



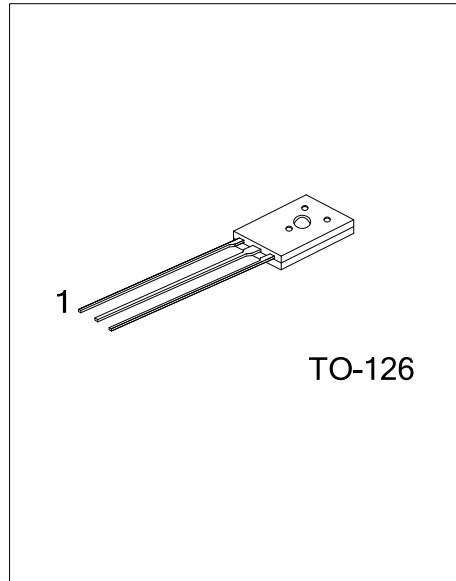
# BD139A

## NPN SILICON TRANSISTOR

### NPN POWER TRANSISTORS

#### ■ FEATURES

- \* High current (max.1.5A)
- \* Low voltage (max.80V)



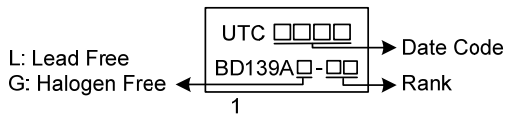
#### ■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
BD139AL-xx-T60-K	BD139AG-xx-T60-K	TO-126	E	C	B	Bulk

Note: Pin Assignment: E: Emitter C: Collector B: Base

BD139AG-xx-AA3-R	(1)Packing Type (2)Package Type (3)Rank (4)Green Package	(1) K: Bulk (2) T60: TO-126 (3) refer to $h_{FE}$ (4) G: Halogen Free and Lead Free, L: Lead Free
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#### ■ MARKING



### ■ ABSOLUTE MAXIMUM RATING

PARAMETER	SYMBOL	RATINGS	UNIT
Collector-Base Voltage	$V_{CBO}$	100	V
Collector-Emitter Voltage	$V_{CEO}$	80	V
Emitter-Base Voltage	$V_{EBO}$	5	V
Collector Current (DC)	$I_C$	1.5	A
Peak Collector Current	$I_{CM}$	2	A
Peak Base Current	$I_{BM}$	1	A
Power Dissipation ( $T_A=25^\circ\text{C}$ )	$P_D$	1.25	W
Junction Temperature	$T_J$	+150	$^\circ\text{C}$
Operating Temperature	$T_{OPR}$	-65 ~ +150	$^\circ\text{C}$
Storage Temperature	$T_{STG}$	-65 ~ +150	$^\circ\text{C}$

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

### ■ THERMAL DATA

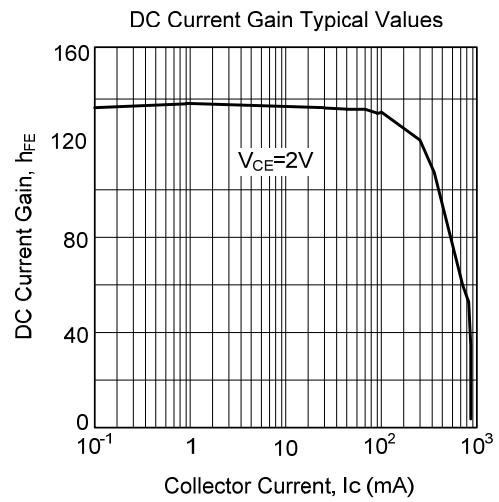
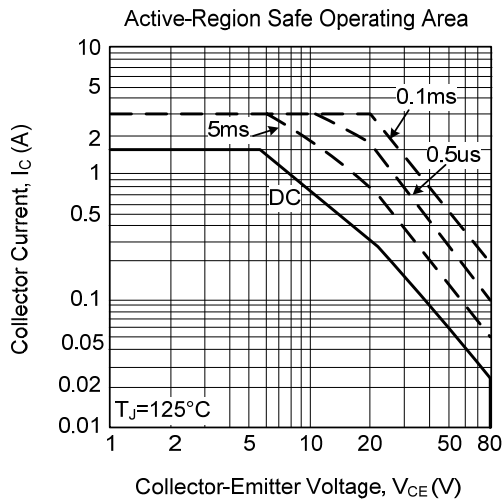
PARAMETER	SYMBOL	RATING	UNIT
Junction to Ambient	$\theta_{JA}$	100	$^\circ\text{C/W}$
Junction to Case	$\theta_{JC}$	10	$^\circ\text{C/W}$

Note: Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper plate.

### ■ ELECTRICAL CHARACTERISTICS ( $T_J=25^\circ\text{C}$ , unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Collector Cut-Off Current	$I_{CBO}$	$I_E=0, V_{CB}=30\text{V}$			100	nA
		$I_E=0, V_{CB}=30\text{V}, T_J=125^\circ\text{C}$			10	$\mu\text{A}$
Emitter Cut-Off Current	$I_{EBO}$	$I_C=0, V_{EB}=5\text{V}$			100	nA
DC Current Gain	$h_{FE}$	$V_{CE}=2\text{V}$	$I_C=5\text{mA}$	40		
			$I_C=150\text{mA}$	63		250
			$I_C=500\text{mA}$	25		
DC Current Gain	BD139A-16	$I_C=150\text{mA}, V_{CE}=2\text{V}$	100		250	
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	$I_C=500\text{mA}, I_B=50\text{mA}$			0.5	V
Base-Emitter Voltage	$V_{BE}$	$I_C=500\text{mA}, V_{CE}=2\text{V}$			1	V
Transition Frequency	$f_T$	$I_C=500\text{mA}, V_{CE}=5\text{V}, f=100\text{MHz}$		190		MHz

### ■ TYPICAL CHARACTERISTICS



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