

**2SC4005****Driver Applications****Applications**

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

**Features**

- High DC current gain.
- Large current capacity and wide ASO.
- On-chip Zener diode of  $50\pm 8V$  between collector and base.
- Uniformity in collector-to-base breakdown voltage due to accurate impurity diffusion process.
- Large inductive load handling capability.
- Micaless package facilitating mounting.

**Specifications****Absolute Maximum Ratings at  $T_a = 25^\circ C$** 

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	$V_{CBO}$		42*	V
Collector-to-Emitter Voltage	$V_{CEO}$		42*	V
Emitter-to-Base Voltage	$V_{EBO}$		6	V
Collector Current	$I_C$		2	A
Collector Current (Pulse)	$I_{CP}$		4	A
Base Current	$I_B$		0.4	A
Collector Dissipation	$P_C$		2.0	W
		$T_c=25^\circ C$	15	W
Junction Temperature	$T_j$		150	$^\circ C$
Storage Temperature	$T_{stg}$		-55 to +150	$^\circ C$

\* : On-chip Zener diode of  $50\pm 8V$ **Electrical Characteristics at  $T_a = 25^\circ C$** 

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	$I_{CBO}$	$V_{CB}=30V, I_E=0$			10	$\mu A$
Emitter Cutoff Current	$I_{EBO}$	$V_{EB}=5V, I_C=0$			2	mA
DC Current Gain	$h_{FE}$	$V_{CE}=5V, I_C=1A$	2000	4000		
Gain-Bandwidth Product	$f_T$	$V_{CE}=5V, I_C=1A$		180		MHz
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

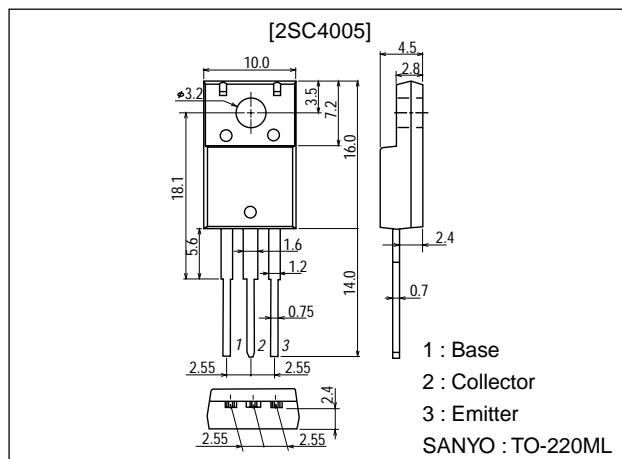
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**Package Dimensions**

unit:mm

2041A

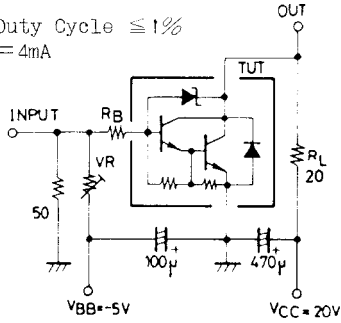


# 2SC4005

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=0.1mA, I_E=0$	42	50	58	V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=1mA, R_{BE}=\infty$	42	50	58	V
Inductive Load Handling Capability	Es/b	$L=100mH, R_{BE}=100\Omega$	25			mJ
Turn-ON Time	$t_{on}$	See specified Test Circuit. $V_{CC}=20V, I_C=1A, I_{B1}=-I_{B2}=4mA$		0.2		$\mu s$
Storage Time	$t_{stg}$	See specified Test Circuit. $V_{CC}=20V, I_C=1A, I_{B1}=-I_{B2}=4mA$		3.5		$\mu s$
Fall Time	$t_f$	See specified Test Circuit. $V_{CC}=20V, I_C=1A, I_{B1}=-I_{B2}=4mA$		0.5		$\mu s$

