

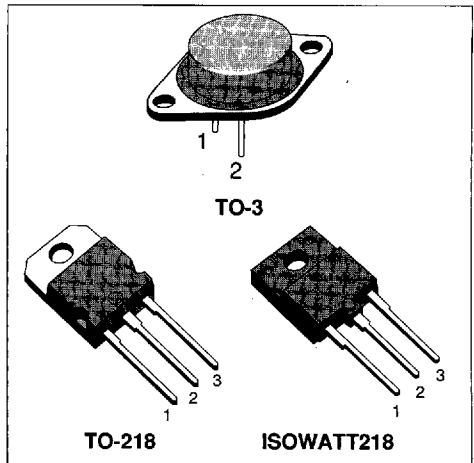
HIGH VOLTAGE IGNITION COIL DRIVER NPN POWER DARLINGTON

PRELIMINARY DATA

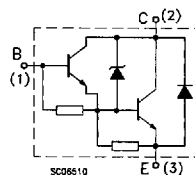
- VERY RUGGED BIPOLAR TECHNOLOGY
- BUILT IN CLAMPING ZENER
- HIGH OPERATING JUNCTION TEMPERATURE
- WIDE RANGE OF PACKAGES

APPLICATIONS

- HIGH RUGGEDNESS ELECTRONIC IGNITIONS



INTERNAL SCHEMATIC DIAGRAM



for TO-3
 Emitter: pin 2
 Base: pin 1
 Collector: tab

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value			Unit
		BU931Z	BU931ZP	BU931ZPFI	
V_{CES}	Collector-Base Voltage ($V_{BE} = 0$)	350			V
V_{CEO}	Collector-Emitter Voltage ($I_B = 0$)	350			V
V_{EBO}	Emitter-Base Voltage ($I_C = 0$)	5			V
I_C	Collector Current	10			A
I_{CM}	Collector Peak Current	15			A
I_B	Base Current	1			A
I_{BM}	Base Peak Current	5			A
P_{tot}	Total Dissipation at $T_c = 25^\circ\text{C}$	175	150	60	W
T_{stg}	Storage Temperature	-65 to 200	-65 to 175	-65 to 150	$^\circ\text{C}$
T_j	Max. Operating Junction Temperature	200	175	150	$^\circ\text{C}$

THERMAL DATA

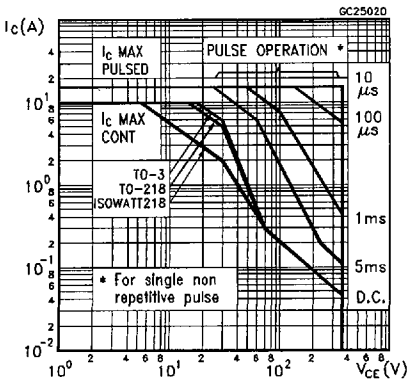
		TO-3	TO-218	ISOWATT218	
$R_{thj-case}$	Thermal Resistance Junction-case Max	1	1	2.8	°C/W

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

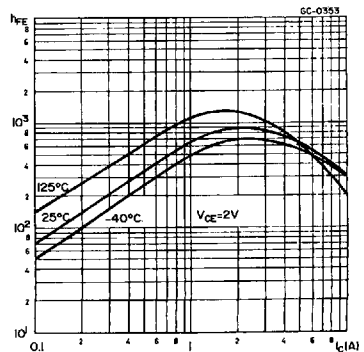
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CES}	Collector Cut-off Current ($V_{BE} = 0$)	$V_{CE} = 450\text{ V}$			250	μA
		$V_{CE} = 450\text{ V}$ $T_j = 150\text{ }^{\circ}\text{C}$			0.5	mA
I_{CES}	Collector Cut-off Current ($V_{BE} = 0$)	$V_{CE} = 400\text{ V}$			250	μA
					0.5	mA
I_{EBO}	Emitter Cut-off Current ($I_C = 0$)	$V_{EB} = 5\text{ V}$			20	mA
V_{CL}^*	Clamping Voltage	$I_C = 100\text{ mA}$	350		500	V
$V_{CE(sat)}^*$	Collector-Emitter Saturation Voltage	$I_C = 7\text{ A}$ $I_B = 70\text{ mA}$			1.6	V
		$I_C = 8\text{ A}$ $I_B = 100\text{ mA}$			1.8	V
		$I_C = 10\text{ A}$ $I_B = 250\text{ mA}$			1.8	V
$V_{BE(sat)}^*$	Base-Emitter Saturation Voltage	$I_C = 10\text{ A}$ $I_B = 250\text{ mA}$			2.5	V
h_{FE}^*	DC Current Gain	$I_C = 5\text{ A}$ $V_{CE} = 10\text{ V}$	300		2000	
V_F	Diode Forward Voltage	$I_F = 10\text{ A}$			2	V
	Functional Test (see fig. 1)	$V_{CC} = 24\text{ V}$ $L = 7\text{ mH}$	8			A
t_s t_f	INDUCTIVE LOAD Storage Time Fall Time (see fig. 3)	$V_{CC} = 12\text{ V}$ $L = 7\text{ mH}$ $V_{clamp} = 300\text{ V}$		15		μs
		$I_C = 7\text{ A}$ $I_B = 70\text{ mA}$ $V_{BE} = 0$ $R_{BE} = 47\text{ }\Omega$		0.5		μs

