



## BU931

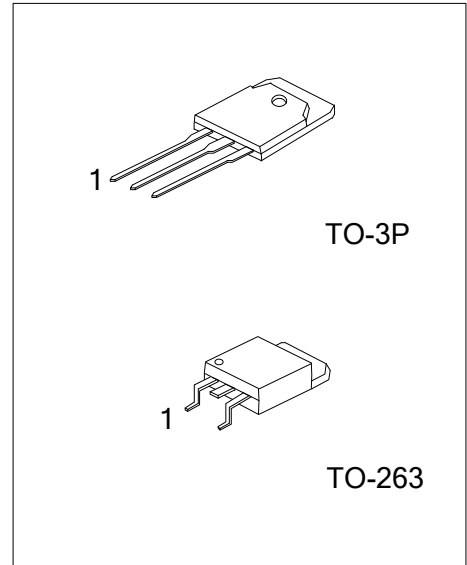
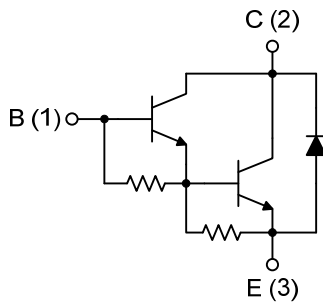
## NPN SILICON TRANSISTOR

### NPN POWER DARLINGTON

#### ■ FEATURES

- \* High operating junction temperature
- \* High voltage ignition coil driver
- \* Very rugged bipolar technology

#### ■ INTERNAL SCHEMATIC DIAGRAM



#### ■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
BU931L-T3P-T	BU931G-T3P-T	TO-3P	B	C	E	Tube
BU931L-TQ2-T	BU931G-TQ2-T	TO-263	B	C	E	Tube
BU931L-TQ2-R	BU931G-TQ2-R	TO-263	B	C	E	Tape Reel

<p>BU931L-T3P-T</p> <p>(1) Packing Type (2) Package Type (3) Lead Plating</p>	<p>(1) T: Tube, R: Tape Reel (2) T3P: TO-3P, TQ2: TO-263 (3) L: Lead Free, G: Halogen Free</p>
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### ■ ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

PARAMETER	SYMBOL	RATINGS	UNIT
Collector-Emitter Voltage (V <sub>BE</sub> =0)	V <sub>CES</sub>	500	V
Collector-Emitter Voltage (I <sub>B</sub> =0)	V <sub>CEO</sub>	400	V
Emitter-Base Voltage (I <sub>C</sub> =0)	V <sub>EBO</sub>	5	V
Collector Current	I <sub>C</sub>	15	A
Collector Peak Current	I <sub>CM</sub>	30	A
Base Current	I <sub>B</sub>	1	A
Base Peak Current	I <sub>BM</sub>	5	A
Power Dissipation (T <sub>C</sub> =25°C)	TO-3P	135	W
	TO-263	125	W
Junction Temperature	T <sub>J</sub>	+200	°C
Storage Temperature	T <sub>STG</sub>	-65 ~ +200	°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

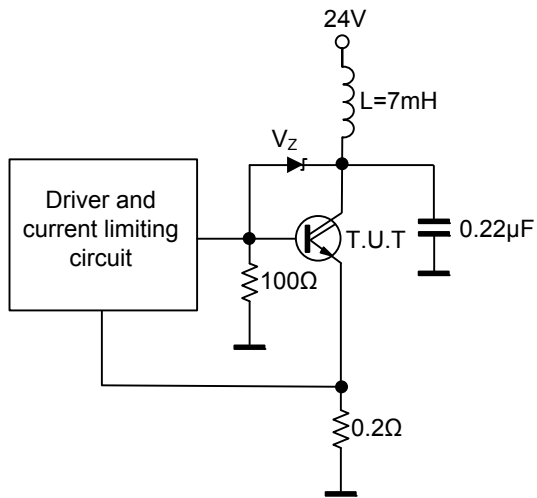
PARAMETER	SYMBOL	RATING	UNIT
Junction to Case	TO-3P	1.1	°C/W
	TO-263	1.2	°C/W

