



BU941

NPN SILICON TRANSISTOR

NPN POWER DARLINGTON HIGH VOLTAGE IGNITION COIL DRIVER

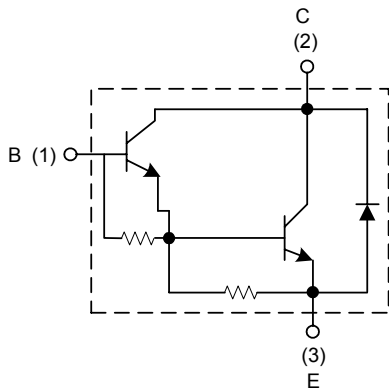
FEATURES

- * NPN Darlington
- * Integrated antiparallel collector-emitter diode

APPLICATIONS

- * High ruggedness electric ignitions

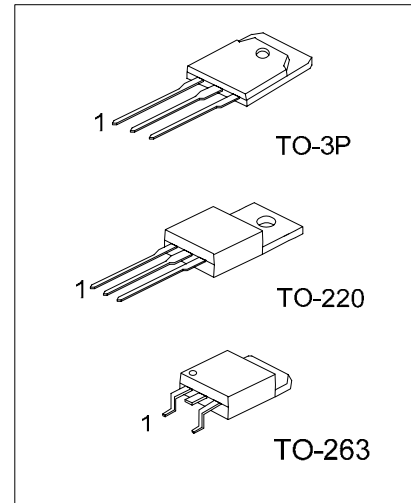
INTERNAL SCHEMATIC DIAGRAM



ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Normal	Lead Free Plating		1	2	3	
BU941-T3P-T	BU941L-T3P-T	TO-3P	B	C	E	Tube
BU941-TA3-T	BU941L-TA3-T	TO-220	B	C	E	Tube
BU941-TQ2-R	BU941L-TQ2-R	TO-263	B	C	E	Tape Reel
BU941-TQ2-T	BU941L-TQ2-T	TO-263	B	C	E	Tube

<p>BU941L-TA3-T</p> <p>(1)Packing Type</p> <p>(2)Package Type</p> <p>(3)Lead Plating</p>	<p>(1) R: Tape Reel, T: Tube</p> <p>(2) T3P: TO-3P, TA3: TO:220, TQ2: TO-263</p> <p>(3) L: Lead Free Plating, Blank: Pb/Sn</p>
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*Pb-free plating product number: BU941L

■ ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	RATINGS	UNIT
Collector-Emitter Voltage	V_{CES}	500	V
Collector-Emitter Voltage	V_{CEO}	400	V
Emitter-Base Voltage	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	W
Total Power Dissipation ($T_c=25^\circ\text{C}$)	TO-3P	155	W
	TO-220	150	W
	TO-263	65	W
Junction Temperature	T_J	+175	$^\circ\text{C}$
Storage Temperature	T_{STG}	-65 ~ +175	$^\circ\text{C}$

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.

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

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Collector-Emitter Sustaining Voltage	$V_{CEO(SUS)}^*$	$I_C=100\text{mA}$, $V_{clamp}=400\text{V}$, $L=10\text{mH}$ (see Fig. 1)	400			V
Collector Cut-Off Current	I_{CES}	$V_{CE}=500\text{V}$, $V_{BE}=0$ $V_{CE}=500\text{V}$, $V_{BE}=0$, $T_J=125^\circ\text{C}$			100 0.5	μA mA
Collector Cut-Off Current	I_{CEO}	$V_{CE}=450\text{V}$, $I_B=0$ $V_{CE}=450\text{V}$, $I_B=0$, $T_J=125^\circ\text{C}$			100 0.5	μA mA
Emitter Cut-off Current	I_{EBO}	$V_{EB}=5\text{V}$, $I_C=0$			20	mA
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}^*$	$I_C=8\text{A}$, $I_B=100\text{mA}$ $I_C=10\text{A}$, $I_B=250\text{mA}$ $I_C=12\text{A}$, $I_B=300\text{mA}$			1.6 1.8 2	V
Base-Emitter Saturation Voltage	$V_{BE(SAT)}^*$	$I_C=8\text{A}$, $I_B=100\text{mA}$ $I_C=10\text{A}$, $I_B=250\text{mA}$ $I_C=12\text{A}$, $I_B=300\text{mA}$			2.2 2.5 2.7	V
DC Current Gain	h_{FE}^*	$V_{CE}=10\text{V}$, $I_C=5\text{A}$	300			
Diode Forward Voltage	V_F	$I_F=10\text{A}$			2.5	V
Functional Test		$V_{CC}=24\text{V}$, $V_{clamp}=400\text{V}$, $L=7\text{mH}$ (see Functional Test Circuit)	10			A
Fall Time	t_F	$V_{CC}=12\text{V}$, $V_{clamp}=300\text{V}$, $V_{BE}=0$,		15		μs
Storage Time	t_s	$R_{BE}=47\Omega$, $L=7\text{mH}$, $I_C=7\text{A}$, $I_B=70\text{mA}$ (see Fig.2)		0.5		

