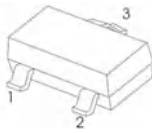
FEATURES

- High saturation voltage
- Complementary to FMMT591
- Excellent H_{FE} Linearity
- R_{SAT} = 188mΩ for a low equivalent on-resistance
- h_{FE} characterised up to -2A for high current gain hold up

SOT-23



591

1.BASE
2.EMITTER
3.COLLECTOR

MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

MAXIMUM RATING @ Ta=25℃ unless otherwise specified

Symbol	Parameter	Value	Units
V_{CBO}	Collector-Base Voltage	-80	V
V_{CEO}	Collector-Emitter Voltage	-60	V
V_{EBO}	Emitter-Base Voltage	-5	V
I_C	Collector Current -Continuous	-1	A
I_{CM}	Collector Current -Peak	-2	A
P_D	Power Dissipation *1	500	mW
$R_{\theta JA}$	Thermal Resistance Junction-to-Air *2	191	°C/W
$R_{\theta JC}$	Thermal Resistance Junction-to-Case *2	74	°C/W
$R_{\theta JL}$	Thermal Resistance Junction-to-Lead *2	45	°C/W
T_J, T_{STG}	Junction and Storage Temperature	-55 to +150	°C

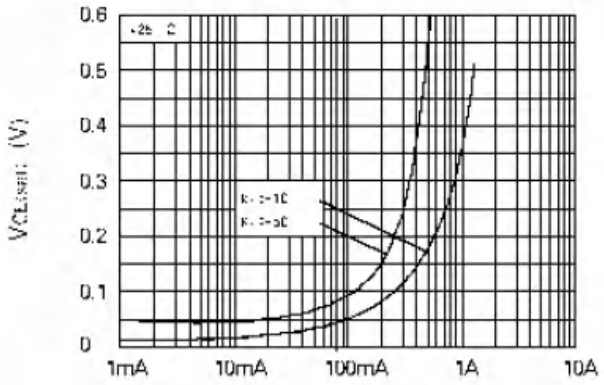
Notes:

1. For a device mounted with the collector lead on 15mm × 15mm 1oz copper that is on a single-sided FR-4 PCB; device is measured under still air conditions whilst operating in a steady-state
2. The data tested by surface mounted on a 15mm * 15mm * 1mm FR4-epoxy P.C.B

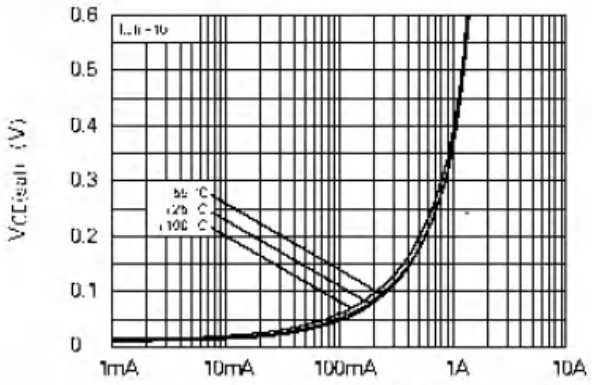
Electrical Characteristics Ta = 25℃

Parameter	Symbol	Test conditions	MIN	TYP	MAX	UNIT
Collector-base breakdown voltage	$V_{(BR)CBO}$	I_C=-100μA,I_E=0	-80			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	I_C=-10mA,I_B=0	-60			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	I_E=-100μA,I_C=0	-5			V
Collector cut-off current	I_{CBO}	V_{CB}=-60V,I_E=0			-0.1	μA
Emitter cut-off current	I_{EBO}	V_{EB}=-4V,I_C=0			-0.1	μA
DC current gain	h_{FE}	V_{CE}=-5V,I_C=-1mA V_{CE}=-5V,I_C=-500mA V_{CE}=-5V,I_C=-1A V_{CE}=-5V,I_C=-2A	100 100 80 15		300	
Collector-emitter saturation voltage	$V_{CE(sat)}$	I_C=-500mA, I_B=-50mA I_C=-1A, I_B= -100mA			-0.3 -0.6	V
Base-emitter saturation voltage	$V_{BE(sat)}$	I_C=-1A, I_B= -100mA			-1.2	V
Base-emitter voltage	V_{BE}	V_{CE}=-5V,I_C=-1A			-1	V
Transition frequency	f_T	V_{CE}=-10V, I_C= -50mA f=100MHz	150			MHz
Collector output capacitance	C_{ob}	V_{CB}=-10V,I_E=0,f=1MHz			10	pF

