/ Descriptions

TO-252 NPN Silicon NPN transistor in a TO-252 Plastic Package.

/ Features

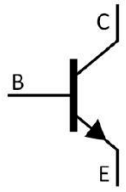
f_T

Low $V_{CE(sat)}$, high current and high f_T, excellent linearity of h_{FE}, fast switching time.

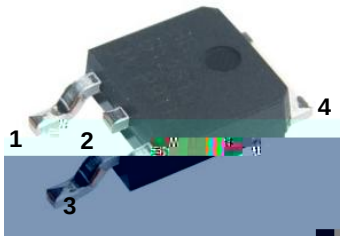
/ Applications

Relay drivers, high-speed inverters, general high-current switching applications.

/ Equivalent Circuit



/ Pinning



PIN1 Base PIN 2,4 Collector PIN 3 Emitter

/ h_{FE} Classifications & Marking

h_{FE} Classifications Symbol	Q	R	S	T
h_{FE} Range	70 140	100 200	140 280	200 400

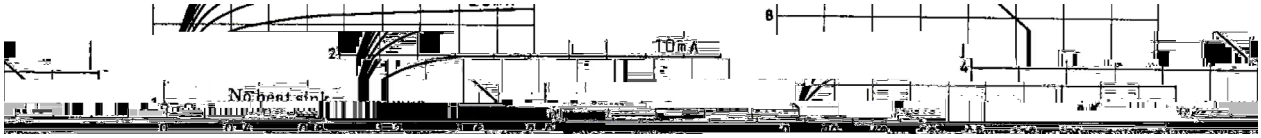
/ Absolute Maximum Ratings(Ta=25)

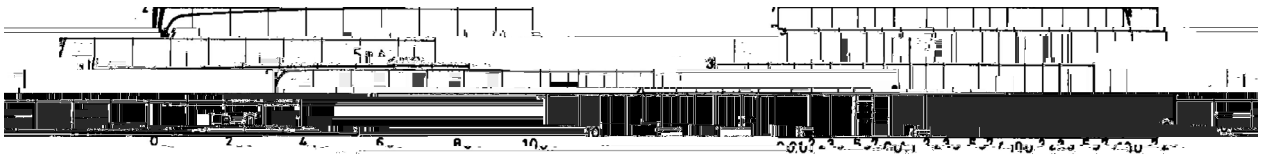
Parameter	Symbol	Rating	Unit
Collector to Base Voltage	V_{CBO}	60	V
Collector to Emitter Voltage	V_{CEO}	50	V
Emitter to Base Voltage	V_{EBO}	6.0	V
Collector Current - Continuous	I_C	8.0	A
Collector Current – Continuous(Pulse)	I_{CP}	12	A
Collector Power Dissipation	P_C	1.0	W
Collector Power Dissipation	P_C(Tc=25)	20	W
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 to Base Breakdown Voltage	V_{CBO}	I_C=10μA I_E=0	60			V
Collector to Emitter Breakdown Voltage	V_{CEO}	I_C=1.0mA R_{BE}=∞	50			V
Emitter to Base Breakdown Voltage	V_{EBO}	I_E=10μA I_C=0	6.0			V
Collector Cut-Off Current	I_{CBO}	V_{CB}=40V I_E=0			1.0	μA
Emitter Cut-Off Current	I_{EBO}	V_{EB}=4.0V I_C=0			1.0	μA
DC Current Gain	$h_{FE(1)}$	V_{CE}=2.0V I_C=0.5A	70		400	
	$h_{FE(2)}$	V_{CE}=2.0V I_C=6.0A	35			
Collector to Emitter Saturation Voltage	$V_{CE(sat)}$	I_C=4.0A I_B=0.2A		0.2	0.4	V
Base to Emitter Saturation Voltage	$V_{BE(sat)}$	I_C=3.0A I_B=0.15A		0.95	1.3	V
Transition Frequency	f_T	V_{CE}=5.0V I_C=1.0A		180		MHz
Collector output capacitance	C_{ob}	V_{CB}=10V I_E=0 f=1.0MHz		65		pF
Turn-On Time	t_{on}	I_C=10I_{B1}=10I_{B2}=2.0A		50		ns
Storage Time	t_{stg}			500		ns
Fall Time	t_f			20		ns

