

Descriptions

Silicon NPN transistor in a TO-92 Plastic Package

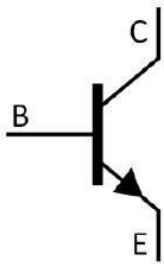
Features

- High voltage
- Excellent h_{FE} linearity

Applications

AF amplifier and low speed switching applications

Equivalent Circuit



Pinning



PIN1: Collector PIN 2: Base PIN 3: Emitter

h_{FE} Classifications & Marking

h_{FE} Classifications Symbol	R	Q	P	K
h_{FE} Range	90~180	135~270	200~400	300~600

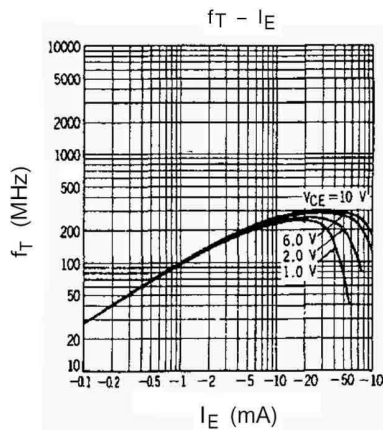
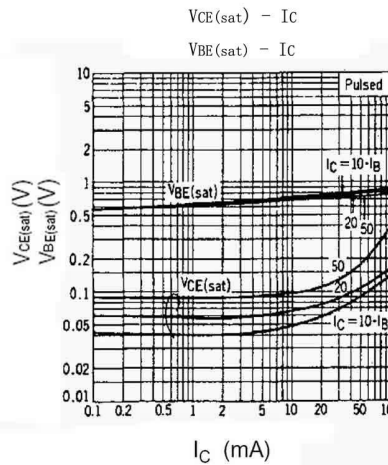
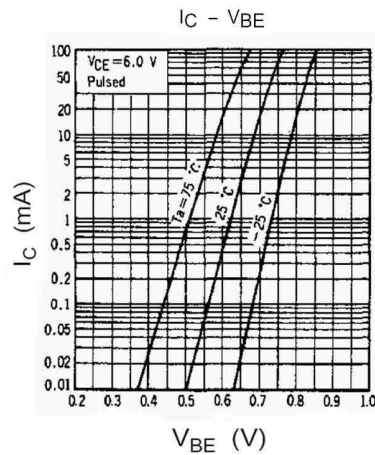
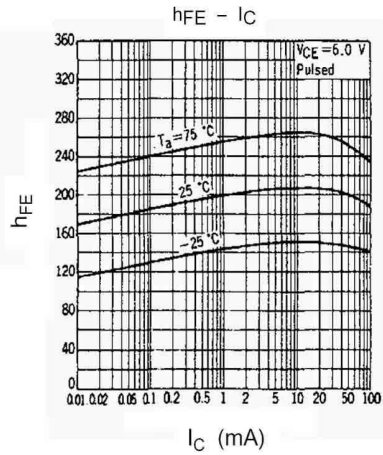
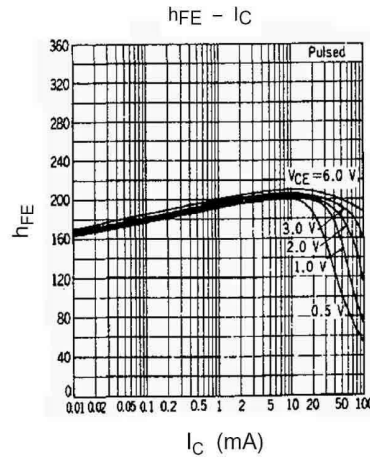
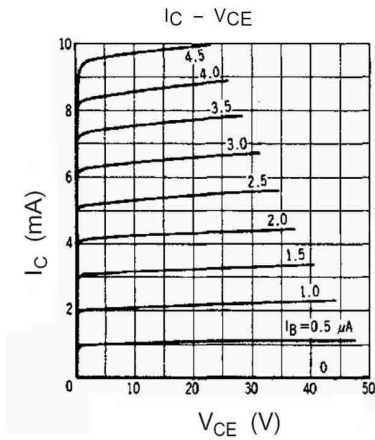
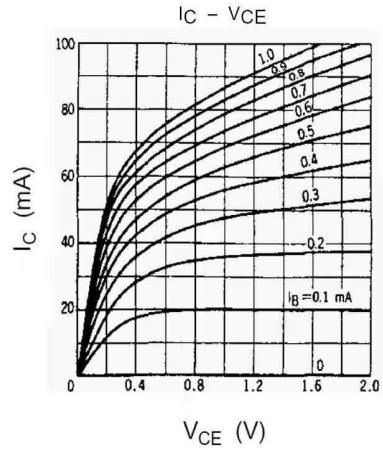
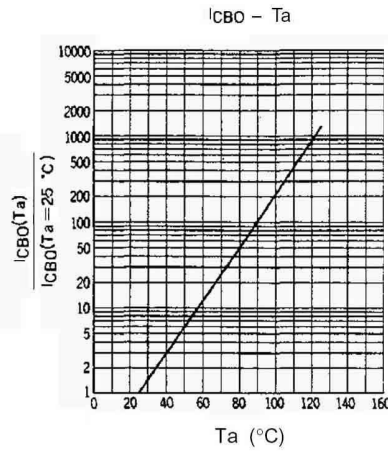
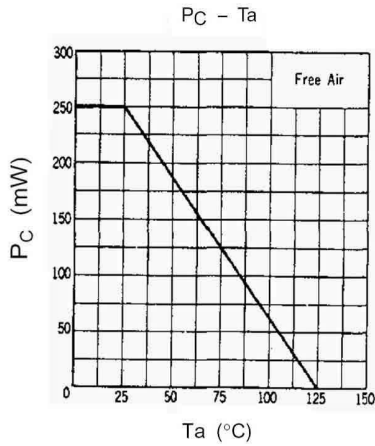
Absolute Maximum Ratings(Ta=25°C)

