Ordering number:EN2271A

NPN Planar Type Silicon Darlington Transistor

2SC4005

Driver Applications

Applications

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

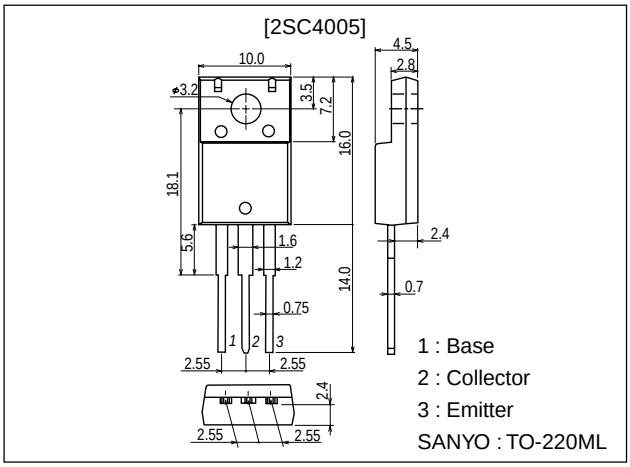
Features

· High DC current gain.
· Large current capacity and wide ASO.
· On-chip Zener diode of 50±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.

Package Dimensions

unit:mm

2041A



Specifications

Absolute Maximum Ratings at Ta = 25˚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
		Tc=25˚C	15	W
Junction Temperature	Tj		150	˚C
Storage Temperature	Tstg		–55 to +150	˚C

* : On-chip Zener diode of 50±8V

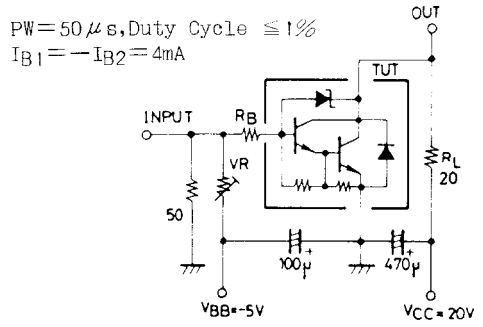
Electrical Characteristics at Ta = 25˚C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CBO}	V_{CB}=30V, I_E=0			10	μA
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

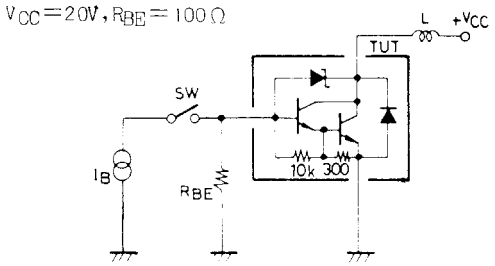
SANYO Electric Co.,Ltd. Semiconductor Bussiness Headquaters
TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

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}=∞	42	50	58	V
Inductive Load Handling Capability	Es/b	L=100mH, R_{BE}=100Ω	25			mJ
Turn-ON Time	t_{on}	See specified Test Circuit. V_{CC}=20V, I_C=1A, I_{B1}=–I_{B2}=4mA		0.2		μs
Storage Time	t_{stg}	See specified Test Circuit. V_{CC}=20V, I_C=1A, I_{B1}=–I_{B2}=4mA		3.5		μs
Fall Time	t_f	See specified Test Circuit. V_{CC}=20V, I_C=1A, I_{B1}=–I_{B2}=4mA		0.5		μs

