

## isc Silicon NPN Darlington Power Transistor

BD683

## DESCRIPTION

- Collector–Emitter Breakdown Voltage—  
:  $V_{(BR)CEO} = 120V(\text{Min.})$
- DC Current Gain—  
:  $h_{FE} = 750(\text{Min})@ I_C = 1.5A$
- Complement to Type BD684
- Minimum Lot-to-Lot variations for robust device performance and reliable operation

## APPLICATIONS

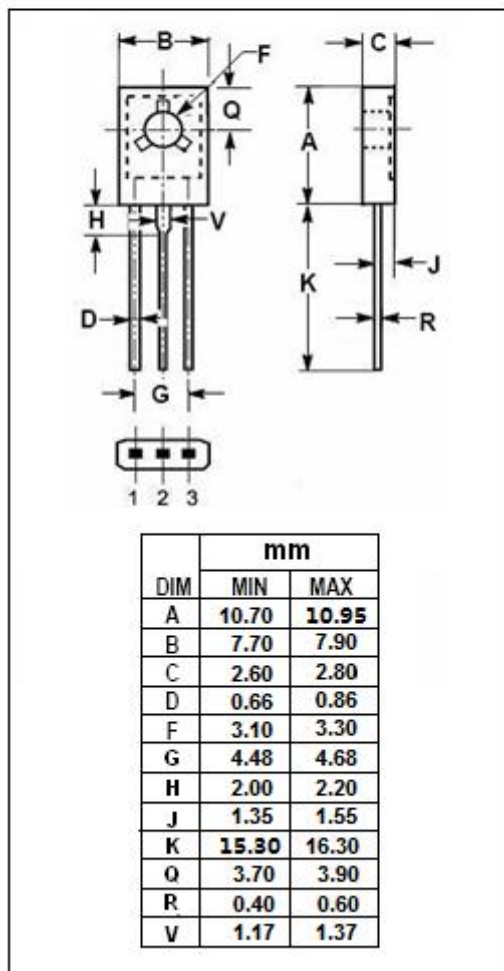
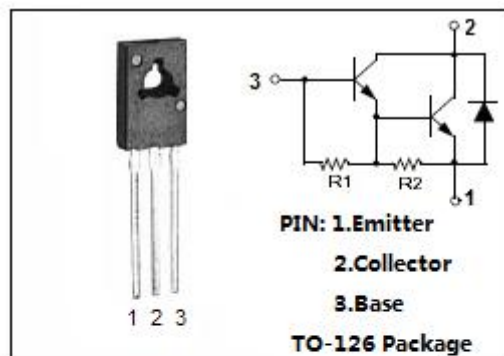
- Designed for use as output devices in complementary general-purpose amplifier applications.

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

SYMBOL	PARAMETER	VALUE	UNIT
$V_{CBO}$	Collector-Base Voltage	140	V
$V_{CEO}$	Collector-Emitter Voltage	120	V
$V_{EBO}$	Emitter-Base Voltage	5	V
$I_C$	Collector Current-Continuous	4	A
$I_B$	Base Current	0.1	A
$P_C$	Collector Power Dissipation $T_C=25^{\circ}C$	40	W
$T_j$	Junction Temperature	150	$^{\circ}C$
$T_{stg}$	Storage Temperature Range	-55~150	$^{\circ}C$

## THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	MAX	UNIT
$R_{th j-c}$	Thermal Resistance, Junction to Case	3.12	$^{\circ}C/W$



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## ELECTRICAL CHARACTERISTICS

 $T_c=25^{\circ}\text{C}$  unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN	MAX	UNIT
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage	$I_C=50\text{mA}; I_B=0$	120		V
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C=1.5\text{A}; I_B=6\text{mA}$		2.5	V
$V_{BE(on)}$	Base-Emitter On Voltage	$I_C=1.5\text{A}; V_{CE}=3\text{V}$		2.5	V
$I_{CEO}$	Collector Cutoff Current	$V_{CE}=120\text{V}; I_B=0$		0.5	mA
$I_{CBO}$	Collector Cutoff Current	$V_{CB}=140\text{V}; I_E=0$ $V_{CB}=70\text{V}; I_E=0; T_c=150^{\circ}\text{C}$		0.2 1.0	mA
$I_{EBO}$	Emitter Cutoff Current	$V_{EB}=5\text{V}; I_C=0$		2.0	mA
$h_{FE-1}$	DC Current Gain	$I_C=1.5\text{A}; V_{CE}=3\text{V}$	750		
$h_{FE-2}$	DC Current Gain	$I_C=0.5\text{A}; V_{CE}=3\text{V}$		2200	
$h_{FE-3}$	DC Current Gain	$I_C=4\text{A}; V_{CE}=3\text{V}$		1500	

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