



## T2096

## NPN SILICON TRANSISTOR

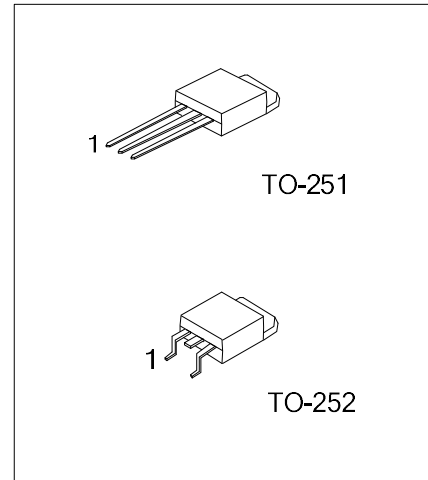
### HIGH VOLTAGE TRANSISTOR

#### DESCRIPTION

The T2096 is a NPN Silicon Planar Transistors in TO-251 package. It is intended for high voltage, switching power supply and industrial applications.

#### FEATURES

- \* Pb-free package is available
- \* Collector-Emitter voltage:  $V_{CEO} = 400V$
- \* Pulse collector current to 4A



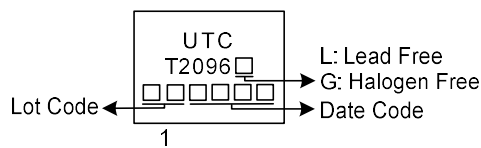
#### ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
T2096L-TM3-T	T2096G-TM3-T	TO-251	B	C	E	Tube
T2096L-TN3-R	T2096G-TN3-R	TO-252	B	C	E	Tape Reel

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

<p>T2096G-TM3-T</p> <p>(1) Packing Type</p> <p>(2) Package Type</p> <p>(3) Green Package</p>	<p>(1) T: Tube, R: Tape Reel</p> <p>(2) TM3: TO-251, TN3: TO-252</p> <p>(3) G: Halogen Free and Lead Free, L: Lead Free</p>
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#### MARKING



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

PARAMETER	SYMBOL	RATINGS	UNIT	
Collector-Base Voltage	$V_{CBO}$	800	V	
Collector-Emitter Voltage	$V_{CES}$	800	V	
Collector-Emitter Voltage	$V_{CEO}$	400	V	
Emitter-Base Voltage	$V_{EBO}$	8	V	
Base Current	$I_B$	1	A	
DC Collector Current	$I_C$	2	A	
Pulse Collector Current (Note 2)	$I_{CP}$	4	A	
Collector Dissipation	$P_C$	$T_A=25^{\circ}\text{C}$	1	W
		$T_C=25^{\circ}\text{C}$	15	W
Junction Temperature	$T_J$	150	$^{\circ}\text{C}$	
Storage Temperature	$T_{STG}$	-55 ~ +150	$^{\circ}\text{C}$	

Notes: 1. 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.

2. Pulse Test: Pulse Width  $\leq 300\mu\text{s}$ , Duty Cycle  $\leq 10\%$ .

■ **THERMAL DATA**

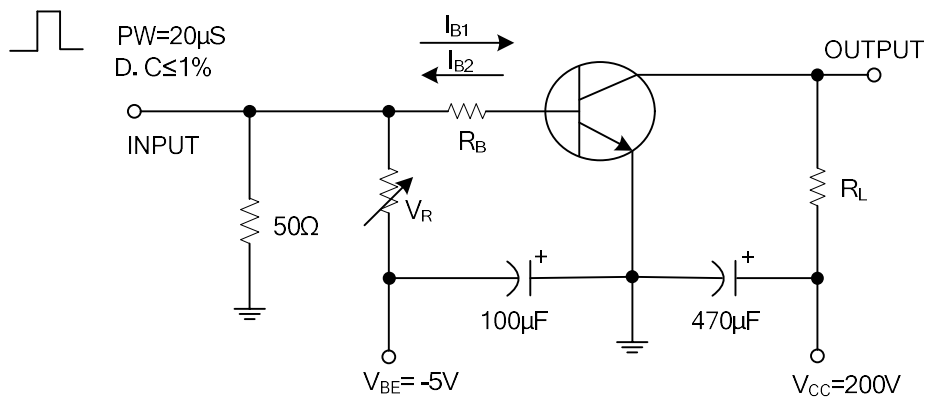
PARAMETER	SYMBOL	RATINGS	UNIT	
Junction to Ambient	$\theta_{JA}$	125 (Note)	TO-251	$^{\circ}\text{C/W}$
			TO-252	$^{\circ}\text{C/W}$
Junction to Case	$\theta_{JC}$	8.33 (Note)	TO-251	$^{\circ}\text{C/W}$
			TO-252	$^{\circ}\text{C/W}$