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

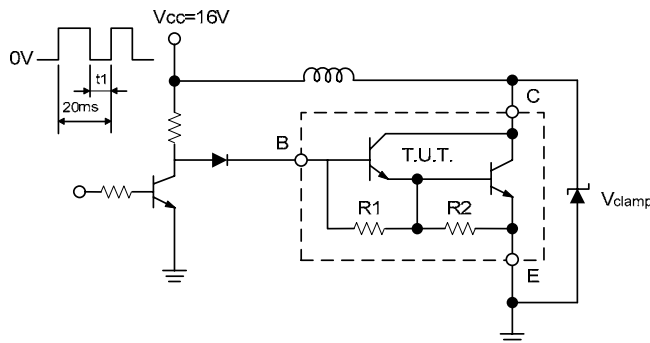


Fig. 1 Sustaining Voltage Test Circuit

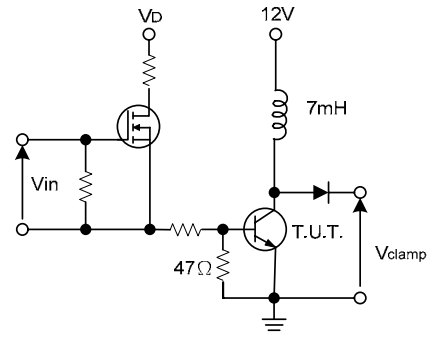
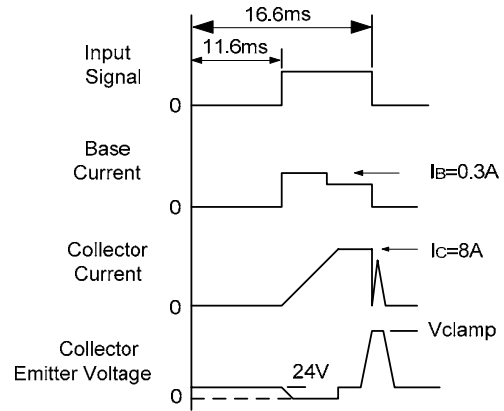
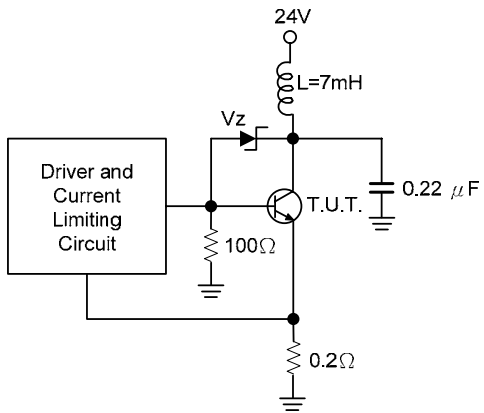
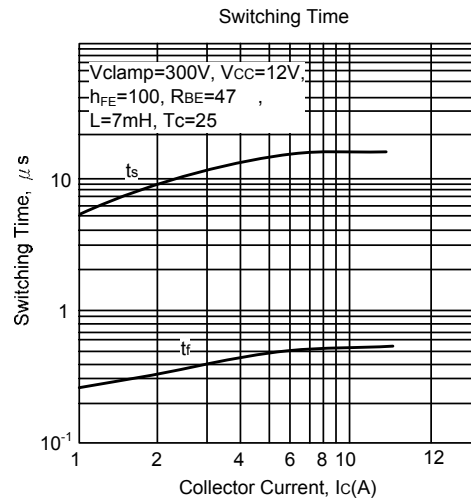
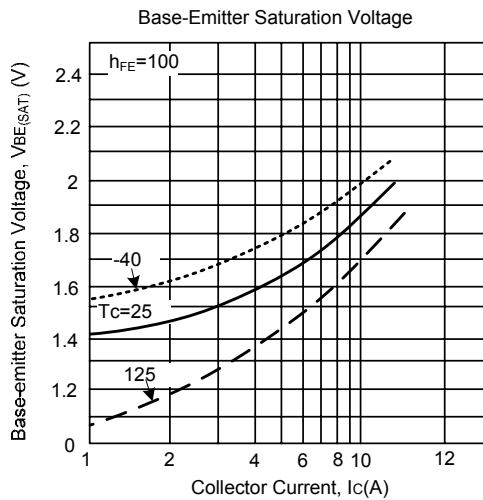
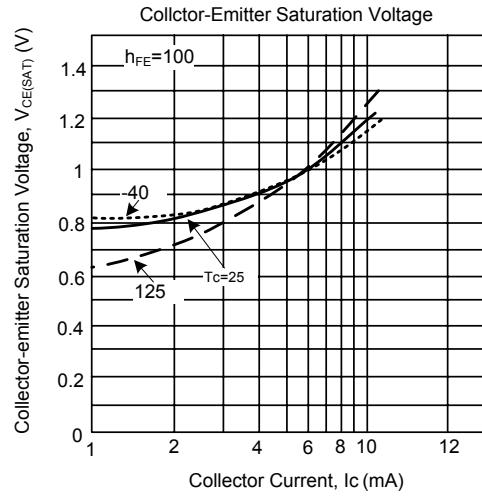
