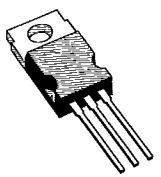
SGS-THOMSON
MICROELECTRONICS

BU910/911
BU912

HIGH VOLTAGE POWER DARLINGTON

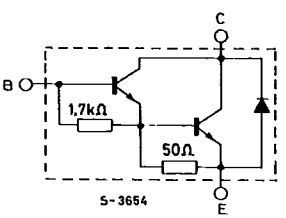
DESCRIPTION

The BU910, BU911, and BU912 are high voltage, silicon NPN transistors in monolithic Darlington configuration in JEDEC TO-220 plastic package, designed for applications such as electronic ignition, DC and AC motor controls, solenoid drivers, etc.



TO-220

INTERNAL SHEMATIC DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value			Unit
		BU910	BU911	BU912	
V_{CES}	Collector-emitter Voltage (V_{BE} = 0)	400	450	500	V
V_{CEO}	Collector-emitter Voltage (I_B = 0)	350	400	450	V
V_{EBO}	Emitter-base Voltage (I_C = 0)	5			V
I_C	Collector Current	6			A
I_{CM}	Collector Peak Current	10			A
I_B	Base Current	1			A
P_{tot}	Total Power Dissipation at $T_{case} \leq 25°C$	60			W
T_{stg}	Storage Temperature	– 65 to 150			°C
T_j	Junction Temperature	150			°C

THERMAL DATA

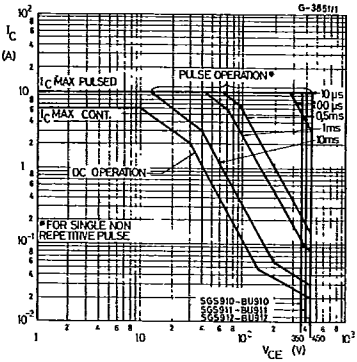
$R_{th\ j\text{-}case}$	Thermal Resistance Junction-case	Max	2.08	°C/W

ELECTRICAL CHARACTERISTICS (T_{case} = 25°C unless otherwise specified)

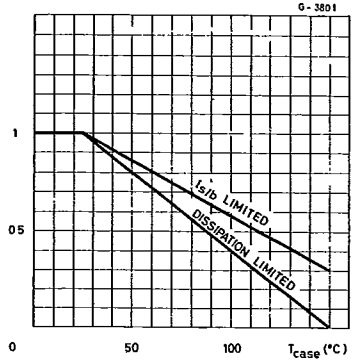
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CES}	Collector Cutoff Current (V_{BE} = 0)	for **BU910** V_{CE} = 400V			1	mA
		for **BU911** V_{CE} = 450V			1	mA
		for **BU912** V_{CE} = 500V			1	mA
		T_{case} = 125°C				
		for **BU910** V_{CE} = 400V			5	mA
		for **BU911** V_{CE} = 450V			5	mA
		for **BU912** V_{CE} = 500V			5	mA
I_{CEO}	Collector Cutoff Current (I_B = 0)	for **BU910** V_{CE} = 350V			1	mA
		for **BU911** V_{CE} = 400V			1	mA
		for **BU912** V_{CE} = 450V			1	mA
I_{EBO}	Emitter Cutoff Current (I_C = 0)	V_{EB} = 5V			5	mA
$V_{CEO(sus)}$*	Collector-emitter Sustaining Voltage (I_B = 0)	I_C = 100mA				
		for **BU910**	350			V
		for **BU911**	400			V
		for **BU912**	450			V
$V_{CE(sat)}$*	Collector-emitter Saturation Voltage	for **BU910** and **BU911**				
		I_C = 2.5A I_B = 50mA			1.8	V
		for **BU912**				
		I_C = 2A I_B = 50mA			1.8	V
		All Types				
		I_C = 4A I_B = 200mA			1.8	V
$V_{BE(sat)}$*	Base-emitter Saturation Voltage	for **BU910** and **BU911**				
		I_C = 2.5A I_B = 50mA			2.2	V
		for **BU912**				
		I_C = 2A I_B = 50mA			2.2	V
		All Types				
		I_C = 4A I_B = 200mA			2.5	V
V_F*	Diode Forward Voltage	I_F = 4A			2.5	V

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

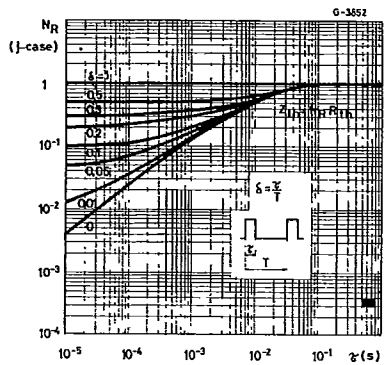
Safe Operating Area.



