To all our customers

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Renesas Technology Corp.
Customer Support Dept.
April 1, 2003

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2SC5850

Silicon NPN Epitaxial

ADE-208-1479 (Z)

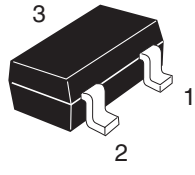
Rev.0
Feb. 2002

Features

- Low frequency amplifier

Outline

CMPAK



1. Emitter
2. Base
3. Collector

Absolute Maximum Ratings

(Ta = 25°C)

Item	Symbol	Ratings	Unit
Collector to base voltage	V_{CBO}	50	V
Collector to emitter voltage	V_{CEO}	40	V
Emitter to base voltage	V_{EBO}	5	V
Collector current	I_C	100	mA
Emitter current	I_E	–100	mA
Collector power dissipation	P_C*	150	mW
Junction temperature	Tj	150	°C
Storage temperature	Tstg	–55 to +125	°C

*Value on the glass epoxy board (10 mm x 10 mm x 0.7 mm)

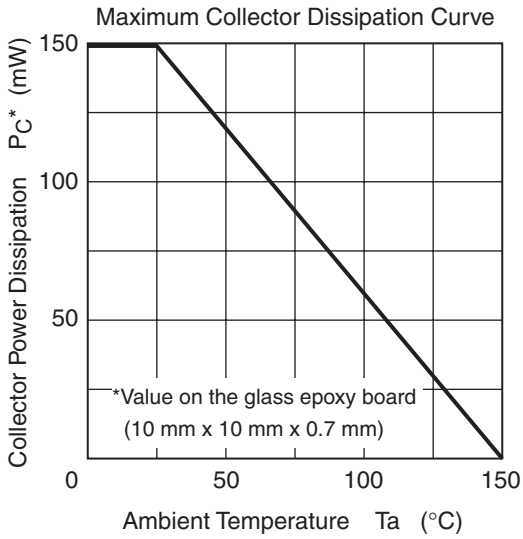
Electrical Characteristics

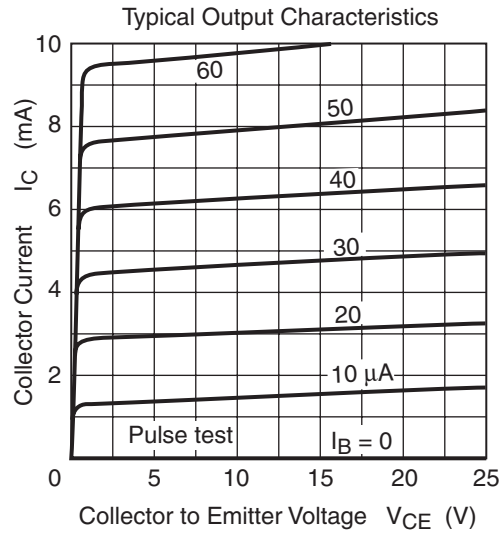
(Ta = 25°C)

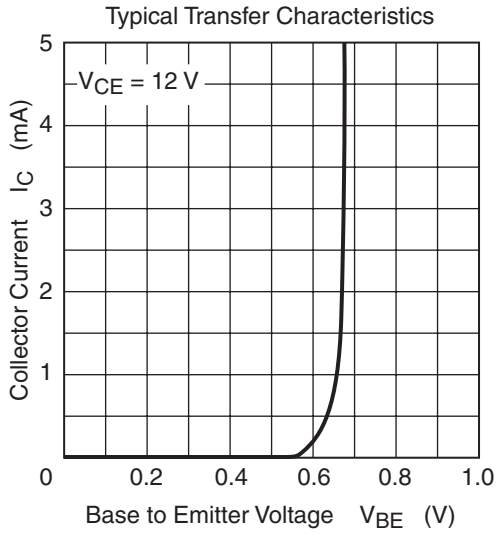
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Collector to base breakdown voltage	$V_{(BR)CBO}$	50	—	—	V	I_C = 10 µA, I_E = 0
Collector to emitter breakdown voltage	$V_{(BR)CEO}$	40	—	—	V	I_C = 1 mA, R_{BE} = ∞
Emitter to base breakdown voltage	$V_{(BR)EBO}$	5	—	—	V	I_E = 10 µA, I_C = 0
Collector cutoff current	I_{CBO}	—	—	0.5	µA	V_{CB} = 30 V, I_E = 0
Emitter cutoff current	I_{EBO}	—	—	0.5	µA	V_{EB} = 2 V, I_C = 0
DC current transfer ratio	h_{FE}*[1]	100	—	500	—	V_{CE} = 12 V, I_C = 2 mA
Collector to emitter saturation voltage	$V_{CE(sat)}$	—	—	0.2	V	I_C = 10 mA, I_B = 1 mA
Base to emitter voltage	V_{BE}	—	—	0.75	V	V_{CE} = 12 V, I_C = 2 mA