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

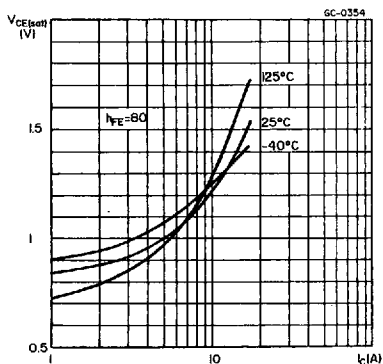
Safe Operating Areas



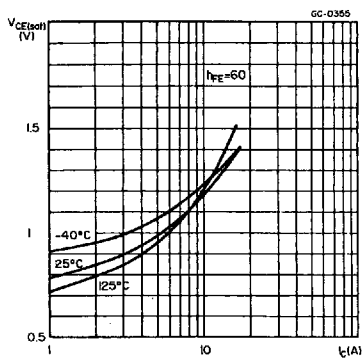
DC Current Gain



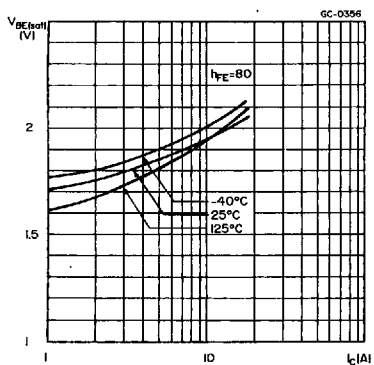
Collector-emitter Saturation Voltage



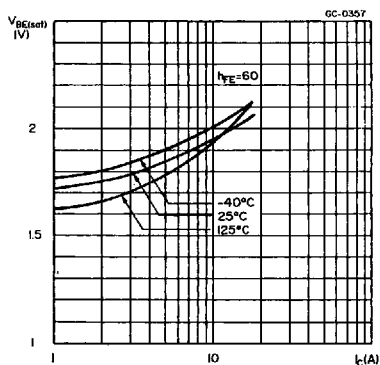
Collector-emitter Saturation Voltage



Base-emitter Saturation Voltage



Base-emitter Saturation Voltage



Collector-emitter Saturation Voltage

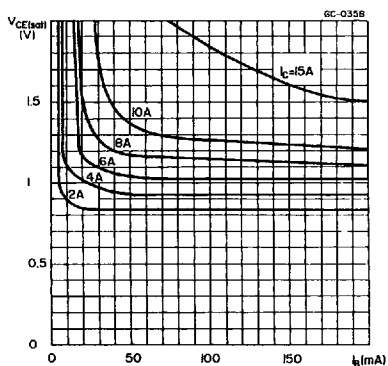


FIGURE 1: Functional Test Circuit

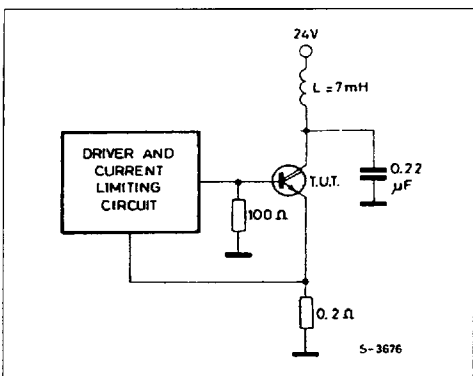


FIGURE 2: Functional Test Waveform

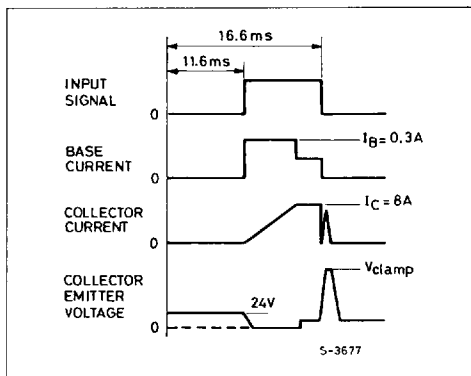


FIGURE 3: Switching Time Test Circuit

