

TO-92 Plastic-Encapsulate Transistors

2N2222A TRANSISTOR (NPN)

Features:

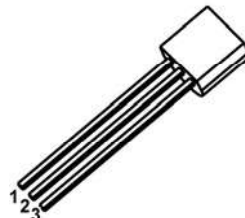
- Complementary NPN Type available (2N2907A)

TO-92

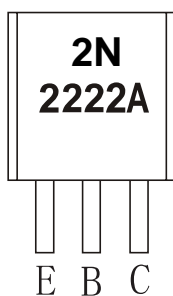
1. EMITTER

2. BASE

3. COLLECTOR

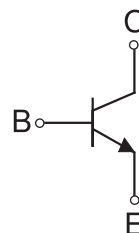


MARKING



2N2222A=Device code

Equivalent Circuit



ORDERING INFORMATION

Part Number	Package	Packing Method	Pack Quantity
2N2222A	TO-92	Bulk	1000pcs/Bag
2N2222A-TA	TO-92	Tape	2000pcs/Box

MAXIMUM RATINGS (T_a=25°C unless otherwise noted)

Symbol	Parameter	Value	Unit
V _{CB0}	Collector-Base Voltage	75	V
V _{CEO}	Collector-Emitter Voltage	40	V
V _{EB0}	Emitter-Base Voltage	6	V
I _C	Collector Current -Continuous	0.6	A
P _D	Collector Power Dissipation	625	mW
R _{θJA}	Thermal Resistance from Junction to Ambient	200	°C /W
T _J ,T _{stg}	Operation Junction and Storage Temperature Range	-55~+150	°C

