

/ Descriptions

TO-92(R)

NPN

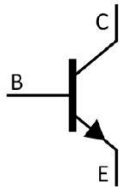
Silicon NPN transistor in a TO-92(R) Plastic Package.

/ Features

Low current, low voltage.

/ Applications

High-speed switching.

/ Equivalent Circuit**/ Pinning**

1 2 3
PIN1 Emitter PIN 2 Base PIN 3 Collector

/ h_{FE} Classifications & Marking

See Marking Instructions.

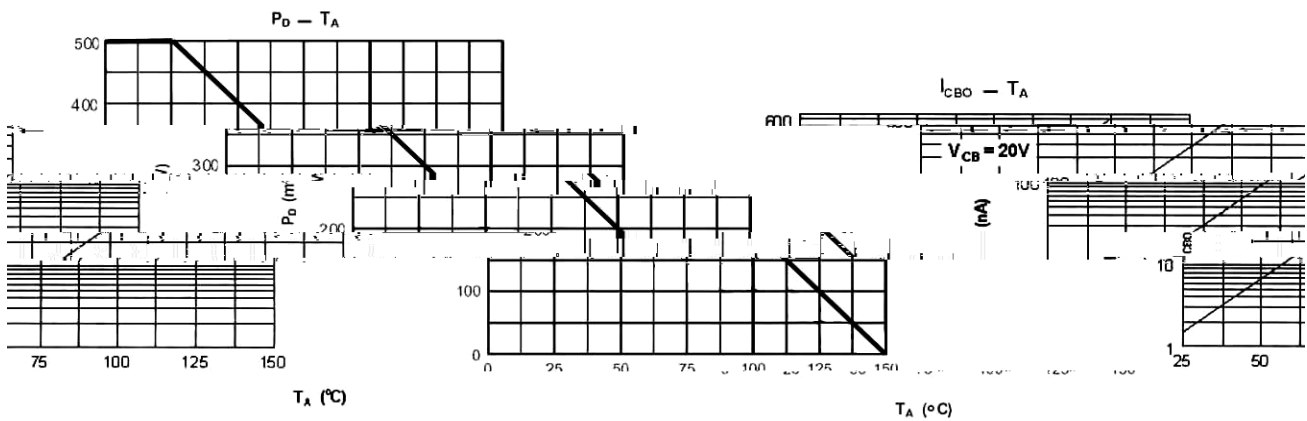
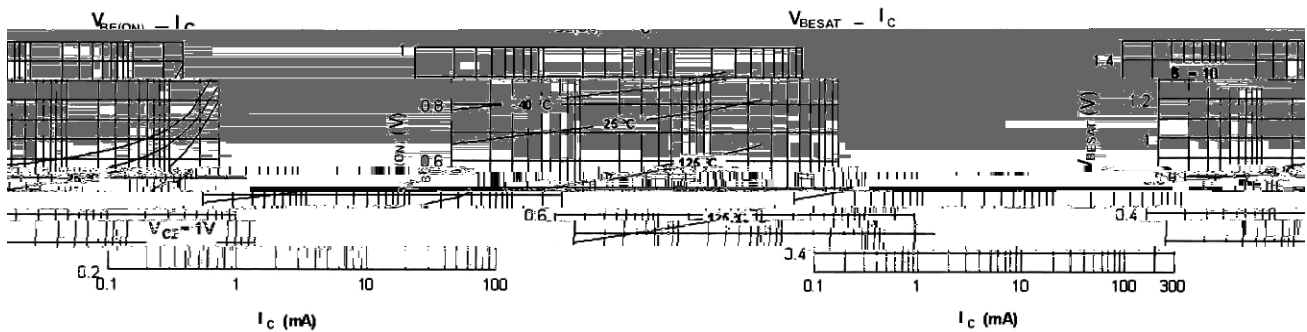
/ Absolute Maximum Ratings(Ta=25)

Parameter	Symbol	Rating	Unit
Collector to Base Voltage	V_{CBO}	40	V
Collector to Emitter Voltage	V_{CEO}	15	V
Emitter to Base Voltage	V_{EBO}	4.5	V
Collector Current - Continuous	I_C	200	mA
Peak Collector Current	I_{CM}	300	mA
Peak Base Current	I_{BM}	100	mA
Collector Power Dissipation	P_C	500	mW
Junction Temperature	T_j	150	
Storage Temperature Range	T_{stg}	-55 150	

