



5302D

NPN SILICON TRANSISTOR

HIGH VOLTAGE NPN TRANSISTOR WITH DIODE

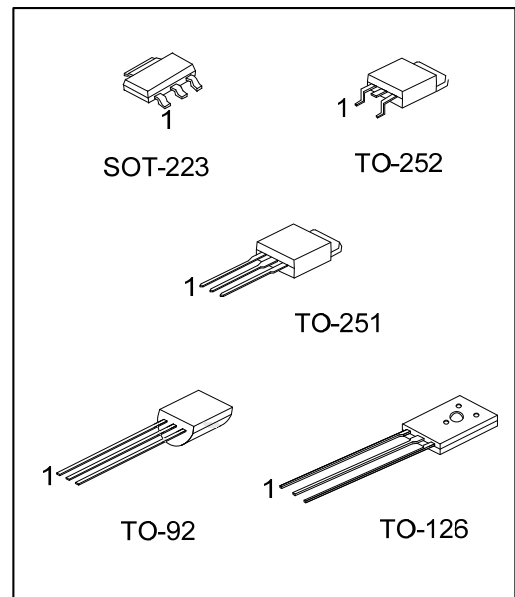
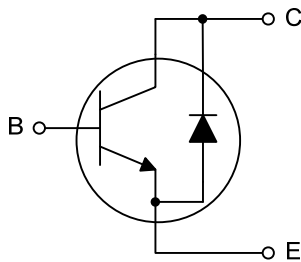
DESCRIPTION

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	
5302DL-AA3-R	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

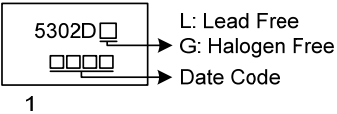
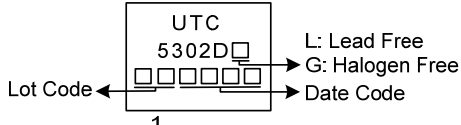
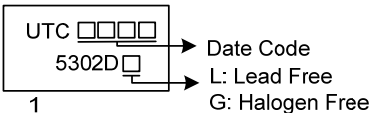
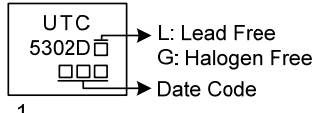
Note: Pin assignment: E: Emitter B: Base C: Collector

<p>5302DG-AA3-R</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) G: Halogen Free and Lead Free, L: Lead Free</p>
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MARKING

