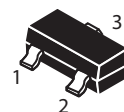
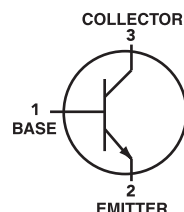


### NPN Transistors

 Lead(Pb)-Free



**SOT-23**

### MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	$V_{CEO}$	50	Vdc
Collector-Base Voltage	$V_{CBO}$	60	Vdc
Emitter-Base Voltage	$V_{EBO}$	5.0	Vdc
Collector Current-Continuous	$I_C$	150	mAdc

### THERMAL CHARACTERISTICS

Characteristics	Symbol	Max	Unit
Total Device Dissipation FR-5 Board (1) $T_A=25^{\circ}\text{C}$	$P_D$	200	mW
Derate above $25^{\circ}\text{C}$		1.6	mW/ $^{\circ}\text{C}$
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	625	$^{\circ}\text{C/W}$
Junction and Storage, Temperature	$T_J, T_{stg}$	-55 to +150	$^{\circ}\text{C}$

### DEVICE MARKING

C945LT1=CR

### ELECTRICAL CHARACTERISTICS

Characteristics	Symbol	Min	Max	Unit
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### OFF CHARACTERISTICS

Collector-Emitter Breakdown Voltage ( $I_C=100\text{ uAdc}, I_E=0$ )	$V_{(BR)CEO}$	50	-	Vdc
Collector-Base Breakdown Voltage ( $I_C=1\text{ mAdc}, I_E=0$ )	$V_{(BR)CBO}$	60	-	Vdc
Emitter-Base Breakdown Voltage ( $I_E=100\text{ uAdc}, I_C=0$ )	$V_{(BR)EBO}$	5.0	-	Vdc
Collector Cutoff Current ( $V_{CE}=60\text{ Vdc}, I_E=0$ )	$I_{CEO}$	-	0.1	uAdc
Collector Cutoff Current ( $V_{CB}=45\text{ Vdc}, I_E=0$ )	$I_{CBO}$	-	0.1	uAdc
Emitter Cutoff Current ( $V_{EB}=5.0\text{ Vdc}, I_C=0$ )	$I_{EBO}$	-	0.1	uAdc

1.FR-5=1.0 x 0.75 x 0.062 in

**ELECTRICAL CHARACTERISTICS** ( $T_A=25^{\circ}\text{C}$  unless otherwise noted) (Continued)

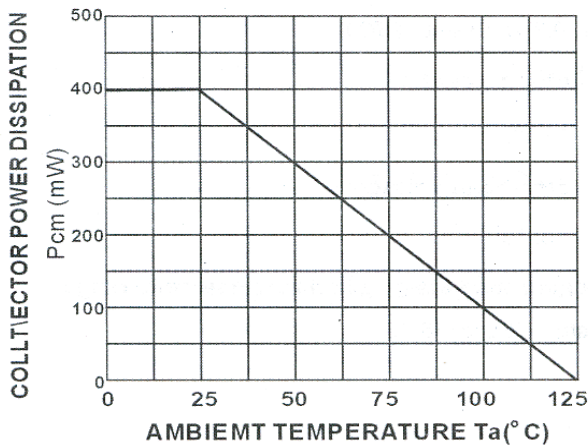
Characteristics	Symbol	Min	Typ	Max	Unit
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**ON CHARACTERISTICS**

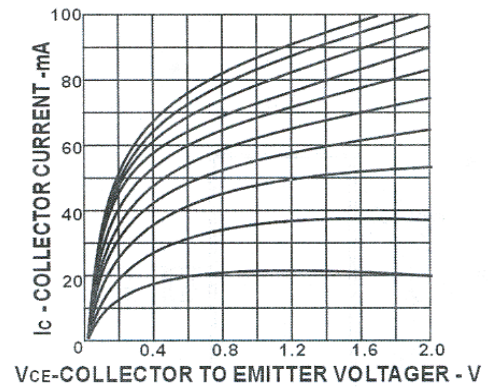
DC Current Gain ( $I_C=1\text{ mA}$ , $V_{CE}=6.0\text{ Vdc}$ )	$h_{FE}$	130	-	400	-
Collector-Emitter Saturation Voltage ( $I_C=100\text{ mA}$ , $I_B=10\text{ mA}$ )	$V_{CE(sat)}$	-	-	0.3	Vdc
Base-Emitter Voltage ( $I_E=310\text{ mA}$ )	$V_{BEF}$	-	-	1.4	V
Transition Frequency ( $I_C=10\text{ mA}$ , $V_{CE}=6\text{ Vdc}$ , $f=30\text{ MHz}$ )	$f_T$	150	-	-	MHz