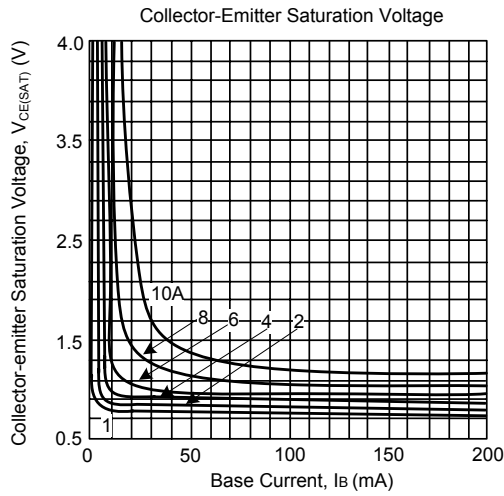
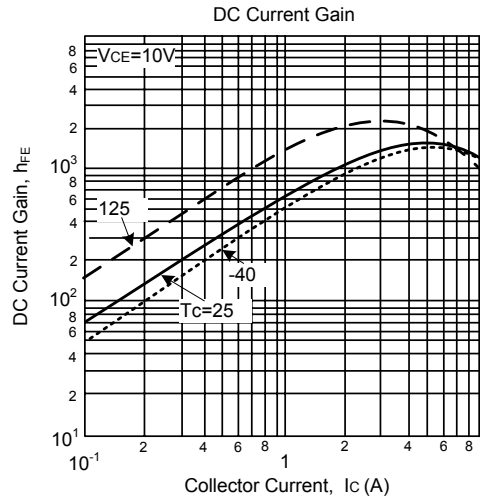
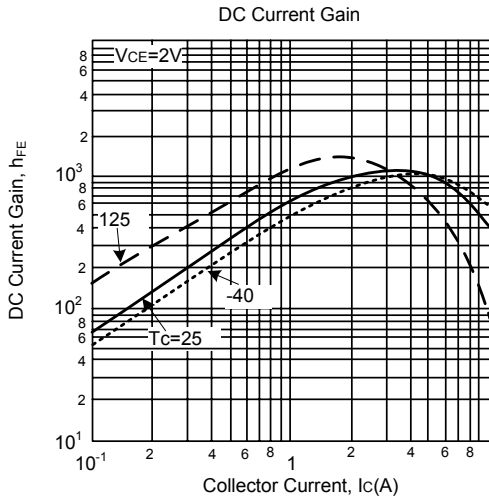


Fig. 2 Switching Time Test Circuit

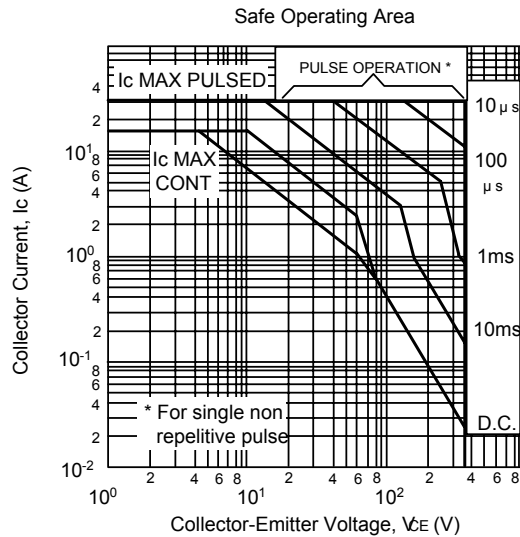
■ FUNCTION TEST CIRCUIT



TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS(Cont.)



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