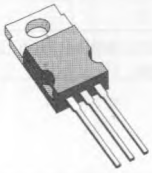
SGS-THOMSON MICROELECTRONICS

BU406
BU406H/BU408

HORIZONTAL TV DEFLECTORS

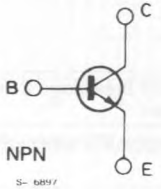
DESCRIPTION

The BU406, BU406H, and BU408 are silicon epitaxial planar NPN transistors in Jedec TO-220 plastic package. They are fast switching, high voltage devices for use in horizontal deflection output stages of large screen MTV receivers with 110° CRT.



TO-220

INTERNAL SCHEMATIC DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-base Voltage (I_E = 0)	400	V
V_{CEV}	Collector-emitter Voltage (V_{BE} = – 1.5V)	400	V
V_{CEO}	Collector-emitter Voltage (I_B = 0)	200	V
V_{EBO}	Emitter-base Voltage (I_C = 0)	6	V
I_C	Collector Current	7	A
I_{CM}	Collector Peak Current (repetitive)	10	A
I_{CM}	Collector Peak Current (t_p = 10ms)	15	A
I_B	Base Current	4	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

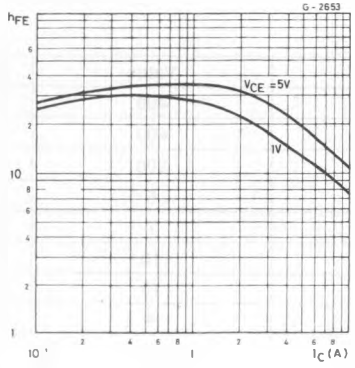
$R_{th\ j\text{-}case}$	Thermal Resistance Junction-case	Max	2.08	°C/W
$R_{th\ j\text{-}amb}$	Thermal Resistance Junction-ambient	Max	70	°C/W

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

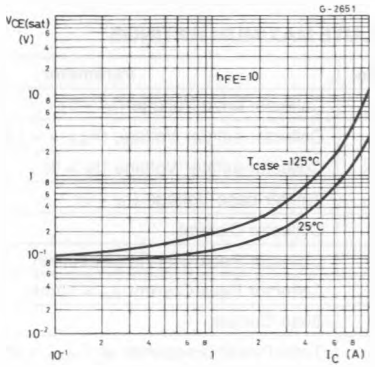
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CES}	Collector Cutoff Current (V_{BE} = 0)	V_{CE} = 400V V_{CE} = 250V T_{case} = 150°C V_{CE} = 250V			5 100 1	mA µA mA
I_{EBO}	Emitter Cutoff Current (I_C = 0)	V_{EB} = 6V			1	mA
$V_{CE(sat)}$*	Collector-emitter Saturation Voltage	for **BU406** I_C = 5A I_B = 0.5A for **BU406H** I_C = 5A I_B = 0.8A for **BU408** I_C = 6A I_B = 1.2A			 1 1 1	 V V V
$V_{BE(sat)}$*	Base-emitter Saturation Voltage	for **BU406** I_C = 5A I_B = 0.5A for **BU406H** I_C = 5A I_B = 0.8A for **BU408** I_C = 6A I_B = 1.2A			 1.2 1.2 1.5	 V V V
f_T	Transition Frequency	I_C = 0.5A V_{CE} = 10V	10			MHz
t_{off}**	Turn-off Time	for **BU406** I_C = 5A I_{Bend} = 0.5A for **BU406H** I_C = 5A I_{Bend} = 0.8A for **BU408** I_C = 6A I_{Bend} = 1.2A			 0.75 0.4 0.4	 µs µs µs
$I_{s/b}$	Second Breakdown Collector Current	V_{CE} = 40V t = 10ms		4		A

* Pulsed : pulse duration = 300µs, duty cycle = 1.5%.
** See test circuit.

