



1.Features

- 4.5 Amps continuous current
- Up to 20 Amps peak current
- Very low saturation voltage
- Very low leakage
- Exceptional gain linearity down to 10mA
- Spice model available

2.Mechanical Data

- Case:Molded Plastic,TO-92
- Epoxy:UL 94V-0 rate flame retardant
- Terminals:Plated Leads Solderable per MIL-STD-750,Method-2026.
- Marking: marked on body.
- Mounting Position : Any.
- Equivalent Circuit:

TO-92



1.E

2.B

3.C

3.Maximum Ratings

Rating at 25°C Ambient temperature unless otherwise specified

Characteristics	Symbol	value	Unit
Collector-Base Voltage	BV_{CBO}	-40	V
Collector-Emitter Voltage	BV_{CEO}	-25	V
Emitter-Base Voltage	BV_{EBO}	-6	V
Continuous Collector Current	I_C	-4.5	A
Peak Collector Current	I_{CM}	-20	A
Practical Power Dissipation*	P_{totp}	1.58	W
Power Dissipation at $T_{amb}=25^{\circ}C$	P_{tot}	1.2	W
Operating and Storage Temperature Range	$T_j ; T_{stg}$	-55~+200	$^{\circ}C$

*The power which can be dissipated assuming the device is mounted in a typical manner on a P.C.B. with copper equal to 1 inch square minimum

**4. Electrical Characteristics ($T_A=25^{\circ}\text{C}$ unless otherwise noted)**

Parameters	Symbol	Condition	Min	TYP	Max	Unit
Collector-base breakdown voltage	BV_{CBO}	$I_C = -100\mu\text{A}$	-40	-55	-	V
Collector-emitter breakdown voltage	BV_{CER}	$I_C = -1\mu\text{A}, R_B \leq 1\text{k}\Omega$	-40	-55	-	V
Collector-emitter breakdown voltage	BV_{CEO}	$I_C = -10\text{mA}$	-20	-30	-	V
Emitter-base breakdown voltage	BV_{EBO}	$I_E = -100\mu\text{A}$	-6	-8	-	V
Collector cut-off current	I_{CBO}	$V_{CB} = -30\text{V}$	-	-	-50	nA
		$V_{CB} = -30\text{V}, T_{amb}=100^{\circ}\text{C}$	-	-	-1	μA
Collector cut-off current ($R_B \leq 1\text{k}\Omega$)	I_{CBR}	$V_{CB} = -30\text{V}$	-	-	-50	nA
		$V_{CB} = -30\text{V}, T_{amb}=100^{\circ}\text{C}$	-	-	-1	μA
Emitter cut-off current	I_{EBO}	$V_{CB} = -6\text{V}$	-	-	-10	μA
Collector-emitter saturation voltage*	$V_{CE(sat)}$	$I_C = -0.5\text{A}, I_B = -10\text{mA}$	-	-45	-100	mV
		$I_C = -2\text{A}, I_B = -0.2\text{A}$		-90	-150	
		$I_C = -4\text{A}, I_B = -0.4\text{A}$		-180	-250	
		$I_C = -5\text{A}, I_B = -0.3\text{A}$		-230	-310	
Base -emitter saturation voltage*	$V_{BE(sat)}$	$I_C = -5\text{A}, I_B = -0.3\text{A}$		-0.96	-1.1	V
Base-Emitter Turn-On Voltage	$V_{BE(on)}$	$V_{CE} = -1\text{V}, I_C = -5\text{A}$		-0.86	-1	V
DC current gain	h_{FE}	$V_{CE} = -1\text{V}, I_C = -10\text{mA}$	100	200	300	-
		$V_{CE} = -1\text{V}, I_C = -1\text{A}$	100	200		
		$V_{CE} = -1\text{V}, I_C = -5\text{A}$	75	160		
		$V_{CE} = -1\text{V}, I_C = -10\text{A}$	60	130		
		$V_{CE} = -1\text{V}, I_C = -20\text{A}$	15	40		
Transition frequency	f_T	$V_{CE} = -10\text{V}, I_B = -100\text{mA}$ $f=50\text{MHz}$	-	80	-	MHz
Output Capacitance	C_{ob}	$V_{CB} = -10\text{V}, f=50\text{MHz}$	-	163	-	pF
Switching Times	t_{on}	$I_C = -4\text{A}, I_{B1} = -0.4\text{A}$	-	120	-	-
	t_{off}	$I_{B2} = -0.4\text{A}, V_{CC} = -10\text{V}$	-	126	-	-
Junction to Ambient	$R_{th(j-amb)}$		-	-	150	$^{\circ}\text{C/W}$
Junction to Case	$R_{th(j-case)}$		-	-	50	$^{\circ}\text{C/W}$

