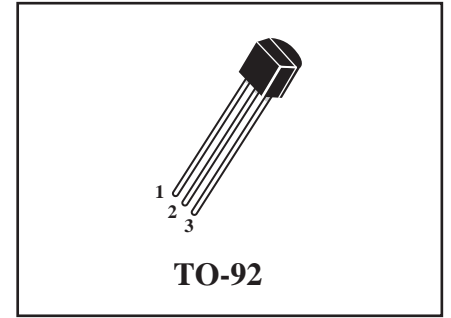
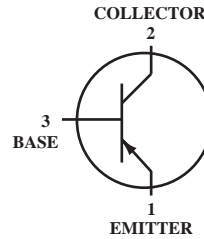


### PNP General Purpose Transistor

**(Pb)** Lead(Pb)-Free



### Maximum Ratings ( $T_A=25^{\circ}\text{C}$ unless otherwise noted)

Rating	Symbol	1116	1116A	Unit
Collector-Base Voltage	$V_{CBO}$	-60	-80	V
Collector-Emitter Voltage	$V_{CEO}$	-50	-60	V
Emitter-Base Voltage	$V_{EBO}$	-6.0	-6.0	V
Collector Current Continuous	$I_C$	1000		mA

### THERMAL CHARACTERISTICS

Characteristics	Symbol	Max	Unit
Total Device Dissipation Alumina Substrate, $T_A=25^{\circ}\text{C}$	$P_D$	750	mW
Junction Temperature	$T_J$	+150	$^{\circ}\text{C}$
Storage Temperature	$T_{stg}$	-55 to +150	$^{\circ}\text{C}$

### ELECTRICAL CHARACTERISTICS

Characteristics	Symbol	Min	Max	Unit
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### OFF CHARACTERISTICS

Collector-Base Breakdown Voltage ( $I_C=-100\mu\text{A}$ , $I_E=0$ )	1116	$V_{(BR)CBO}$	-60	-	V
	1116A		-80	-	
Collector-Emitter Breakdown Voltage ( $I_C=-1\text{mA}$ , $I_B=0$ )	1116	$V_{(BR)CEO}$	-50	-	V
	1116A		-60	-	
Emitter-Base Breakdown Voltage ( $I_E=-100\mu\text{A}$ , $I_C=0$ )	1116 1116A	$V_{(BR)EBO}$	-6.0	-	V

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

Characteristics	Symbol	Min	Max	Unit
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**OFF CHARACTERISTICS**

Collector Cut-off Current $V_{CB}=-60\text{V}, I_E=0$ $V_{CB}=-80\text{V}, I_E=0$	1116 1116A	$I_{CBO}$	-	-0.1	$\mu\text{A}$
Emitter Cut-off Current $V_{EB}=-6\text{V}, I_C=0$		$I_{EBO}$	-	-0.1	$\mu\text{A}$

