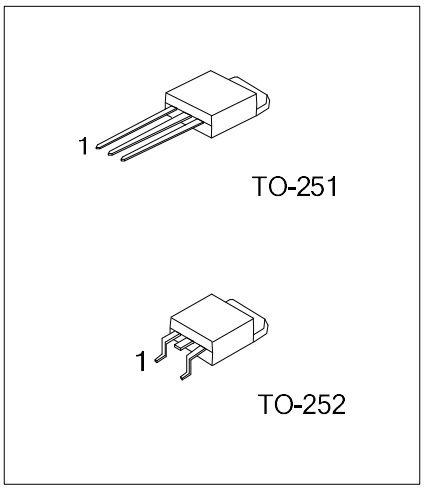
T2096

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.

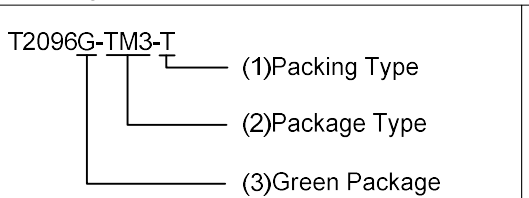
■ FEATURES

* 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

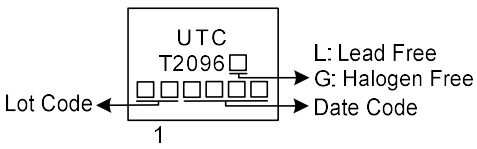


(1) T: Tube, R: Tape Reel

(2) TM3: TO-251, TN3: TO-252

(3) G: Halogen Free and Lead Free, L: Lead Free

■ MARKING



■ ABSOLUATE MAXIUM RATINGS (T_A=25°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	T_A=25°C	P_C	1	W
	T_C=25°C		15	W
Junction Temperature		T_J	150	°C
Storage Temperature		T_{STG}	-55 ~ +150	°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 ≤ 300μS, Duty Cycle ≤ 10%.

■ THERMAL DATA

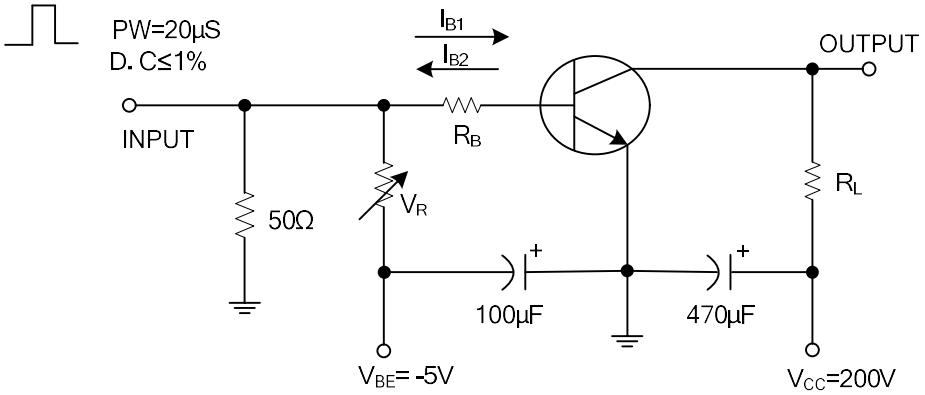
PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	TO-251	$θ_{JA}$	125 (Note)	°C/W
	TO-252			°C/W
Junction to Case	TO-251	$θ_{JC}$	8.33 (Note)	°C/W
	TO-252			°C/W

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

■ ELECTRICAL CHARACTERISTICS (T_A=25°C, unless otherwise specified)

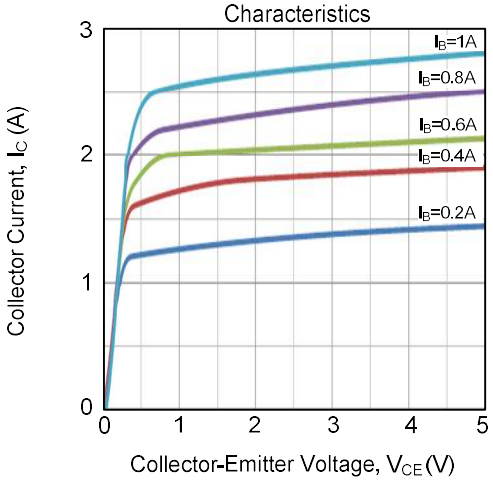
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Collector-Base Breakdown Voltage	BV_{CBO}	I_C =1mA, I_E =0	800			V
Collector-Emitter Breakdown Voltage	BV_{CEO}	I_C =5mA, R_{BE}=∞	400			V
Emitter-Base Breakdown Voltage	BV_{EBO}	I_E =1mA, I_C =0	8			V
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	I_C =1A, I_B =0.2A			0.8	V
Base-Emitter Saturation Voltage	$V_{BE(SAT)}$	I_C =1A, I_B =0.2A			1.5	V
Collector Cutoff Current	I_{CBO}	V_{CB} =400V, I_E =0			10	μA
Emitter Cutoff Current	I_{EBO}	V_{EB} =5V, I_C =0			10	μA
DC Current Gain	$h_{FE\,1}$	V_{CE} =5V, I_C =1mA	45			
	$h_{FE\,2}$	V_{CE} =5V, I_C =0.2A	120		180	
Current Gain-Bandwidth Product	f_T	V_{CE} =10V, I_C =0.2A		20		MHz
Output Capacitance	Cob	V_{CB} =10V, f =1MHz		20		pF
Turn-on Time	t_{ON}	I_C =1.0A, I_{B1} =0.05A			0.5	μs
Storage Time	t_{STG}	I_{B2} = -0.5A, R_L =200Ω			2.5	μs
Fall Time	t_F	V_{CC}=200V			0.3	μs

