

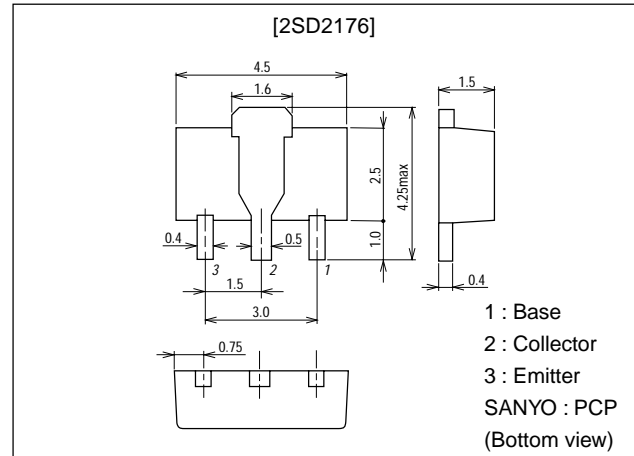
**2SD2176****Motor Driver Applications****Features**

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

**Package Dimensions**

unit:mm

2038A

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

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	$V_{\text{CBO}}$	On-chip Zener diode ( $60\pm 10\text{V}$ )	50	V
Collector-to-Emitter Voltage	$V_{\text{CEO}}$	On-chip Zener diode ( $60\pm 10\text{V}$ )	50	V
Emitter-to-Base Voltage	$V_{\text{EBO}}$		6	V
Collector Current	$I_{\text{C}}$		1.2	A
Collector Current (Pulse)	$I_{\text{CP}}$		2.5	A
Base Current	$I_{\text{B}}$		0.2	A
Collector Dissipation	$P_{\text{C}}$	Mounted on ceramic board ( $250\text{mm}^2 \times 0.8\text{mm}$ )	1.3	W
Junction Temperature	$T_{\text{J}}$		150	$^\circ\text{C}$
Storage Temperature	$T_{\text{stg}}$		-55 to +150	$^\circ\text{C}$

