

HIGH VOLTAGE FAST-SWITCHING NPN POWER TRANSISTOR

- SGS-THOMSON PREFERRED SALESTYPE
- HIGH VOLTAGE CAPABILITY
- U.L. RECOGNISED ISOWATT218 PACKAGE (U.L. FILE # E81734 (N))

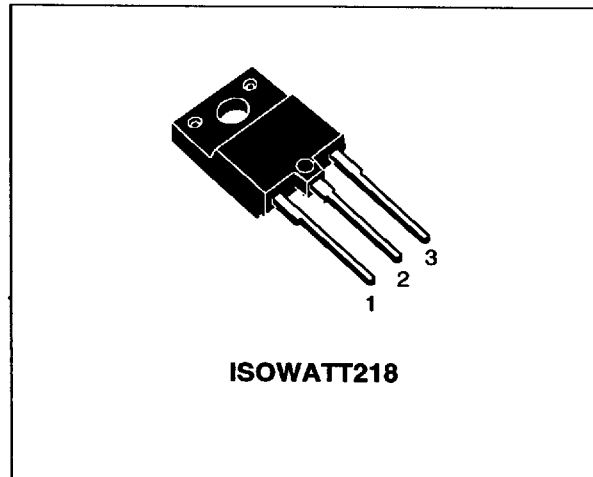
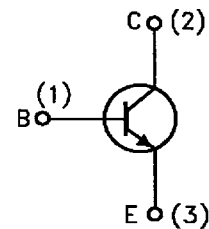
APPLICATIONS:

- HORIZONTAL DEFLECTION FOR MONITORS
- SWITCH MODE POWER SUPPLIES

DESCRIPTION

The BUH715 is manufactured using Multi-epitaxial Mesa technology for cost-effective high performance and uses a Hollow Emitter structure to enhance switching speeds.

The BUH series is designed for use in horizontal deflection circuits in televisions and monitors.


INTERNAL SCHEMATIC DIAGRAM

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_{CB0}	Collector-Base Voltage ($I_E = 0$)	1500	V
V_{CE0}	Collector-Emitter Voltage ($I_B = 0$)	700	V
V_{EB0}	Emitter-Base Voltage ($I_C = 0$)	10	V
I_C	Collector Current	10	A
I_{CM}	Collector Peak Current ($t_p < 5$ ms)	20	A
I_B	Base Current	5	A
I_{BM}	Base Peak Current ($t_p < 5$ ms)	10	A
P_{tot}	Total Dissipation at $T_c = 25$ °C	57	W
T_{stg}	Storage Temperature	-65 to 150	°C
T_j	Max. Operating Junction Temperature	150	°C

THERMAL DATA

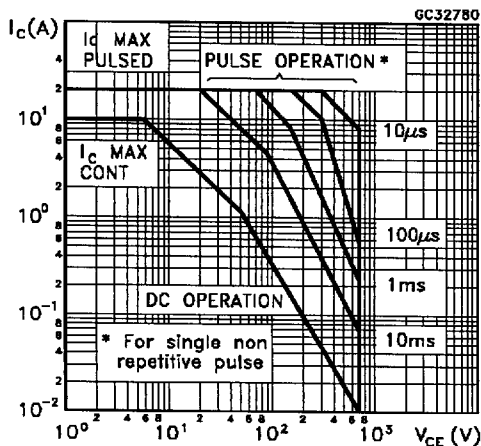
$R_{thj-case}$	Thermal Resistance Junction-case	Max	2.2	$^{\circ}C/W$
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ELECTRICAL CHARACTERISTICS ($T_{case} = 25^{\circ}C$ unless otherwise specified)

