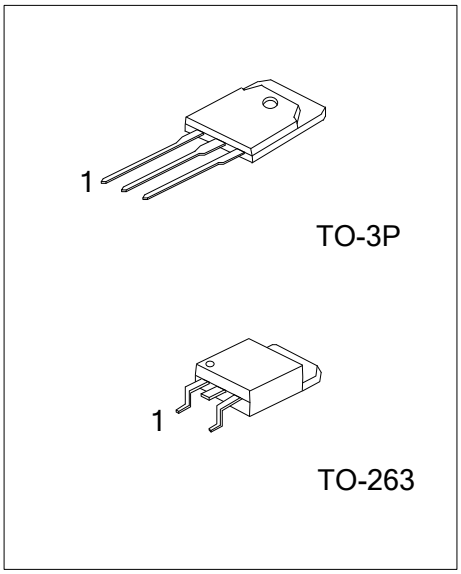
BU931

NPN SILICON TRANSISTOR

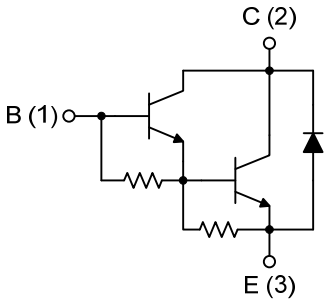
NPN POWER DARLINGTON



■ 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

BU931L-T3P-T

(1)Packing Type
(2)Package Type
(3)Lead Plating

(1) T: Tube, R: Tape Reel

(2) T3P: TO-3P, TQ2: TO-263

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

■ ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

PARAMETER		SYMBOL	RATINGS	UNIT
Collector-Emitter Voltage (V_{BE}=0)		V_{CES}	500	V
Collector-Emitter Voltage (I_B=0)		V_{CEO}	400	V
Emitter-Base Voltage (I_C=0)		V_{EBO}	5	V
Collector Current		I_C	15	A
Collector Peak Current		I_{CM}	30	A
Base Current		I_B	1	A
Base Peak Current		I_{BM}	5	A
Power Dissipation (T_C=25°C)	TO-3P	P_D	135	W
	TO-263		125	W
Junction Temperature		T_J	+200	°C
Storage Temperature		T_{STG}	-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

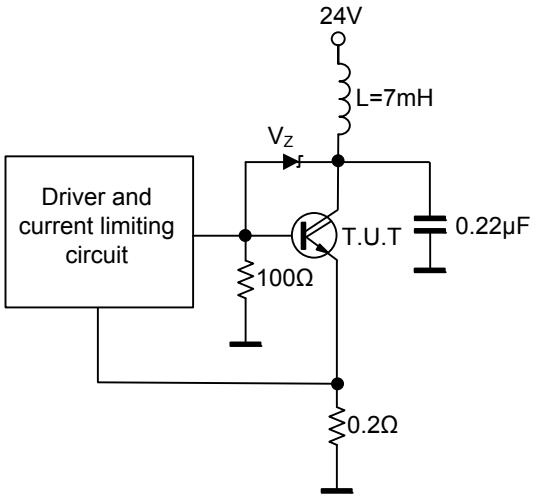
PARAMETER		SYMBOL	RATING	UNIT
Junction to Case	TO-3P	θ_{JC}	1.1	°C/W
	TO-263		1.2	°C/W

■ ELECTRICAL CHARACTERISTICS

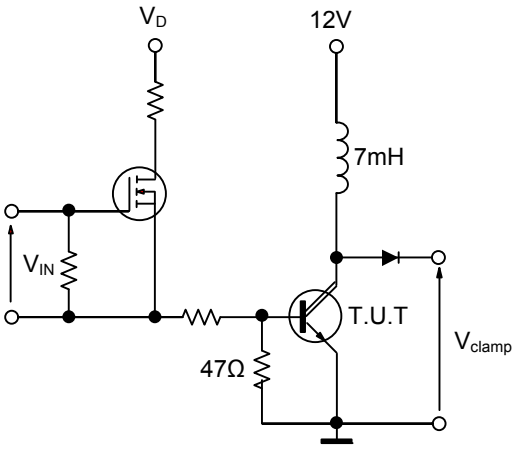
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Collector Cut-off Current (I_B=0)	I_{CEO}	V_{CE} = 450 V			100	μA
		V_{CE} =450V, T_J =125°C			0.5	mA
Emitter Cut-off Current (I_C=0)	I_{EBO}	V_{EB} = 5V			20	mA
Collector-Emitter Saturation Voltage (Note)	$V_{CE(SAT)}$	I_C = 7A, I_B =70mA			1.6	V
		I_C = 8A, I_B =100mA			1.8	V
		I_C = 10A, I_B =250mA			1.8	V
Base-Emitter Saturation Voltage (Note)	$V_{BE(SAT)}$	I_C = 7A, I_B =70mA			2.2	V
		I_C = 8A, I_B =100mA			2.4	V
		I_C = 10A, I_B =250mA			2.5	V
DC Current Gain	h_{FE}	I_C = 5A, V_{CE} =10V	300			
Diode Forward Voltage	V_F	I_F = 10 A			2.5	V
Functional Test		V_{CC} =24V, V_{clamp} =400V L=7mH	8			A
Inductive Load Storage Time / Fall Time	t_S t_F	V_{CC} = 12V, V_{clamp} =300V L=7mH I_C =7A, I_B =70mA V_{BE} =0, R_{BE} =47Ω		15 0.5		μs μs