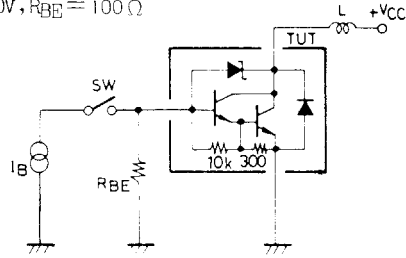
## Switching Time Test Circuit

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

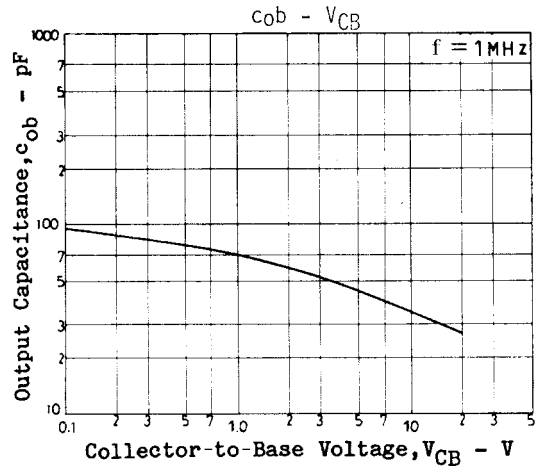
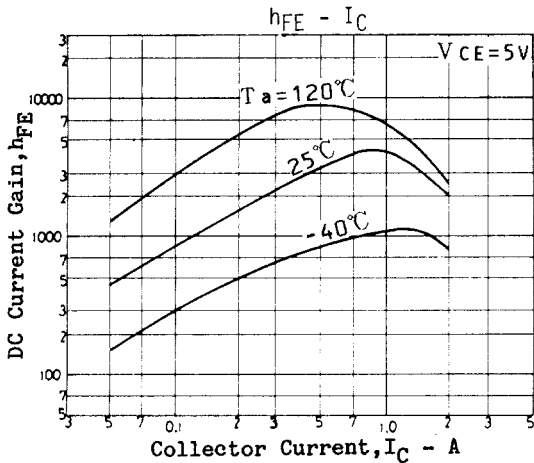
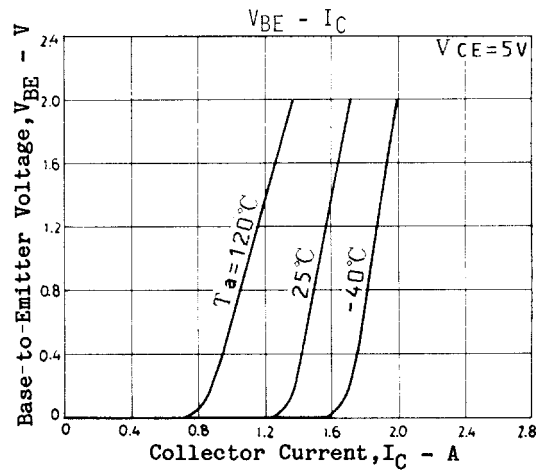
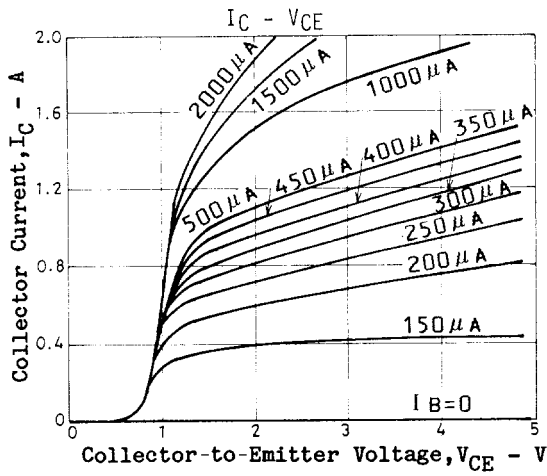


