

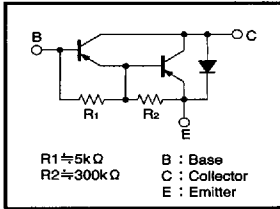
# Power Transistor (-100V, -8A)

2SB1344

●Features

- 1) Darlington connection for high DC current gain.
- 2) Built-in resistor between base and emitter.
- 3) Built-in damper diode.
- 4) Complements the 2SD2025.

●Circuit schematic



●Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Collector-base voltage	V <sub>ceo</sub>	-100	V
Collector-emitter voltage	V <sub>ceo</sub>	-100	V
Emitter-base voltage	V <sub>ebo</sub>	-7	V
Collector current	I <sub>c</sub>	-8	A (DC)
		-10	A (Pulse) *
Power dissipation	P <sub>c</sub>	2	W
		30	W (T <sub>c</sub> =25°C)
Junction temperature	T <sub>j</sub>	150	°C
Storage temperature	T <sub>stg</sub>	-55~150	°C

\* Single pulse P<sub>w</sub>=100ms

●Packaging specifications and hFE

Type	2SB1344
Package	TO-220FP
hFE	1k~20k
Code	—
Basic ordering unit (pieces)	500

●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV <sub>ceo</sub>	-100	—	—	V	I <sub>c</sub> =-50 μA
Collector-emitter breakdown voltage	BV <sub>ceo</sub>	-100	—	—	V	I <sub>c</sub> =-5mA
Collector cutoff current	I <sub>cbo</sub>	—	—	-10	μA	V <sub>ce</sub> =-100V
Emitter cutoff current	I <sub>ebo</sub>	—	—	-3	mA	V <sub>eb</sub> =-5V
Collector-emitter saturation voltage	V <sub>CE(sat)</sub>	—	-1.0	-1.5	V	I <sub>c</sub> /I <sub>e</sub> =-3A/-6mA
DC current transfer ratio	h <sub>FE</sub>	1000	10000	20000	—	V <sub>ce</sub> /I <sub>c</sub> =-3V/-2A
Transition frequency	f <sub>t</sub>	—	12	—	MHz	V <sub>ce</sub> =-5V, I <sub>e</sub> =0.5A, f=10MHz
Output capacitance	C <sub>ob</sub>	—	90	—	pF	V <sub>ce</sub> =-10V, I <sub>e</sub> =0A, f=1MHz

\*1 Measured using pulse current.

\*2 Transition frequency of mounted transistor.

(94L-374-B403)

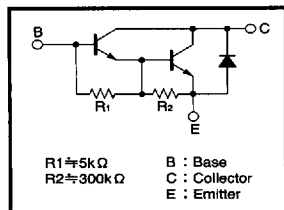
# Power Transistor (100V, 8A)

2SD2025

●Features

- 1) Darlington connection for high DC current gain.
- 2) Built-in resistor between base and emitter.
- 3) Built-in damper diode.
- 4) Complements the 2SB1344.

●Circuit schematic



●Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Collector-base voltage	V <sub>ceo</sub>	100	V
Collector-emitter voltage	V <sub>ceo</sub>	100	V
Emitter-base voltage	V <sub>ebo</sub>	7	V
Collector current	I <sub>c</sub>	8	A (DC)
		10	A (Pulse) *
Power dissipation	P <sub>c</sub>	2	W
		30	W (T <sub>c</sub> =25°C)
Junction temperature	T <sub>j</sub>	150	°C
Storage temperature	T <sub>stg</sub>	-55~150	°C

\* Single pulse P<sub>w</sub>=10ms

●Packaging specifications and hFE

Type	2SD2025
Package	TO-220FP
hFE	1k~20k
Code	—
Basic ordering unit (pieces)	500

●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV <sub>ceo</sub>	100	—	—	V	I <sub>c</sub> =50 μA
Collector-emitter breakdown voltage	BV <sub>ceo</sub>	100	—	—	V	I <sub>c</sub> =5mA
Collector cutoff current	I <sub>cbo</sub>	—	—	10	μA	V <sub>ce</sub> =100V
Emitter cutoff current	I <sub>ebo</sub>	—	—	3	mA	V <sub>eb</sub> =5V
Collector-emitter saturation voltage	V <sub>CE(sat)</sub>	—	—	1.5	V	I <sub>c</sub> /I <sub>e</sub> =3A/6mA
DC current transfer ratio	h <sub>FE</sub>	1000	—	20000	—	V <sub>ce</sub> /I <sub>c</sub> =3V/2A
Transition frequency	f <sub>t</sub>	—	40	—	MHz	V <sub>ce</sub> =5V, I <sub>e</sub> =-0.2A, f=10MHz
Output capacitance	C <sub>ob</sub>	—	50	—	pF	V <sub>ce</sub> =10V, I <sub>e</sub> =0A, f=1MHz

\*1 Measured using pulse current.

\*2 Transition frequency of mounted transistor.

