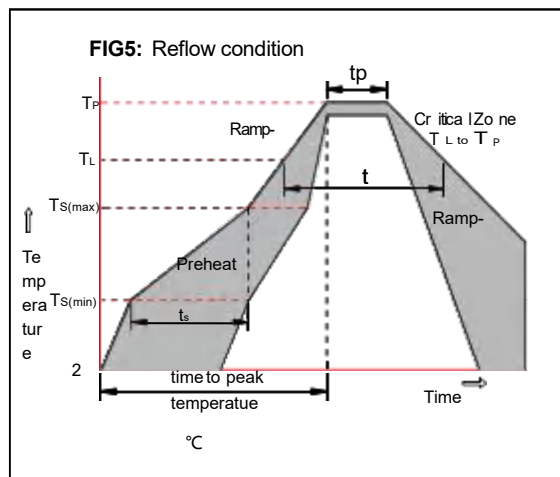


Fig 7. Capacitance



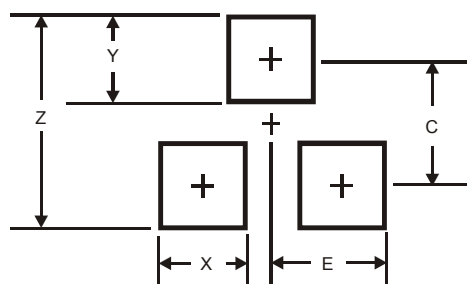
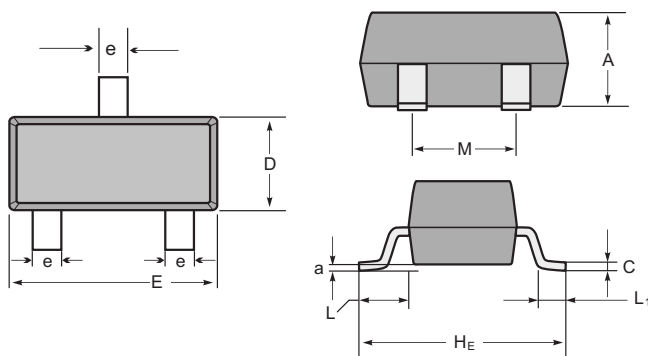
Soldering parameters

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

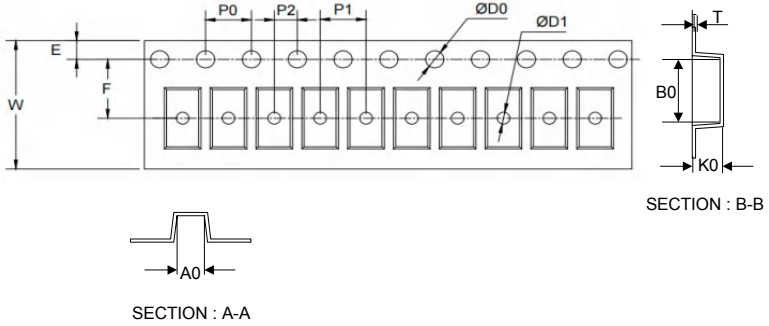
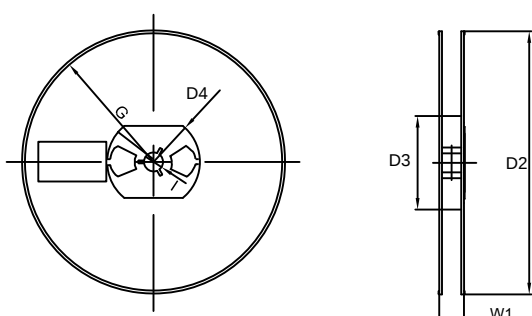


SOT-23 mechanical data

UNIT	A	C	D	E	H _E	e	M	L	L ₁	a
mm	max	1.1	0.15	1.4	3.0	2.6	0.5	1.95	0.55 (ref)	0.36 (ref)
	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)
	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)
 SECTION : A-A SECTION : B-B		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
7" Reel 		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
		Quantity: 3000PCS	