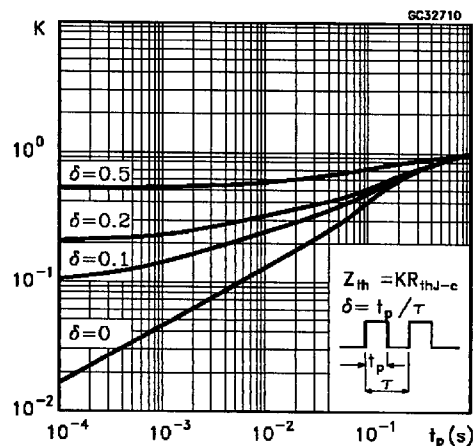
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CES}	Collector Cut-off Current ($V_{BE} = 0$)	$V_{CE} = 1500 V$ $V_{CE} = 1500 V \quad T_j = 125^{\circ}C$			1 2	mA mA
I_{EBO}	Emitter Cut-off Current ($I_C = 0$)	$V_{EB} = 5 V$			100	μA
$V_{CEO(sus)}$	Collector-Emitter Sustaining Voltage	$I_C = 100 mA$	700			V
V_{EBO}	Emitter-Base Voltage ($I_C = 0$)	$I_E = 10 mA$	10			V
$V_{CE(sat)*}$	Collector-Emitter Saturation Voltage	$I_C = 7 A \quad I_B = 1.5 A$			1.5	V
$V_{BE(sat)*}$	Base-Emitter Saturation Voltage	$I_C = 7 A \quad I_B = 1.5 A$			1.3	V
h_{FE*}	DC Current Gain	$I_C = 7 A \quad V_{CE} = 5 V$ $I_C = 7 A \quad V_{CE} = 5 V \quad T_j = 100^{\circ}C$	8 5		16	
t_s t_f	RESISTIVE LOAD Storage Time Fall Time	$V_{CC} = 400 V \quad I_C = 7 A$ $I_{B1} = 1.5 A \quad I_{B2} = 3.5 A$		2.1 140	3.1 210	μs ns
t_s t_f	INDUCTIVE LOAD Storage Time Fall Time	$I_C = 7 A \quad f = 15625 Hz$ $I_{B1} = 1.5 A \quad I_{B2} = -3.5 A$ $V_{cefflyback} = 1050 \sin\left(\frac{\pi}{10} 10^6 t\right) V$		3.5 350		μs ns
t_s t_f	INDUCTIVE LOAD Storage Time Fall Time	$I_C = 7 A \quad f = 31250 Hz$ $I_{B1} = 1.5 A \quad I_{B2} = -3.5 A$ $V_{cefflyback} = 1200 \sin\left(\frac{\pi}{5} 10^6 t\right) V$		3.5 320		μs ns

