/ Descriptions

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

/ Features

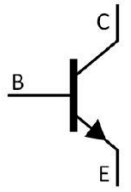
f_T

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

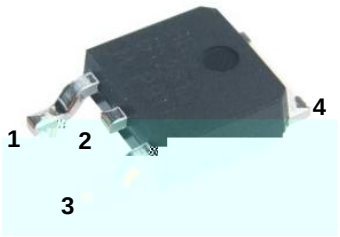
/ Applications

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	M	L	K
h_{FE} Range	100 200	160 320	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}	60	V
Emitter to Base Voltage	V_{EBO}	7.0	V
Collector Current - Continuous	I_C	3.0	A
Collector Power Dissipation*	*P_C	2.0	W
Junction Temperature	T_j	150	℃
Storage Temperature Range	T_{stg}	-55 150	℃

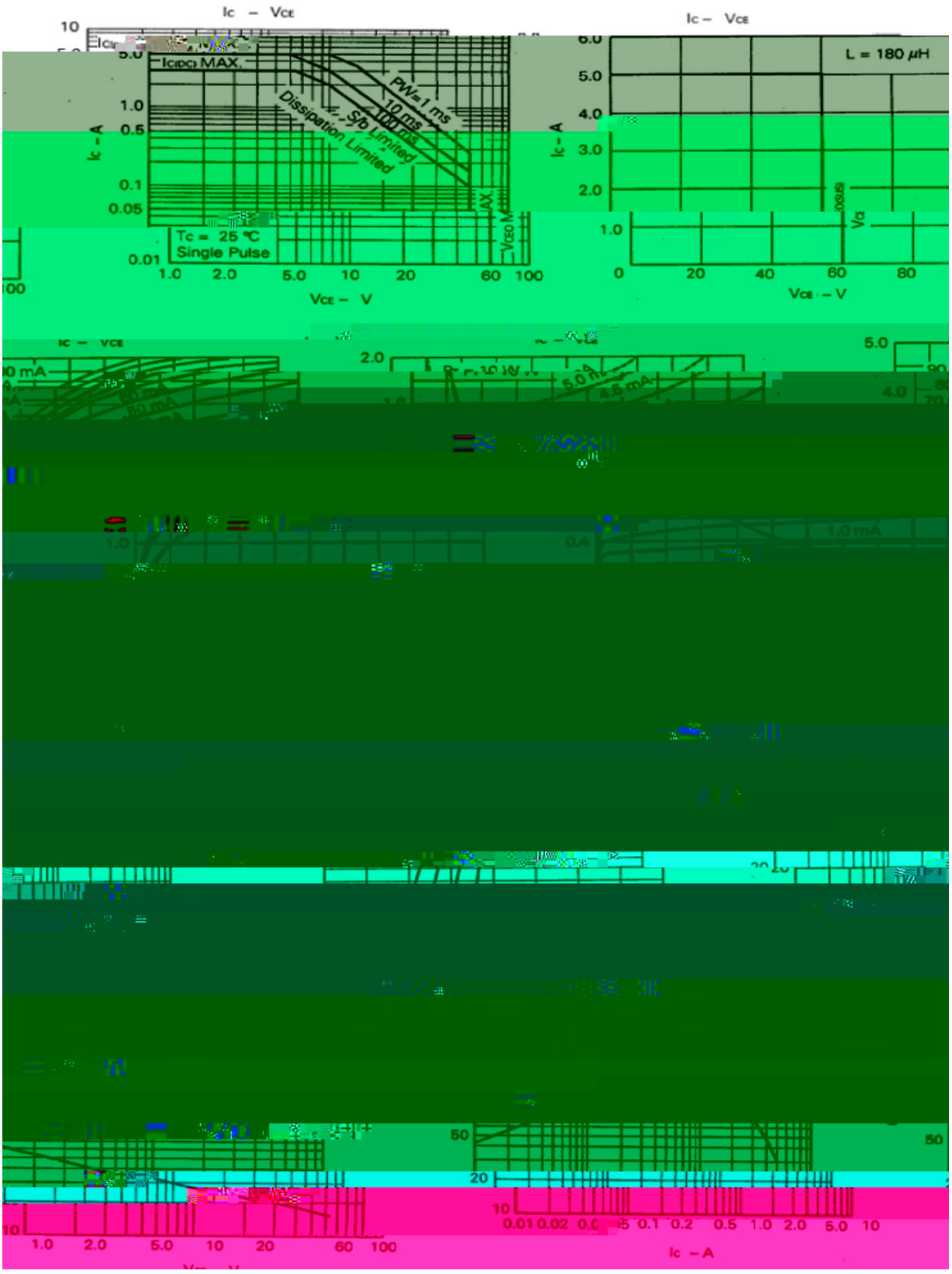
* 7.5×7.5×0.7mm

*When mounted on a 7.5×7.5×0.7mm ceramic board

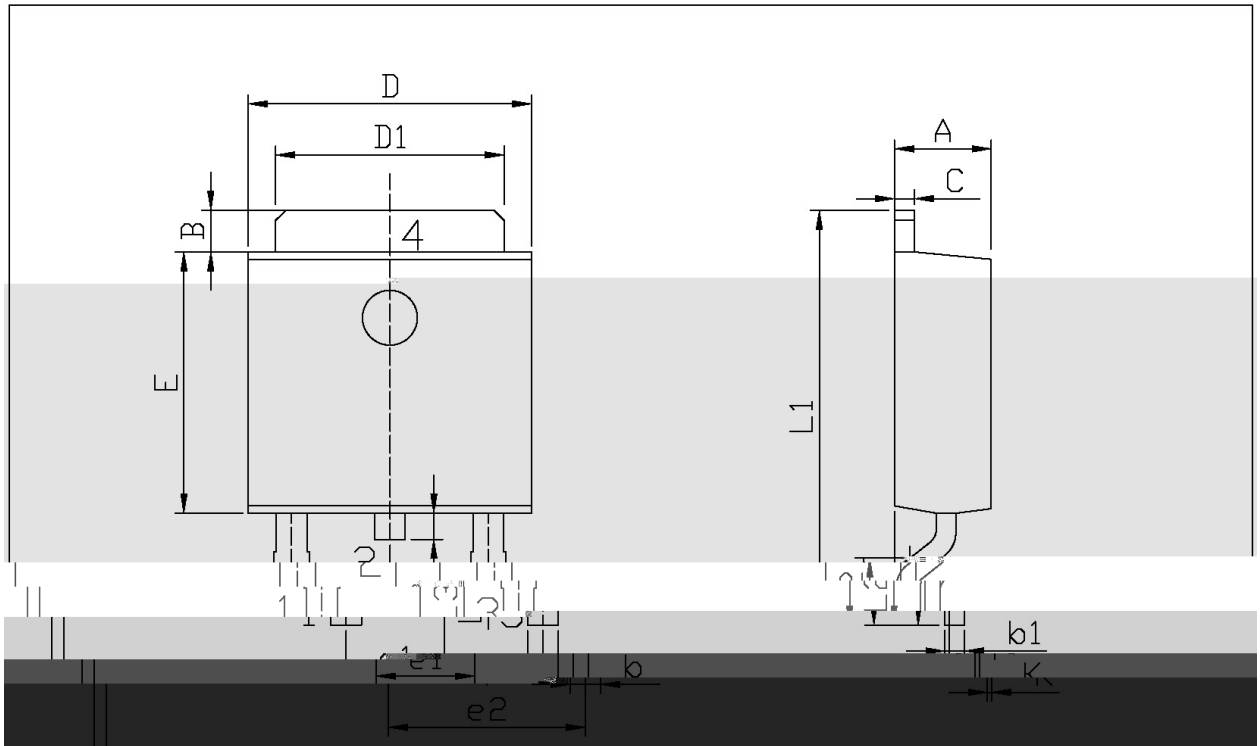
/ Electrical Characteristics(Ta=25)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector to Base Breakdown Voltage	V_{CBO}	I_C=100μA I_E=0	60			V