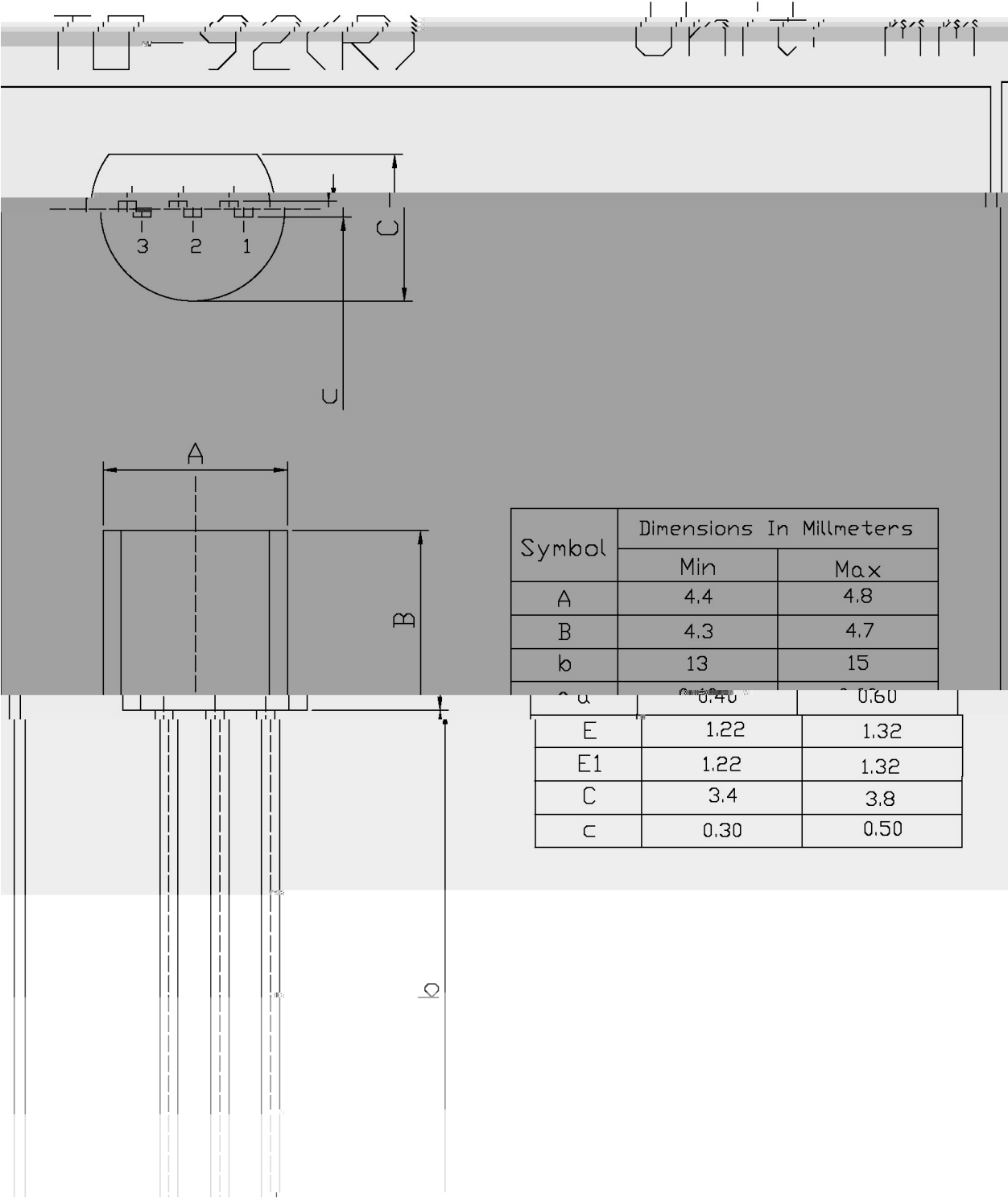
/ Electrical Characteristics(Ta=25)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector Cut-Off Current	I_{CBO}	$V_{CB}=20V$ $I_E=0$			0.4	μA
Emitter Cut-Off Current	I_{EBO}	$V_{EB}=4.0V$ $I_C=0$			0.1	μA
DC Current Gain	$h_{FE(1)}$	$V_{CE}=1.0V$ $I_C=10mA$	40		200	
	$h_{FE(2)}$	$V_{CE}=2.0V$ $I_C=100mA$	20			
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=10mA$ $I_B=1.0mA$			0.25	V
Base -Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=10mA$ $I_B=1.0mA$			0.85	V
Collector Capacitance	C_c	$I_E=ie=0$ $f=1.0MHz$ $V_{CB}=5.0V$			4.0	pF
Emitter Capacitance	C_e	$I_C=ic=0$ $f=1.0MHz$ $V_{EB}=1.0V$			4.5	pF
Transition Frequency	f_T	$I_C=10mA$ $f=100MHz$ $V_{CE}=10V$	500			MHz
Turn-On Time	t_{on}	$I_C=10mA$ $I_{B1}=3.0mA$ $-I_{B2}=1.5mA$			10	ns
Storage Time	T_{stg}				10	ns
Turn-Off Time	t_{off}				20	ns