**CLASSIFICATION OF  $h_{FE}$** 

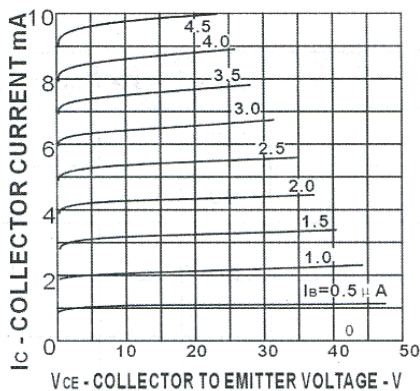
Rank	L	H
Range	130-200	200-400



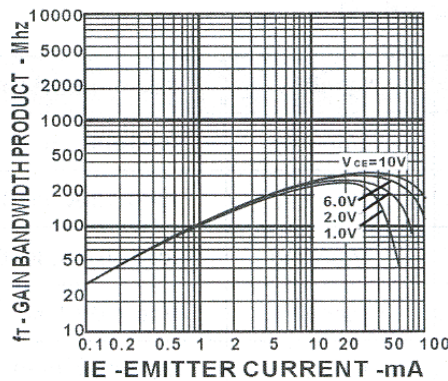
**FIG1. Total Power Dissipation vs Ambient Temperature**



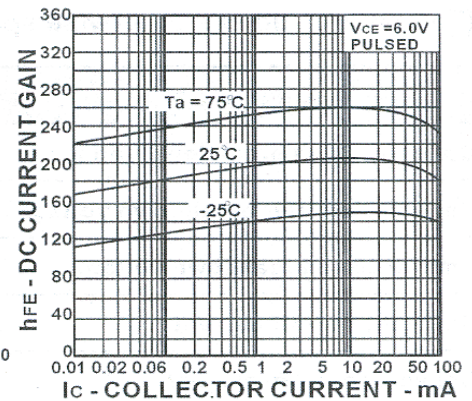
**FIG2. Collector Current vs Collector to Emitter Voltage**



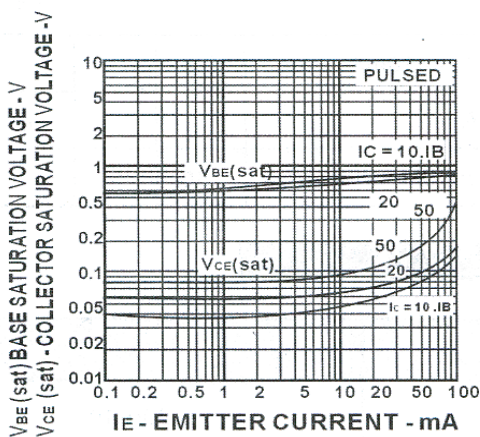
**FIG3. Collector Current vs Collector to Emitter Voltage**



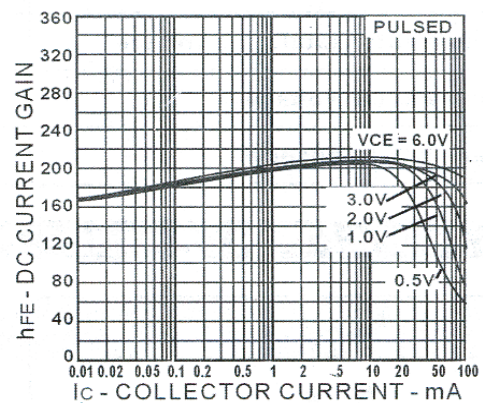
**FIG4. Gain Bandwidth Product vs Emitter Current**



**FIG5. DC Current Gain vs Collector Current**



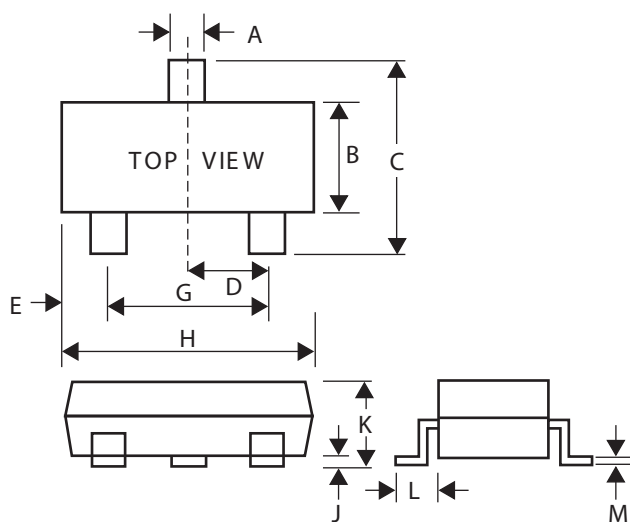
**FIG6. Collector and Base Saturation Voltage vs Collector Current**



**FIG7. DC Current Gain vs Collector Current**

**SOT-23 Package Outline Dimensions**

Unit:mm



Dim	Min	Max
A	0.35	0.51
B	1.19	1.40
C	2.10	3.00
D	0.85	1.05
E	0.46	1.00
G	1.70	2.10
H	2.70	3.10
J	0.01	0.13
K	0.89	1.10
L	0.30	0.61
M	0.076	0.25