

SANYO

No.2220B

2SC3986

NPN Planar Silicon Darlington Transistor

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 $60 \pm 10V$ between collector and base.
- Uniformity in collector-to-base breakdown voltage due to the adoption of an accurate impurity diffusion process.
- High inductive load handling capability.
- Micaless package facilitating mounting.

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

			unit
Collector-to-Base Voltage	V_{CB0}	50 ※	V
Collector-to-Emitter Voltage	V_{CEO}	50 ※	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
		15	W
Junction Temperature	T_j	150	$^\circ C$
Storage Temperature	T_{stg}	-55 to +150	$^\circ C$

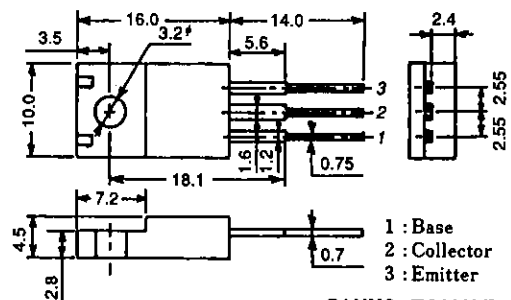
$T_c = 25^\circ C$

※ : With Zener diode ($60 \pm 10V$)

Electrical Characteristics at $T_a = 25^\circ C$

			min	typ	max	unit
Collector Cutoff Current	I_{CB0}	$V_{CB} = 40V, I_E = 0$			10	μA
Emitter Cutoff Current	I_{EBO}	$V_{EB} = 5V, I_C = 0$			2	mA
DC Current Gain	h_{FE}	$V_{CE} = 5V, I_C = 1A$	1000	4000		
Gain-Bandwidth Product	f_T	$V_{CE} = 5V, I_C = 1A$		180		MHz
C-E Saturation Voltage	$V_{CE(sat)}$	$I_C = 1A, I_B = 4mA$		1.0	1.5	V
B-E Saturation Voltage	$V_{BE(sat)}$	$I_C = 1A, I_B = 4mA$			2.0	V
C-B Breakdown Voltage	$V_{(BR)CBO}$	$I_C = 0.1mA, I_E = 0$	50	60	70	V
C-E Breakdown Voltage	$V_{(BR)CEO}$	$I_C = 1mA, R_{BE} = \infty$	50	60	70	V
Inductive Load Handling Capability	E_s/b	$L = 100mH, R_{BE} = 100\Omega$	25			mJ

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Package Dimensions 2041A
(unit : mm)

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Turn-ON Time
Storage Time
Fall Time