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

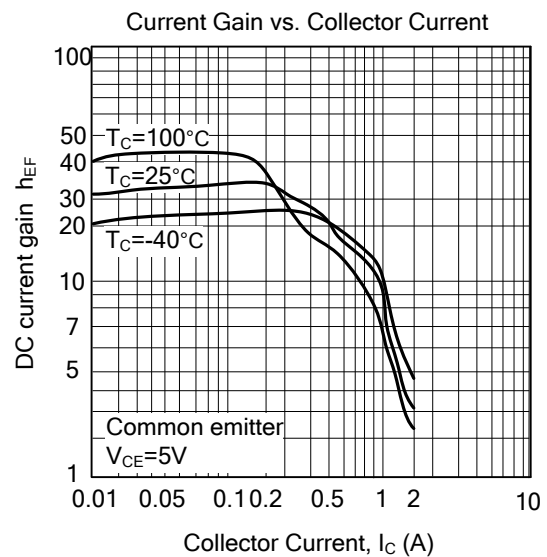
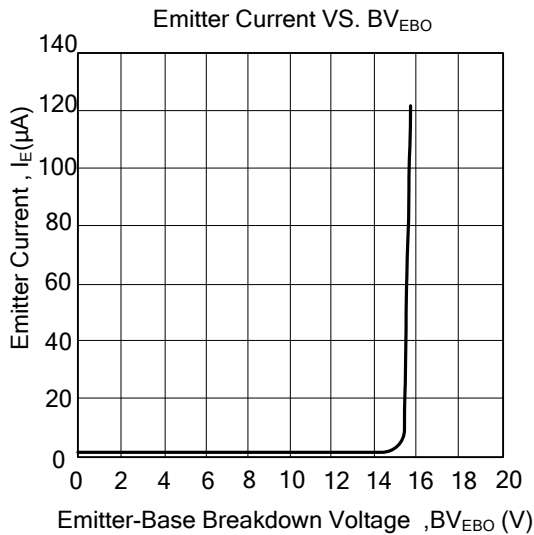
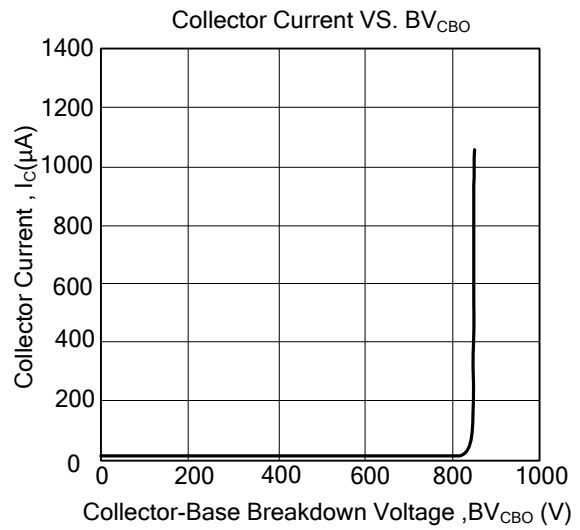
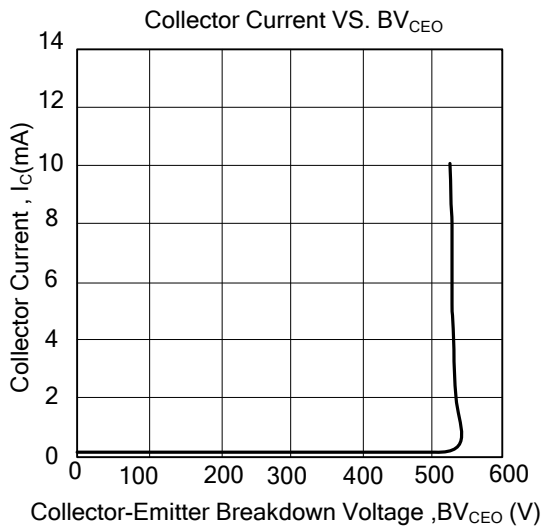
PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	TO-126	θ_{JA}	122	$^\circ\text{C/W}$
	TO-92		160	
	TO-251/ TO-252		100	
	SOT-223		175	
Junction to Case	TO-126	θ_{JC}	10	$^\circ\text{C/W}$
	TO-92		80	
	TO-251/ TO-252		5	
	SOT-223		125	

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

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Collector-Base Breakdown Voltage	BV_{CBO}	$I_C=1\text{mA}, I_B=0$	800			V
Collector-Emitter Breakdown Voltage	BV_{CEO}	$I_C=10\text{mA}, I_E=0$ (Note)	400			V
Collector-Emitter Breakdown Voltage	BV_{CES}	$I_C=1\text{mA}, V_{BE}=0\text{V}$	700			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	μA
Emitter Cutoff Current	I_{EBO}	$V_{EB}=9\text{V}, I_C=0$			1	μA
ON CHARACTERISTICS						
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	
SWITCHING CHARACTERISTICS						
Turn On Time	t_{ON}	$V_{CC}=250\text{V}, I_C=1\text{A},$		0.15	0.3	μS
Fall Time	t_F	$I_{B1}=I_{B2}=0.2\text{A}, t_p=25\mu\text{S}$		0.2	0.4	μS
Storage Time	t_{STG}	Duty Cycle<1%		0.5	0.9	μS
DIODE						
Forward Voltage Drop	V_F	$I_C=1\text{A}$			1.4	V
Fall Time	t_F	$I_C=1\text{A}$			800	μS

Note: Pulsed duration = 300 μS , Duty cycle \leq 2%

TYPICAL CHARACTERISTICS



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