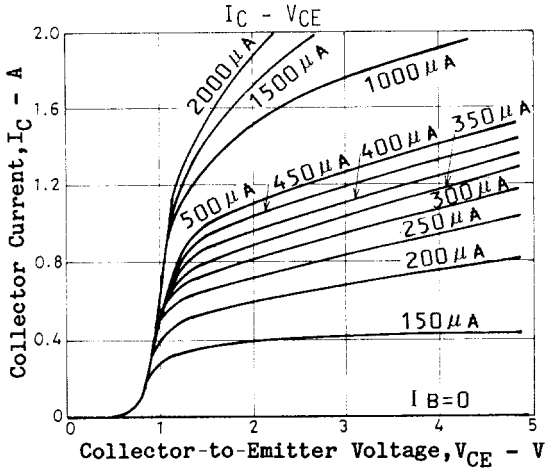
Switching Time Test Circuit

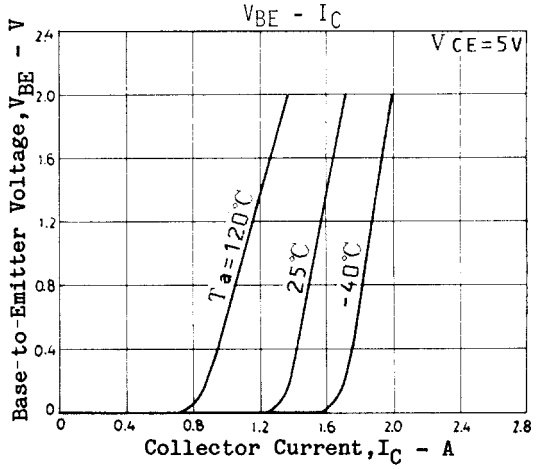


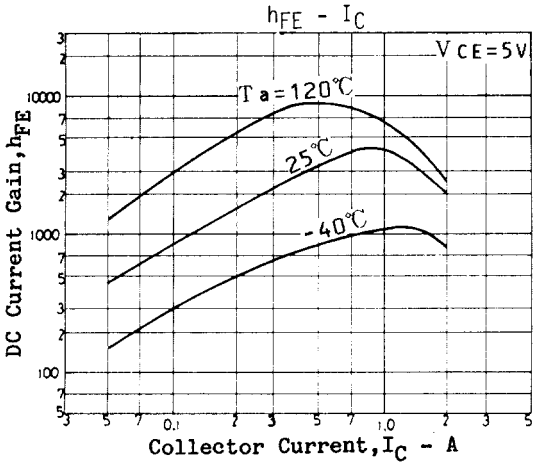
Es/b Test Circuit

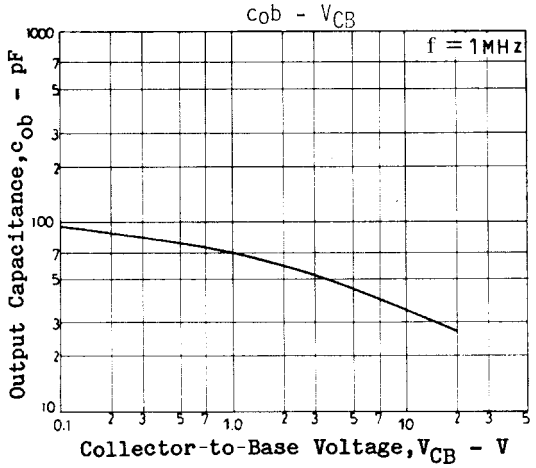


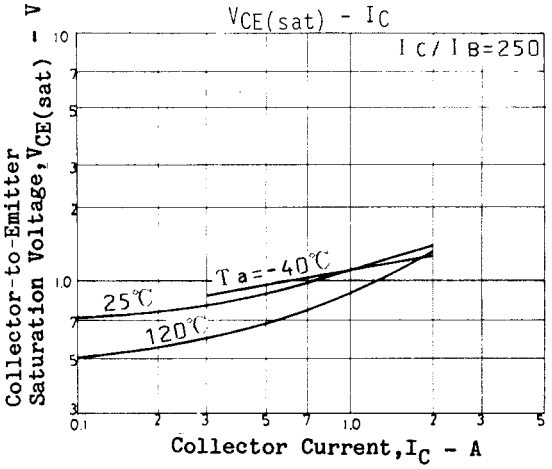
Unit (resistance: Ω, capacitance: F)