Collector to Emitter Breakdown Voltage	V_{CEO}	I_C=1.0mA I_B=0	60			V
Emitter to Base Breakdown Voltage	V_{EBO}	I_E=100μA I_C=0	7.0			V
Collector Cut-Off Current	I_{CBO}	V_{CB}=60V I_E=0			10.0	μA
Emitter Cut-Off Current	I_{EBO}	V_{EB}=7.0V I_C=0			10.0	μA
DC Current Gain	$h_{FE(1)}$	V_{CE}=2.0V I_C=600mA	100		400	
	$h_{FE(2)}$	V_{CE}=2.0V I_C=200mA	60			
	$h_{FE(3)}$	V_{CE}=2.0V I_C=2.0A	50			
Collector to Emitter Saturation Voltage	$V_{CE(sat)}$	I_C=1.5A I_B=150mA			0.25	V
Base to Emitter Saturation Voltage	$V_{BE(sat)}$	I_C=1.5A I_B=150mA			1.2	V
Transition Frequency	f_T	V_{CE}=5.0V I_C=1.5A		120		MHz
Collector output capacitance	C_{ob}	V_{CB}=10V I_E=0 f=1.0MHz		30		pF
Turn-On Time	t_{on}	V_{CC}=10V I_C=1A I_{B1}=-I_{B2}=-0.1			0.5	μs
Storage Time	t_{stg}				2.0	μs
Fall Time	t_f				0.5	μs