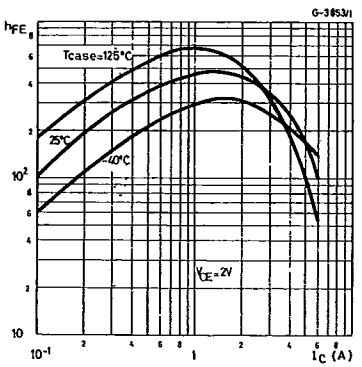
Derating Curves.



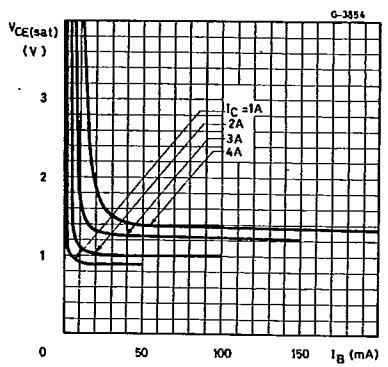
Thermal Transient Response.



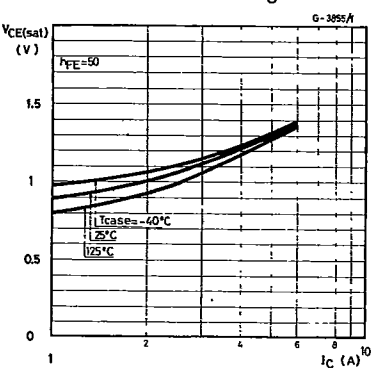
DC Current Gain.



Collector-emitter Saturation Voltage.



Collector-emitter Saturation Voltage.



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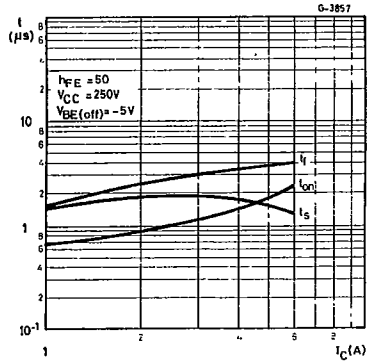
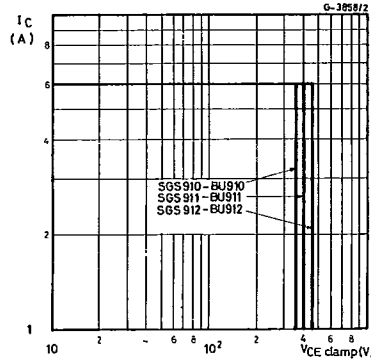
Saturated Switching Characteristics.



Clamped Reverse bias Safe Operating Areas.



Clamped $E_{s/b}$ Test Circuit.

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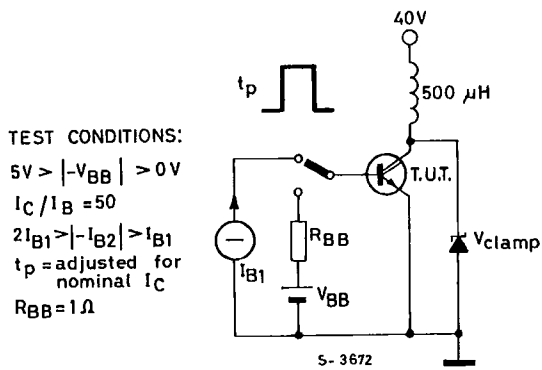

TEST CONDITIONS:

$5V > |-V_{BB}| > 0V$

$I_C / I_B = 50$

$2I_{B1} > |-I_{B2}| > I_{B1}$

t_p = adjusted for nominal I_C

$R_{BB} = 1\,\Omega$