

isc Silicon NPN Power Transistor

BUL39D

DESCRIPTION

- Collector–Emitter Sustaining Voltage
: $V_{CEO(SUS)} = 450V(\text{Min.})$
- Collector Saturation Voltage
: $V_{CE(sat)} = 0.5V(\text{Max}) @ I_C = 1.0A$
- Very High Switching Speed

APPLICATIONS

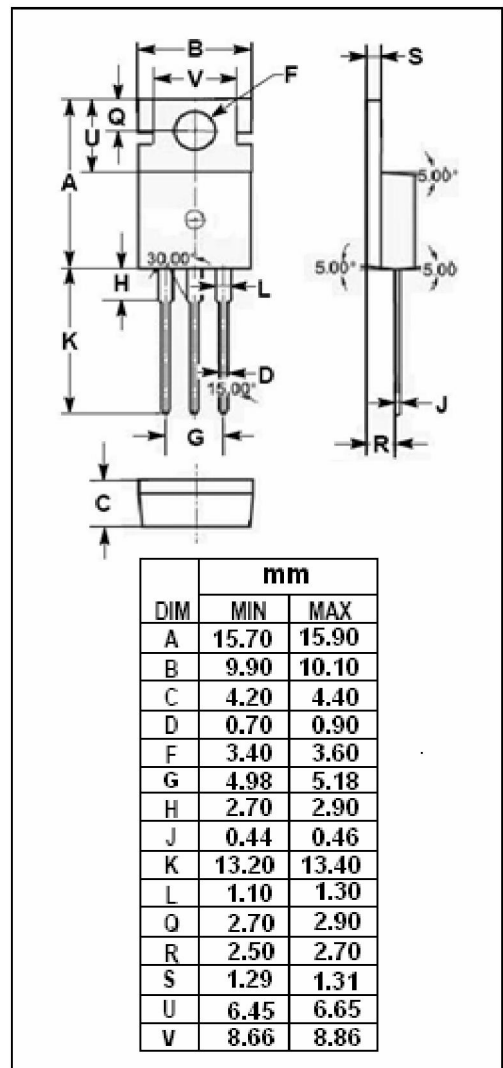
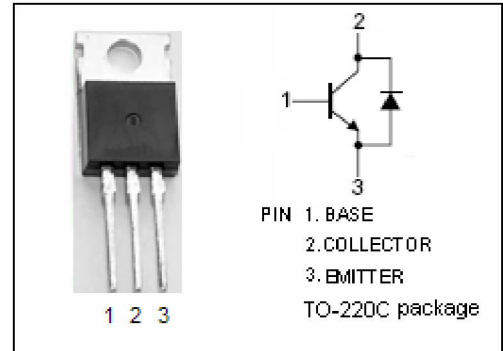
- Designed for use in lighting applications and low cost switch-mode power supplies

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

SYMBOL	PARAMETER	VALUE	UNIT
V_{CES}	Collector-Emitter Voltage	850	V
V_{CEO}	Collector-Emitter Voltage	450	V
V_{EBO}	Emitter-Base Voltage	9	V
I_C	Collector Current-Continuous	4	A
I_{CM}	Collector Current-peak $t_p < 5\text{ms}$	8	A
I_B	Base Current-Continuous	2	A
I_{BM}	Base Current-peak $t_p < 5\text{ms}$	4	A
P_C	Collector Power Dissipation $T_C = 25^\circ\text{C}$	70	W
T_j	Junction Temperature	150	$^\circ\text{C}$
T_{stg}	Storage Temperature Range	-65~150	$^\circ\text{C}$

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	MAX	UNIT
$R_{th\ j-c}$	Thermal Resistance, Junction to Case	1.78	$^\circ\text{C}/\text{W}$
$R_{th\ j-a}$	Thermal Resistance, Junction to Ambient	70	$^\circ\text{C}/\text{W}$



isc Silicon NPN Power Transistor**BUL39D****ELECTRICAL CHARACTERISTICS** $T_C = 25^\circ\text{C}$ unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP.	MAX	UNIT
$V_{CE0(SUS)}$	Collector-Emitter Sustaining Voltage	$I_C = 100\text{mA}$; $L = 25\text{mH}$	450			V
$V_{CE(sat)-1}$	Collector-Emitter Saturation Voltage	$I_C = 1\text{A}$; $I_B = 0.2\text{A}$			0.5	V
$V_{CE(sat)-2}$	Collector-Emitter Saturation Voltage	$I_C = 2.5\text{A}$; $I_B = 0.5\text{A}$			1.1	V
$V_{BE(sat)-1}$	Base-Emitter Saturation Voltage	$I_C = 1\text{A}$; $I_B = 0.2\text{A}$			1.1	V
$V_{BE(sat)-2}$	Base-Emitter Saturation Voltage	$I_C = 2.5\text{A}$; $I_B = 0.5\text{A}$			1.3	V
I_{CES}	Collector Cutoff Current	$V_{CE} = 850\text{V}$; $V_{BE} = 0$ $V_{CE} = 850\text{V}$; $V_{BE} = 0$, $T_C = 125^\circ\text{C}$			0.1 0.5	mA
I_{EBO}	Emitter Cutoff Current	$V_{EB} = 9\text{V}$; $I_C = 0$			0.1	mA
h_{FE-1}	DC Current Gain	$I_C = 5\text{A}$; $V_{CE} = 10\text{V}$	4			
h_{FE-2}	DC Current Gain	$I_C = 10\text{mA}$; $V_{CE} = 5\text{V}$	10			
V_F	Diode Forward Voltage	$I_F = 2\text{A}$			1.5	V

Switching Times, Inductive Load

t_s	Storage Time	$I_C = 2.5\text{A}$; $I_{B(on)} = 0.5\text{A}$; $V_{BE(off)} = -5\text{V}$ $V_{CL} = 300\text{V}$; $R_{BB} = 0\Omega$; $L = 1\text{mH}$			1.5	μs
t_f	Fall Time				0.1	μs