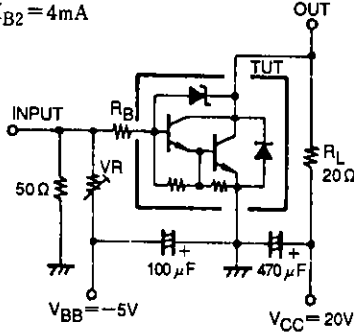
t_{on}
 t_{stg}
 t_f

See specified Test Circuit.
 $V_{CC} = 20V, I_C = 1A,$
 $I_{B1} = -I_{B2} = 4mA$

min	typ	max	unit
	0.2		μs
	3.5		μs
	0.5		μs

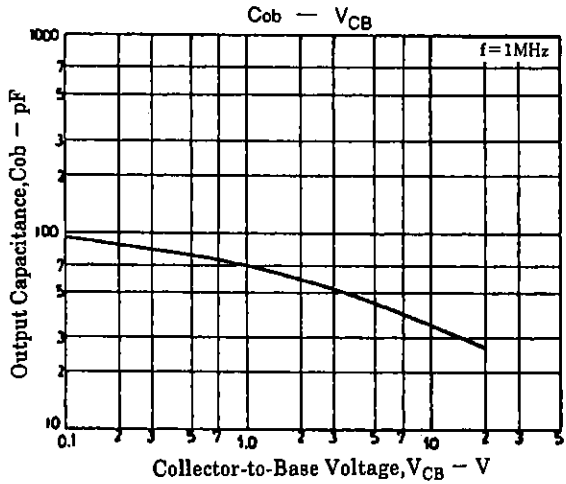
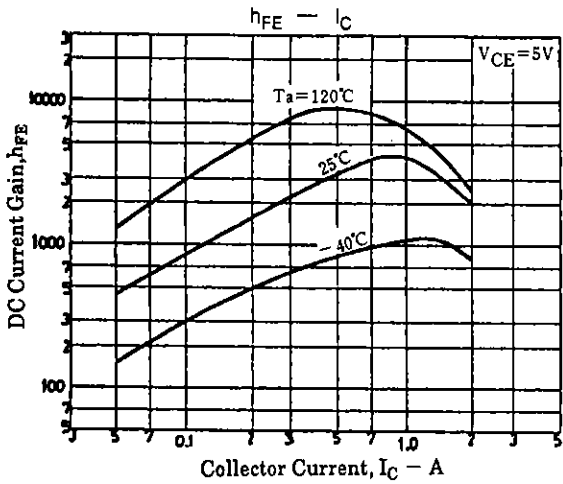
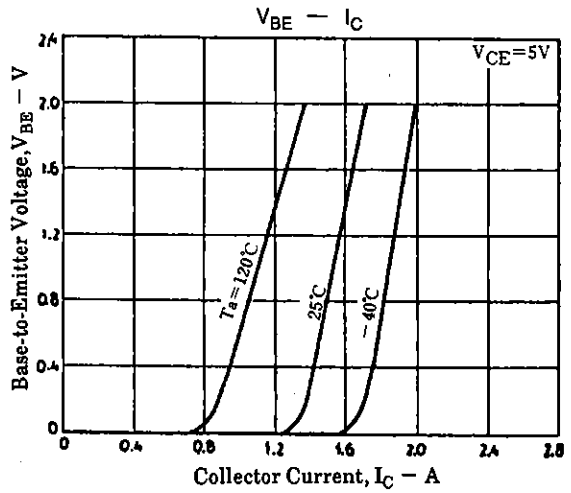
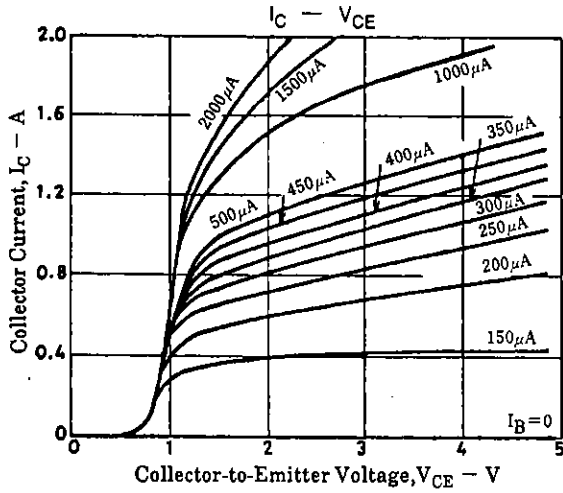
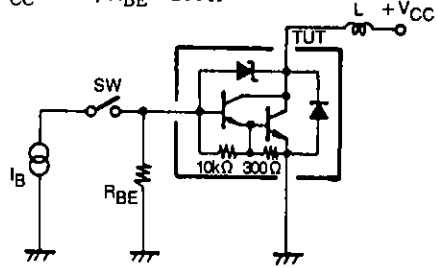
Switching Time Test Circuit

