

<b>SANYO</b>	No.3196	<b>2SD2176</b>
		NPN Epitaxial Planar Silicon Transistor
<b>Motor Driver Applications</b>		

**Features**

- Darlington connection
- On-chip zener diode of  $60 \pm 10V$  between collector and base
- High inductive load handling capability
- Small-sized package

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

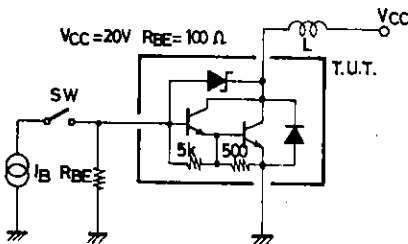
			unit
Collector to Base Voltage	$V_{CB0}$	On-chip zener diode ( $60 \pm 10V$ )	50 V
Collector to Emitter Voltage	$V_{CEO}$	"	50 V
Emitter to Base Voltage	$V_{EBO}$		6 V
Collector Current	$I_C$		1.2 A
Collector Current(Pulse)	$I_{CP}$		2.5 A
Base Current	$I_B$		0.2 A
Collector Dissipation	$P_C$	Mounted on ceramic board ( $250mm^2 \times 0.8mm$ )	1.3 W
Junction Temperature	$T_j$		150 $^\circ C$
Storage Temperature	$T_{stg}$		-55 to +150 $^\circ C$

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

			min	typ	max	unit
Collector Cutoff Current	$I_{CBO}$	$V_{CB} = 40V, I_E = 0$			10	$\mu A$
Emitter Cutoff Current	$I_{EBO}$	$V_{EB} = 5V, I_C = 0$			2	mA
DC Current Gain	$h_{FE}$	$V_{CE} = 3V, I_C = 500mA$	1000		20000	
C-E Saturation Voltage	$V_{CE(sat)}$	$I_C = 500mA, I_B = 1mA$		1.0	1.5	V
B-E Saturation Voltage	$V_{BE(sat)}$	$I_C = 500mA, I_B = 1mA$		1.5	2	V
C-B Breakdown Voltage	$V_{(BR)CBO}$	$I_C = 100\mu A, I_E = 0$	50		70	V
C-E Breakdown Voltage	$V_{(BR)CEO}$	$I_C = 1mA, R_{BE} = \infty$	50		70	V
Inductive Load Handling Capability	$Es/b$	$L = 30mH, R_{BE} = 100\Omega$	15			mJ

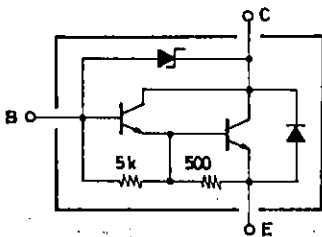
Marking : DQ

**Es/b Test Circuit**



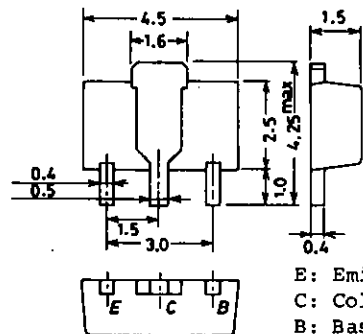
Unit (Resistance :  $\Omega$ )

**Electrical Connection**



Unit (Resistance :  $\Omega$ )