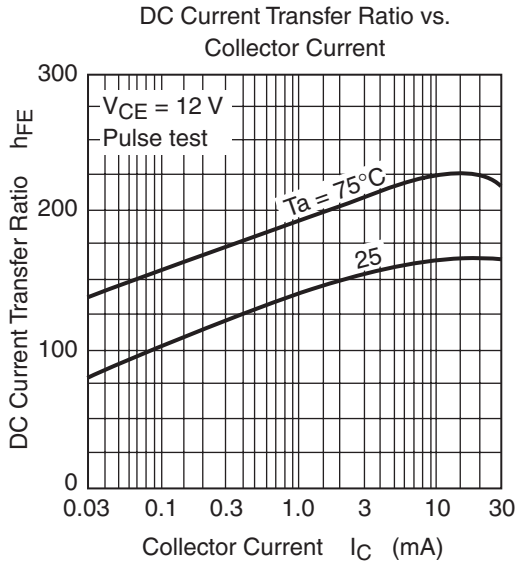
Notes: 1. The 2SC5850 is grouped by h_{FE} as follows.

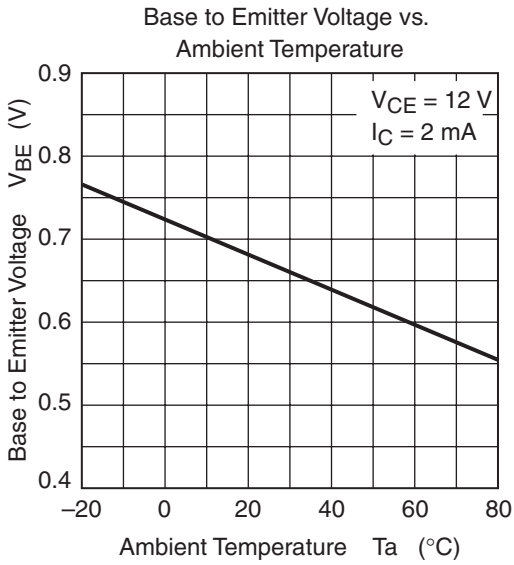
Grade	B	C	D
Mark	LB	LC	LD
h_{FE}	100 to 200	160 to 320	250 to 500

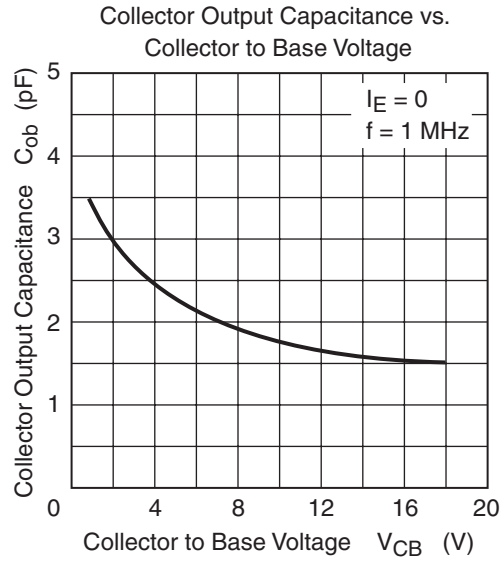

Maximum Collector Dissipation Curve
Collector Power Dissipation PC* (mW)
150
100
50
0
50
100
150
*Value on the glass epoxy board
(10 mm x 10 mm x 0.7 mm)
Ambient Temperature Ta (°C)

