



TO-92 Plastic-Encapsulate Transistors

3DD13001 TRANSISTOR (NPN)

FEATURES

Power dissipation

$$P_{CM} : 1.25 \text{ W (} T_{amb}=25 \text{)}$$

Collector current

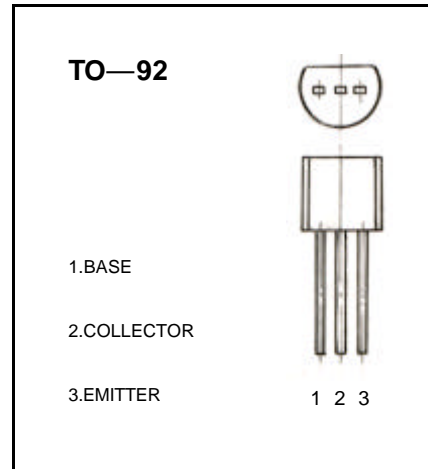
$$I_{CM} : 0.2 \text{ A}$$

Collector-base voltage

$$V_{(BR)CBO} : 600 \text{ V}$$

Operating and storage junction temperature range

$$T_J, T_{stg}: -55 \text{ to } +150$$



ELECTRICAL CHARACTERISTICS ($T_{amb}=25$ unless otherwise specified)

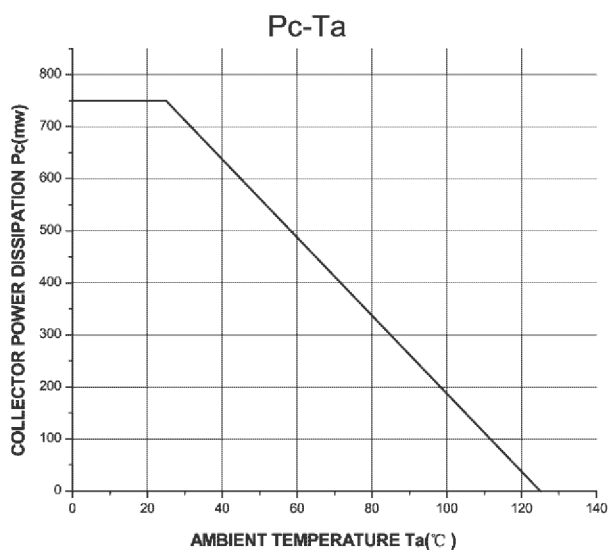
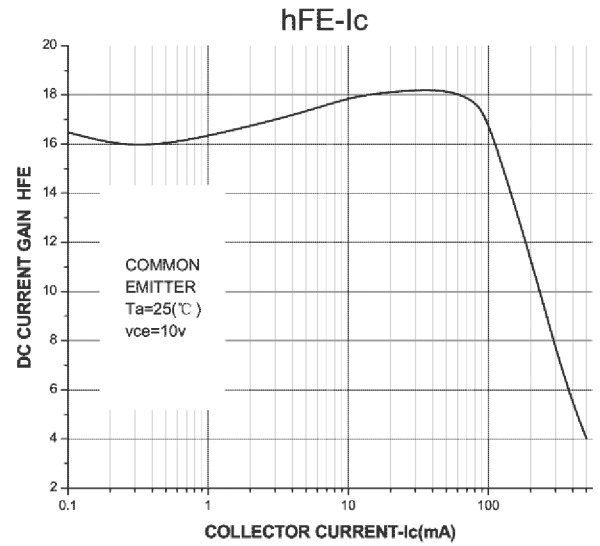
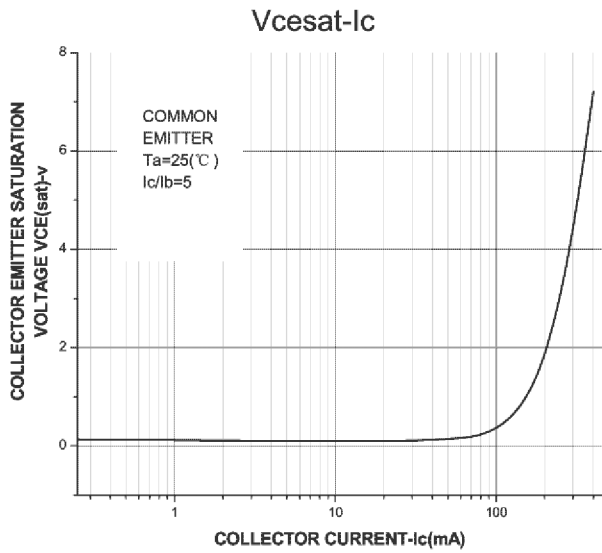
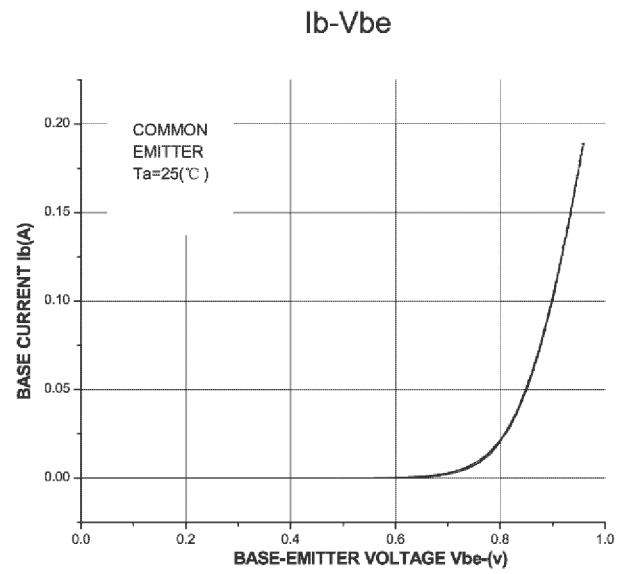
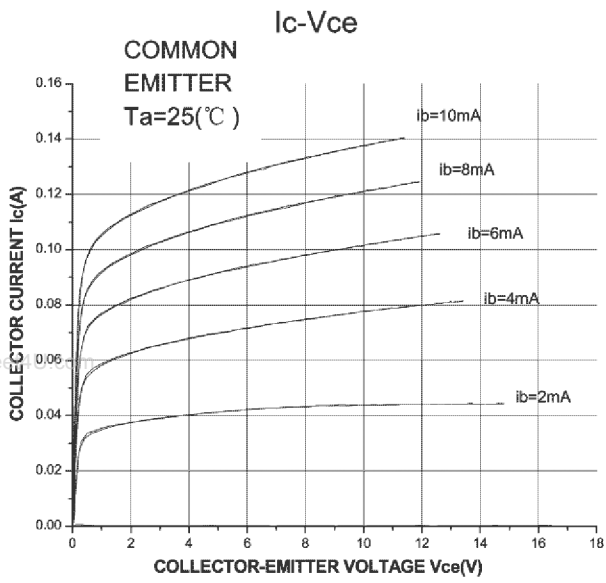
Parameter	Symbol	Test conditions	MIN	TYP	MAX	UNIT
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C=100 \mu A, I_E=0$	600			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C=1 \text{ mA}, I_B=0$	400			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E=100 \mu A, I_C=0$	7			V
Collector cut-off current	I_{CBO}	$V_{CB}=600 \text{ V}, I_E=0$			100	μA
Collector cut-off current	I_{CEO}	$V_{CE}=400 \text{ V}, I_B=0$			200	μA
Emitter cut-off current	I_{EBO}	$V_{EB}=7 \text{ V}, I_C=0$			100	μA
DC current gain	$h_{FE(1)}$	$V_{CE}=20 \text{ V}, I_C=20 \text{ mA}$	10		70	
	$h_{FE(2)}$	$V_{CE}=10 \text{ V}, I_C=0.25 \text{ mA}$	5			
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C=50 \text{ mA}, I_B=10 \text{ mA}$			0.5	V
Base-emitter saturation voltage	$V_{BE(sat)}$	$I_C=50 \text{ mA}, I_B=10 \text{ mA}$			1.2	V
Transition frequency	f_T	$V_{CE}=20 \text{ V}, I_C=20 \text{ mA}$ $f = 1 \text{ MHz}$	8			MHz
Fall time	t_f	$I_C=50 \text{ mA}, I_{B1}=-I_{B2}=5 \text{ mA}$			0.3	μs
Storage time	t_s	$V_{CC}=45 \text{ V}$			1.5	μs

