



# 5302D

## NPN SILICON TRANSISTOR

### HIGH VOLTAGE NPN TRANSISTOR WITH DIODE

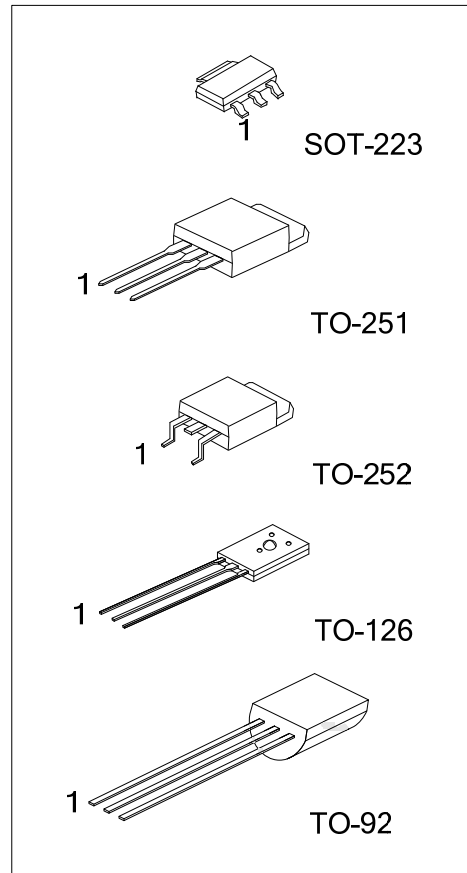
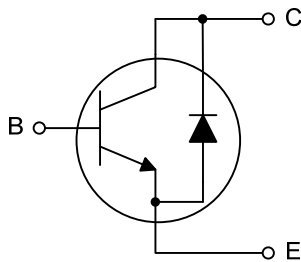
■ DESCRIPTION

The UTC **5302D** are series of NPN silicon planar transistor with diode and its suited to be used in power amplifier applications.

■ FEATURES

- \* Internal free-wheeling diode
- \* Makes efficient anti-saturation operation
- \* Low variable storage-time spread
- \* Low base drive
- \* Very suitable for half bridge light ballast application

■ SYMBOL



■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
-	5302DG-AA3-R	SOT-223	B	C	E	Tape Reel
5302DL-T60-K	5302DG-T60-K	TO-126	B	C	E	Bulk
5302DL-T92-B	5302DG-T92-B	TO-92	E	C	B	Tape Box
5302DL-T92-K	5302DG-T92-K	TO-92	E	C	B	Bulk
5302DL-T92-R	5302DG-T92-R	TO-92	E	C	B	Tape Reel
5302DL-TM3-T	5302DG-TM3-T	TO-251	B	C	E	Tube
5302DL-TN3-R	5302DG-TN3-R	TO-252	B	C	E	Tape Reel

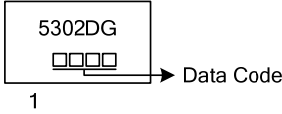
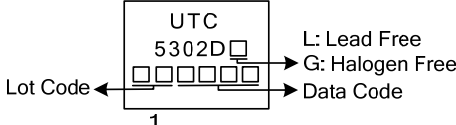
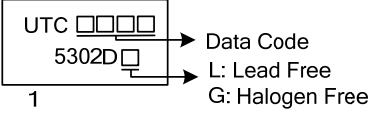
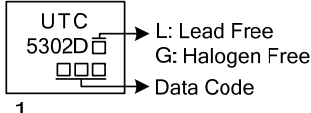
Note: Pin assignment: E: Emitter B: Base C: Collector

<p>5302DL-T60-T</p> <p>(1) Packing Type</p> <p>(2) Package Type</p> <p>(3) Green Package</p>	<p>(1) B: Tape Box, K: Bulk, T: Tube, R: Tape Reel</p> <p>(2) T60: TO-126, T92: TO-92, TM3: TO-251, TN3: TO-252, AA3: SOT-223</p> <p>(3) L: Lead Free, G: Halogen Free and Lead Free</p>
--	--