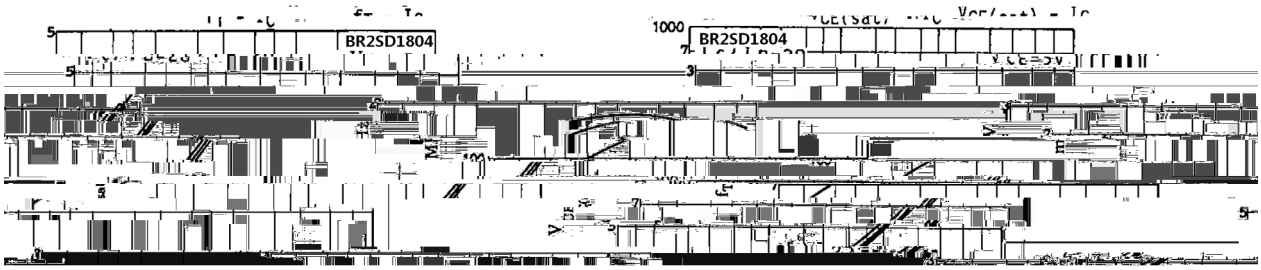
/ Electrical Characteristic Curve

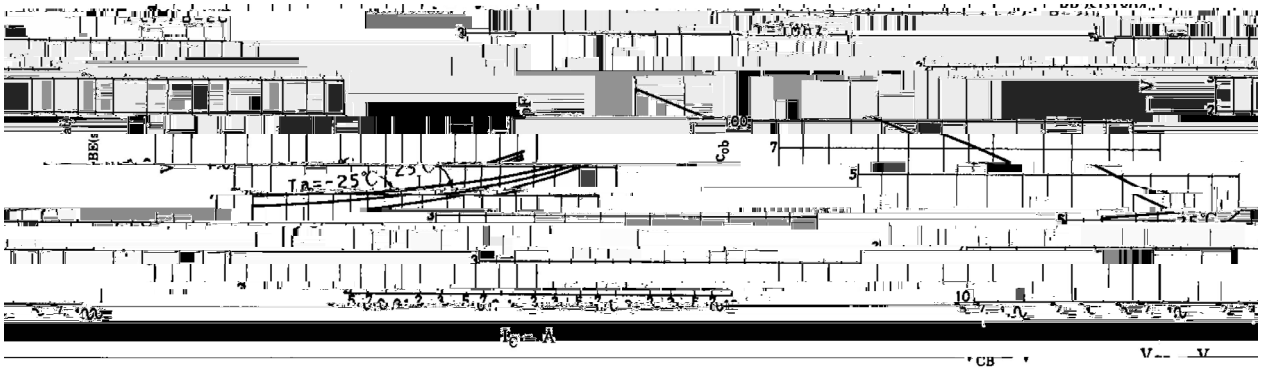




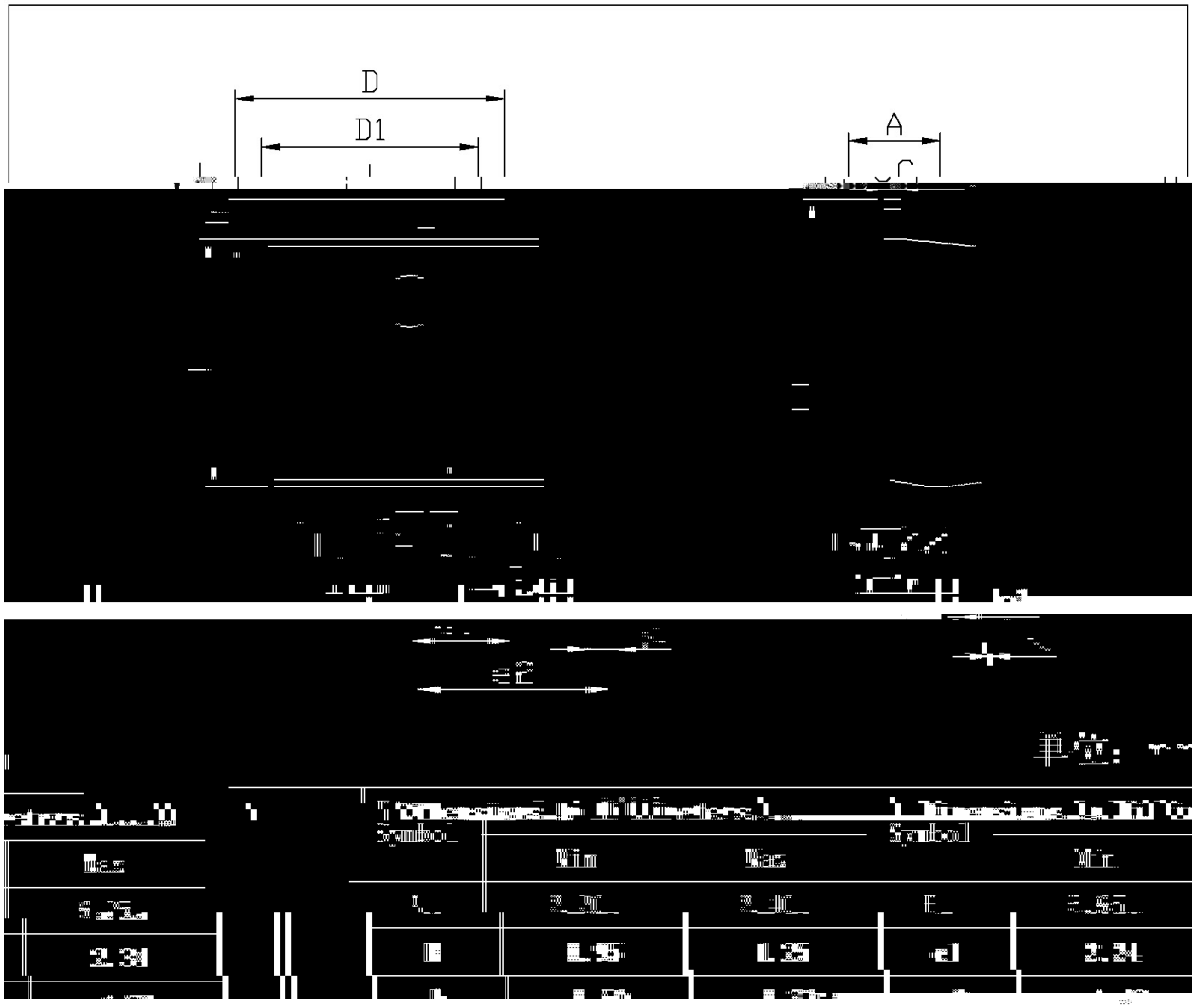
V_{CE} – V

I_C – A

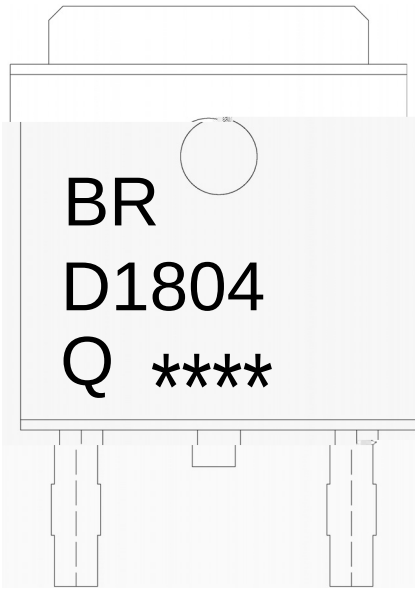




/ Package Dimensions



/ Marking Instructions



BR

D1804

Q: h_{FE}

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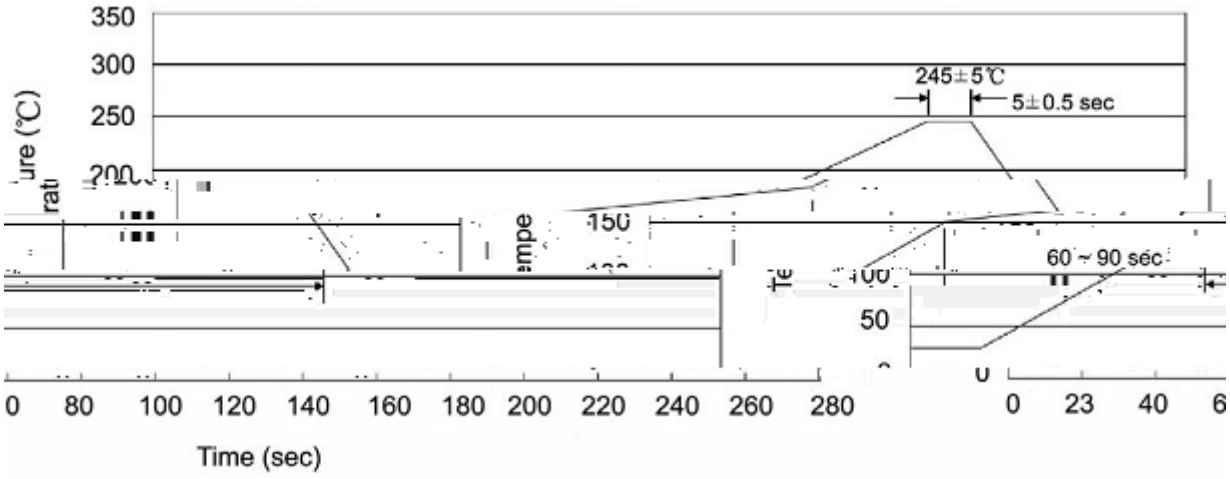
Note:

BR:	Company Code
D1804:	Product Type.
Q:	h_{FE} Classifications Symbol
****:	Lot No. Code, code change with Lot No.

( ) / Temperature Profile for IR Reflow Soldering(Pb-Free)



Note:

1 25 150 60 90sec;

1.Preheating:25~150 , Time:60~90sec.

2 245±5 5±0.5sec;

2.Peak Temp.:245±5 , Duration:5±0.5sec.

3 2 10 /sec.

3. Cooling Speed: 2~10 /sec.

/ Resistance to Soldering Heat Test Conditions

260±5 10±1 sec. Temp.:260±5 Time:10±1 sec

/ Packaging SPEC.

/ REEL

Package Type	Units					Dimension		(unit mm^3)
	Units/Reel /	Reels/Inner Box /	Units/Inner Box /	Inner Boxes/Outer Box /	Units/Outer Box /	Reel	Inner Box	Outer Box
TO-252	2,500	2	5,000	5	25,000	13 ×16	360×360×50	385×257×392