



**Driver Applications**

**Applications**

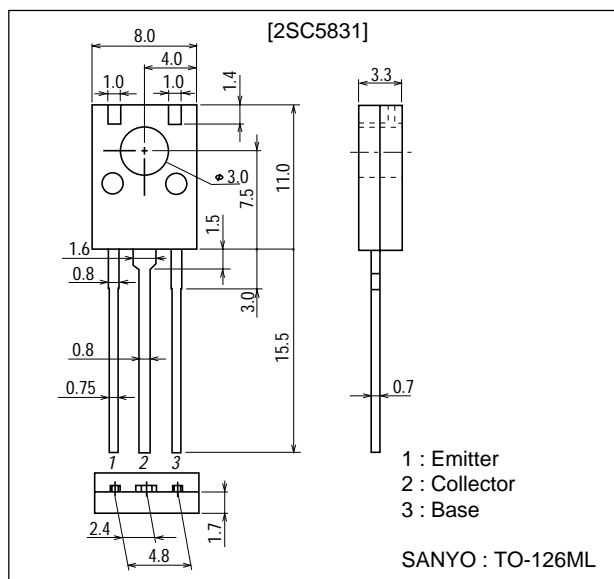
- Suitable for use in switching of inductive load (motor drivers, printer hammer drivers, relay drivers).

**Features**

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

**Package Dimensions**

unit : mm  
2042B



**Specifications**

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

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V <sub>CBO</sub>		*55	V
Collector-to-Emitter Voltage	V <sub>CEO</sub>		*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>		1.5	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

\*: On-chip zener diode(65±10V)

**Electrical Characteristics** at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I <sub>CBO</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

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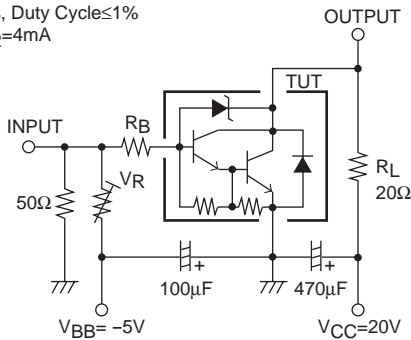
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
DC Current Gain	$h_{FE}$	$V_{CE}=5V, I_C=1A$	1000	4000		
Gain-Bandwidth Product	$f_T$	$V_{CE}=5V, I_C=1A$		180		MHz
Inductive Load	$Es / b$	$L=100mH, R_{BE}=100\Omega$	25			mJ
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=1A, I_B=4mA$		1.0	1.5	V
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=1A, I_B=4mA$			2.0	V
Collector-to-Base Breakdown Voltage	$V(BR)CBO$	$I_C=100\mu A, I_E=0$	55	65	75	V
Collector-to-Emitter Breakdown Voltage	$V(BR)CEO$	$I_C=1mA, R_{BE}=\infty$	55	65	75	V
Turn-ON Time	$t_{on}$	See specified Test Circuit.		0.2		$\mu s$
Storage Time	$t_{stg}$	See specified Test Circuit.		3.5		$\mu s$
Fall Time	$t_f$	See specified Test Circuit.		0.5		$\mu s$