# 5302D

## NPN SILICON TRANSISTOR

### MARKING

SOT-223	TO-251 / TO-252
 <p>5302DG □□□ → Data Code 1</p>	 <p>UTC 5302D □□□□ → Data Code ← Lot Code L: Lead Free G: Halogen Free 1</p>
TO-126	TO-92
 <p>UTC □□□ 5302D □ → Data Code → L: Lead Free → G: Halogen Free 1</p>	 <p>UTC 5302D □□ → L: Lead Free → G: Halogen Free → Data Code 1</p>

■ ABSOLUTE MAXIMUM RATING ( $T_A=25^{\circ}\text{C}$ , unless otherwise specified)

PARAMETER		SYMBOL	RATINGS	UNIT
Collector-Base Voltage		$V_{CBO}$	800	V
Collector-Emitter Voltage		$V_{CEO}$	400	V
Emitter-Base Voltage		$V_{EBO}$	10	V
Collector Current		$I_C$	2	A
Collector Peak Current ( $t_P < 5\text{ms}$ )		$I_{CM}$	4	A
Base Current		$I_B$	1	A
Base Peak Current ( $t_P < 5\text{ms}$ )		$I_{BM}$	2	A
Power Dissipation ( $T_C \leq 25^{\circ}\text{C}$ )	TO-126	$P_D$	12.5	W
	TO-92		1.6	
	TO-251/ TO-252		25	
	SOT-223		1	
Junction Temperature		$T_J$	+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

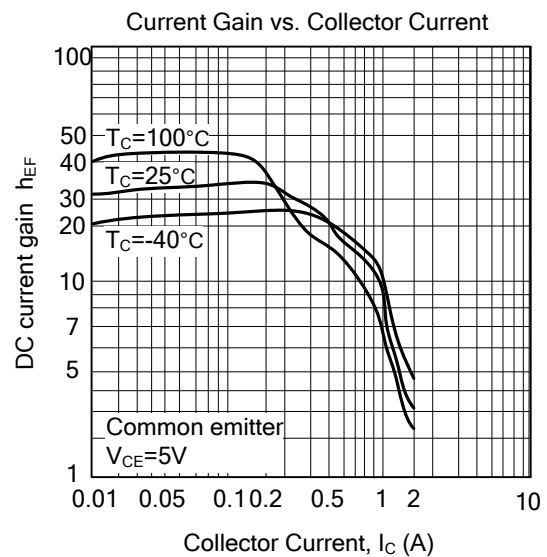
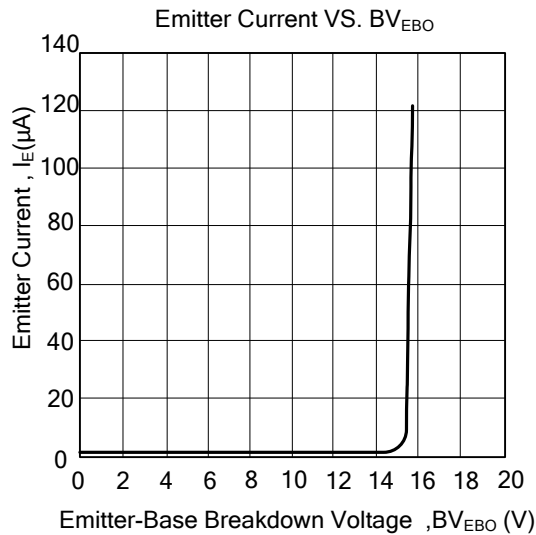
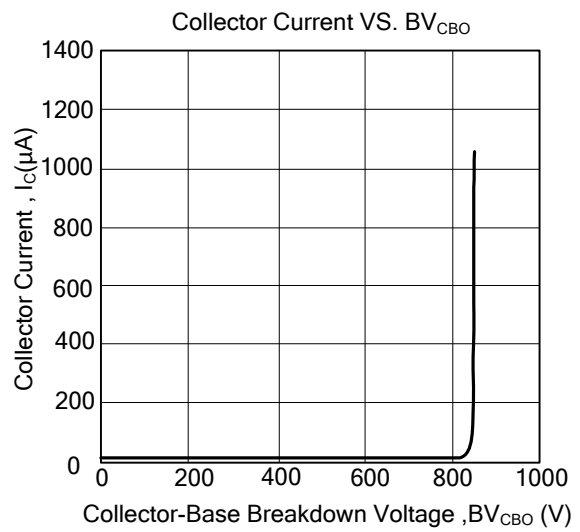
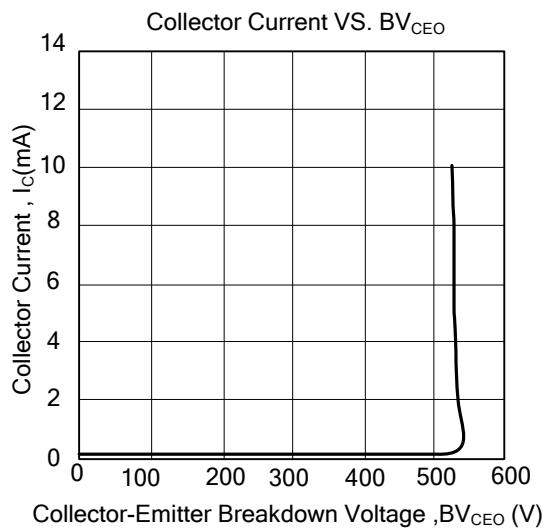
PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	TO-126	$\theta_{JA}$	122	$^{\circ}\text{C}/\text{W}$
	TO-92		160	
	TO-251/ TO-252		100	
	SOT-223		175	
Junction to Case	TO-126	$\theta_{JC}$	10	$^{\circ}\text{C}/\text{W}$
	TO-92		80	
	TO-251/ TO-252		5	
	SOT-223		125	