Parameter	Symbol	Rating	Unit
Collector to Base Voltage	V_{CBO}	60	V
Collector to Emitter Voltage	V_{CEO}	50	V
Emitter to Base Voltage	V_{EBO}	5.0	V
Collector Current - Continuous	I_C	150	mA
Base Current – Continuous	I_B	20	mA
Collector Power Dissipation	P_C	250	mW
Junction Temperature	T_j	150	°C
Storage Temperature Range	T_{stg}	-55~150	°C

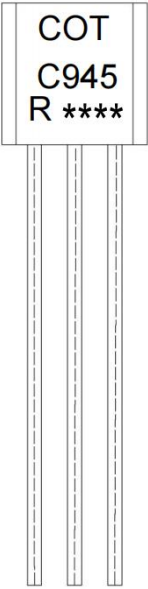
Electrical Characteristics(Ta=25°C)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector Cut-Off Current	I_{CBO}	$V_{CB}=60V$ $I_E=0$			0.1	μA
Emitter Cut-Off Current	I_{EBO}	$V_{EB}=5.0V$ $I_C=0$			0.1	μA
DC Current Gain	$h_{FE(1)}$	$V_{CE}=6.0V$ $I_C=1.0mA$	90		600	
	$h_{FE(2)}$	$V_{CE}=6.0V$ $I_C=0.1mA$	50			
Collector to Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=100mA$ $I_B=10mA$		0.15	0.3	V
Base to Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=100mA$ $I_B=10mA$		0.86	1.0	V
Base to Emitter Voltage	V_{BE}	$V_{CE}=6.0V$ $I_C=1.0mA$		0.62	0.65	V
Transition Frequency	f_T	$V_{CE}=6.0V$ $I_C=10mA$	150	250	450	MHz
Collector Output Capacitance	C_{ob}	$V_{CB}=6.0V$ $I_E=0$ $f=1.0MHz$		3.0	4.0	pF
Noise Figure	NF	$V_{CE}=6.0V$ $I_C=0.1mA$ $R_g=2.0K\Omega$ $f=1.0KHz$		0.8	15	dB

Electrical Characteristic Curve



Marking Instructions



- Note:
- COT: Company Code.
 - C945: Product Type Code.
 - R: hFE Classifications Symbol.
 - ****: Lot No. Code, code change with Lot No.

hFE Classifications Symbol	R	Q	P	K
hFE Range	90~180	135~270	200~400	300~600

Packaging SPEC

BULK

Package Type	Units					Dimension (unit: mm3)		
	Units/Bag	Bags/Inner Box	Units/Inner Box	Inner Boxes/Outer Box	Units/Outer Box	Bag	Inner Box	Outer Box
TO-92	1,000	10	10,000	5	50,000	135×190	237×172×102	560×245×195
	1,000	10	10,000	10	100,000	135×190	237×172×102	560×245×375

