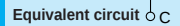


2SB1351

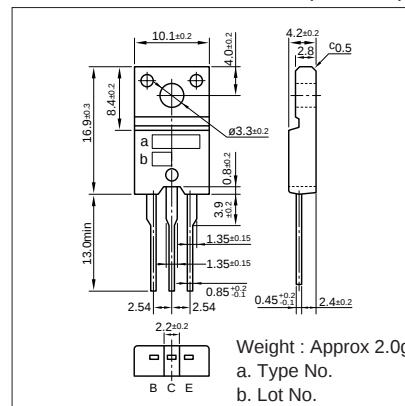


Application : Driver for Printer Head, Solenoid, Relay, Motor and General Purpose

($T_a=25^{\circ}\text{C}$)

Symbol	Condition	2SB1351	Unit
I_{CBO}	$V_{CB} = -60V$	-10max	μA
I_{EBO}	$V_{EB} = -6V$	-10max	mA
$V_{(BR)CEO}$	$I_C = -10mA$	-60min	V
h_{FE}	$V_{CE} = -4V, I_C = -10A$	2000min	
$V_{CE(sat)}$	$I_C = -10A, I_B = -20mA$	-1.5max	V
$V_{BE(sat)}$	$I_C = -10A, I_B = -20mA$	-2.0max	V
f_T	$V_{CE} = -12V, I_E = 1A$	130typ	MHz
C_{OB}	$V_{CB} = -10V, f = 1MHz$	170typ	pF

V _{CC} (V)	R _L (Ω)	I _C (A)	V _{BB1} (V)	V _{BB2} (V)	I _{B1} (mA)	I _{B2} (mA)	t _{on} (μs)	t _{stg} (μs)	t _f (μs)
-40	4	-10	-10	5	-20	20	0.7t _{vp}	1.5t _{vp}	0.6t _{vp}



The graph plots Collector Current I_C (A) on the y-axis (ranging from 0 to -20) against Collector-Emitter Voltage V_{CE} (V) on the x-axis (ranging from 0 to -6). Several curves are shown for different base currents I_B :

- $I_B = -10\text{mA}$
- $I_B = -6\text{mA}$
- $I_B = -4\text{mA}$
- $I_B = -3\text{mA}$
- $I_B = -2\text{mA}$
- $I_B = -1\text{mA}$

The curves show that I_C increases with V_{CE} and is approximately equal to I_B for $V_{CE} > 1\text{V}$.

The graph plots the Collector-Emitter Saturation Voltage $V_{CE(sat)}$ in Volts (V) on the y-axis against the Base Current I_B in milliamperes (mA) on the x-axis. The y-axis ranges from 0 to -3 V, and the x-axis ranges from -0.1 to -100 mA on a logarithmic scale. Three curves are shown for different collector currents I_C : -10A, -5A, and -1A. The curves show that $V_{CE(sat)}$ decreases (becomes more negative) as I_B increases and as the magnitude of I_C decreases.

Base Current I_B (mA)	$V_{CE(sat)}$ (V) for $I_C = -10A$	$V_{CE(sat)}$ (V) for $I_C = -5A$	$V_{CE(sat)}$ (V) for $I_C = -1A$
-0.1	-2.2	-1.8	-1.2
-1	-1.5	-1.1	-0.8
-10	-1.2	-1.0	-0.7
-100	-1.1	-0.9	-0.6

Graph of Collector Current I_C (A) vs. Base-Emitter Voltage V_{BE} (V) for a BJT at $V_{CE} = -4V$. The graph shows three curves for different temperatures: 125°C (Case Temp), 25°C (Case Temp), and -30°C (Case Temp). The y-axis ranges from 0 to -20 A, and the x-axis ranges from 0 to -2.4 V. The curves show that I_C increases as V_{BE} becomes more negative and as temperature increases.

A graph showing the transient thermal resistance $\theta_{JA}(t)$ in $^{\circ}\text{C/W}$ as a function of time t in milliseconds (ms) for a 100W LED. The x-axis is logarithmic, ranging from 1 ms to 1000 ms. The y-axis is logarithmic, ranging from 0.3 to 5 $^{\circ}\text{C/W}$. The curve starts at approximately 0.4 $^{\circ}\text{C/W}$ at 1 ms and increases to about 4 $^{\circ}\text{C/W}$ at 1000 ms.

($V_{DS} = -12V$)

Emitter Current I_E (A)	Typical f_T (MHz)	Minimum f_T (MHz)
0.05	110	85
0.1	145	105
0.5	195	130
1.0	210	135
5.0	155	105
10.0	85	55
20.0	25	15

Graph of Collector Current I_c (A) vs Collector-Emitter Voltage V_{CE} (V) for the 2N2222A transistor. The graph shows three curves: DC, 10ms, and 1ms. The DC curve is the leftmost, followed by 10ms, and then 1ms. The curves show that the collector current decreases as the collector-emitter voltage increases, and the current is higher for shorter pulse widths. A box labeled "Without Heatsink Natural Cooling" is present in the lower left quadrant of the graph.

The graph shows the maximum power dissipation P_c in Watts as a function of ambient temperature T_a in degrees Celsius. The y-axis ranges from 0 to 30 W, and the x-axis ranges from 0 to 150 °C. Five curves are plotted, representing different cooling conditions:

- Without Heatsink:** A horizontal line at $P_c = 2$ W from 0 to 25 °C, then a line to (150, 0).
- 50x50x2:** A horizontal line at $P_c = 8$ W from 0 to 25 °C, then a line to (150, 0).
- 100x100x2:** A horizontal line at $P_c = 14$ W from 0 to 25 °C, then a line to (150, 0).
- 150x150x2:** A horizontal line at $P_c = 15$ W from 0 to 25 °C, then a line to (150, 0).
- With Infinite heatsink:** A horizontal line at $P_c = 30$ W from 0 to 25 °C, then a line to (150, 0).

Legend: Natural Cooling, Silicone Grease, Heatsink: Aluminum in mm.