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

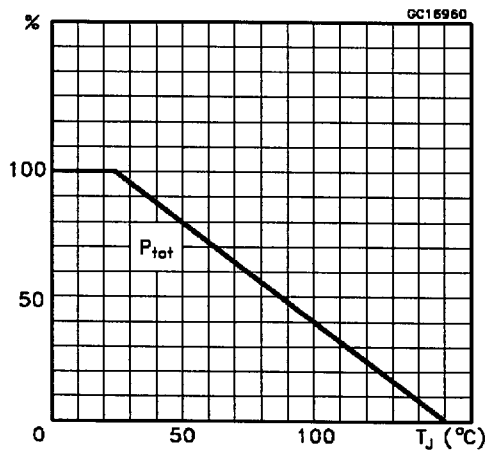
Safe Operating Area



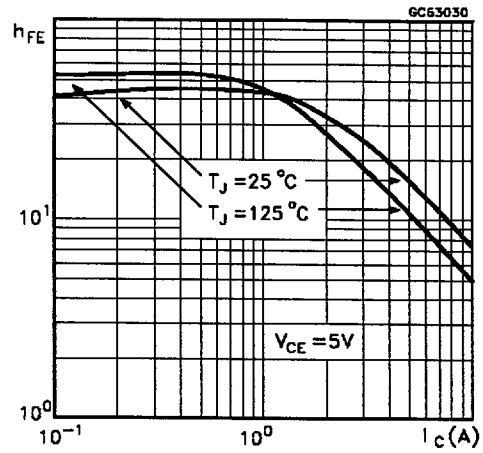
Thermal Impedance



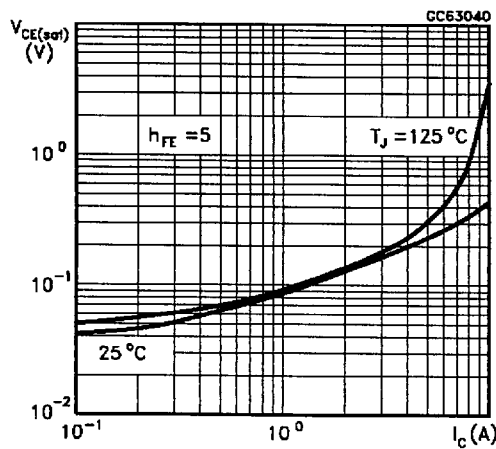
Derating Curve



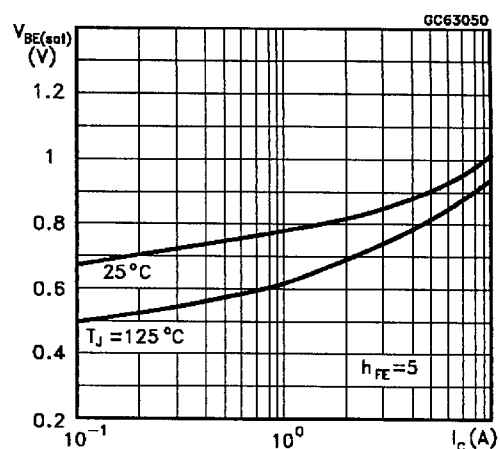
DC Current Gain



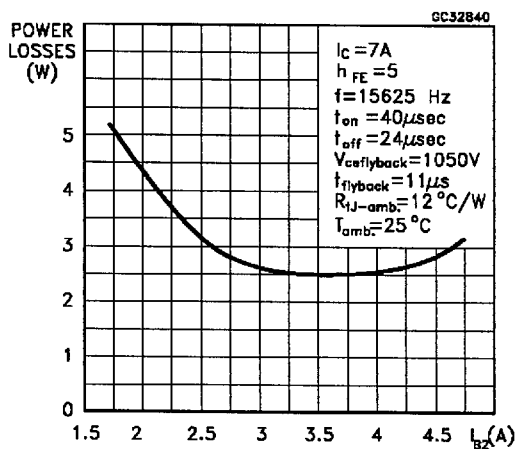
Collector Emitter Saturation Voltage



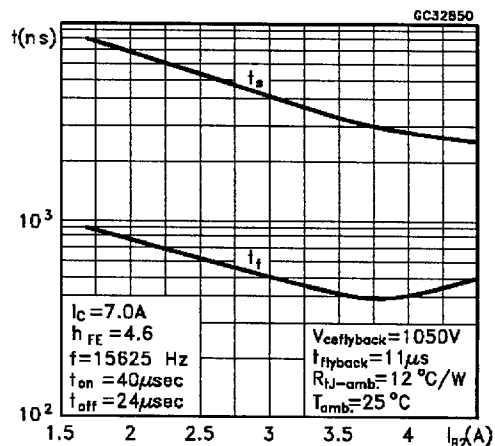
Base Emitter Saturation Voltage



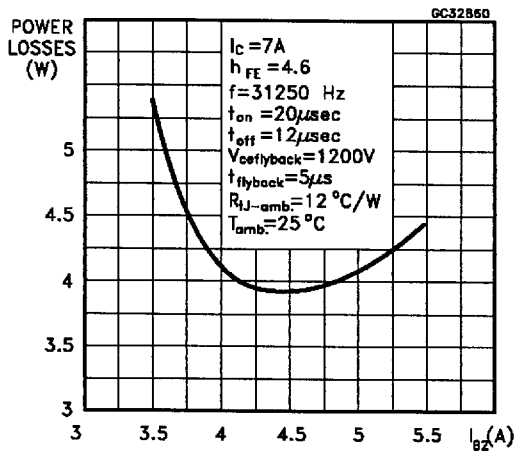
Power Losses at 16 KHz



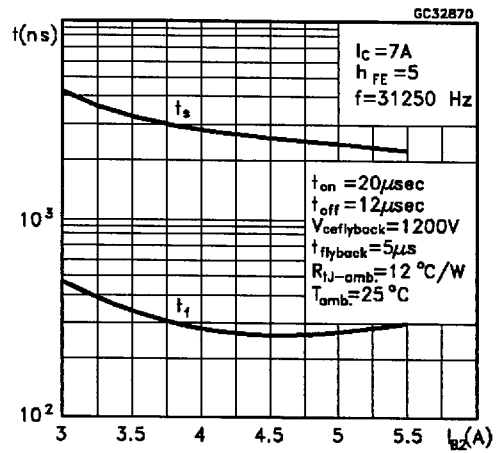
Switching Time Inductive Load at 16KHz (see figure 2)