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

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
<b>OFF CHARACTERISTICS</b>						
Collector-Emitter Breakdown Voltage	$BV_{CEO}$	$I_C=10\text{mA}$ , $I_E=0$ (Note)	400			V
Collector-Base Breakdown Voltage	$BV_{CBO}$	$I_C=1\text{mA}$ , $I_B=0$	800			V
Emitter-Base Breakdown Voltage	$BV_{EBO}$	$I_E=1\text{mA}$ , $I_C=0$	10			V
Collector Cutoff Current	$I_{CBO}$	$V_{CB}=800\text{V}$ , $I_E=0$			1	$\mu\text{A}$
Emitter Cutoff Current	$I_{EBO}$	$V_{EB}=9\text{V}$ , $I_C=0$			1	$\mu\text{A}$
<b>ON CHARACTERISTICS</b>						
DC Current Gain	$h_{FE1}$	$V_{CE}=5\text{V}$ , $I_C=10\text{mA}$	10			
	$h_{FE2}$	$V_{CE}=5\text{V}$ , $I_C=400\text{mA}$	10		40	
	$h_{FE3}$	$V_{CE}=5\text{V}$ , $I_C=1\text{A}$	5			
Collector-Emitter Saturation Voltage	$V_{CE(SAT1)}$	$I_C=0.5\text{A}$ , $I_B=0.1\text{A}$ (Note)			0.5	V
	$V_{CE(SAT2)}$	$I_C=1\text{A}$ , $I_B=0.25\text{A}$ (Note)		1.1	1.5	
Base-Emitter Saturation Voltage	$V_{BE(SAT1)}$	$I_C=0.5\text{A}$ , $I_B=0.1\text{A}$ (Note)			1.1	V
	$V_{BE(SAT2)}$	$I_C=1\text{A}$ , $I_B=0.25\text{A}$ (Note)			1.2	
<b>SWITCHING CHARACTERISTICS</b>						
Turn On Time	$t_{ON}$	$V_{CC}=250\text{V}$ , $I_C=1\text{A}$ ,		0.15	0.3	$\mu\text{S}$
Fall Time	$t_F$	$I_{B1}=I_{B2}=0.2\text{A}$ , $t_P=25\mu\text{S}$		0.2	0.4	$\mu\text{S}$
Storage Time	$t_{STG}$	Duty Cycle < 1%		0.5	0.9	$\mu\text{S}$
<b>DIODE</b>						
Forward Voltage Drop	$V_F$	$I_C=1\text{A}$			1.4	V
Fall Time	$t_F$	$I_C=1\text{A}$			800	$\mu\text{S}$

Note: Pulsed duration =  $300\mu\text{S}$ , Duty cycle  $\leq 2\%$

### 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. The information presented in this document does not form part of any quotation or contract, is believed to be accurate and reliable and may be changed without notice.