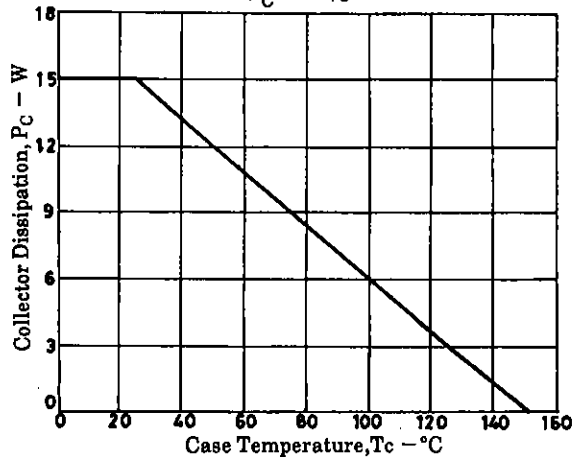
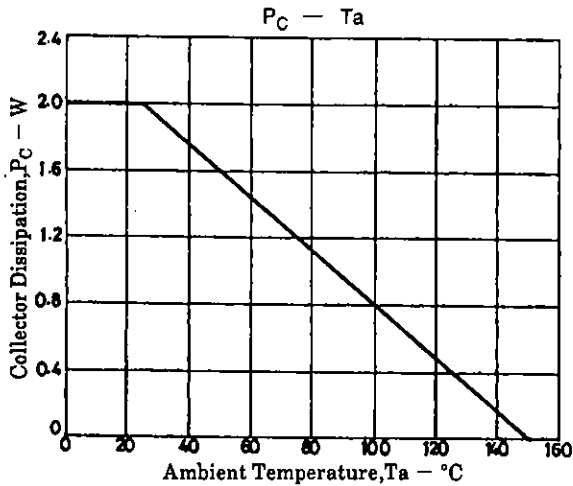
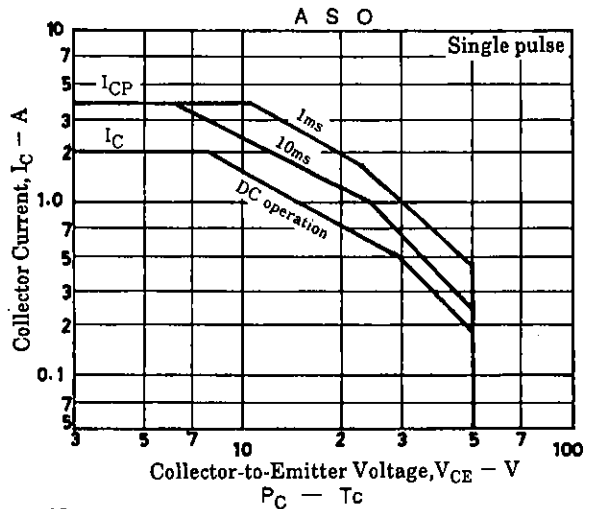
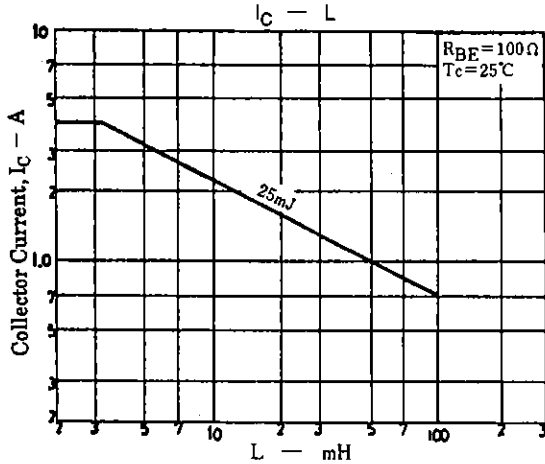
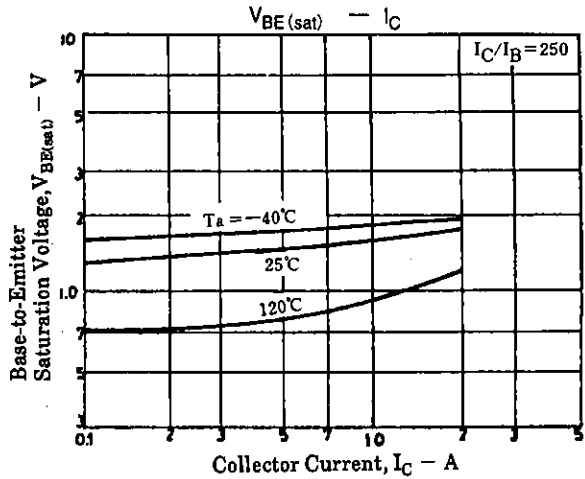
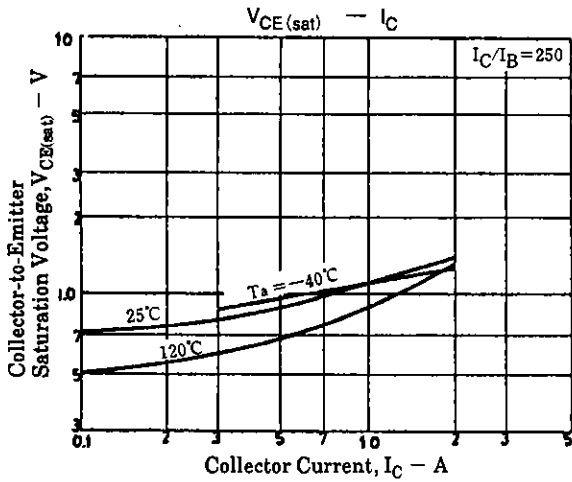
PW = 50 μs , Duty Cycle \leq 1%
 $I_{B1} = -I_{B2} = 4mA$



Es/b Test Circuit

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





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