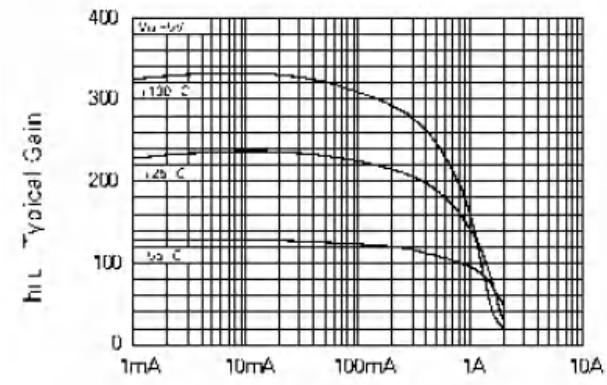
RATING AND CHARACTERISTIC CURVES



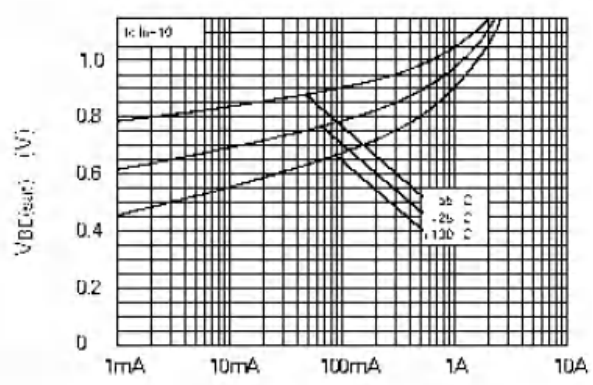
VCE(sat) v IC



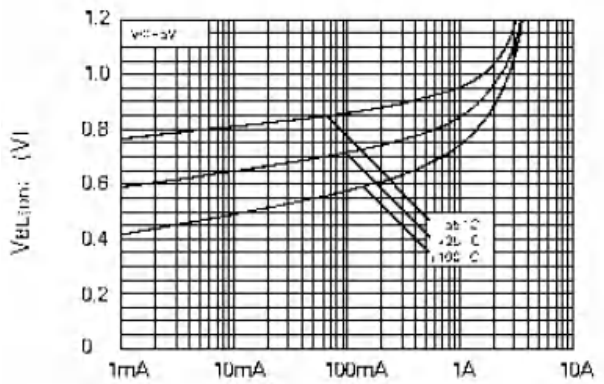
VCE(sat) v IC



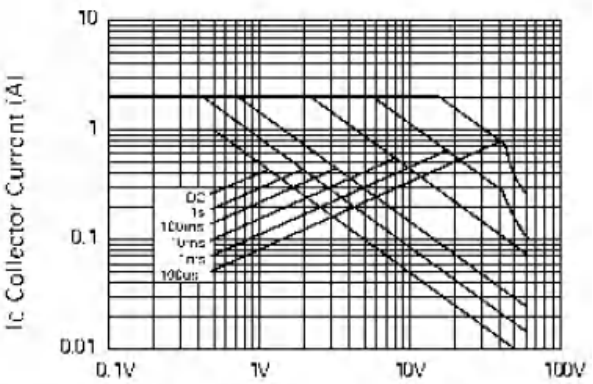
hFE V IC



VBE(sat) v IC



VBE(on) v IC

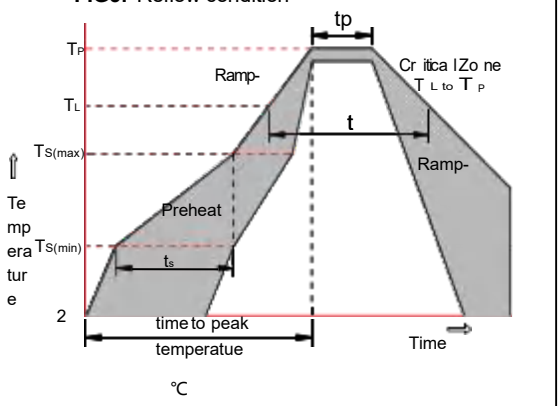


Safe Operating Area

Soldering parameters

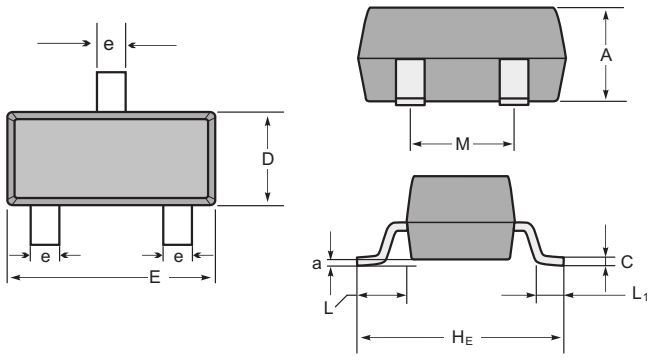
Reflow Condition		Pb-Free assembly (see as bellow)
Pre Heat	-Temperature Min ($T_{s(min)}$)	+150℃
	-Temperature Max($T_{s(max)}$)	+200℃
	-Time (Min to Max) (ts)	60-180 secs.
Average ramp up rate (Liquid us Temp (T_L) to peak)		3℃/sec. Max