### ■ ELECTRICAL CHARACTERISTICS

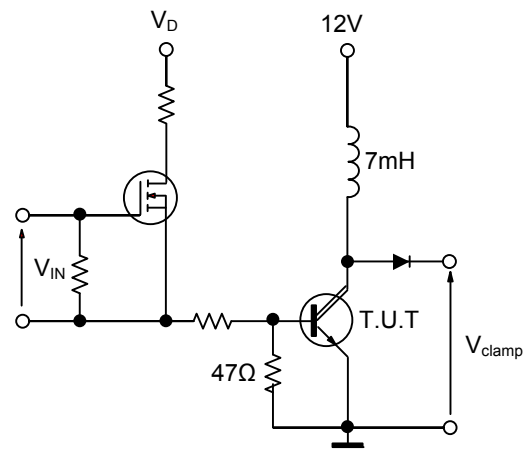
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Collector Cut-off Current (I <sub>B</sub> =0)	I <sub>CEO</sub>	V <sub>CE</sub> = 450 V			100	μA
		V <sub>CE</sub> = 450V, T <sub>J</sub> = 125°C			0.5	mA
Emitter Cut-off Current (I <sub>C</sub> =0)	I <sub>EBO</sub>	V <sub>EB</sub> = 5V			20	mA
Collector-Emitter Saturation Voltage (Note)	V <sub>CE(SAT)</sub>	I <sub>C</sub> = 7A, I <sub>B</sub> = 70mA			1.6	V
		I <sub>C</sub> = 8A, I <sub>B</sub> = 100mA			1.8	V
		I <sub>C</sub> = 10A, I <sub>B</sub> = 250mA			1.8	V
Base-Emitter Saturation Voltage (Note)	V <sub>BE(SAT)</sub>	I <sub>C</sub> = 7A, I <sub>B</sub> = 70mA			2.2	V
		I <sub>C</sub> = 8A, I <sub>B</sub> = 100mA			2.4	V
		I <sub>C</sub> = 10A, I <sub>B</sub> = 250mA			2.5	V
DC Current Gain	h <sub>FE</sub>	I <sub>C</sub> = 5A, V <sub>CE</sub> = 10V	300			
Diode Forward Voltage	V <sub>F</sub>	I <sub>F</sub> = 10 A			2.5	V
Functional Test		V <sub>CC</sub> = 24V, V <sub>clamp</sub> = 400V L = 7mH	8			A
Inductive Load Storage Time / Fall Time	t <sub>s</sub>	V <sub>CC</sub> = 12V, V <sub>clamp</sub> = 300V L = 7mH		15		μs
	t <sub>f</sub>	I <sub>C</sub> = 7A, I <sub>B</sub> = 70mA V <sub>BE</sub> = 0, R <sub>BE</sub> = 47Ω		0.5		μs