*Measured under pulsed conditions. Pulse width=300 μs . Duty cycle $\leq 2\%$



5. Rating And Characteristic Curves

Figure 1. Derating curve

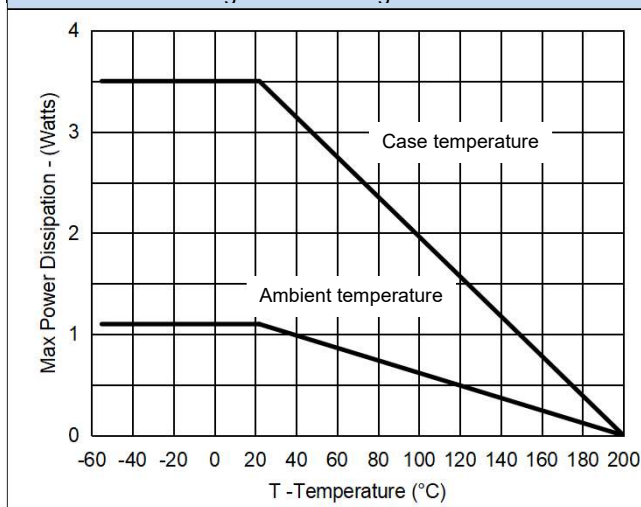


Figure 2. Maximum transient thermal impedance

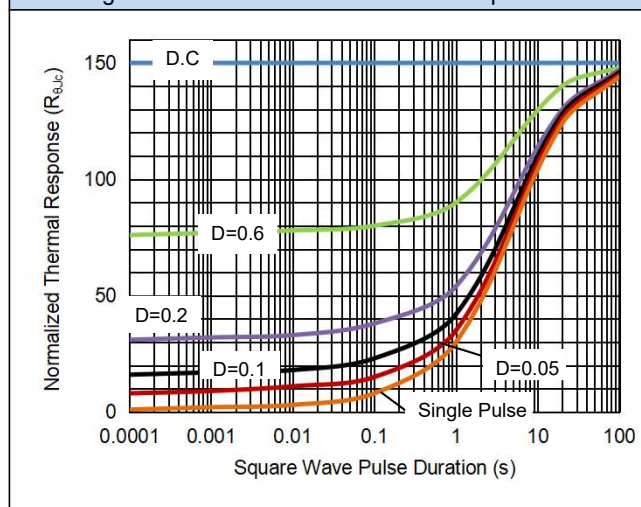