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

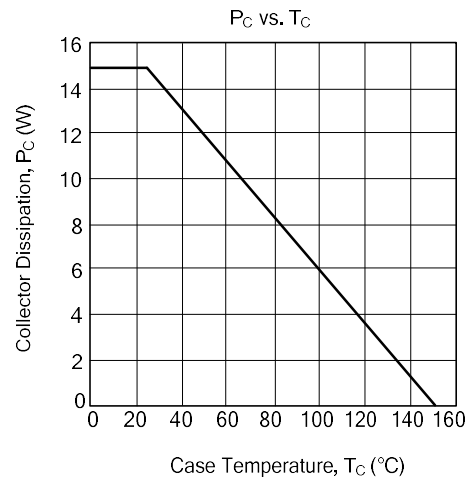
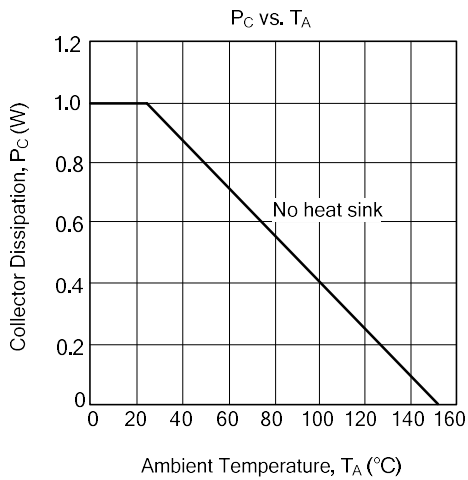
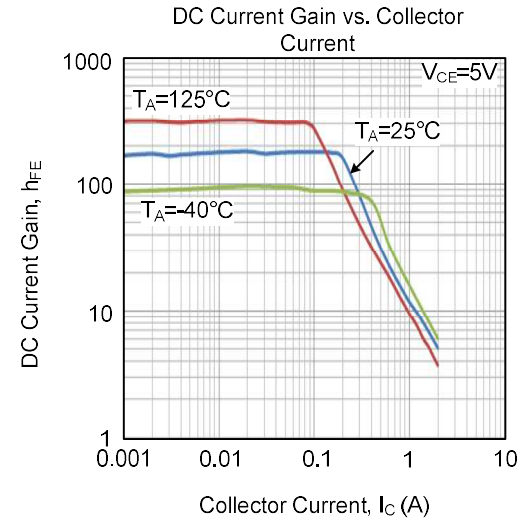
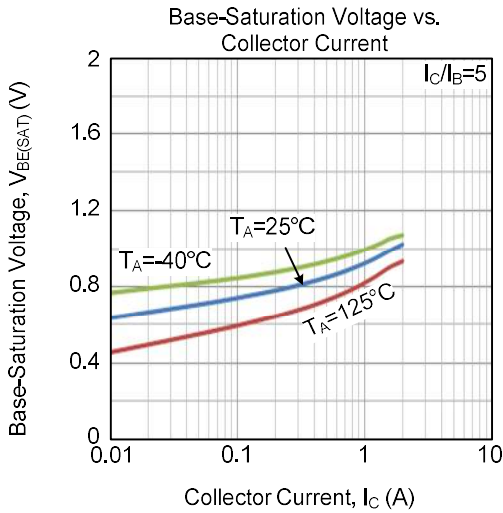
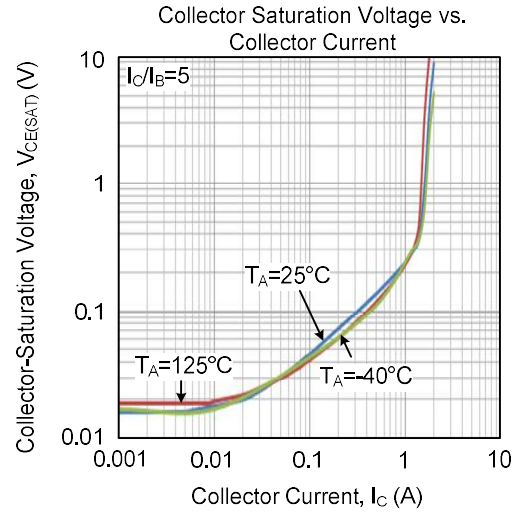
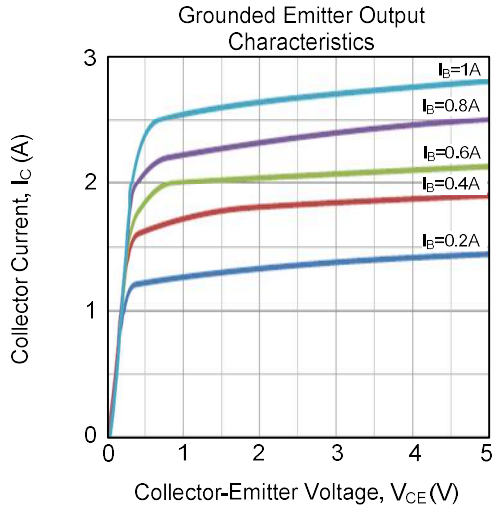
■ **ELECTRICAL CHARACTERISTICS** ( $T_A=25^{\circ}\text{C}$ , unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Collector-Base Breakdown Voltage	$BV_{CBO}$	$I_C=1\text{mA}$ , $I_E=0$	800			V
Collector-Emitter Breakdown Voltage	$BV_{CEO}$	$I_C=5\text{mA}$ , $R_{BE}=\infty$	400			V
Emitter-Base Breakdown Voltage	$BV_{EBO}$	$I_E=1\text{mA}$ , $I_C=0$	8			V
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	$I_C=1\text{A}$ , $I_B=0.2\text{A}$			0.8	V
Base-Emitter Saturation Voltage	$V_{BE(SAT)}$	$I_C=1\text{A}$ , $I_B=0.2\text{A}$			1.5	V
Collector Cutoff Current	$I_{CBO}$	$V_{CB}=400\text{V}$ , $I_E=0$			10	$\mu\text{A}$
Emitter Cutoff Current	$I_{EBO}$	$V_{EB}=5\text{V}$ , $I_C=0$			10	$\mu\text{A}$
DC Current Gain	$h_{FE1}$	$V_{CE}=5\text{V}$ , $I_C=1\text{mA}$	45			
	$h_{FE2}$	$V_{CE}=5\text{V}$ , $I_C=0.2\text{A}$	120		180	
Current Gain-Bandwidth Product	$f_T$	$V_{CE}=10\text{V}$ , $I_C=0.2\text{A}$		20		MHz
Output Capacitance	$C_{ob}$	$V_{CB}=10\text{V}$ , $f=1\text{MHz}$		20		pF
Turn-on Time	$t_{ON}$	$I_C=1.0\text{A}$ , $I_{B1}=0.05\text{A}$ $I_{B2}=-0.5\text{A}$ , $R_L=200\Omega$			0.5	$\mu\text{s}$
Storage Time	$t_{STG}$				2.5	$\mu\text{s}$
Fall Time	$t_F$		$V_{CC}=200\text{V}$			0.3