## Switching Time Test Circuit

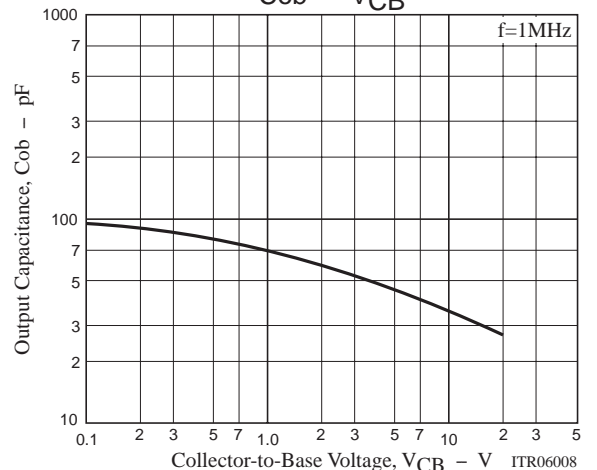
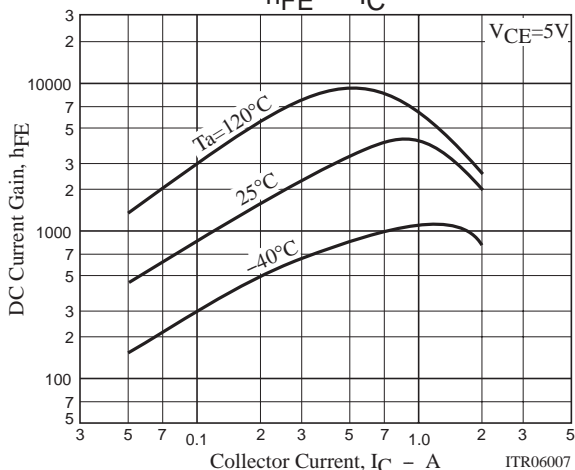
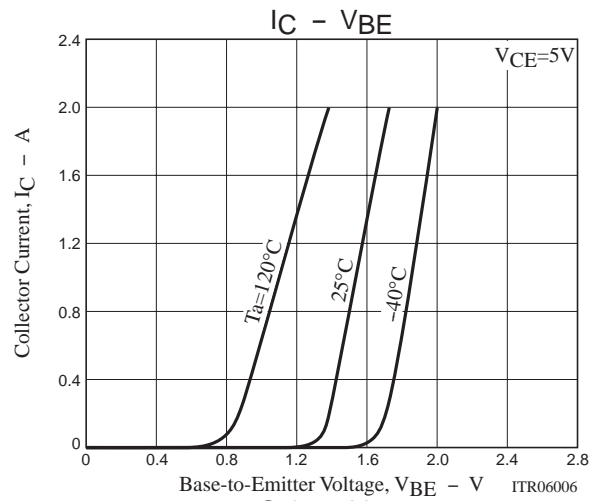
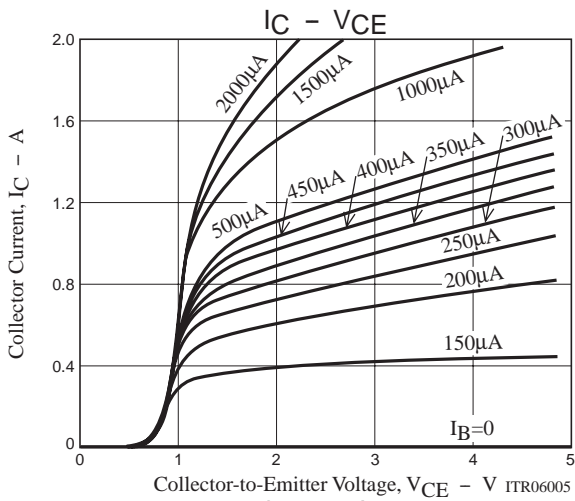
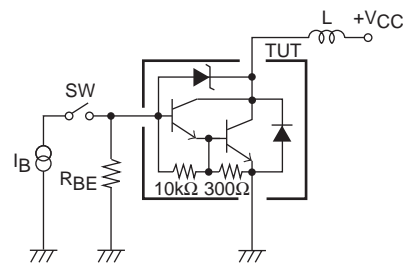
PW=50 $\mu s$ , Duty Cycle $\leq$ 1%  
 $I_{B1} = -I_{B2} = 4mA$