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

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

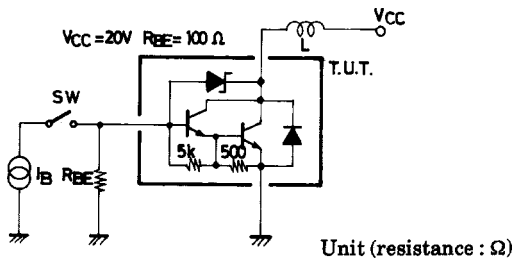
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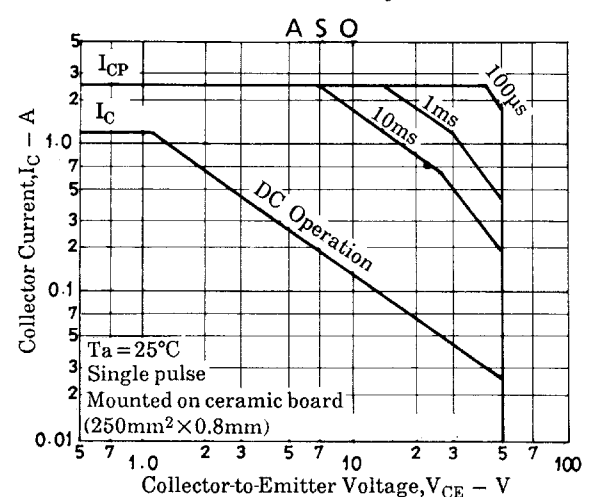
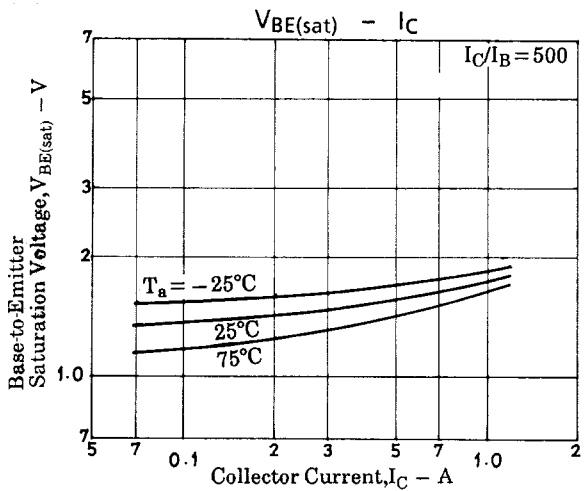
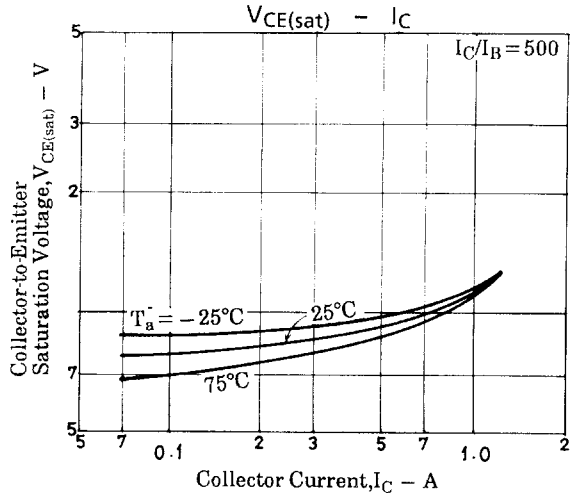
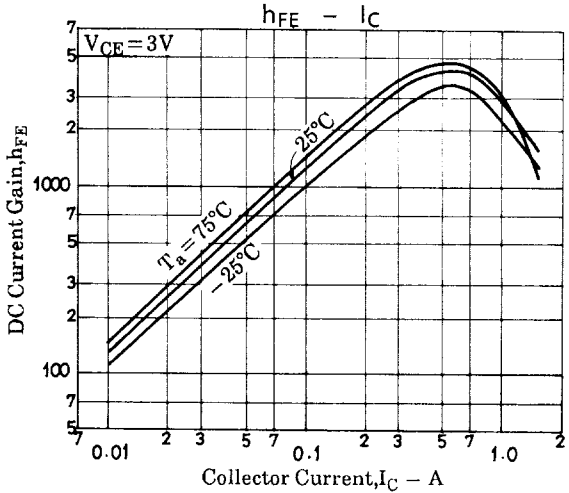
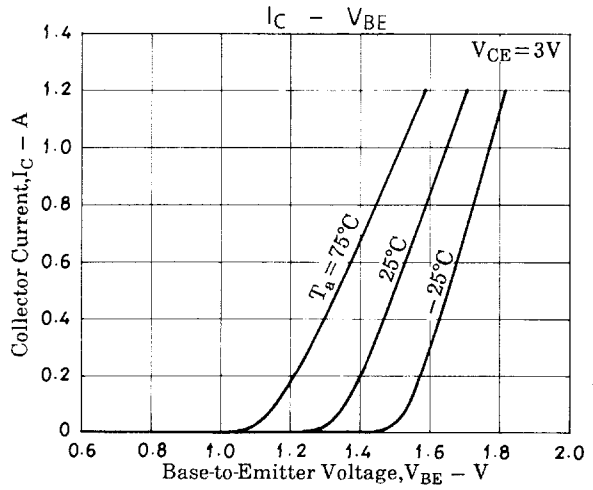
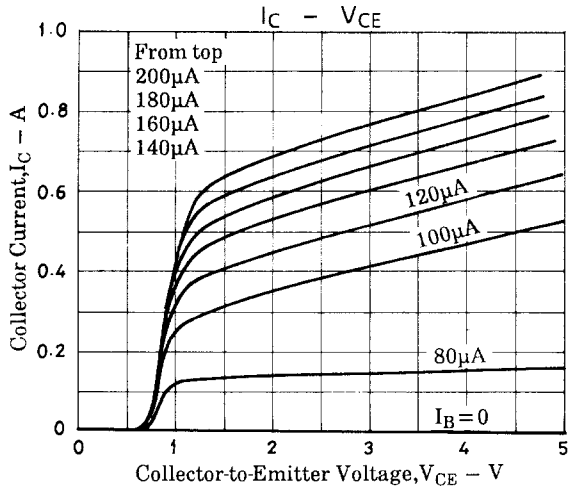
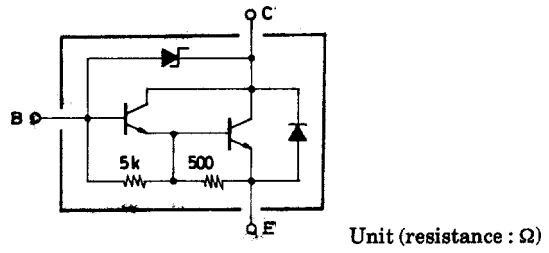
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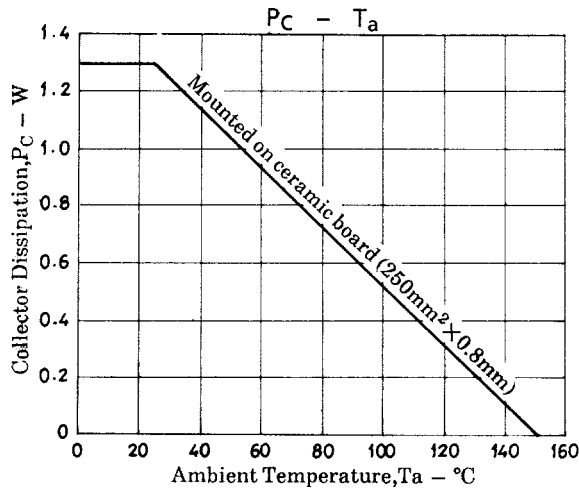
Es/b Test Circuit



Electrical Connection



## 2SD2176



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