$T_{s(max)}$ to T_L - Ramp-up Rate		3℃/sec. Max
Reflow	-Temperature(T_L)(Liquid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

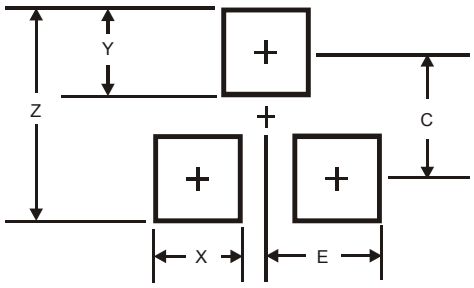
FIG5: Reflow condition



Package Dimensions & Suggested Pad Layout

SOT23





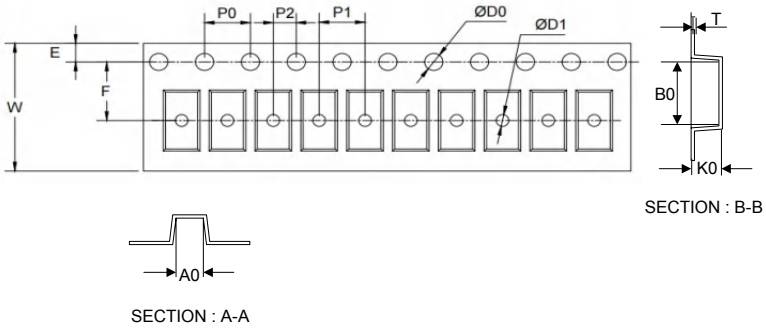
SOT-23 mechanical data

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)	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

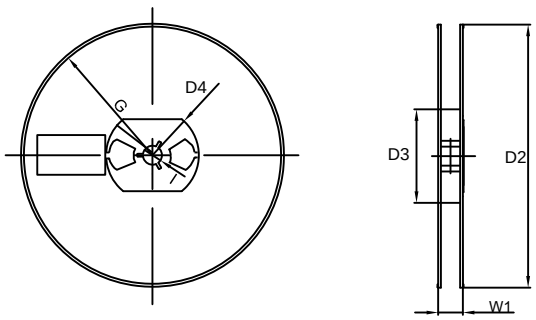
Tape & rell specification

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

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	