ELECTRICAL CHARACTERISTICS

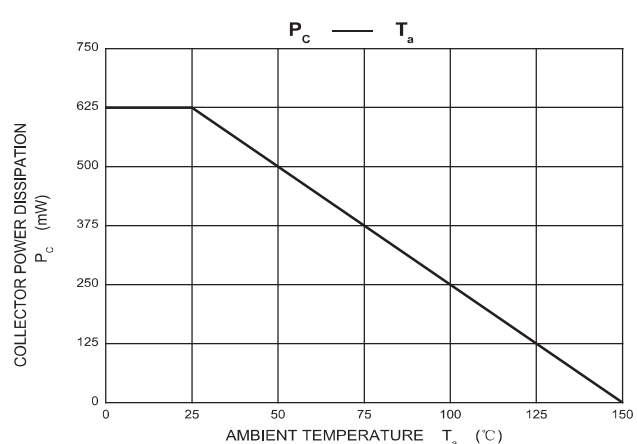
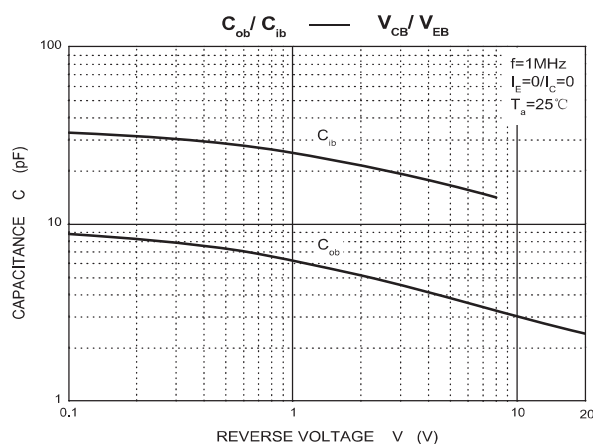
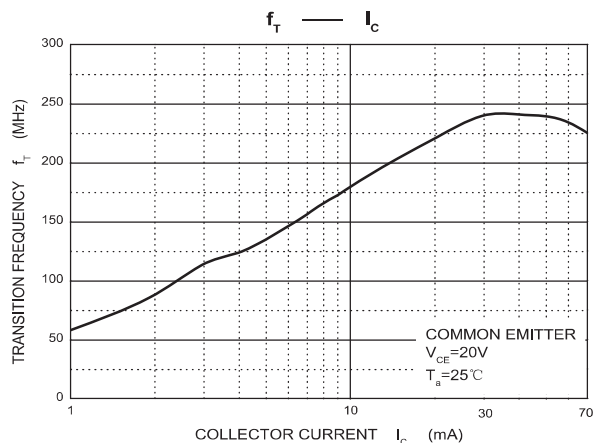
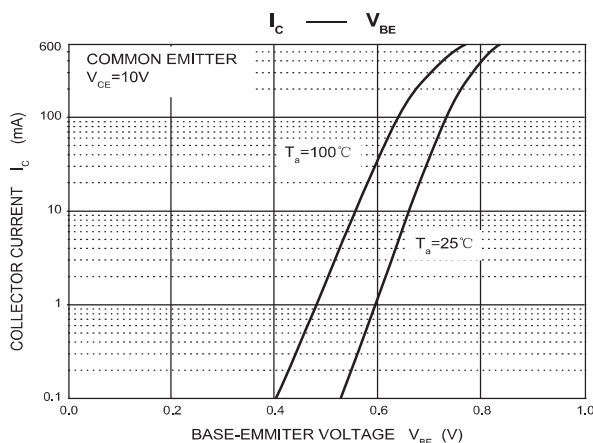
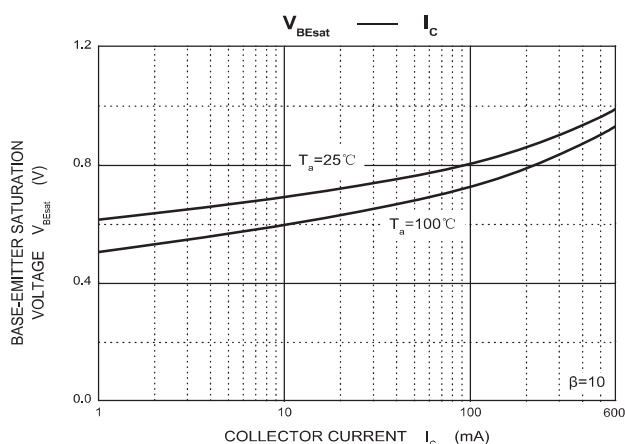
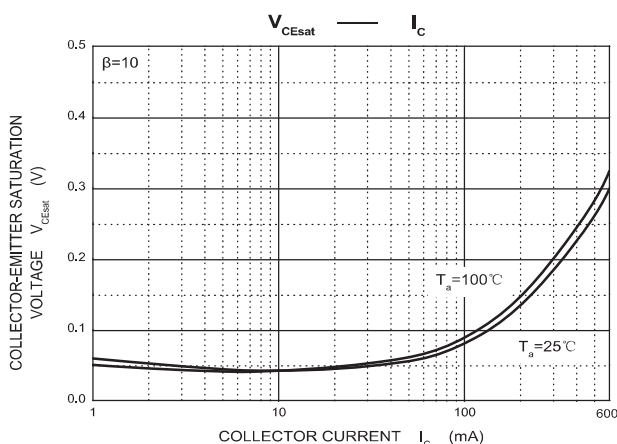
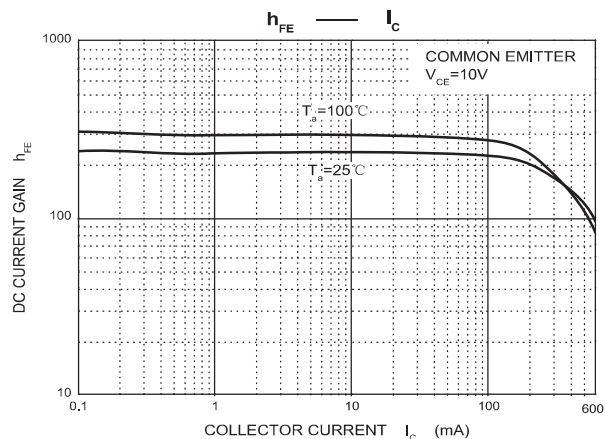
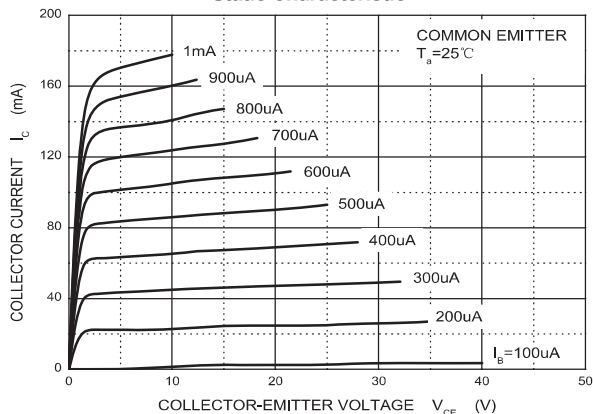
T_a=25 °C unless otherwise specified

