



TUL1203

NPN SILICON TRANSISTOR

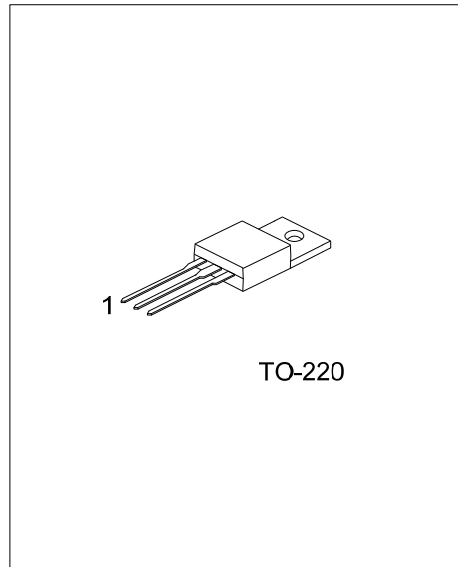
HIGH VOLTAGE FAST-SWITCHING NPN POWER TRANSISTOR

DESCRIPTION

The **TUL1203** is manufactured by using high voltage Planar technology for high voltage capability and high switching speeds.

FEATURES

- * BV_{CES} Up To 1400V.
- * Better Distribution Of Dynamic Parameters And Lot To Lot Spread
- * High Switching Speed



ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free Plating	Halogen-Free		1	2	3	
TUL1203L-TA3-T	TUL1203G-TA3-T	TO-220	B	C	E	Tube

<p>TUL1203L-TA3-T</p> <p>(1)Packing Type (2)Package Type (3)Lead Plating</p>	<p>(1) T: Tube (2) TA3: TO-220 (3) L: Lead Free, G: Halogen Free</p>
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■ ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	RATINGS	UNIT
Collector-Base Voltage ($I_E = 0$)	V_{CBO}	1400	V
Collector-Emitter Voltage ($V_{BE} = 0$)	V_{CES}	1400	V
Collector-Emitter Voltage ($I_B = 0$)	V_{CEO}	550	V
Emitter-Base Voltage ($I_C = 0$)	V_{EBO}	12	V
Collector Current	I_C	5	A
Collector Peak Current ($t_p < 5$ ms)	I_{CM}	8	A
Base Current	I_B	2	A
Base Peak Current ($t_p < 5$ ms)	I_{BM}	4	A
Power Dissipation ($T_C = 25^\circ\text{C}$)	P_D	100	W
Junction Temperature	T_J	+150	$^\circ\text{C}$
Storage Temperature	T_{STG}	-65 ~ +150	$^\circ\text{C}$

Note: Absolute maximum ratings are the values beyond which the device will be damaged permanently.

Absolute maximum ratings are only stress ratings and it is not implied for functional device operation.

■ THERMAL DATA

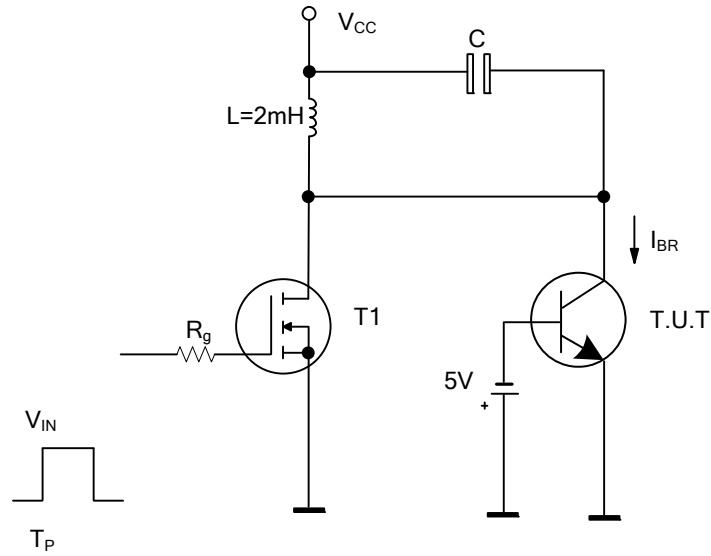
PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Case	θ_{JC}	1.25	$^\circ\text{C/W}$