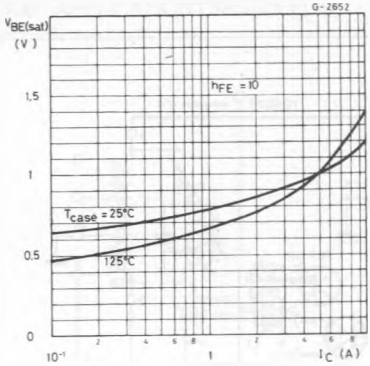
DC Current Gain.



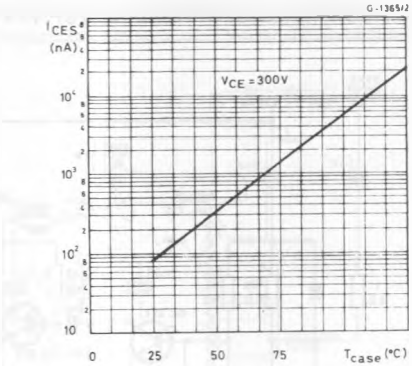
Collector-emitter Saturation Voltage.



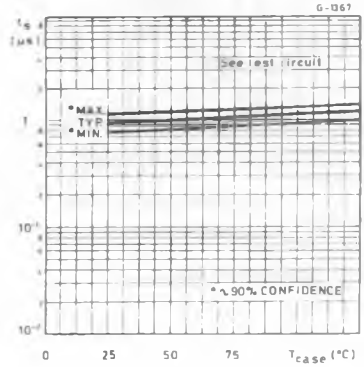
Base-emitter Saturation Voltage.



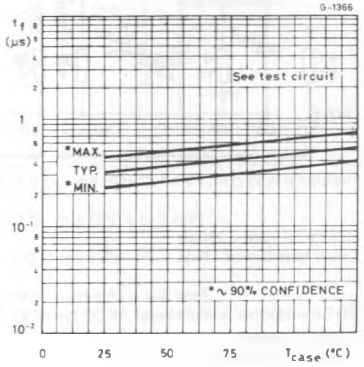
Collector cutoff Current.



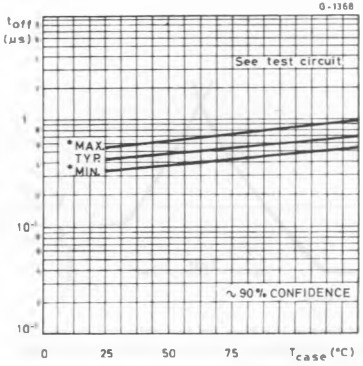
Storage Time.



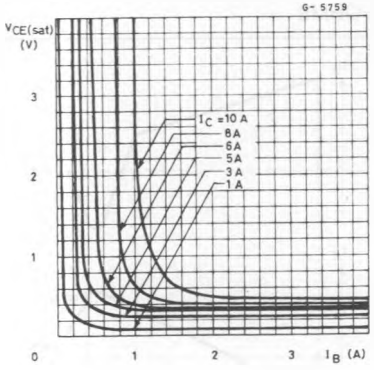
Fall Time.



Turn-off Time.

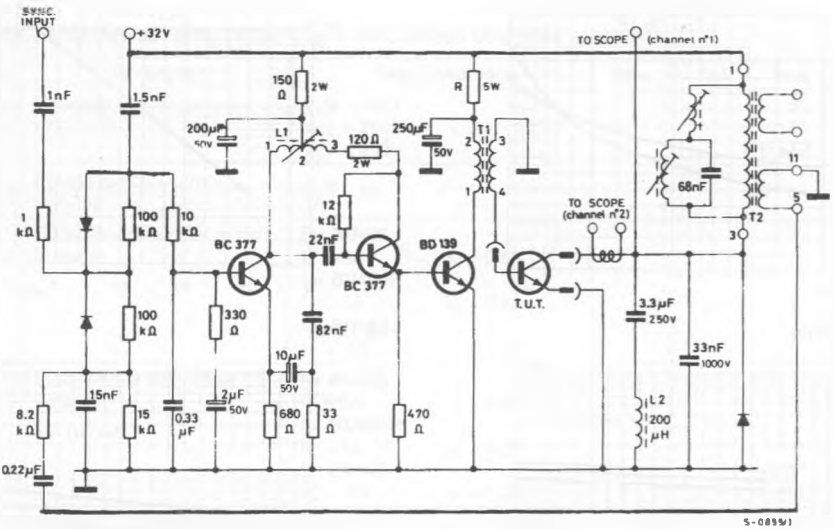


Collector-emitter Saturation Voltage.