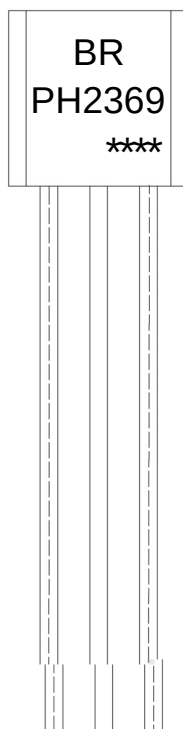
/ Electrical Characteristic Curve



/ Package Dimensions



/ Marking Instructions



BR

PH2369

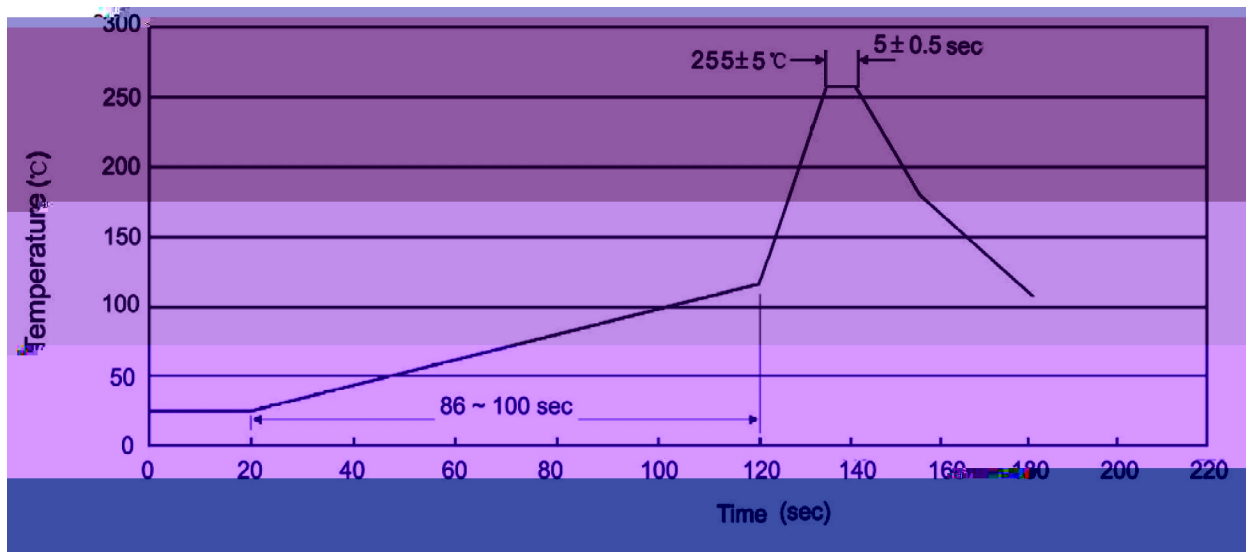
Note:

BR: Company Code.

PH2369: Product Type.

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

() / Temperature Profile for Dip Soldering(Pb-Free)



Note:

- | | | | | | |
|---|-------|-----|-----------|---|--------------------------------------|
| 1 | 25 | 150 | 60 | 90sec; | 1.Preheating:25~150 , Time:60~90sec. |
| 2 | 255±5 | | 5±0.5sec; | 2.Peak Temp.:255±5 , Duration:5±0.5sec. | |
| 3 | | 2 | 10 | /sec. | 3. Cooling Speed: 2~10 /sec. |

/ Resistance to Soldering Heat Test Conditions

270±5 10±1 sec. Temp.:270±5 Time:10±1 sec

/ Packaging SPEC.

/ BULK

Package Type 封装形式	Units 包装数量					Dimension 包装尺寸 (unit: mm3)		
	Units/Bag 只/袋	Bags/Inner Box 袋/盒	Units/Inner Box 只/盒	Inner Boxes/Outer Box 盒/箱	Units/Outer Box 只/箱	Bag 袋	Inner Box 盒	Outer Box 箱
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 封装形式	Units 包装数量					Dimension 包装尺寸 (unit: mm3)	
	Units/tape 只/纸带	Tape/Inner Box 纸带/盒	Rows/Inner Box 纸带层/盒	Inner Boxes/Outer Box 盒/箱	Units/Outer Box 只/箱	Inner Box 盒	Outer Box 箱
TO-92	3,000	1	120	10	30,000	328×230×42	小箱 480×346×235, 大箱 547×407×268

/ Notices