/ Electrical Characteristic Curve



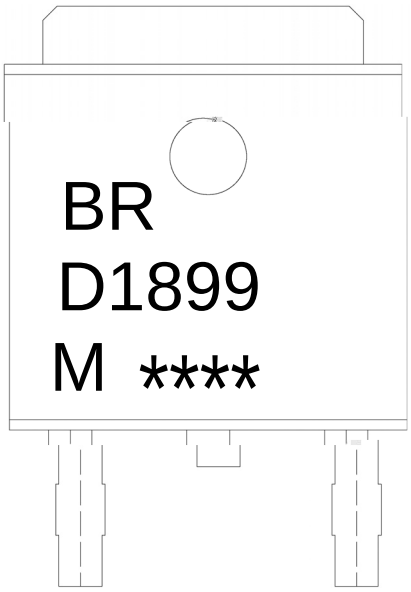
/ Package Dimensions



单位：mm

Dimensions In Millimeters			Dimensions In Millimeters		
Symbol	Min	Max	Symbol	Min	Max
A	2.20	2.40	E	5.95	6.25

/ Marking Instructions



BR

D1899

M: h_{FE}

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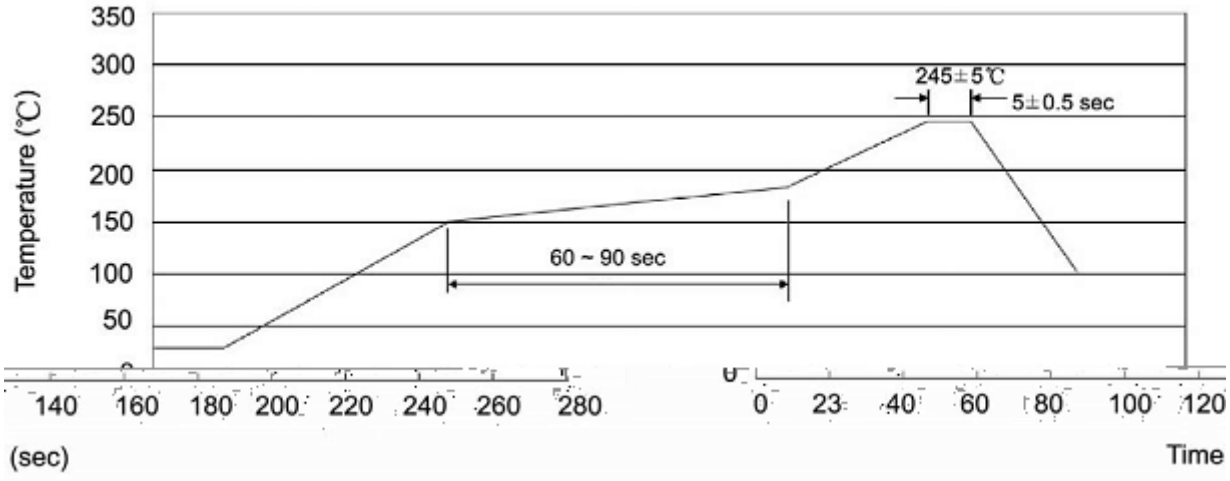
Note:

BR:	Company Code
D1899:	Product Type.
M:	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 mm³)
	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

/ TUBE

Package Type	Units					Dimension		(unit mm³)
	Units/Tube /	Tubes/Inner Box /	Units/Inner Box /	Inner Boxes/Outer Box /	Units/Outer Box /	Tube	Inner Box	Outer Box
TO-251/252	75	48	3,600	5	18,000	526×20.5×5.25	555×164×50	575×290×180

/ Notices