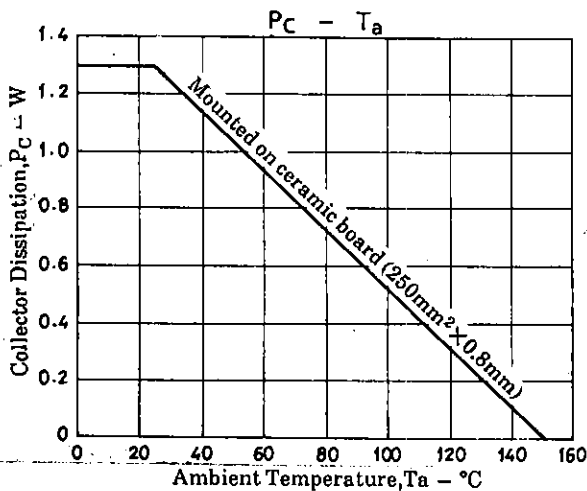
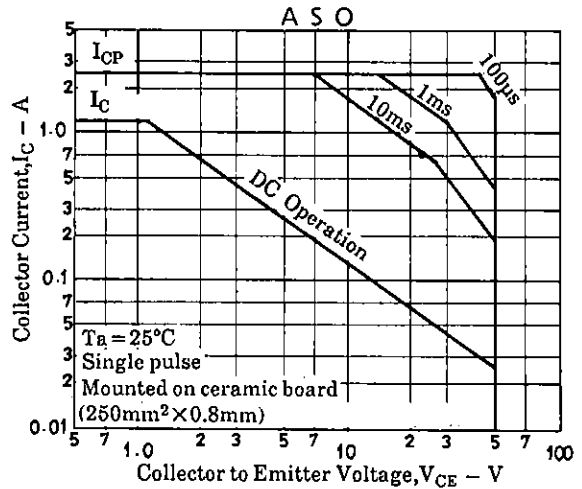
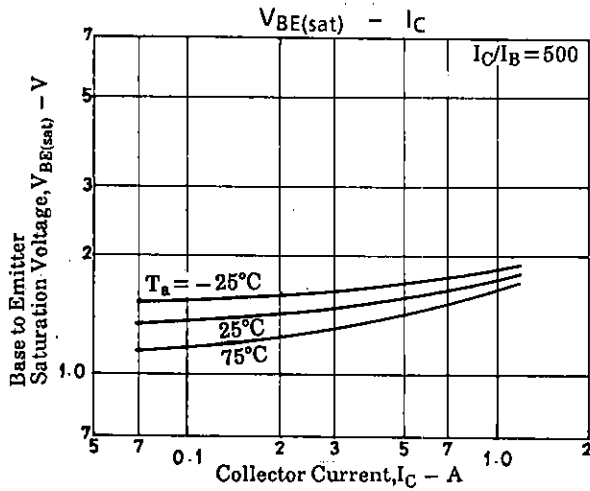
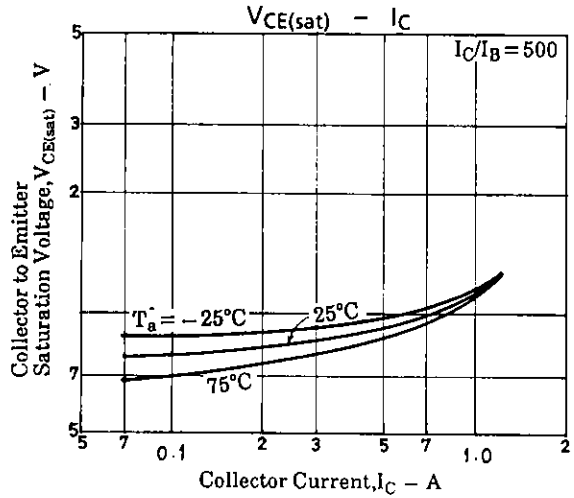
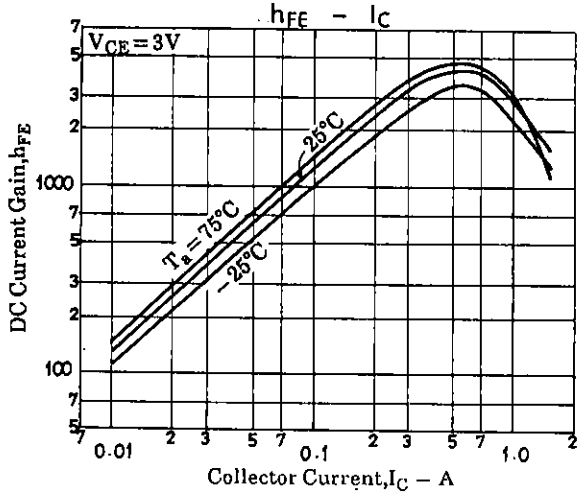
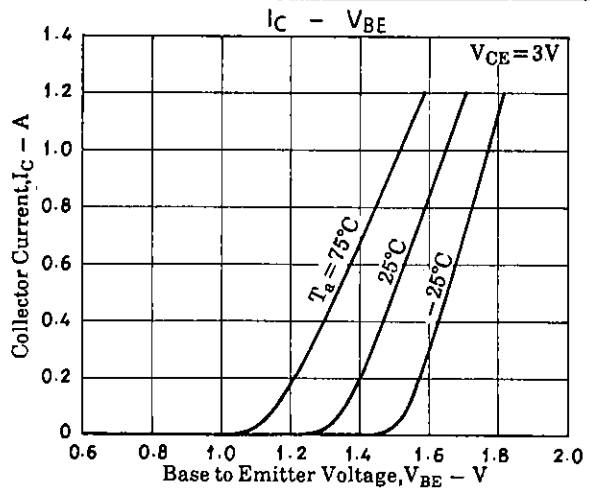
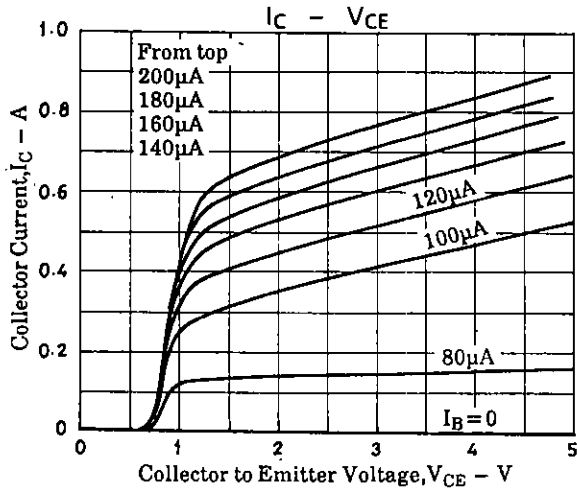
**Package Dimensions 2038**  
(unit : mm)



E: Emitter  
C: Collector  
B: Base

SANYO: PCP

(Bottom View)



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