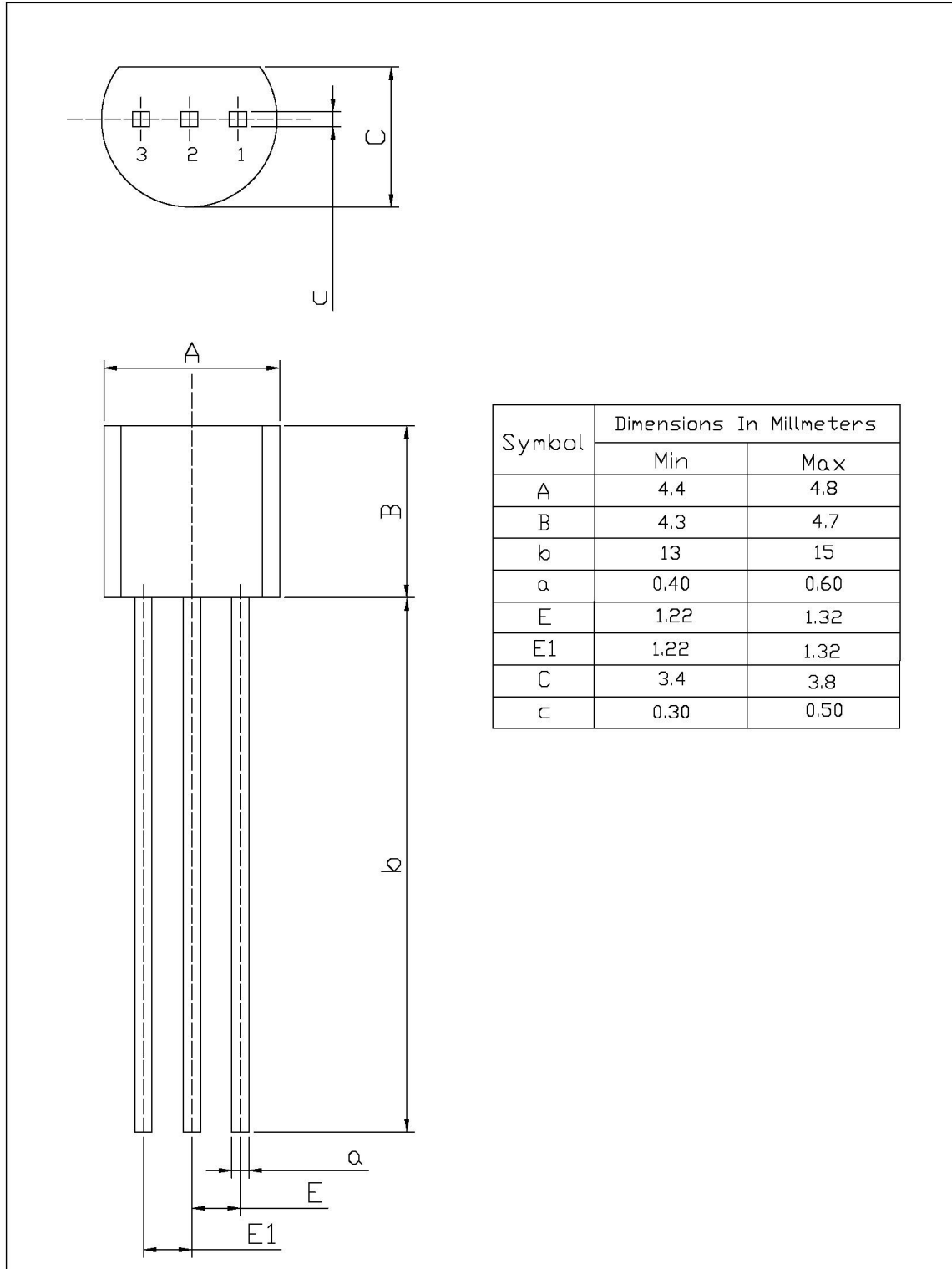
AMMO

Package Type	Units					Dimension (unit: mm3)	
	Units/tape	Tape/Inner Box	Rows/Inner Box	Inner Boxes/Outer Box	Units/Outer Box	Inner Box	Outer Box
TO-92	3,000	1	120	10	30,000	328×230×42	480×346×235, 547×407×268

Package Outline Dimensions

TO-92

Unit: mm



Symbol	Dimensions In Millimeters	
	Min	Max
A	4.4	4.8
B	4.3	4.7
b	13	15
a	0.40	0.60
E	1.22	1.32
E1	1.22	1.32
C	3.4	3.8
c	0.30	0.50