Bi-polar transistors

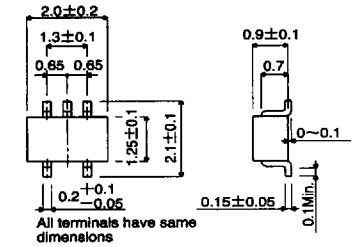
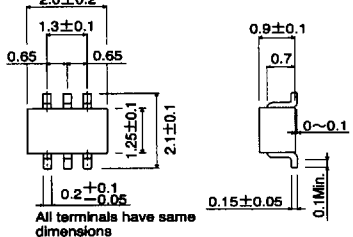
7 8 2 8 9 9 9 0 0 1 6 9 5 0 4 3 6

ROHM

(94L-969-D403)





Type	External dimensions (Units : mm)	Features
<p>UMT5 SC-88A type</p>	 <p>All terminals have same dimensions</p>	<p>The UMT5 consists of two connected transistors or digital transistors in a UMT3 (SC-70) package. The mounting area can be reduced by 50% compared to the UMT3 and the internal circuitry is completed, making this package ideal for high density mounting at half the assembly cost.</p>
<p>UMT6 SC-88 type</p>	 <p>All terminals have same dimensions</p>	<p>The UMT6 consists of two independent transistors or two independent digital transistors in a UMT (SC-70) package. The mounting area and mounting cost can be reduced by 50% compared to the UMT3, and the two transistors are independent to allow free configuration of a high density circuit.</p>

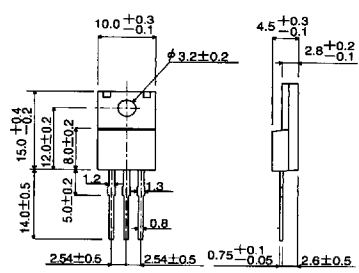
●Types and features of leaded packages

Type	External dimensions (Units : mm)	Features
<p>SPT (SC-72 type)</p>		<p>The SPT is a smaller version of the conventional TO-92 type. The body size (3×4×2 mm<sup>3</sup>) has been reduced to 1/4 that of the TO-92 (5×5×4 mm<sup>3</sup>). The SPT is available on tape for automatic insertion, and less space is occupied on the printed circuit board than the TO-92. Reliability is the same as the TO-92.</p>
<p>FTR</p>		<p>SIL type with a height of 3.4 mm and a lead pitch of 2.54 mm.</p>
<p>FTL</p>		<p>The FTL is a radial taping version of the highly popular FTR. This enables automatic high-density mounting with a radial insertion machine.</p>
<p>ATR (SC-71 type)</p>		<p>SC-71 type with a height of 4.4 mm and a P<sub>c</sub>=1W type.</p>

EXPLANATION

Type	External dimensions (Units : mm)	Features
<p>ATV</p>		<p>The ATV is a radial tapping version of the highly popular ATR. This enables automatic high-density mounting with a radial insertion machine.</p>
<p>TO-92 (SC-43 type)</p>		<p>The SC-43 is for general purpose small signals.</p>
<p>TO-126FP</p>		<p>The TO-126FP is an isolation type package based on a TO-126 full mold. In addition to the features of the TO-126, molded heat sink fins allow easy isolation of the heat sink.</p>
<p>TO-220FP (SC-67 type)</p>		<p>The TO-220FP is an isolation type package based on a TO-220 full mold. In addition to the features of the TO-126 and TO-220, molded heat sink fins allow easy isolation of the heat sink.</p>

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Type	External dimensions (Units : mm)	Features
TO-220FN	 <p>Technical drawing of the TO-220FN transistor showing front and side views with dimensions in mm:</p> <ul style="list-style-type: none"> <li>Front view dimensions: <ul style="list-style-type: none"> <li>Top width: <math>10.0^{+0.3}_{-0.1}</math></li> <li>Top diameter: <math>\phi 3.2 \pm 0.2</math></li> <li>Left side height: <math>15.0^{+0.4}_{-0.2}</math></li> <li>Left side width: <math>12.0 \pm 0.2</math></li> <li>Left side width (lower): <math>8.0 \pm 0.2</math></li> <li>Left side width (lower): <math>5.0 \pm 0.2</math></li> <li>Left side width (lower): <math>1.2</math></li> <li>Left side width (lower): <math>1.3</math></li> <li>Left side width (lower): <math>0.8</math></li> <li>Bottom width: <math>2.54 \pm 0.5</math></li> <li>Bottom width: <math>2.54 \pm 0.5</math></li> <li>Bottom width: <math>0.75^{+0.1}_{-0.05}</math></li> <li>Bottom width: <math>2.6 \pm 0.5</math></li> </ul> </li> <li>Side view dimensions: <ul style="list-style-type: none"> <li>Top width: <math>4.5^{+0.3}_{-0.1}</math></li> <li>Top width: <math>2.8^{+0.2}_{-0.1}</math></li> <li>Bottom width: <math>2.6 \pm 0.5</math></li> </ul> </li> </ul>	<p>The TO-220FN features the same performance as the TO-220FP with approximately 2 mm less height, allowing the design of slimmer devices. Furthermore, the elimination of support pins in the fin (collector electrode) solves short-circuiting problems with neighboring components and the chassis.</p> <p>To make the height to the installation hole the same as the TO-220FP, it can be replaced as is from the TO-220FP.</p>

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