CLASSIFICATION OF $h_{FE(1)}$

Range	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	50-55	55-60	60-65	65-70

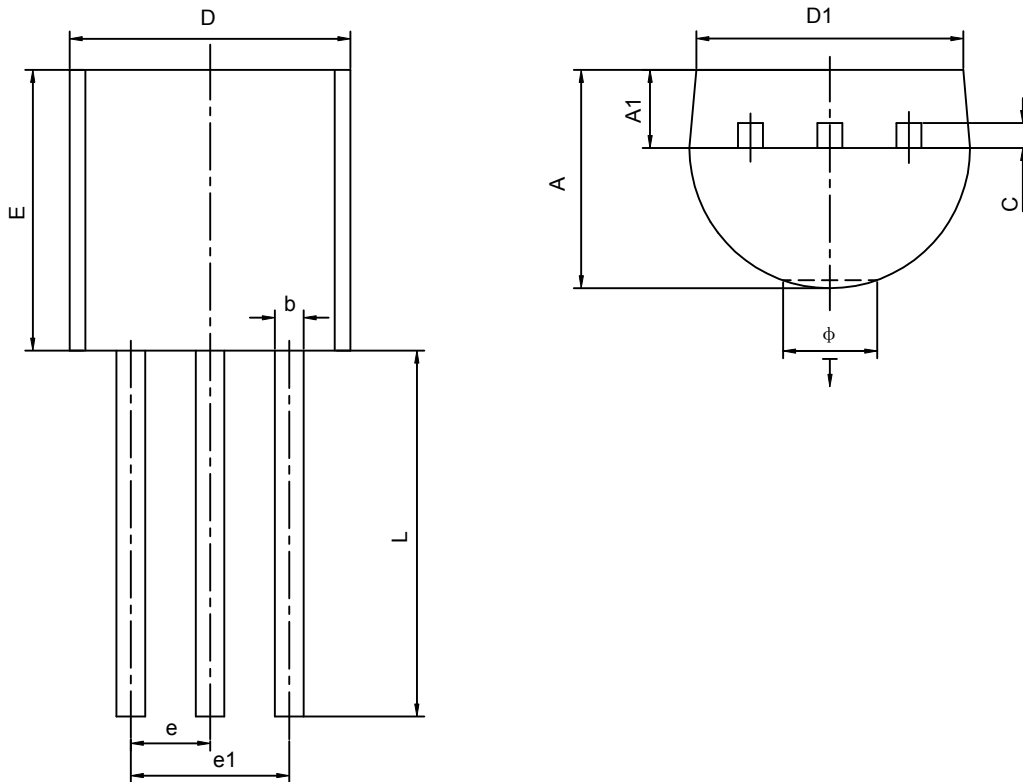
Typical Characteristics

13001



TO-92 PACKAGE OUTLINE DIMENSIONS

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Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	3.300	3.700	0.130	0.146
A1	1.100	1.400	0.043	0.055
b	0.380	0.550	0.015	0.022
c	0.360	0.510	0.014	0.020
D	4.400	4.700	0.173	0.185
D1	3.430		0.135	
E	4.300	4.700	0.169	0.185
e	1.270TYP		0.050TYP	
e1	2.440	2.640	0.096	0.104
L	14.100	14.500	0.555	0.571
Ö		1.600		0.063
↓	0.000	0.380	0.000	0.015