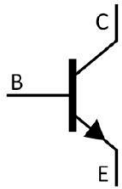


Rev.F Mar.-2016

TO-220F      NPN      Silicon NPN transistor in a TO-220F Plastic Package.

High  $V_{CE0}$ , SOA, High transition frequency and small  $C_{ob}$ .

power amplifier applications.

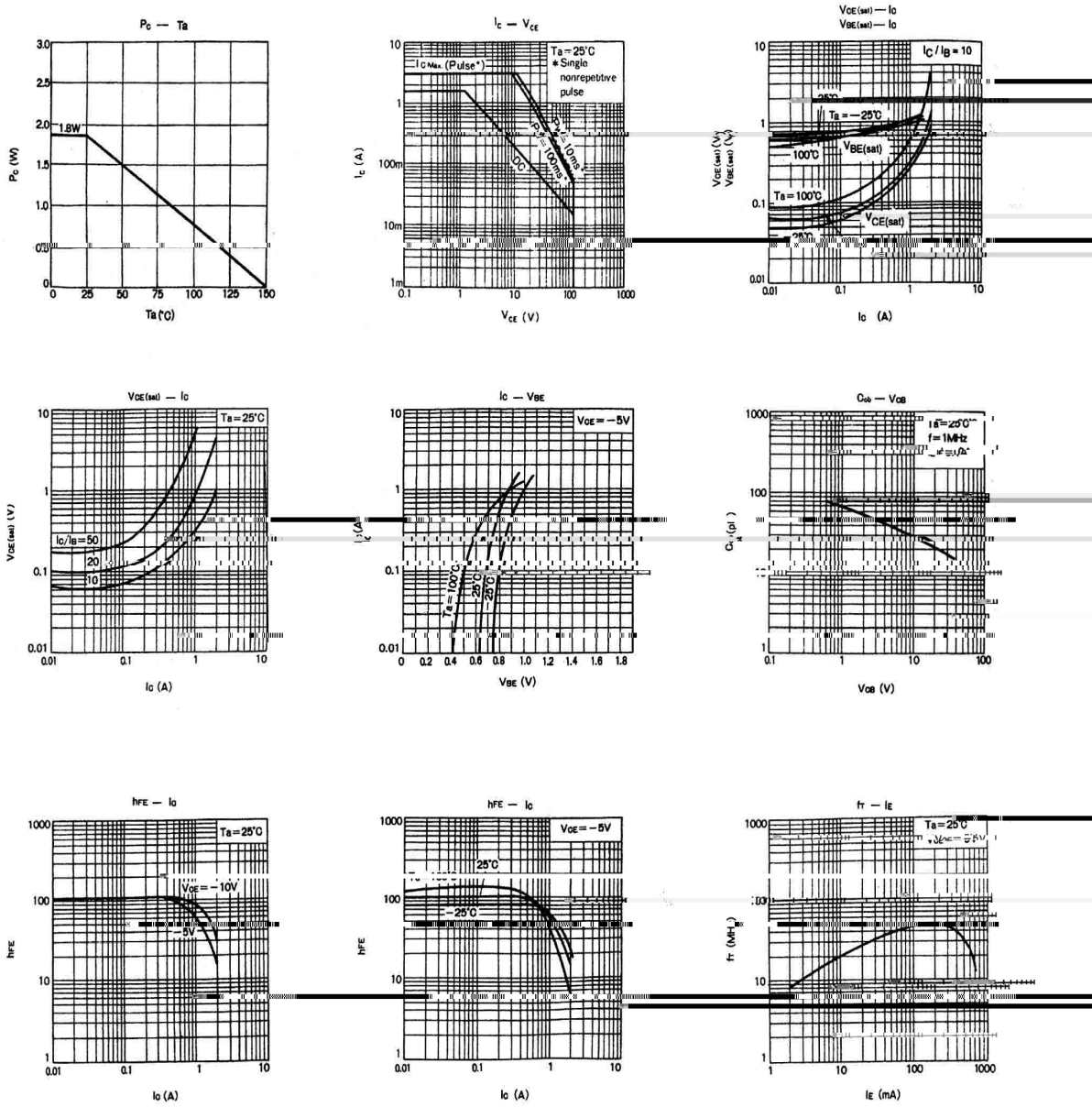


PIN1 Base      PIN 2 Collector      PIN 3 Emitter

$h_{FE}$ Classifications Symbol	D	E	F
$h_{FE}$ Range	60~120	100~200	160~320

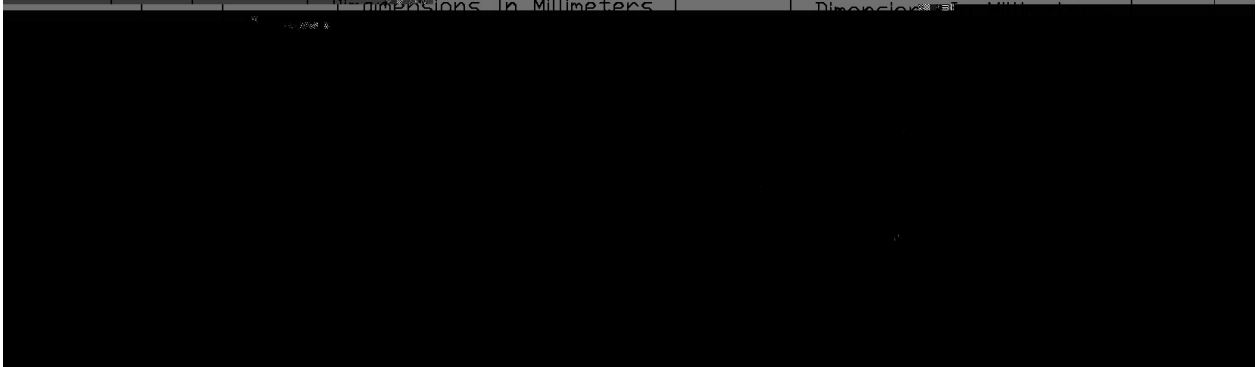
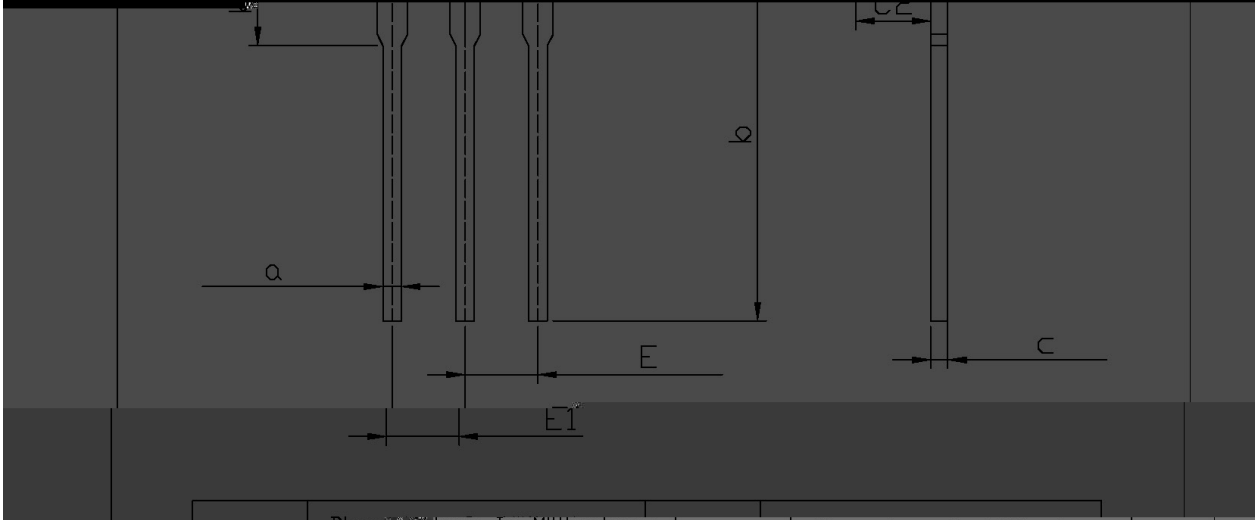
