



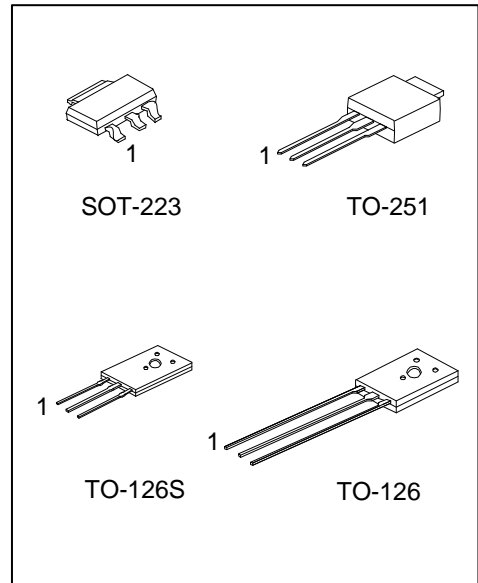
BD139

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	
BD139L-xx-AA3-R	BD139G-xx-AA3-R	SOT-223	B	C	E	Tape Reel
BD139L-xx-TM3-T	BD139G-xx-TM3-T	TO-251	B	C	E	Tube
BD139L-xx-T60-K	BD139G-xx-T60-K	TO-126	E	C	B	Bulk
BD139L-xx-T6S-K	BD139G-xx-T6S-K	TO-126S	E	C	B	Bulk

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

<p>BD139G-xx-AA3-R</p>	<p>(1) R: Tape Reel, K: Bulk, T: Tube (2) AA3: SOT-223, TM3: TO-251, T60: TO-126, T6S: TO-126S (3) refer to h_{FE} (4) G: Halogen Free and Lead Free, L: Lead Free</p>
------------------------	--

MARKING

PACKAGE	MARKING
SOT-223	<p>L: Lead Free G: Halogen Free Date Code</p>
TO-251	<p>UTC BD139 Lot Code L: Lead Free G: Halogen Free Date Code</p>
TO-126 TO-126C	<p>UTC BD139 L: Lead Free G: Halogen Free Date Code Rank</p>

■ 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 ($T_A=25^\circ\text{C}$)	SOT-223	P_D	0.8	W
	TO-126/TO-126S		1.25	W
	TO-251		1.5	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

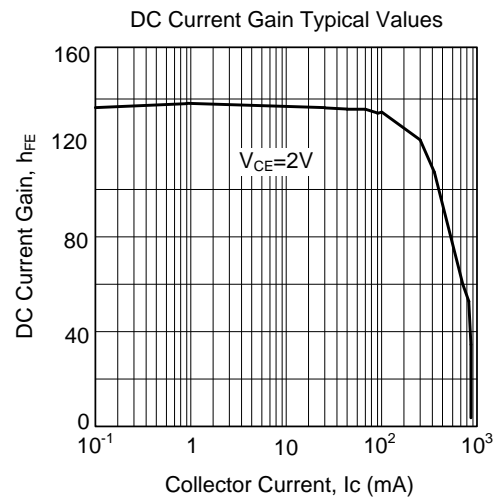
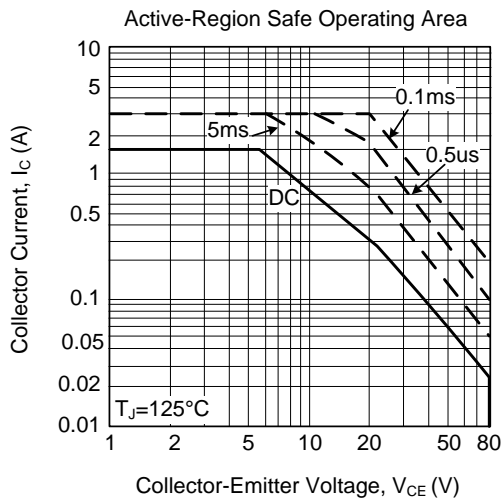
PARAMETER		SYMBOL	RATING	UNIT
Junction to Ambient	SOT-223	θ_{JA}	156	$^\circ\text{C/W}$
	TO-126/TO-126S		100	$^\circ\text{C/W}$
	TO-251		83.3	$^\circ\text{C/W}$
Junction to Case	SOT-223	θ_{JC}	16	$^\circ\text{C/W}$
	TO-126/TO-126S		10	$^\circ\text{C/W}$
	TO-251		8.33	$^\circ\text{C/W}$

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	μA
Emitter Cut-Off Current		I_{EBO}	$I_C=0, V_{EB}=5\text{V}$			100	nA
DC Current Gain		h_{FE}	$V_{CE}=2\text{V}$ (See Fig.1)	$I_C=5\text{mA}$	40		
				$I_C=150\text{mA}$	63		250
				$I_C=500\text{mA}$	25		
DC Current Gain	BD139-10		$I_C=150\text{mA}, V_{CE}=2\text{V}$ (See Fig.1)		63		160
	BD139-16				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**



UTC assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all UTC products described or contained herein. UTC products are not designed for use in life support appliances, devices or systems where malfunction of these products can be reasonably expected to result in personal injury. Reproduction in whole or in part is prohibited without the prior written consent of the copyright owner. UTC reserves the right to make changes to information published in this document, including without limitation specifications and product descriptions, at any time and without notice. This document supersedes and replaces all information supplied prior to the publication hereof.