## Es/b Test Circuit

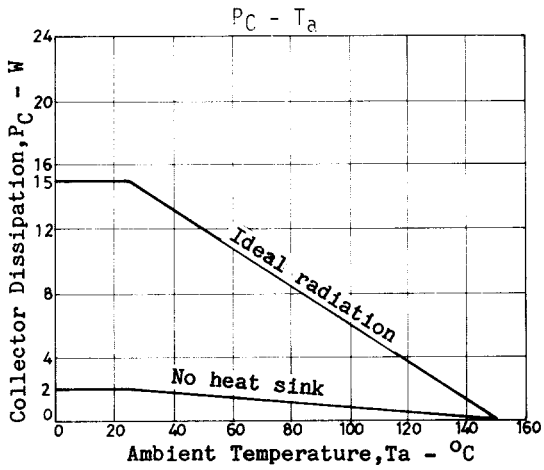
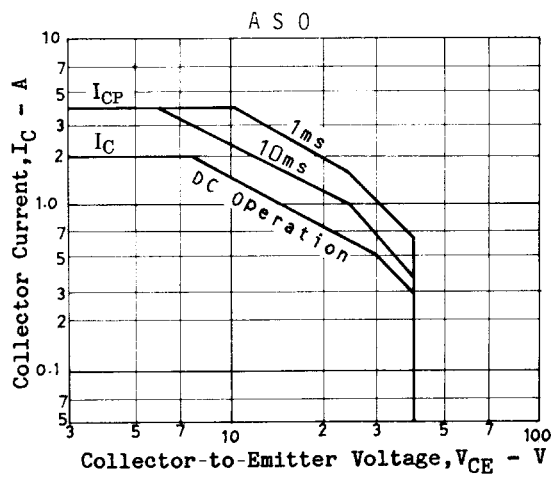
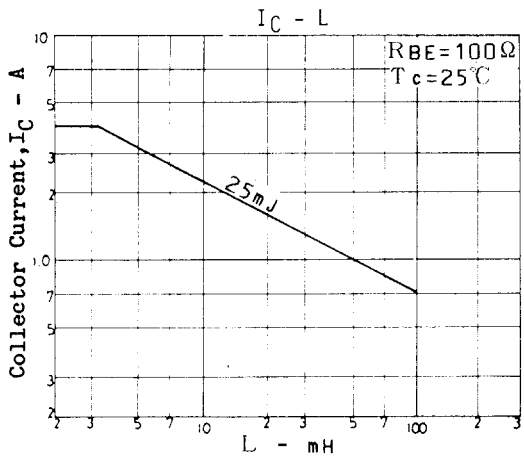
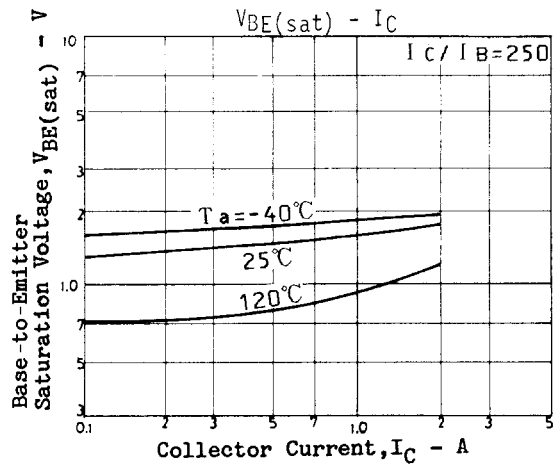
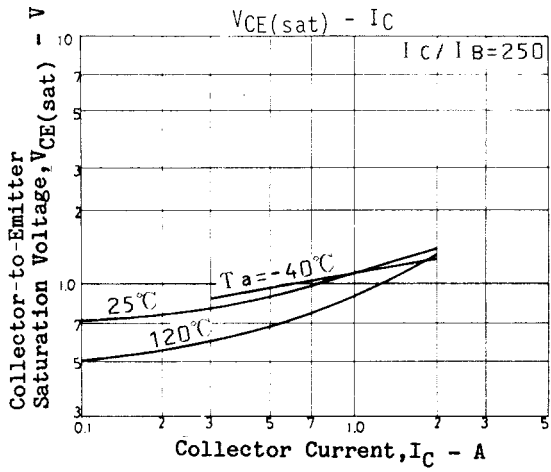
$V_{CC}=20V, R_{BE}=100\Omega$



Unit (resistance:  $\Omega$ , capacitance: F)



# 2SC4005



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