Figure 3. Collector-Emitter Saturation Voltage

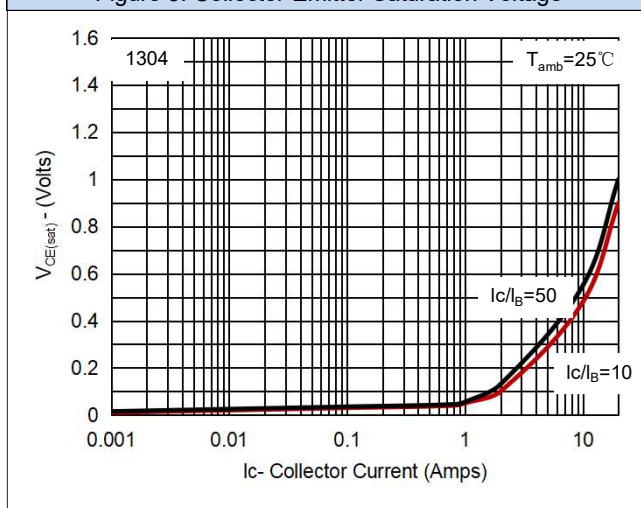


Figure 4. Base-Emitter On Voltage

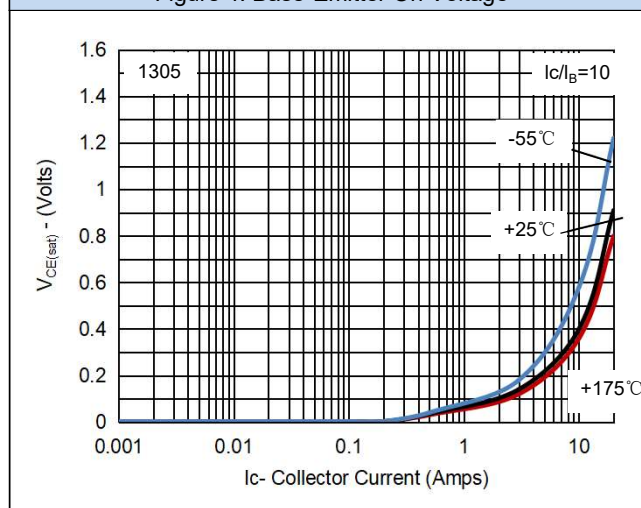


Figure 5. DC current Gain

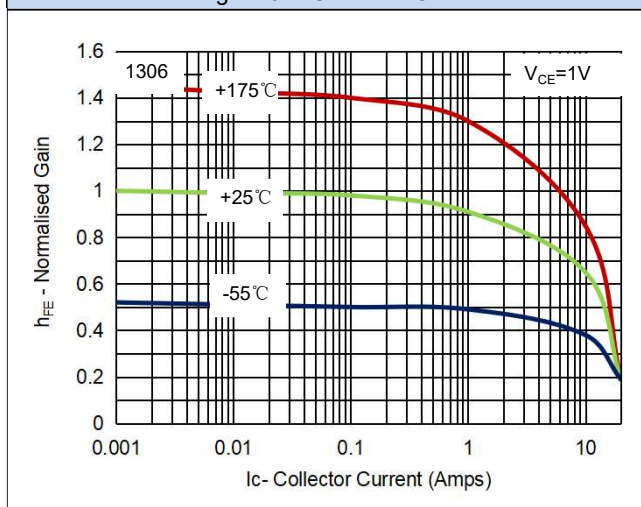
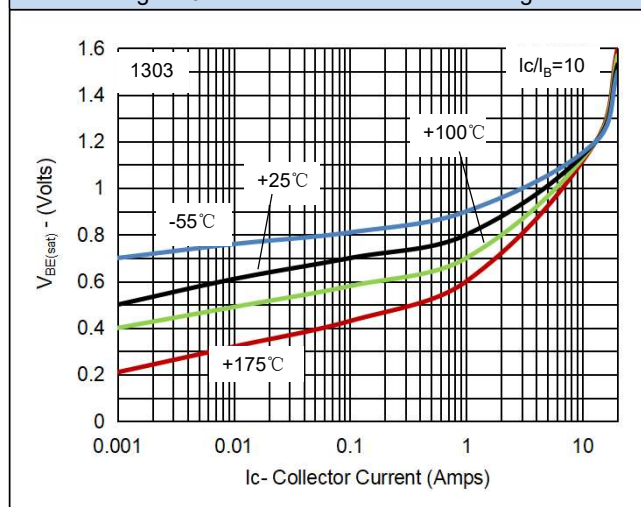