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

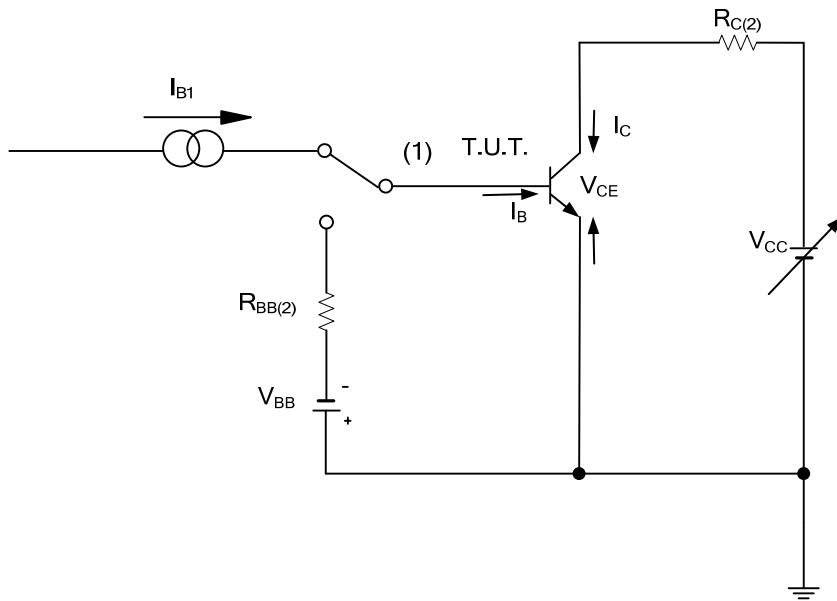
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT	
Collector Cut-off Current ($V_{BE} = 0$)	I_{CES}	$V_{CE} = 1400$ V			100	μA	
Emitter Cut-off Current ($I_B = 0$)	I_{EBO}	$V_{EB} = 12$ V			100	μA	
Collector-Emitter Sustaining Voltage ($I_B = 0$) (Note)	$V_{CEO(SUS)}$	$I_C = 100$ mA	550			V	
Collector-Emitter Saturation Voltage (Note)	$V_{CE(SAT)}$	$I_C = 1$ A, $I_B = 200$ mA			0.5	V	
		$I_C = 2$ A, $I_B = 400$ mA			0.7	V	
		$I_C = 3$ A, $I_B = 1$ A			1.5	V	
Base-Emitter Saturation Voltage (Note)	$V_{BE(SAT)}$	$I_C = 2$ A, $I_B = 400$ mA			1.5	V	
		$I_C = 3$ A, $I_B = 1$ A			1.5	V	
DC Current Gain (Note)	h_{FE}	$I_C = 1$ mA, $V_{CE} = 5$ V	10				
		$I_C = 10$ mA, $V_{CE} = 5$ V	10				
		$I_C = 0.8$ mA, $V_{CE} = 3$ V	14		32		
		$I_C = 2$ A, $V_{CE} = 5$ V	9		28		
Resistive Load	Storage Time	t_S	$I_C = 2$ A, $V_{CC} = 150$ V $I_{B1} = 0.4$ A, $I_{B2} = -0.8$ A $T_P = 30$ μs		2.5	3.0	μs
	Fall Time	t_F			0.2	0.3	μs
Avalanche Energy	E_{AR}	$L = 2$ mH, $C = 1.8$ nF $I_{BR} \leq 2.5$ A, $25^\circ\text{C} < T_C < 125^\circ\text{C}$	6			mJ	

Note: Pulse Test: Pulse width = 300 μs , Duty cycle $\leq 1.5\%$

■ TEST CIRCUITS



Energy Rating Test Circuit



Resistive Load Switching Test Circuit

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