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

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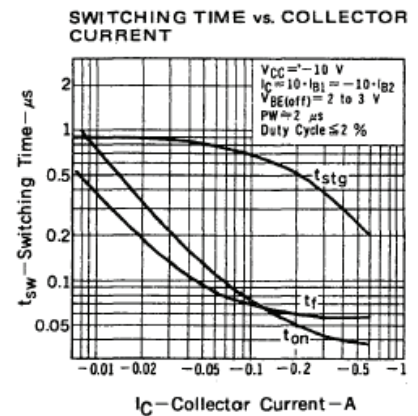
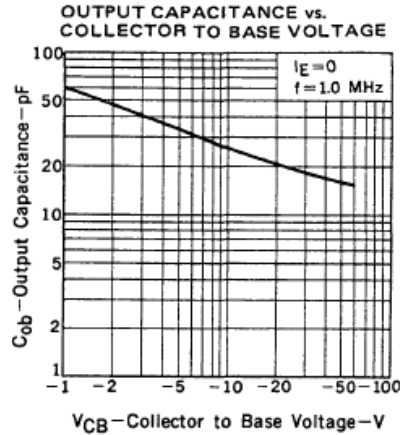
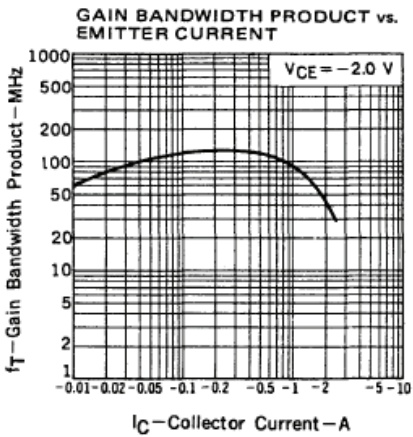
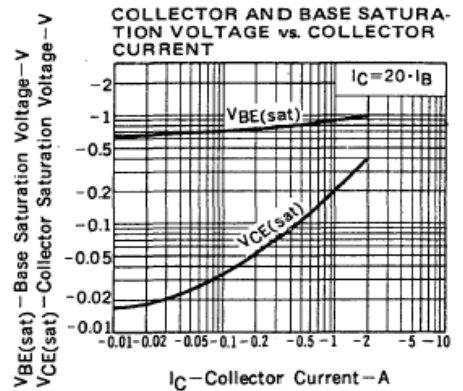
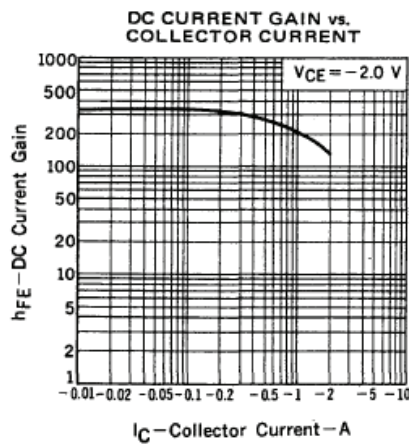
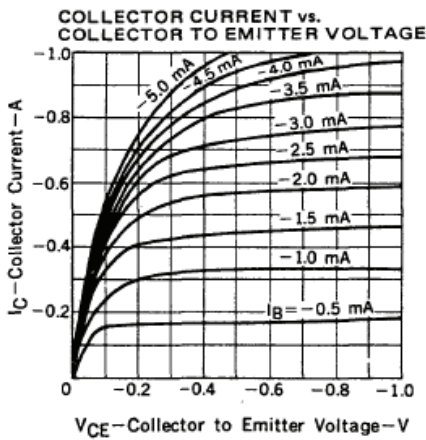
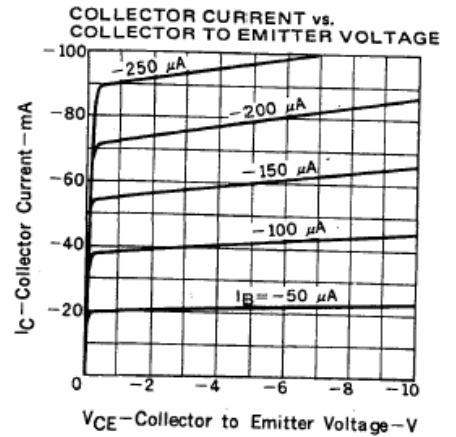
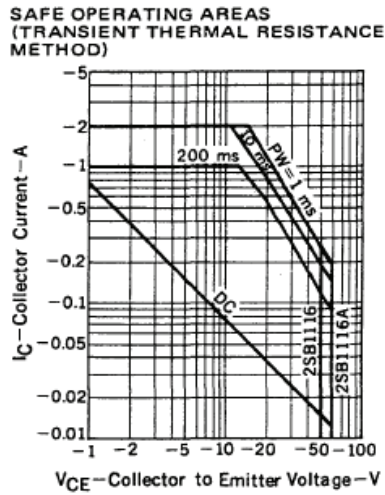
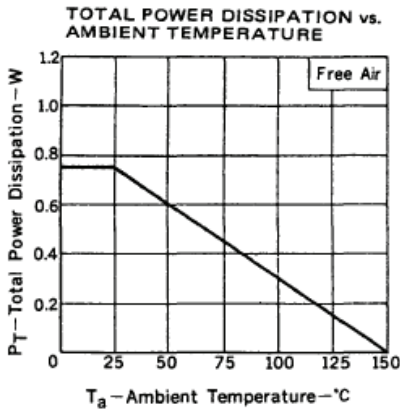
**ON CHARACTERISTICS**

