



## Driver Applications

### Applications

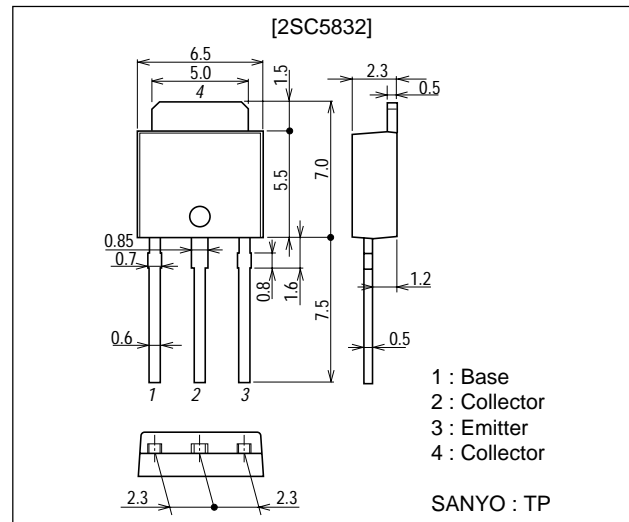
- Suitable for use in switching of inductive load (motor drivers, printer hammer drivers, relay drivers).

### Features

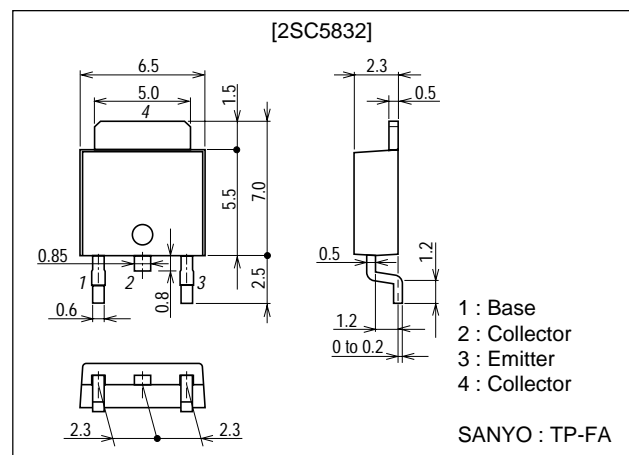
- High DC current gain.
- Wide ASO.
- On-chip zener diode of  $65 \pm 10V$  between collector and base.
- Uniformity in collector-to-base voltage.
- Large inductive load handling capability.

### Package Dimensions

unit : mm  
2045B



unit : mm  
2044B



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## Specifications

### Absolute Maximum Ratings at Ta=25°C

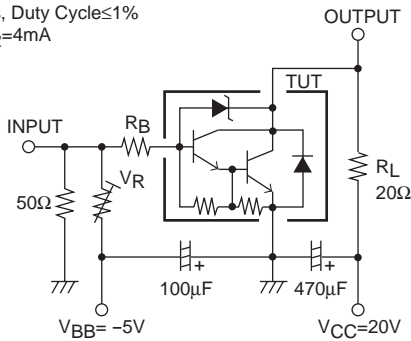
Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V <sub>CB0</sub>	On-chip zener diode(65±10V)	55	V
Collector-to-Emitter Voltage	V <sub>CEO</sub>	On-chip zener diode(65±10V)	55	V
Emitter-to-Base Voltage	V <sub>EBO</sub>		6	V
Collector Current	I <sub>C</sub>		2	A
Collector Current (Pulse)	I <sub>CP</sub>		4	A
Collector Dissipation	P <sub>C</sub>		1.0	W
		T <sub>C</sub> =25°C	10	W
Junction Temperature	T <sub>J</sub>		150	°C
Storage Temperature	T <sub>stg</sub>		-55 to +150	°C

### Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I <sub>CB0</sub>	V <sub>CB</sub> =40V, I <sub>E</sub> =0			10	μA
Emitter Cutoff Current	I <sub>EBO</sub>	V <sub>EB</sub> =5V, I <sub>C</sub> =0			2	mA
DC Current Gain	h <sub>FE</sub>	V <sub>CE</sub> =5V, I <sub>C</sub> =1A	1000	4000		
Gain-Bandwidth Product	f <sub>T</sub>	V <sub>CE</sub> =5V, I <sub>C</sub> =1A		180		MHz
Inductive Load	Es / b	L=100mH, R <sub>BE</sub> =100Ω	25			mJ
Collector-to-Emitter Saturation Voltage	V <sub>CE(sat)</sub>	I <sub>C</sub> =1A, I <sub>B</sub> =4mA		1.0	1.5	V
Base-to-Emitter Saturation Voltage	V <sub>BE(sat)</sub>	I <sub>C</sub> =1A, I <sub>B</sub> =4mA			2.0	V
Collector-to-Base Breakdown Voltage	V <sub>(BR)CBO</sub>	I <sub>C</sub> =100μA, I <sub>E</sub> =0	55	65	75	V
Collector-to-Emitter Breakdown Voltage	V <sub>(BR)CEO</sub>	I <sub>C</sub> =1mA, R <sub>BE</sub> =∞	55	65	75	V
Turn-ON Time	t <sub>on</sub>	See specified Test Circuit.		0.2		μs
Storage Time	t <sub>stg</sub>	See specified Test Circuit.		3.5		μs
Fall Time	t <sub>f</sub>	See specified Test Circuit.		0.5		μs

### Switching Time Test Circuit

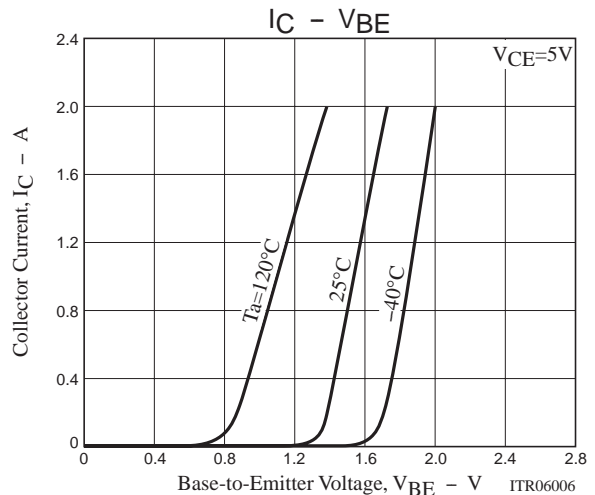
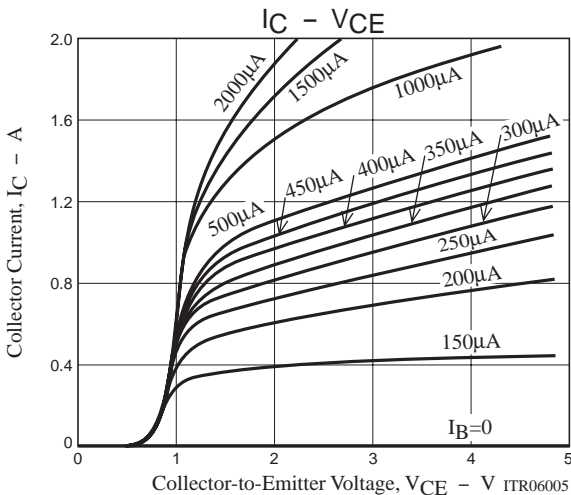
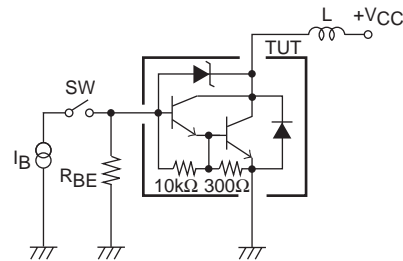
PW=50μs, Duty Cycle≤1%  
I<sub>B1</sub> = -I<sub>B2</sub> = 4mA