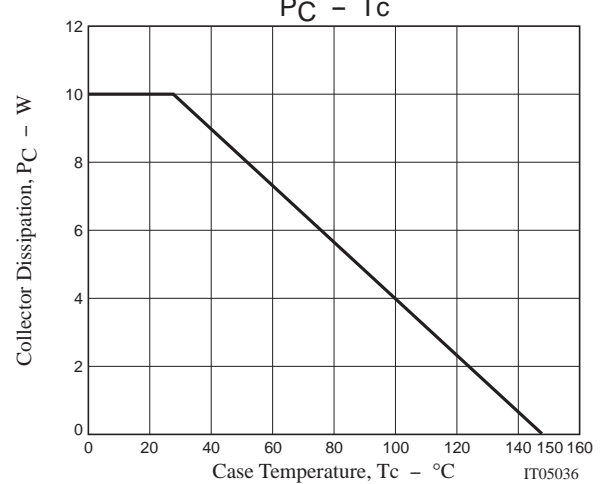
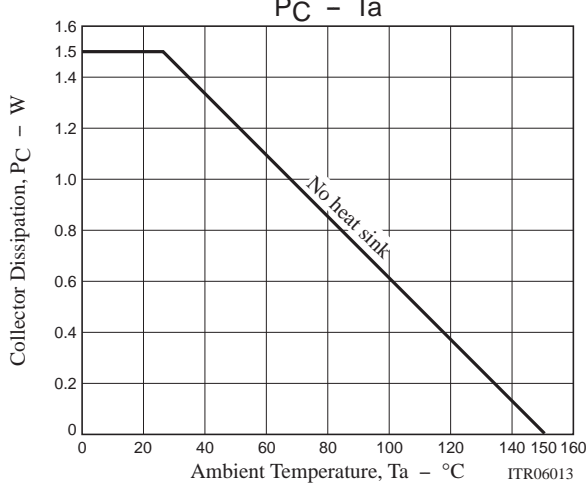
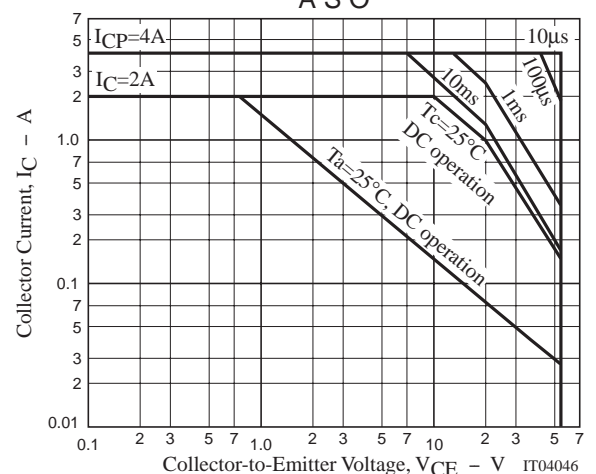
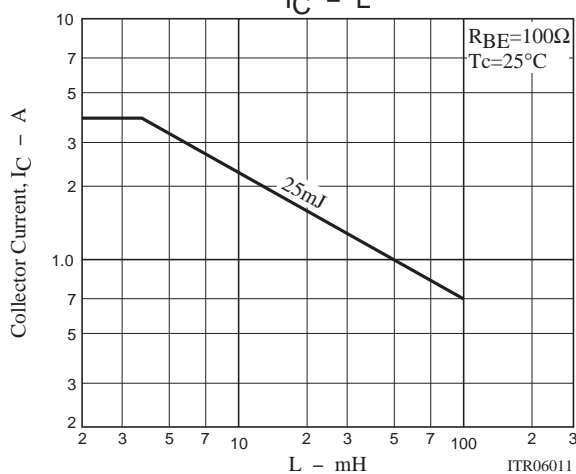
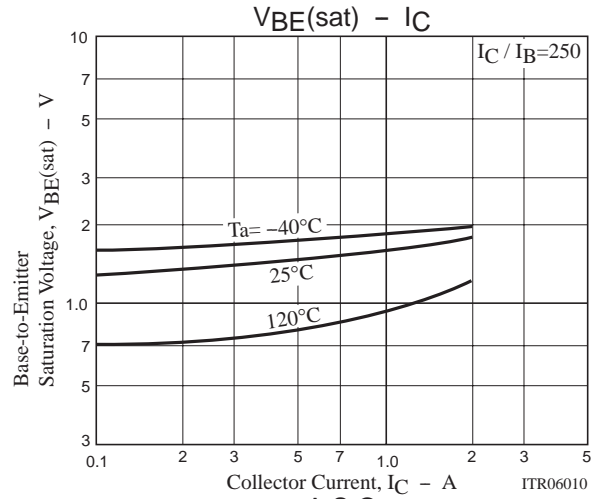
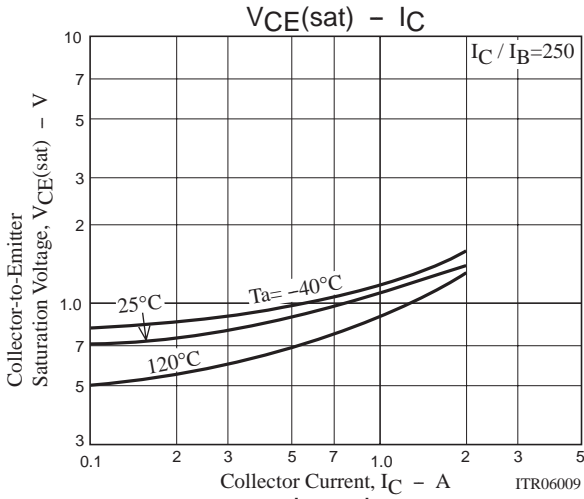
$I_C=250A, I_{B1} = -250A, I_{B2}=1A$

## Es / b Test Circuit

$V_{CC}=20V, R_{BE}=100\Omega$



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