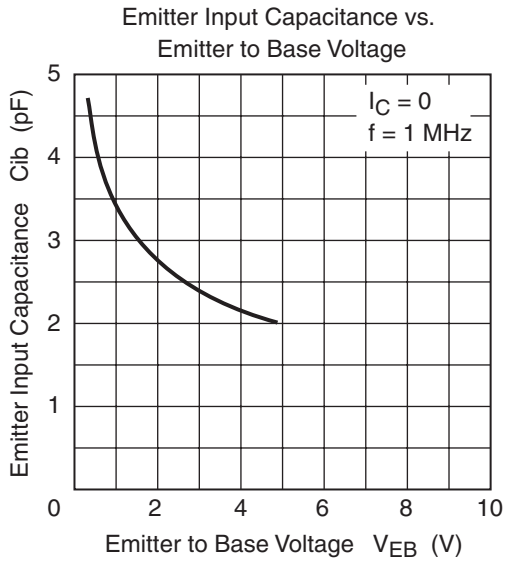

Typical Output Characteristics
Collector Current IC (mA)
10
8
6
4
2
0
5
10
15
20
25
60
50
40
30
20
10 μA
IB = 0
Pulse test
Collector to Emitter Voltage VCE (V)


Typical Transfer Characteristics
Collector Current IC (mA)
5
4
3
2
1
0
0.2
0.4
0.6
0.8
1.0
VCE = 12 V
Base to Emitter Voltage VBE (V)


DC Current Transfer Ratio vs.
Collector Current
DC Current Transfer Ratio hFE
300
200
100
0
0.03
0.1
0.3
1.0
3
10
30
VCE = 12 V
Pulse test
Ta = 75°C
25
Collector Current IC (mA)


Base to Emitter Voltage vs.
Ambient Temperature
V_{CE} = 12 V
I_C = 2 mA
Base to Emitter Voltage V_{BE} (V)
0.9
0.8
0.7
0.6
0.5
0.4
–20
0
20
40
60
80
Ambient Temperature Ta (°C)

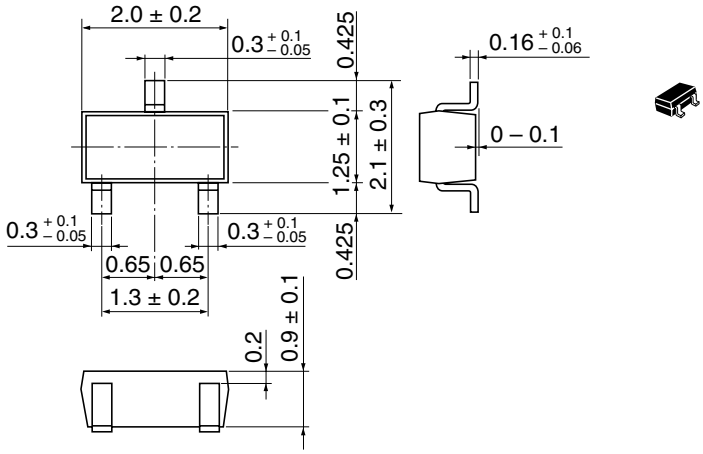

Collector Output Capacitance vs.
Collector to Base Voltage
I_E = 0
f = 1 MHz
Collector Output Capacitance C_{ob} (pF)
5
4
3
2
1
0
4
8
12
16
20
Collector to Base Voltage V_{CB} (V)


Emitter Input Capacitance vs.
Emitter to Base Voltage
I_C = 0
f = 1 MHz
Emitter Input Capacitance Cib (pF)
5
4
3
2
1
0
2
4
6
8
10
Emitter to Base Voltage V_{EB} (V)

Package Dimensions

As of July, 2001

Unit: mm



Hitachi Code	CMPAK
JEDEC	—
JEITA	Conforms
Mass (reference value)	0.006 g

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