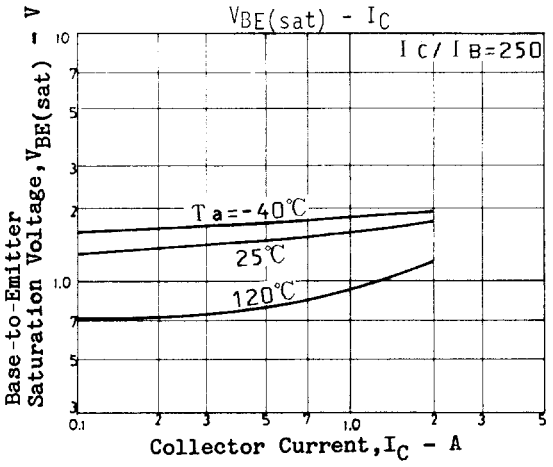


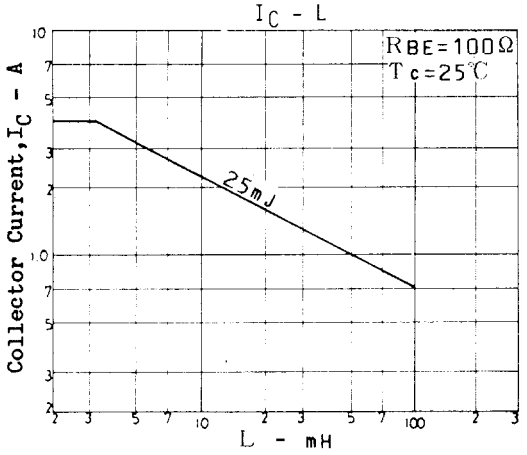


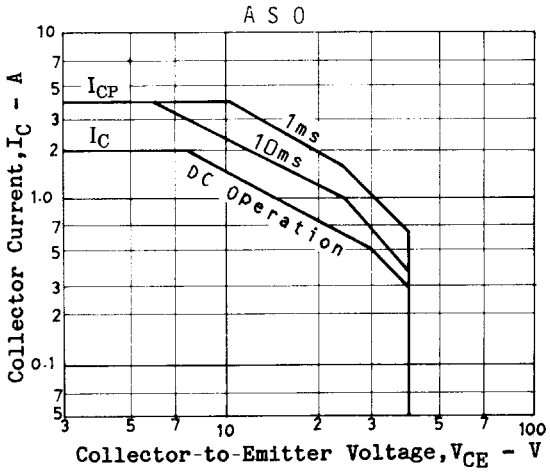


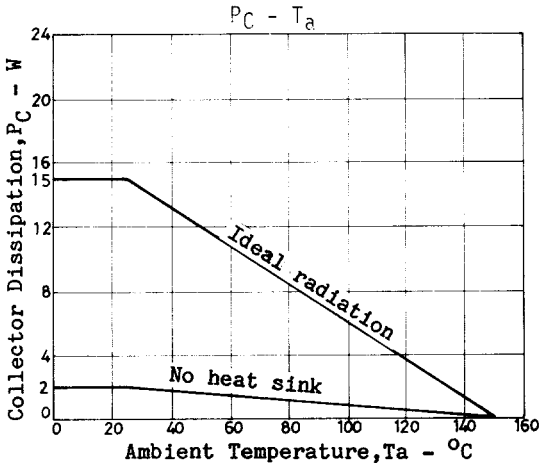



VCE(sat) - IC
Ic/IB=250
Ta=-40℃
25℃
120℃
Collector-to-Emitter Saturation Voltage,VCE(sat) - V
Collector Current,IC - A


VBE(sat) - IC
Ic/IB=250
Ta=-40℃
25℃
120℃
Base-to-Emitter Saturation Voltage,VBE(sat) - V
Collector Current,IC - A


IC - L
RBE=100Ω
Tc=25℃
25mJ
Collector Current,IC - A
L - mH


ASO
ICP
IC
1ms
10ms
DC operation
Collector Current,IC - A
Collector-to-Emitter Voltage,VCE - V


PC - Ta
Ideal radiation
No heat sink
Collector Dissipation,PC - W
Ambient Temperature,Ta - °C