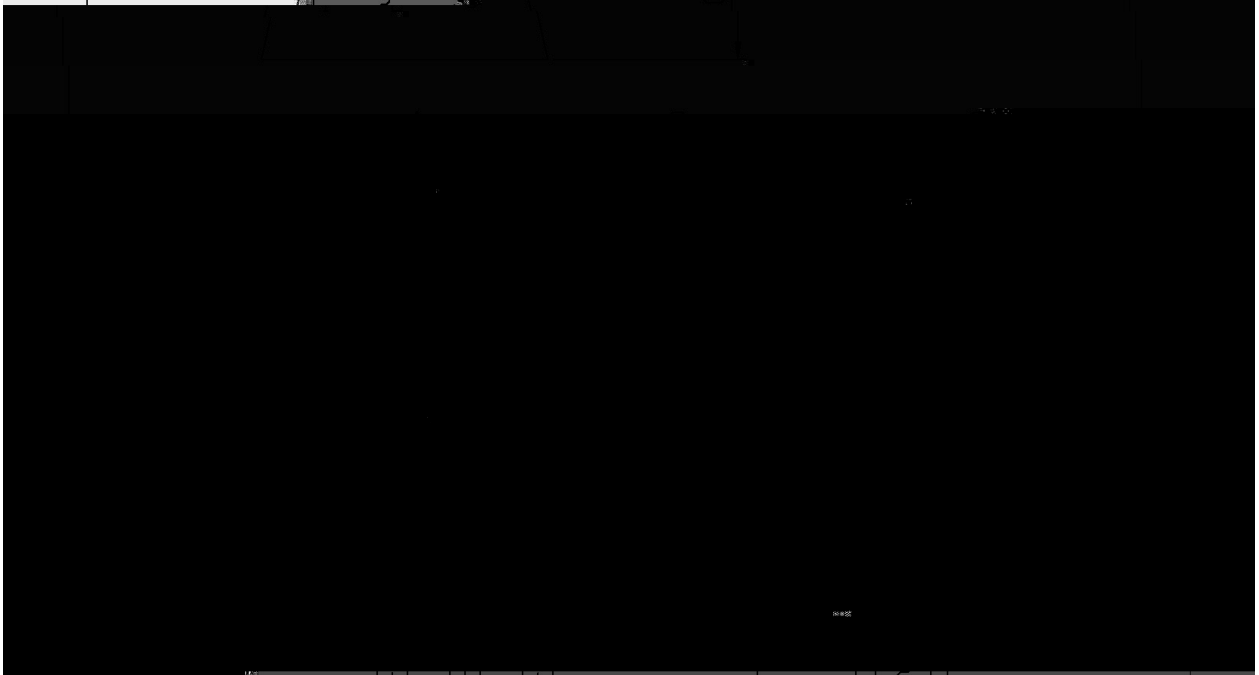
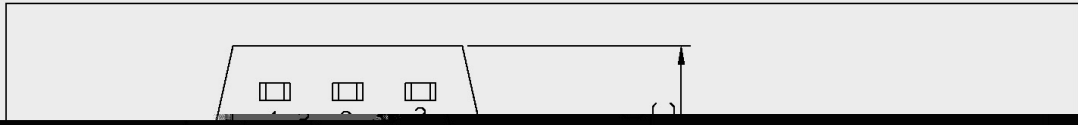
Parameter	Symbol	Rating	Unit
Collector to Base Voltage	$V_{CBO}$	120	V
Collector to Emitter Voltage	$V_{CEO}$	120	V
Emitter to Base Voltage	$V_{EBO}$	5.0	V
Collector Current - Continuous	$I_C$	1.5	A
Collector Current – Continuous(Pulse)	$I_{CP}$	3.0	A
Collector Power Dissipation	$P_C$	1.8	W
Junction Temperature	$T_j$	150	
Storage Temperature Range	$T_{stg}$	-55~150	

