



BU931

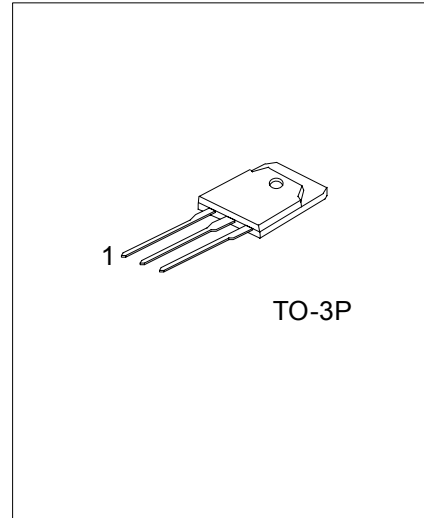
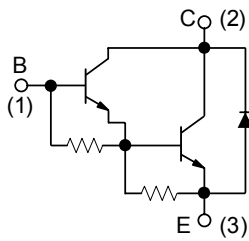
NPN SILICON TRANSISTOR

NPN POWER DARLINGTON

■ FEATURES

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

■ INTERNAL SCHEMATIC DIAGRAM



*Pb-free plating product number: BU931L

■ ORDERING INFORMATION

Order Number		Package	Pin Assignment			Packing
Normal	Lead Free Plating		1	2	3	
BU931-T3P-K	BU931L-T3P-K	TO-3P	B	C	E	Bulk

<p>BU931L-T3P-K</p> <p>(1) Packing Type</p> <p>(2) Package Type</p> <p>(3) Lead Plating</p>	<p>(1) K: Bulk</p> <p>(2) T3P: TO-3P</p> <p>(3) L: Lead Free Plating, Blank Pb/Sn</p>
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■ ABSOLUTE MAXIMUM RATINGS (Ta=25)

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
Total Dissipation ($T_c = 25$)	P_D	175	W
Junction Temperature	T_J	+200	
Storage Temperature	T_{STG}	-65 ~ +200	

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

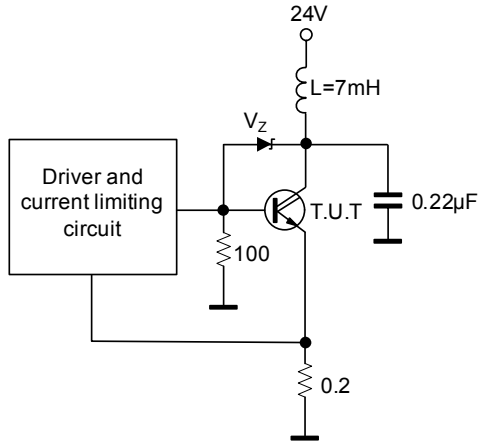
PARAMETER	SYMBOL	RATING	UNIT
Thermal Resistance Junction-Case Max	θ_{JC}	1.1	/W

■ ELECTRICAL CHARACTERISTICS

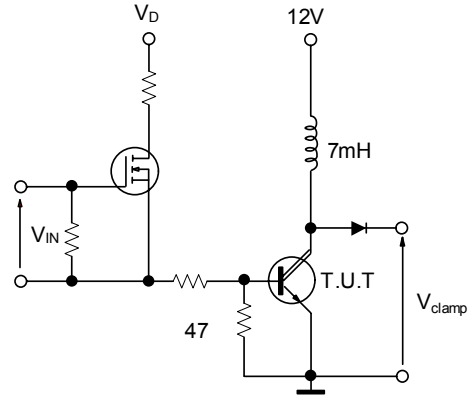
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Collector Cut-off Current ($I_B = 0$)	I_{CEO}	$V_{CE} = 450$ V			100	μ A
		$V_{CE} = 450$ V, $T_J = 125$			0.5	mA
Emitter Cut-off Current ($I_C = 0$)	I_{EBO}	$V_{EB} = 5$ V			20	mA
Collector-Emitter Saturation Voltage(Note)	$V_{CE(SAT)}$	$I_C = 7$ A,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