Parameter	Symbol	Test conditions	Min	Max	Unit
Collector-base breakdown voltage	V _{(BR)CBO}	I _C = 10μA, I _E =0	75		V
Collector-emitter breakdown voltage	V _{(BR)CEO}	I _C = 10mA, I _B =0	40		V
Emitter-base breakdown voltage	V _{(BR)EBO}	I _E = 10μA, I _C =0	6		V
Collector cut-off current	I _{CBO}	V _{CB} = 60V, I _E =0		10	nA
Collector cut-off current	I _{CEX}	V _{CE} = 60V, V _{EB(off)} =3V		10	nA
Emitter cut-off current	I _{EBO}	V _{EB} = 3 V, I _C =0		100	nA
DC current gain	h _{FE(1)}	V _{CE} =10V, I _C = 150mA	100	300	
	h _{FE(2)}	V _{CE} =10V, I _C = 0.1mA	40		
	h _{FE(3)} *	V _{CE} =10V, I _C = 500mA	42		
Collector-emitter saturation voltage	V _{CE(sat)(1)} *	I _C = 500mA, I _B =50mA		0.6	V
	V _{CE(sat)(2)} *	I _C = 150mA, I _B =15mA		0.3	V
Base-emitter saturation voltage	V _{BE(sat)} *	I _C = 500mA, I _B = 50mA		1.2	V
Delay time	t _d	V _{CC} =30V, V _{EB(off)} =-0.5V,		10	nS
Rise time	t _r	I _C =150mA, I _{B1} =15mA		25	nS
Storage time	t _s	V _{CC} =30V, I _C =150mA, I _{B1} =I _{B2} =15mA		225	nS
Fall time	t _f			60	nS
Transition frequency	f _T	V _{CE} =20V, I _C =20mA, f=100MHz	300		MHz

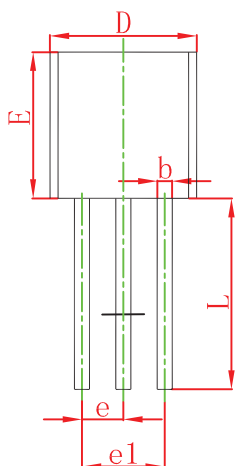
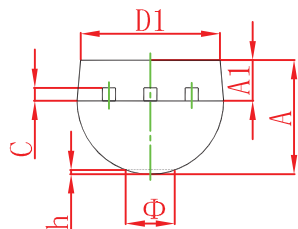
* pulse test