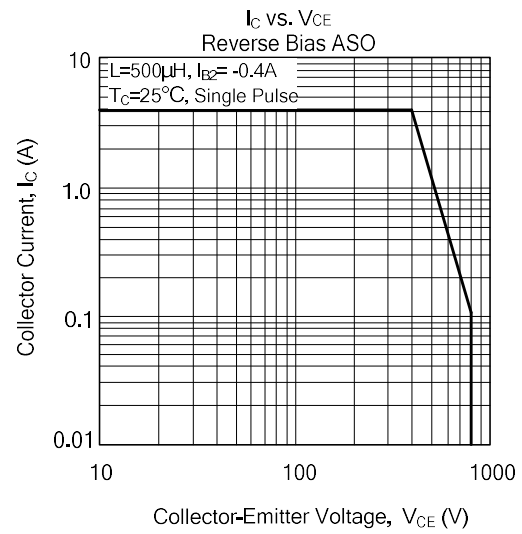
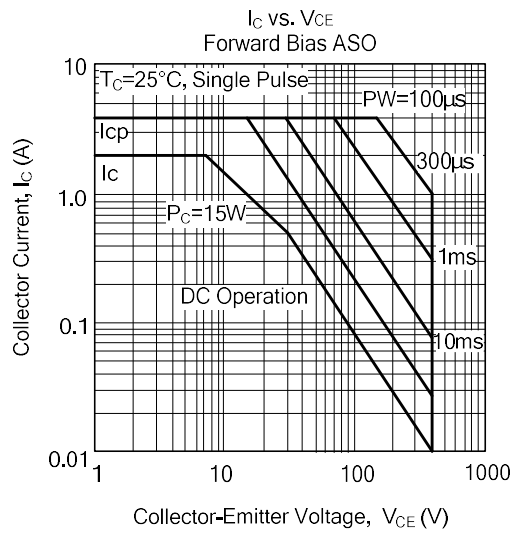
## ■ SWITCHING TIME TEST CIRCUIT



■ TYPICAL CHARACTERISTICS



## ■ TYPICAL CHARACTERISTICS



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