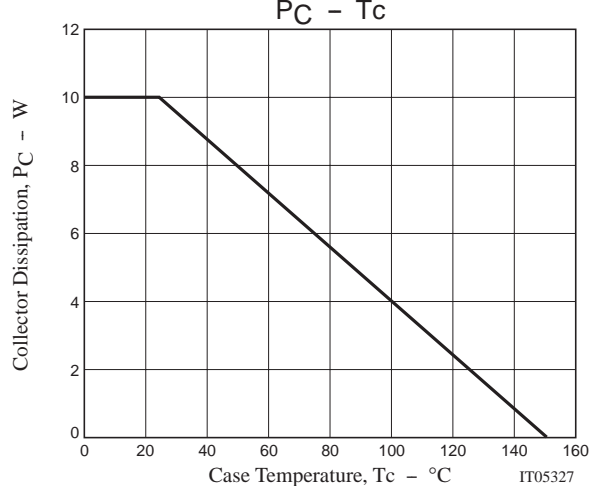
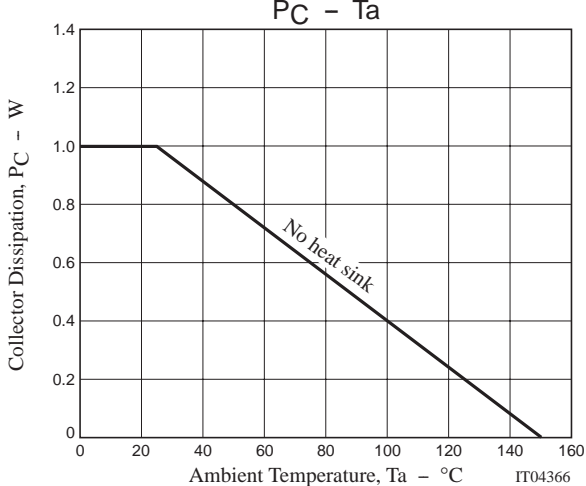
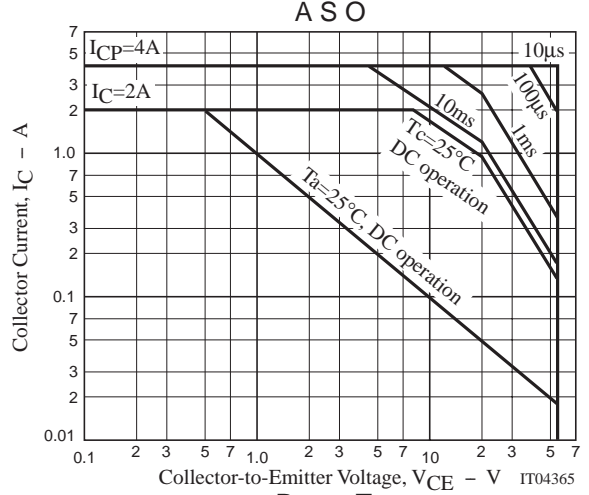
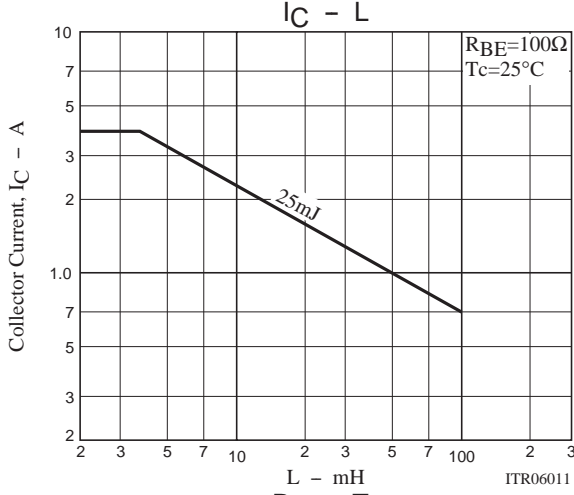
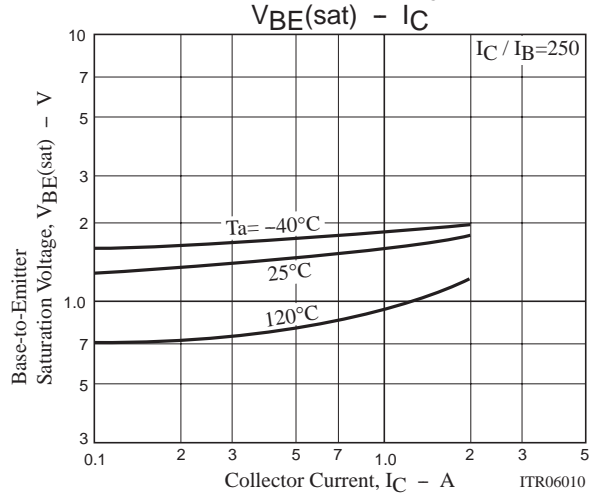
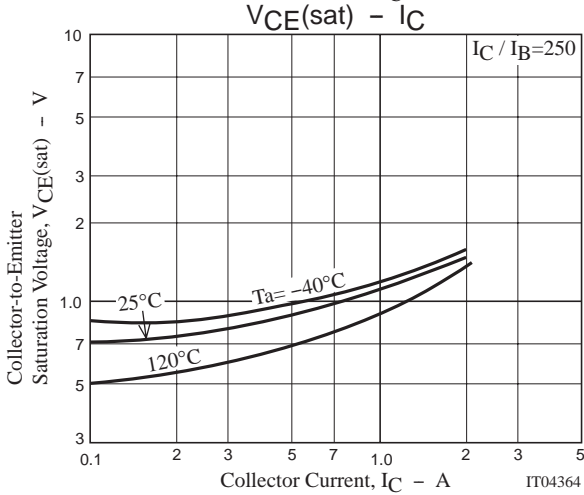