DC current gain $V_{CE}=-2\text{V}, I_C=-0.1\text{A}$ $V_{CE}=-2\text{V}, I_C=-1\text{A}$	$h_{FE}$	135 81		600	
Collector emitter saturation voltage $I_C=-1\text{A}, I_B=-50\text{mA}$	$V_{CE(sat)}$	-	-	-0.3	V
Base emitter saturation voltage $I_C=-1\text{A}, I_B=-50\text{mA}$	$V_{BE(sat)}$	-	-	-1.2	V
Base emitter voltage $V_{CE}=-2\text{V}, I_C=-0.05\text{A}$	$V_{BE}$	-0.6	-	-0.7	V
Transition frequency $V_{CE}=-2\text{V}, I_C=-0.1\text{A}$	$f_T$	70	-	-	MHz
Transition frequency $V_{CB}=-10\text{V}, I_E=0, f=1\text{MHz}$	$C_{ob}$	-	25	-	pF
Transition frequency $V_{CC}=-10\text{V}, I_C=-0.1\text{A}, I_{B1}=-I_{B2}=-0.01\text{A}, V_{BE(off)}=2\text{ to }3\text{V}$	$t_{on}$	-	0.07	-	$\mu\text{s}$
Transition frequency $V_{CC}=-10\text{V}, I_C=-0.1\text{A}, I_{B1}=-I_{B2}=-0.01\text{A}, V_{BE(off)}=2\text{ to }3\text{V}$	$t_s$	-	0.7	-	
Transition frequency $V_{CC}=-10\text{V}, I_C=-0.1\text{A}, I_{B1}=-I_{B2}=-0.01\text{A}, V_{BE(off)}=2\text{ to }3\text{V}$	$t_f$	-	0.07	-	

**CLASSIFICATION OF  $h_{FE}(1)$** 

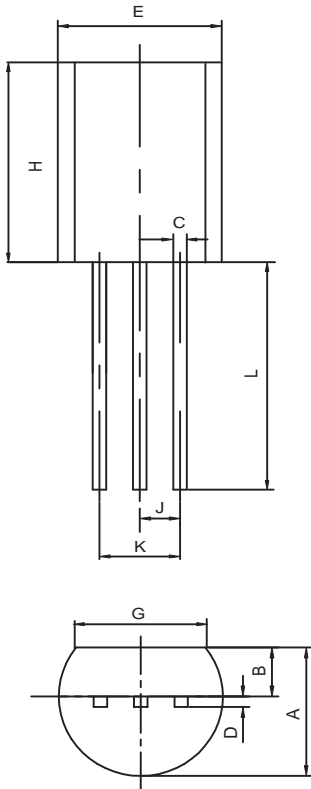
Rank	L	K	U
Range	135-270	200-400	300-600

# Typical Characteristics



**TO-92OutlineDimensions**

unit:mm



<b>TO-92</b>		
<b>Dim</b>	<b>Min</b>	<b>Max</b>
<b>A</b>	3.30	3.70
<b>B</b>	1.10	1.40
<b>C</b>	0.38	0.55
<b>D</b>	0.36	0.51
<b>E</b>	4.40	4.70
<b>G</b>	3.43	-
<b>H</b>	4.30	4.70
<b>J</b>	1.270TYP	
<b>K</b>	2.44	2.64
<b>L</b>	14.10	14.50