Typical Characteristics

Static Characteristic

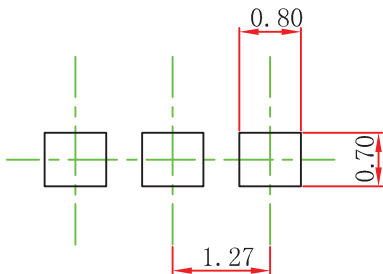


TO-92 Package Outline Dimensions



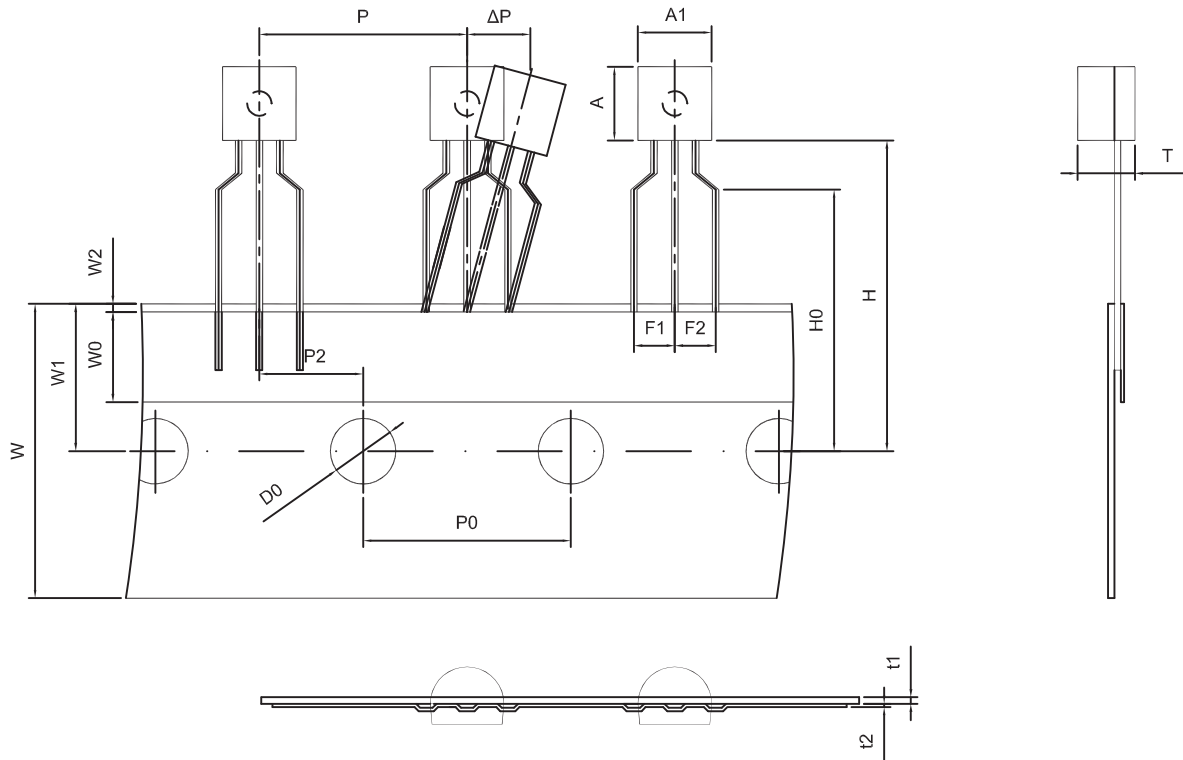
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	3.300	3.700	0.130	0.146
A1	1.100	1.400	0.043	0.055
b	0.380	0.550	0.015	0.022
c	0.360	0.510	0.014	0.020
D	4.300	4.700	0.169	0.185
D1	3.430		0.135	
E	4.300	4.700	0.169	0.185
e	1.270 TYP		0.050 TYP	
e1	2.440	2.640	0.096	0.104
L	14.100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

TO-92 Suggested Pad Layout



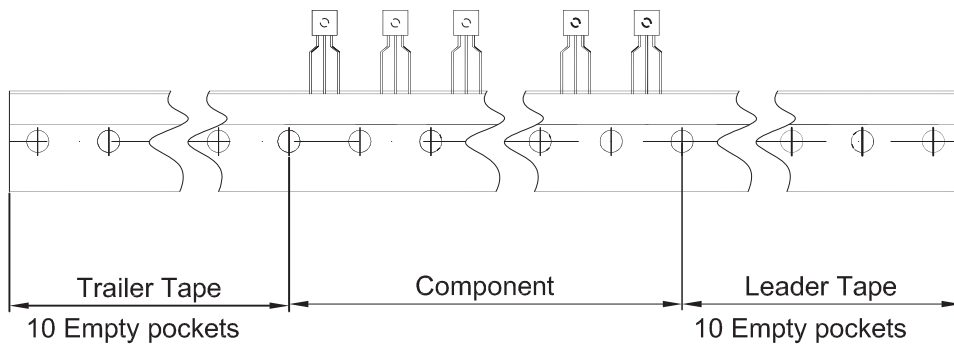
Note:
 1. Controlling dimension: in millimeters.
 2. General tolerance: ± 0.05mm.
 3. The pad layout is for reference purposes only.

TO-92 Tape and Reel



Dimiensions are in millimeter

A1	A	T	P	P0	P2	F1	F2	W
4.5	4.5	3.5	12.7	12.7	6.35	2.5	2.5	18.0
W0	W1	W2	H	H0	D0	t1	t2	ΔP
6.0	9.0	1.0 MAX.	19.0	16.0	4.0	0.4	0.2	0



Package	Box	Box Size(mm)	Carton	Carton Size(mm)
TO-92	2000 pcs	333×162×43	20,000 pcs	350×340×250