Note: Pulsed: Pulse duration = 300μs, duty cycle 1.5 %

## ■ TEST CIRCUITS

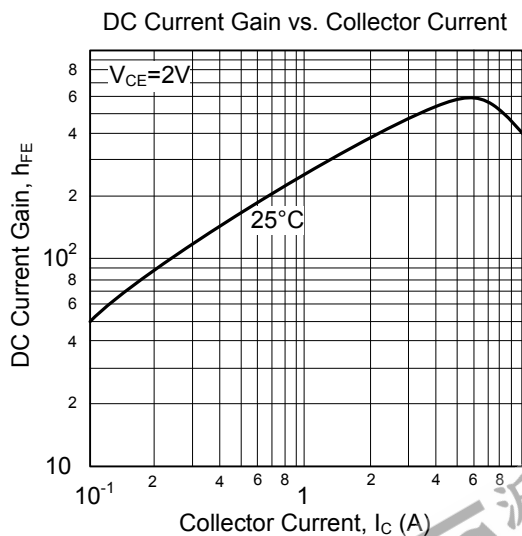
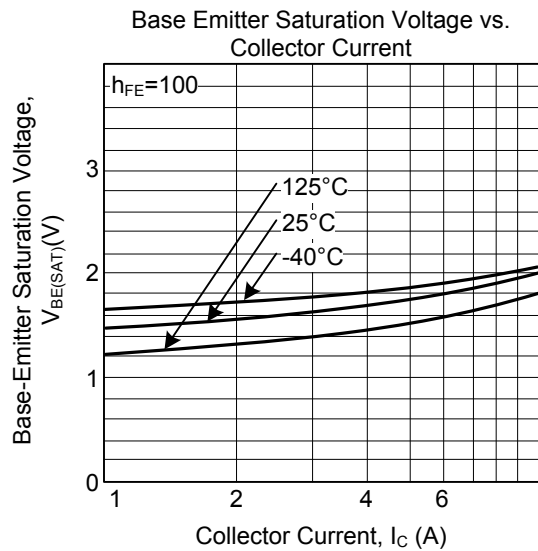
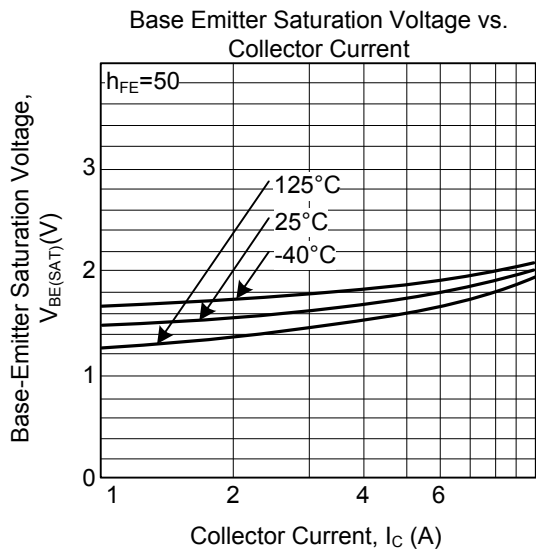
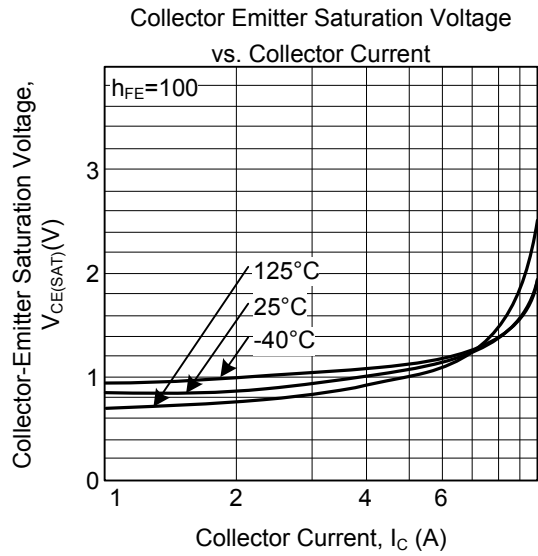
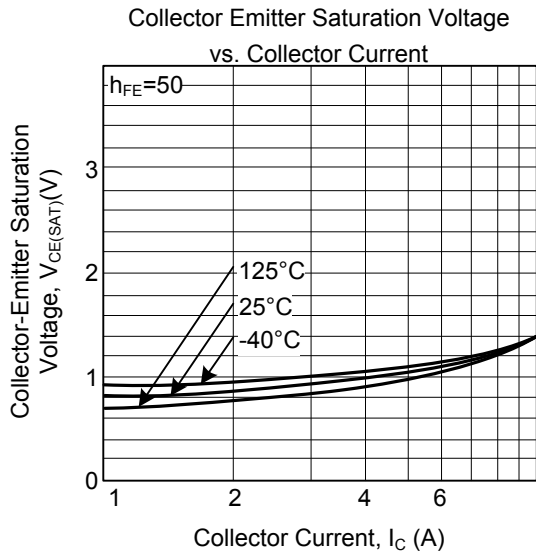


Functional Test Circuit



Switching Time Test Circuit

## TYPICAL CHARACTERISTICS



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