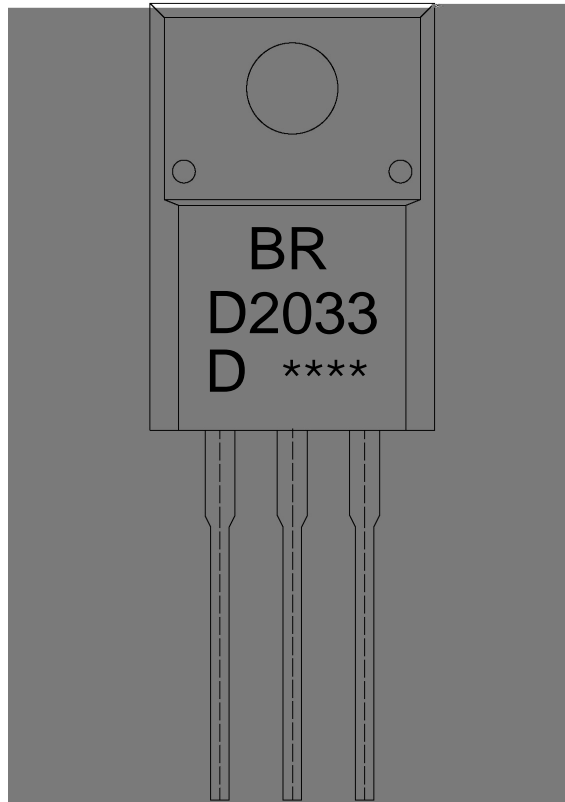
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector to Base Breakdown Voltage	$V_{CBO}$	$I_C=50\mu A$	120			V
Collector to Emitter Breakdown Voltage	$V_{CEO}$	$I_C=1.0mA$	120			V
Emitter to Base Breakdown Voltage	$V_{EBO}$	$I_E=50\mu A$	5.0			V
Collector Cut-Off Current	$I_{CBO}$	$V_{CB}=100V$			1.0	$\mu A$
Emitter Cut-Off Current	$I_{EBO}$	$V_{EB}=4.0V$			1.0	$\mu A$
DC Current Gain	$h_{FE}$	$V_{CE}=5.0V$ $I_C=0.1A$	60		320	
Collector to Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=1.0A$ $I_B=0.1A$			2.0	V
Base to Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=1.0A$ $I_B=0.1A$			1.5	V
Transition Frequency	$f_T$	$V_{CE}=5.0V$ $f=30MHz$ $I_E=0.1A$		50		MHz
Collector output capacitance	$C_{ob}$	$V_{CB}=10V$ $f=1.0MHz$ $I_E=0$		30		pF