Figure 6. Base-Emitter Saturation Voltage





5. Rating And Characteristic Curves

Figure 7. Base-Emitter Saturation Voltage

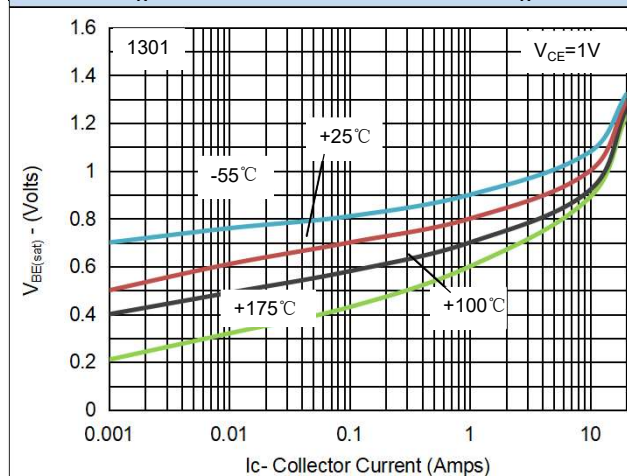
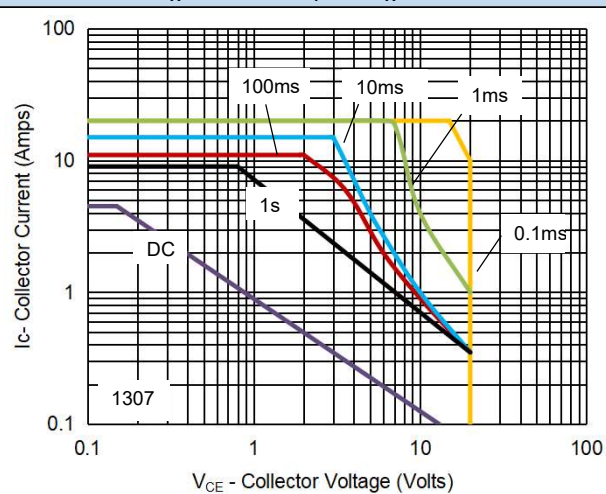
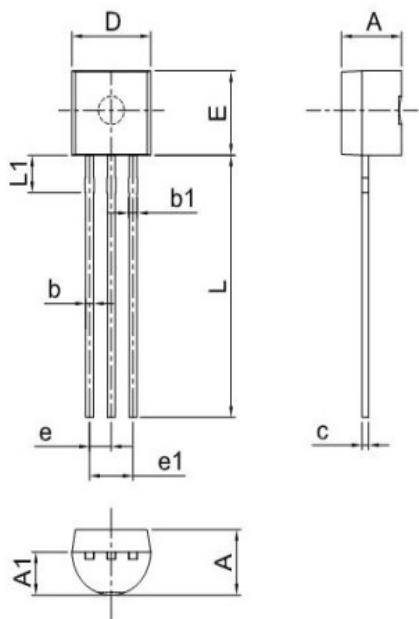


Figure 8. Safe Operating Area



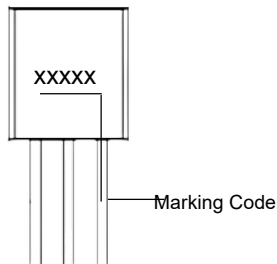


6.Dimensions



Dimensions	Inches		Millimeters	
	Min.	Max.	Min.	Max.
A	0.130	0.146	3.30	3.70
A1	0.083	0.098	2.10	2.50
b	0.016	0.020	0.40	0.50
b1	0.020	0.028	0.50	0.70
c	0.014	0.018	0.35	0.45
D	0.175	0.185	4.45	4.70
E	0.175	0.183	4.45	4.65
e	0.046	0.054	1.17	1.37
e1	0.092	0.104	2.34	2.64
L	0.531	0.571	13.50	14.50
L1	0.071	0.087	1.80	2.20

7. Part Marking System



8. Package Information

Package	Box	Carton
TO92	2000pcs	20,000pcs



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