

isc Silicon NPN Power Transistor**2SD1683****DESCRIPTION**

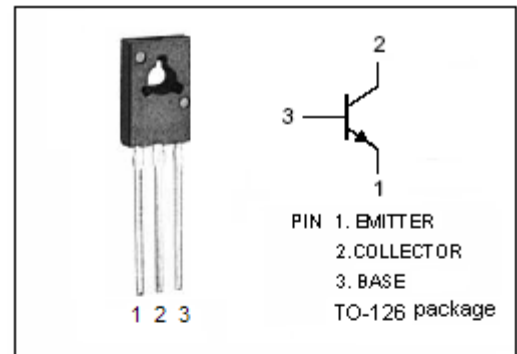
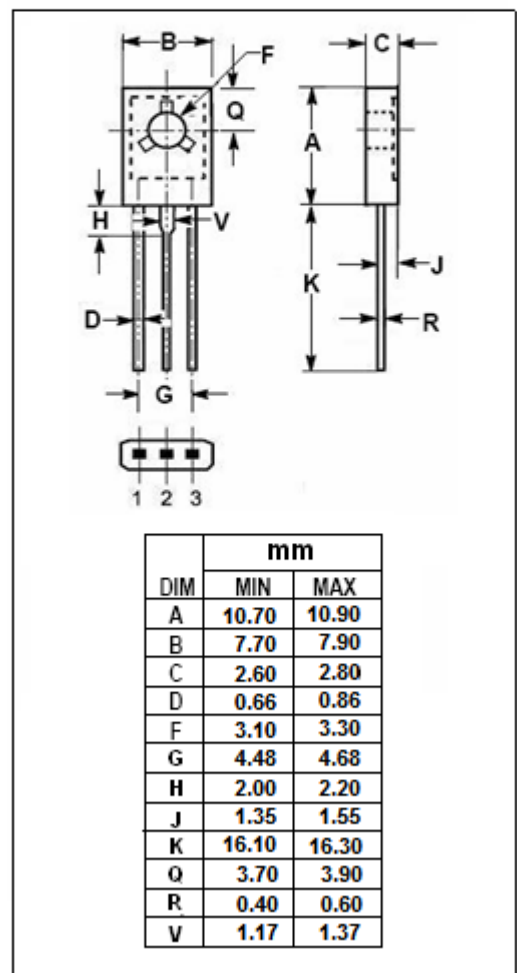
- High Collector Current- $I_C = 4A$
- Low Saturation Voltage -
: $V_{CE(sat)} = 0.5V(\text{Max}) @ I_C = 2A$
- Complement to Type 2SB1143

APPLICATIONS

- Designed for use in voltage regulations, relay drivers, lamp drivers and electrical equipment.

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

SYMBOL	PARAMETER	VALUE	UNIT
V_{CBO}	Collector-Base Voltage	60	V
V_{CEO}	Collector-Emitter Voltage	50	V
V_{EBO}	Emitter-Base Voltage	6	V
I_C	Collector Current-Continuous	4	A
I_{CP}	Collector Current-Pulse	6	A
P_C	Collector Power Dissipation @ $T_a = 25^\circ\text{C}$	1.5	W
	Collector Power Dissipation @ $T_C = 25^\circ\text{C}$	10	
T_J	Junction Temperature	150	$^\circ\text{C}$
T_{stg}	Storage Temperature Range	-55~150	$^\circ\text{C}$



isc Silicon NPN Power Transistor**2SD1683****ELECTRICAL CHARACTERISTICS** $T_C=25^{\circ}\text{C}$ unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP.	MAX	UNIT
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage	$I_C = 1\text{mA}$; $R_{BE} = \infty$	50			V
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	$I_C = 10\text{ }\mu\text{A}$; $I_E = 0$	60			V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	$I_E = 10\text{ }\mu\text{A}$; $I_C = 0$	6			V
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = 2.0\text{A}$; $I_B = 0.1\text{A}$			0.5	V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	$I_C = 2.0\text{A}$; $I_B = 0.1\text{A}$			1.2	V
I_{CBO}	Collector Cutoff Current	$V_{CB} = 40\text{V}$; $I_E = 0$			1.0	μA
I_{EBO}	Emitter Cutoff Current	$V_{EB} = 4\text{V}$; $I_C = 0$			1.0	μA
h_{FE-1}	DC Current Gain	$I_C = 100\text{mA}$; $V_{CE} = 2\text{V}$	100		560	
h_{FE-2}	DC Current Gain	$I_C = 3\text{A}$; $V_{CE} = 2\text{V}$	40			
f_T	Current-Gain—Bandwidth Product	$I_C = 50\text{mA}$; $V_{CE} = 10\text{V}$		150		MHz
C_{OB}	Output Capacitance	$I_E = 0$; $V_{CB} = 10\text{V}$, $f_{test} = 1\text{MHz}$		25		pF

Switching times

t_{on}	Turn-On Time	$I_C = 1\text{A}$; $I_{B1} = -I_{B2} = 0.1\text{A}$; $V_{CC} = 25\text{V}$; $R_L = 25\text{ }\Omega$		70		ns
t_{stg}	Storage Time			650		ns
t_f	Fall Time			35		ns

◆ **h_{FE-1} Classifications**

R	S	T	U
100-200	140-280	200-400	280-560