TO-220F

单位: mm





BR

D2033

D:  $h_{FE}$

\*\*\*\*

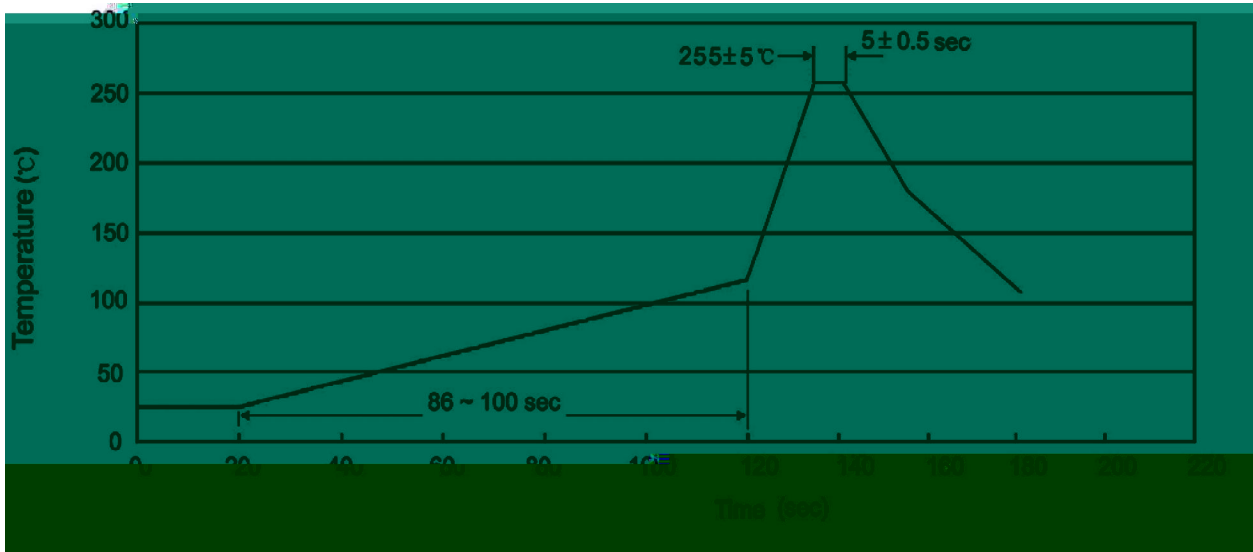
Note:

BR: Company Code.

D2033: Product Type.

D:  $h_{FE}$  Classifications Symbol

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


**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.            |

270±5

10±1 sec.

Temp.:270±5

Time:10±1 sec

/ BULK

Package Type 封装形式	Units 包装数量					Dimension 包装尺寸 (unit: mm <sup>3</sup> )		
	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-220/F	200	10	2,000	5	10,000	135×190	237×172×102	560×245×195

/ TUBE

Package Type 封装形式	Units 包装数量					Dimension 包装尺寸 (unit: mm <sup>3</sup> )		
	Units/Tube 只/套管	Tubes/Inner Box 套管/盒	Units/Inner Box 只/盒	Inner Boxes/Outer Box 盒/箱	Units/Outer Box 只/箱	Tube 套管	Inner Box 盒	Outer Box 箱
TO-220/F	50	20	1,000	5	5,000	532×31.4×5.5	555×164×50	575×290×180