



5302D

NPN SILICON TRANSISTOR

HIGH VOLTAGE NPN TRANSISTOR WITH DIODE

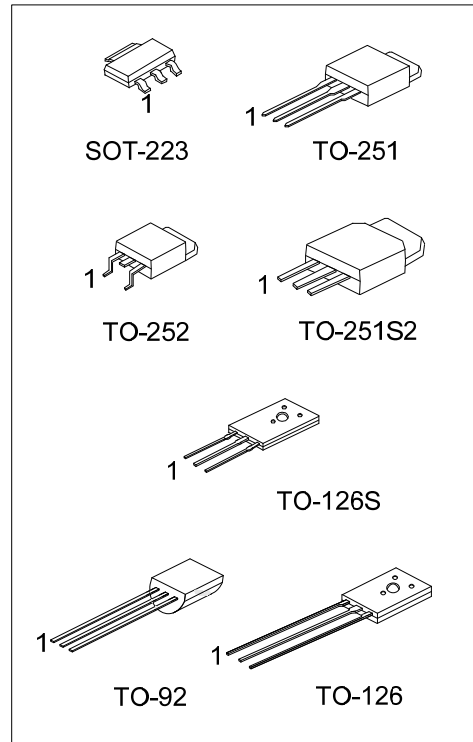
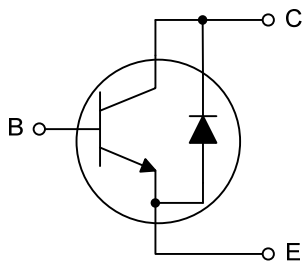
■ DESCRIPTION

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-T6S-K	5302DG-T6S-K	TO-126S	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-TMS2-T	5302DG-TMS2-T	TO-251S2	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) R: Tape Reel, T: Tube, B: Tape Box, K: Bulk (2) AA3: SOT-223, TM3: TO-251, TMS2: TO-251S2 TN3: TO-252, T60: TO-126, T6S: TO-126S T92: TO-92 (3) G: Halogen Free and Lead Free, L: Lead Free</p>
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MARKING

SOT-223	TO-251 / TO-251S2 / TO-252
<p>5302D □ □□□□ 1</p> <p>L: Lead Free G: Halogen Free Date Code</p>	<p>UTC 5302D □ □□□□ Lot Code ← 1</p> <p>L: Lead Free G: Halogen Free Date Code</p>
TO-126 / TO-126S	TO-92
<p>UTC □□□□ 5302D □ 1</p> <p>Date Code L: Lead Free G: Halogen Free</p>	<p>UTC 5302D □ □□□ 1</p> <p>L: Lead Free G: Halogen Free Date Code</p>

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

PARAMETER		SYMBOL	RATINGS	UNIT		
Collector-Base Voltage		V_{CBO}	700	V		
Collector-Emitter Voltage		V_{CEO}	400	V		
Emitter-Base Voltage		V_{EBO}	9	V		
Collector Current		I_C	1.3	A		
Collector Peak Current ($t_p < 5\text{ms}$)		I_{CM}	2.6	A		
Power Dissipation ($T_C \leq 25^{\circ}\text{C}$)	SOT-223	P_D	1	W		
	TO-251/TO-251S2		25	W		
	TO-252			12.5	W	
	TO-126/TO-126S				1.5	W
	TO-92					W
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	SOT-223	θ_{JA}	175	$^{\circ}\text{C/W}$		
	TO-251/TO-251S2		100	$^{\circ}\text{C/W}$		
	TO-252			122	$^{\circ}\text{C/W}$	
	TO-126/TO-126S				160	$^{\circ}\text{C/W}$
	TO-92					$^{\circ}\text{C/W}$
Junction to Case	SOT-223	θ_{JC}	125	$^{\circ}\text{C/W}$		
	TO-251/TO-251S2		5	$^{\circ}\text{C/W}$		
	TO-252			10	$^{\circ}\text{C/W}$	
	TO-126/TO-126S				80	$^{\circ}\text{C/W}$
	TO-92					$^{\circ}\text{C/W}$

■ 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}	$I_C=1\text{mA}, I_B=0$	700			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}	$I_E=1\text{mA}, I_C=0$	9			V
Collector Cutoff Current	I_{CBO}	$V_{CB}=700\text{V}, I_E=0$			1	μA
Emitter Cutoff Current	I_{EBO}	$V_{EB}=9\text{V}, I_C=0$			1	μA
ON CHARACTERISTICS						
DC Current Gain	h_{FE1}	$V_{CE}=5\text{V}, I_C=5\text{mA}$	10			
	h_{FE2}	$V_{CE}=5\text{V}, I_C=200\text{mA}$	15		30	
Collector-Emitter Saturation Voltage	$V_{CE(SAT1)}$	$I_C=0.5\text{A}, I_B=0.1\text{A}$ (Note)			0.8	V
Base-Emitter Saturation Voltage	$V_{BE(SAT1)}$	$I_C=0.5\text{A}, I_B=0.1\text{A}$ (Note)			1.5	V
SWITCHING CHARACTERISTICS						
Storage Time	t_{STG}	$V_{CC}=250\text{V}, I_C=0.1\text{A}, I_{B1}=I_{B2}=10\text{mA}, t_p=25\mu\text{S}$ Duty Cycle < 1%	2		3	μS
DIODE						
Forward Voltage Drop	V_F	$I_C=1\text{A}$			1.4	V

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

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