

**Description**

Silicon NPN transistor in a TO-92 Plastic Package.

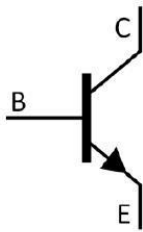
**Features**

- High  $\beta$  and  $h_{FE}$  excellent  $h_{FE}$  linearity
- complementary pair with 9015

**Applications**

- Low frequency, low noise amplifier.

Symbol	Parameter	Max	Unit
$V_{CE0}$	collector-emitter voltage	45	V
$I_C$	collector current (DC)	100	mA

**Equivalent Circuit & Pinning**


PIN1 : Collector

PIN 2 : Base

PIN 3 : Emitter

 **$h_{FE}$  Classifications & Marking**

$h_{FE}$ Classifications Symbol	A	B	C	D
$h_{FE}$ Range	60~150	100~300	200~600	400~1000

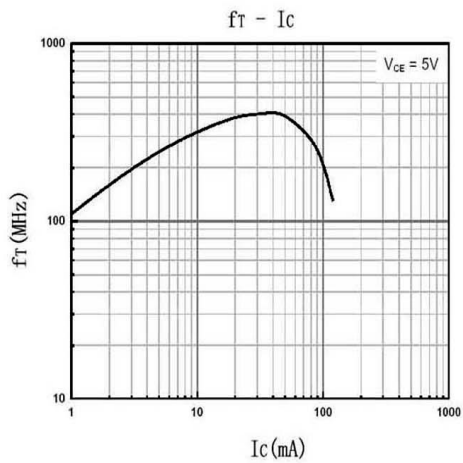
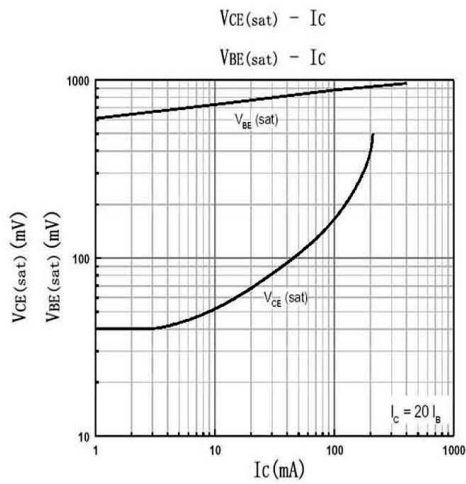
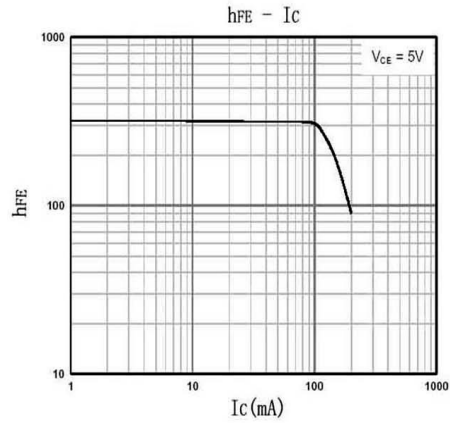
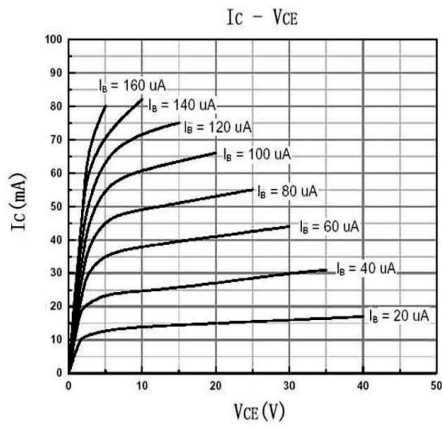
**Absolute Maximum Ratings(Ta=25°C)**

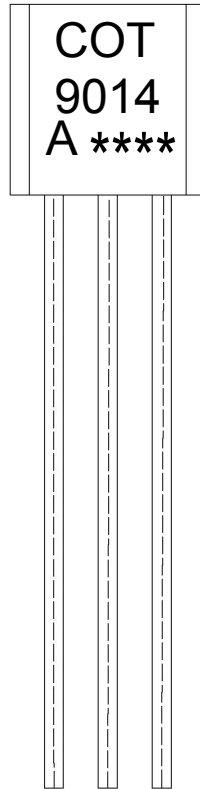
Parameter	Symbol	Rating	Unit
Collector to Base Voltage	$V_{CBO}$	50	V
Collector to Emitter Voltage	$V_{CEO}$	45	V
Emitter to Base Voltage	$V_{EBO}$	5.0	V
Collector Current - Continuous	$I_C$	100	mA
Collector Power Dissipation	$P_C$	450	mW
Junction Temperature	$T_j$	150	°C
Storage Temperature Range	$T_{stg}$	-55 ~ 150	°C

**Electrical Characteristic (Ta=25°C)**

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector to Base Breakdown Voltage	$V_{CBO}$	$I_C=0.1mA$ $I_E=0$	50			V
Collector to Emitter Breakdown Voltage	$V_{CEO}$	$I_C=1.0mA$ $I_B=0$	45			V
Emitter to Base Breakdown Voltage	$V_{EBO}$	$I_E=0.1mA$ $I_C=0$	5.0			V
Collector Cut-Off Current	$I_{CBO}$	$V_{CB}=50V$ $I_E=0$			0.05	$\mu A$
Emitter Cut-Off Current	$I_{EBO}$	$V_{EB}=5.0V$ $I_C=0$			0.05	$\mu A$
DC Current Gain	$h_{FE}$	$V_{CE}=5.0V$ $I_C=1.0mA$	60		1000	
Collector to Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=100mA$ $I_B=5.0mA$		0.14	0.3	V
Base to Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=100mA$ $I_B=5.0mA$		0.84	1.0	V
Base to Emitter Voltage	$V_{BE}$	$V_{CE}=5.0V$ $I_C=2.0mA$		0.63	0.7	V
Transition Frequency	$f_T$	$V_{CE}=5.0V$ $I_C=10mA$	150	270		MHz
Collector Output Capacitance	$C_{ob}$	$V_{CB}=10V$ $f=1.0MHz$ $I_E=0$		2.2	3.5	pF
Noise Figure	NF	$V_{CE}=5.0V$ $R_g=2.0K\Omega$ $I_C=0.2mA$ $f=1.0KHz$ $\Delta f=200Hz$		0.9	10	dB

Electrical Characteristic Curve



**Marking Instructions**

**Note:**
**COT:** Company Code.

**9014:** Product Type.

**A:**  $h_{FE}$  Classifications Symbol.

**\*\*\*\*:** Lot No. Code, code change with Lot No.

$h_{FE}$ Classifications Symbol	A	B	C	D
$h_{FE}$ Range	60~150	100~300	200~600	400~1000

**Packaging SPEC.**
**BULK**

Package Type	Units					Dimension (unit: mm <sup>3</sup> )		
	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: mm <sup>3</sup> )	
	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