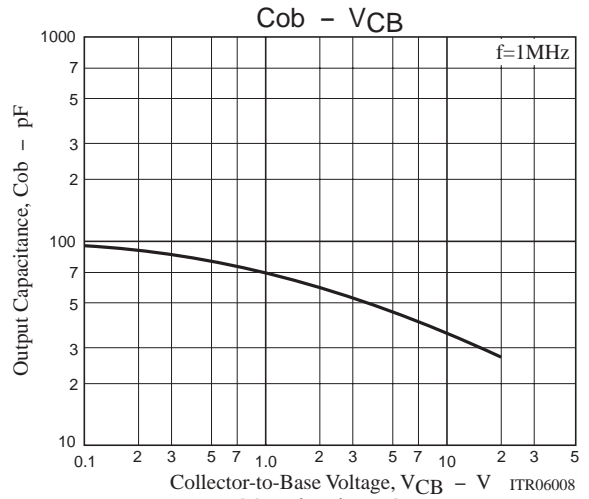
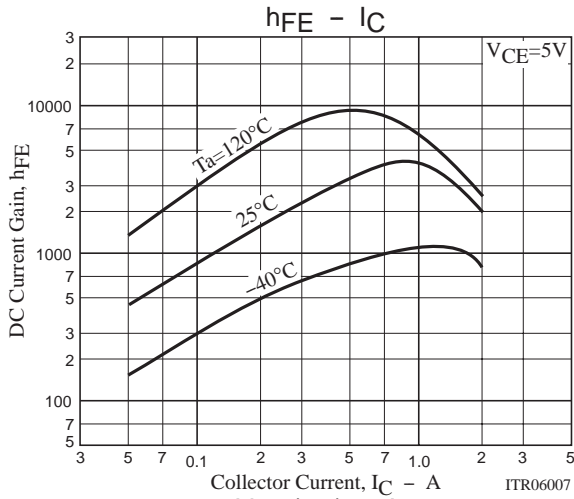


I<sub>C</sub>=250A, I<sub>B1</sub> = -250A, I<sub>B2</sub>=1A

### Es / b Test Circuit

V<sub>CC</sub>=20V, R<sub>BE</sub>=100Ω





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