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

■ TEST CIRCUITS



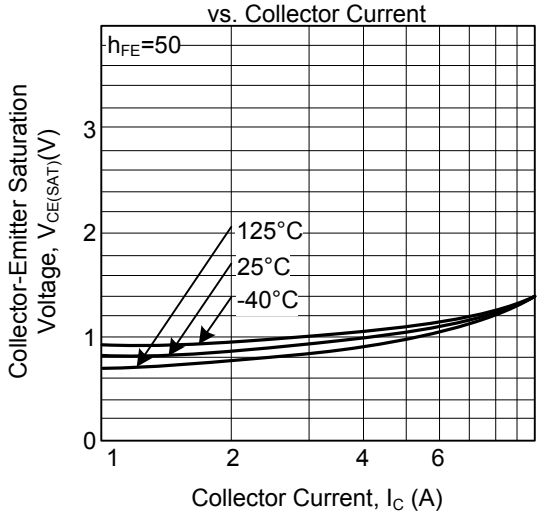
Functional Test Circuit



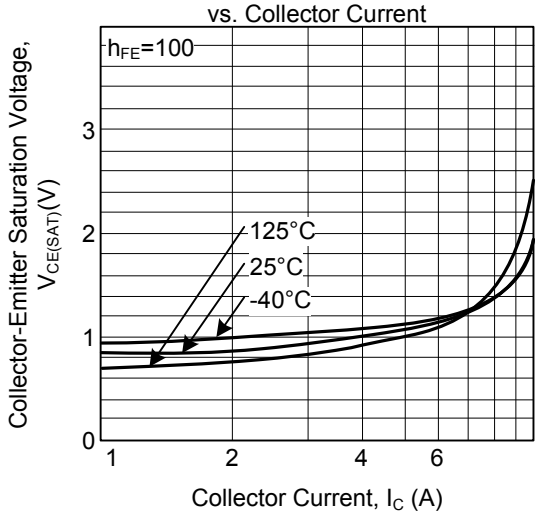
Switching Time Test Circuit

■ TYPICAL CHARACTERISTICS

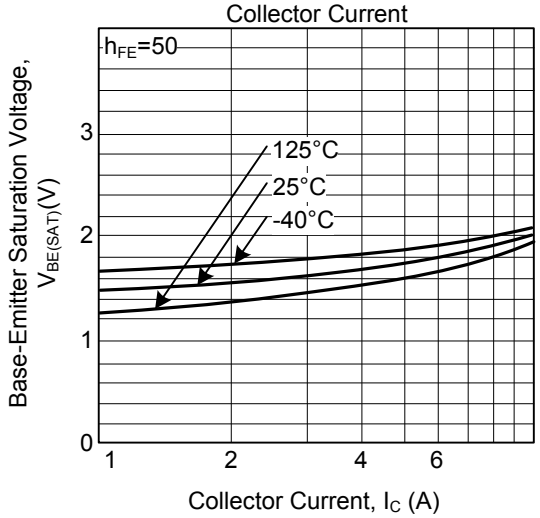
Collector Emitter Saturation Voltage vs. Collector Current



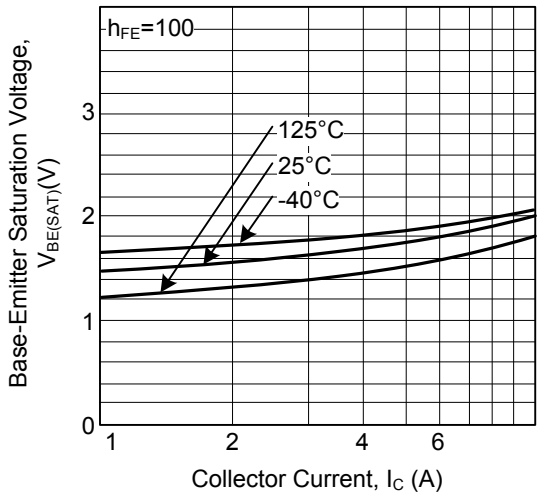
Collector Emitter Saturation Voltage vs. Collector Current



Base Emitter Saturation Voltage vs. Collector Current



Base Emitter Saturation Voltage vs. Collector Current



DC Current Gain vs. Collector Current