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

■ TEST CIRCUITS

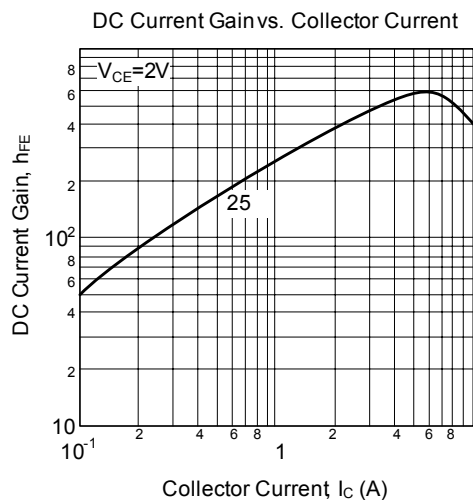
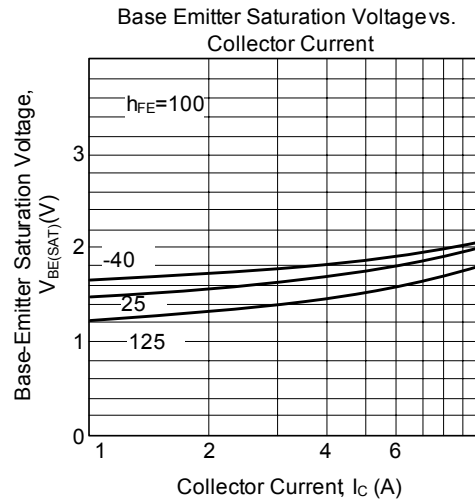
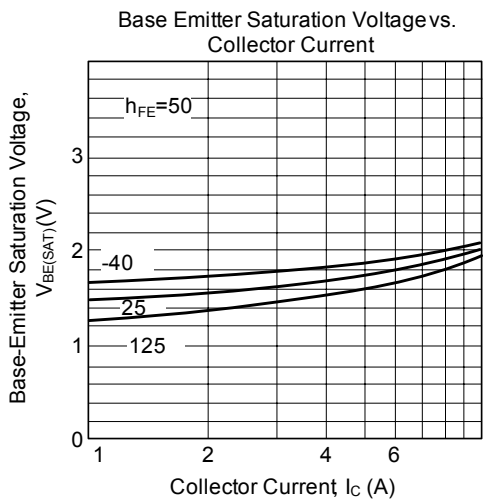
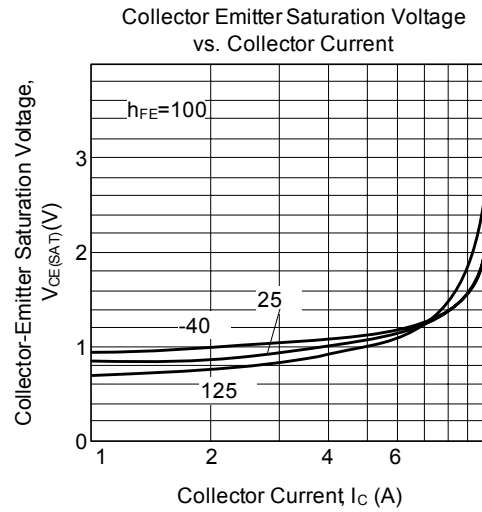
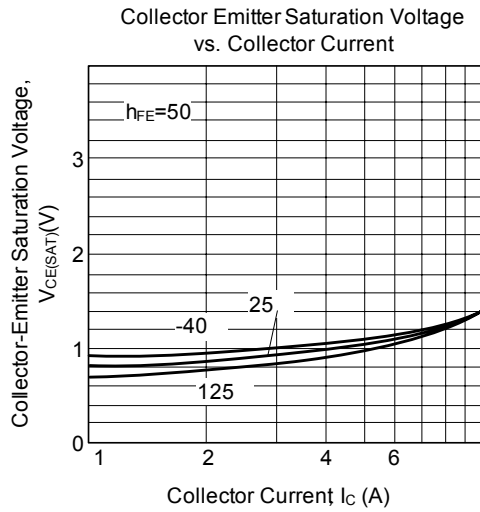


Functional Test Circuit



Switching Time Test Circuit

TYPICAL CHARACTERISTICS



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