SWITCHING TIMES

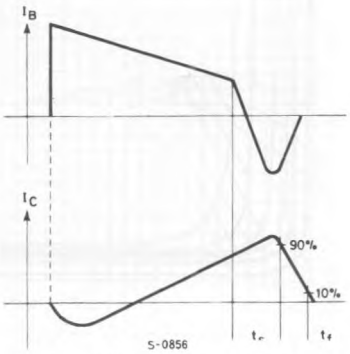
TEST CIRCUIT (FALL, STORAGE AND TURN-OFF TIME)



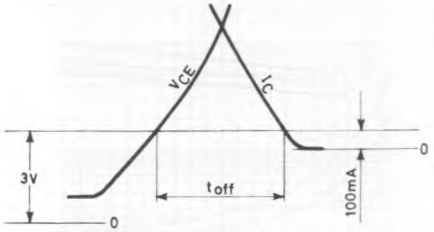
L1 Horizontal hold coil : Pins 1–2 = 75 turns Ø 0.2mm ; R = 1.5Ω ; L min = 0.62mH
Core = siferrit B 62120 25x4x2
Pins 2–3 = 293 turns Ø 0.2mm ; R = 4.8Ω ; L max = 4.1H
L2 Horizontal yoke = 200µH
T1 Driver transformer : Pins 1–2 = 125 turns Ø 0.2mm ;
Gap = 0.12mm ; Core = 3E3 double E 19x15x5
Pins 3–4 = 25 turns Ø 0.4mm ;
T2 EHT transformer manufacturer ARCO type 249.065/035

R = 330Ω for BU406
R = 220Ω for BU406H
R = 180Ω for BU408

WAVEFORMS



Fall and storage time

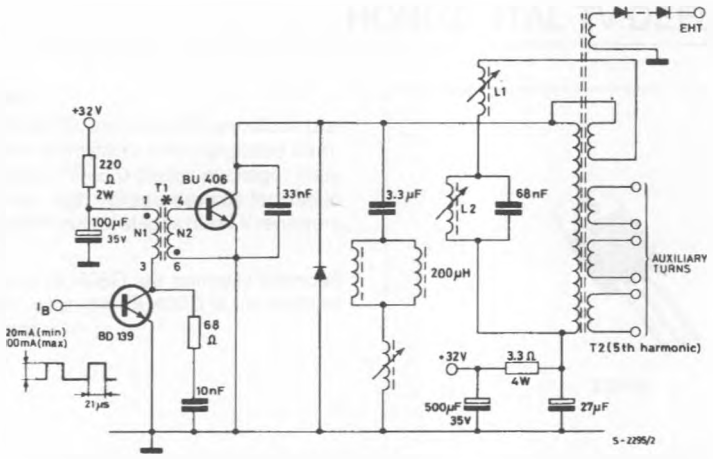


Turn-off time is the time for the collector current I_C to decrease to 100mA after the collector to emitter voltage V_{CE} has risen 3V into its flyback excursion

Turn-off time

APPLICATION INFORMATION

BU406 - APPLICATION CIRCUIT FOR 17" TO 24" - 110° - 28 MM NECK PICTURE TUBES



* N1 = 125 turns Ø 0.3mm ; N2 = 30 turns Ø 0.6mm ; GAP = 0.12mm ; CORE = DOUBLE E 19x5x8mm ; FERRITE 3E1 TYPE