■ SWITCHING TIME TEST CIRCUIT

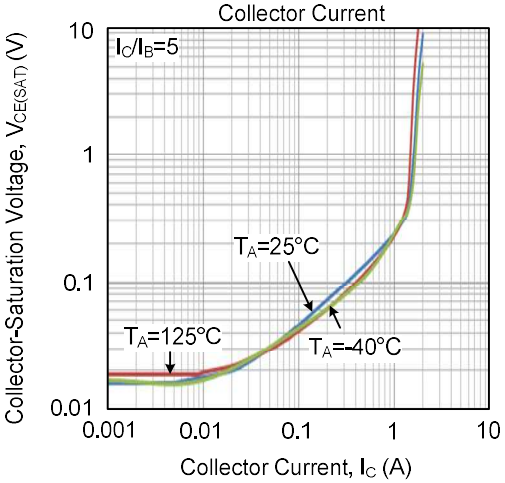


■ TYPICAL CHARACTERISTICS

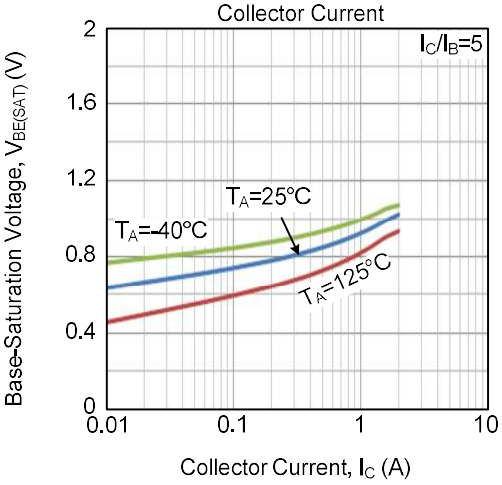
Grounded Emitter Output Characteristics



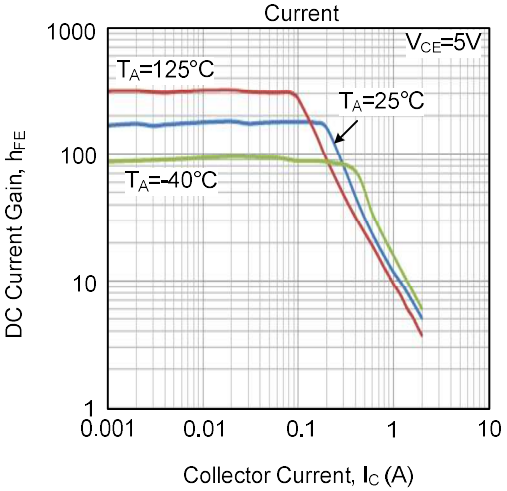
Collector Saturation Voltage vs. Collector Current



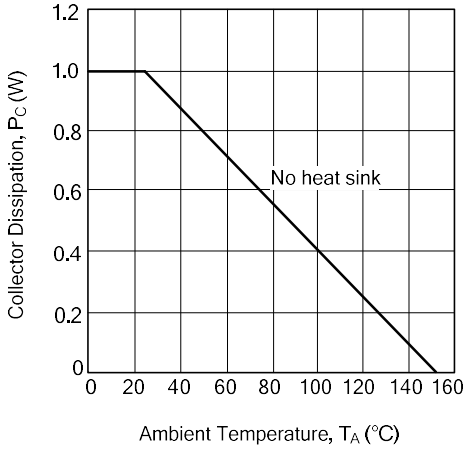
Base-Saturation Voltage vs. Collector Current



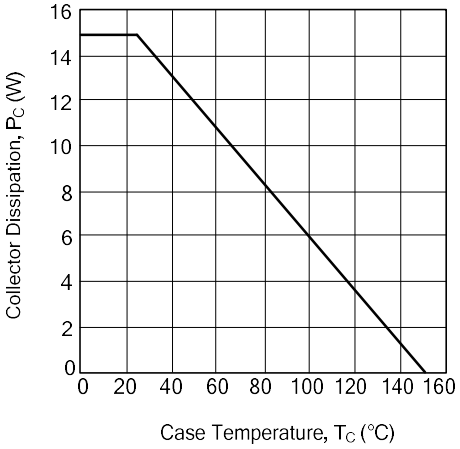
DC Current Gain vs. Collector Current



P_C vs. T_A



P_C vs. T_C



■ TYPICAL CHARACTERISTICS