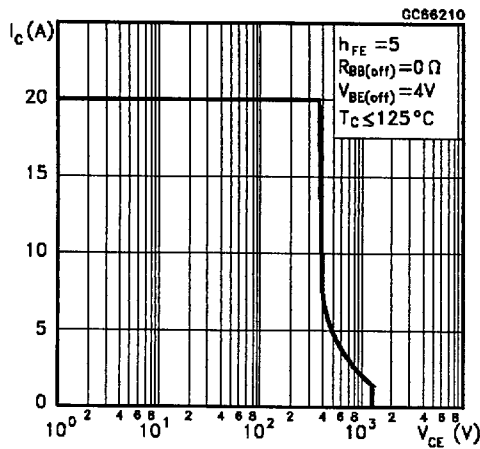
Power Losses at 32 KHz



Switching Time Inductive Load at 32 KHz
(see figure 2)



Reverse Biased SOA



BASE DRIVE INFORMATION

Figure 1: Inductive Load Switching Test Circuits.

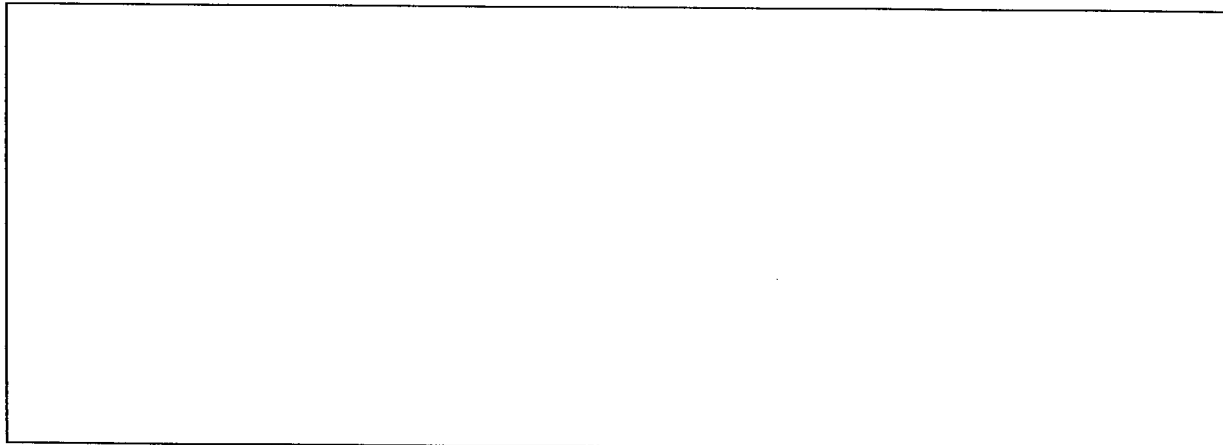
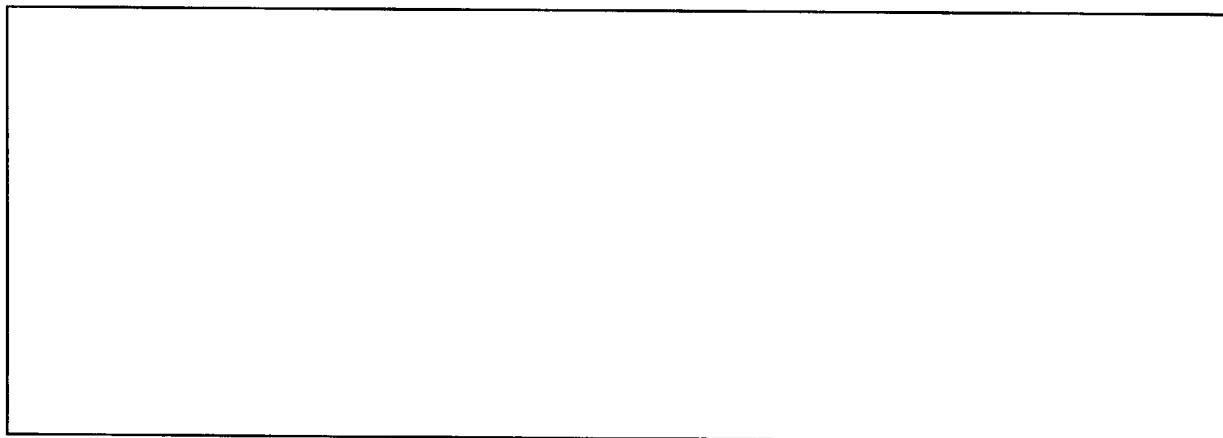
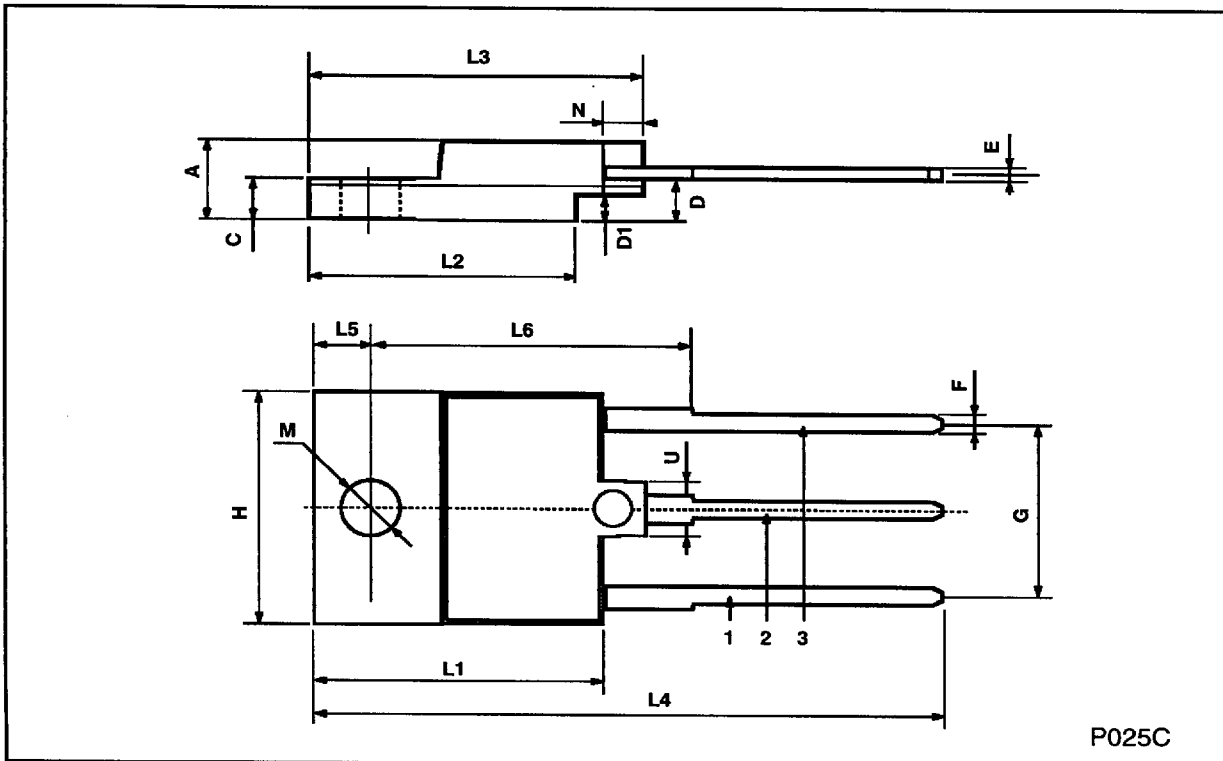


Figure 2: Switching Waveforms in a Deflection Circuit



ISOWATT218 MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	5.35		5.65	0.210		0.222
C	3.3		3.8	0.130		0.149
D	2.9		3.1	0.114		0.122
D1	1.88		2.08	0.074		0.081
E	0.75		1	0.029		0.039
F	1.05		1.25	0.041		0.049
G	10.8		11.2	0.425		0.441
H	15.8		16.2	0.622		0.637
L1	20.8		21.2	0.818		0.834
L2	19.1		19.9	0.752		0.783
L3	22.8		23.6	0.897		0.929
L4	40.5		42.5	1.594		1.673
L5	4.85		5.25	0.190		0.206
L6	20.25		20.75	0.797		0.817
M	3.5		3.7	0.137		0.145
N	2.1		2.3	0.082		0.090
U		4.6			0.181	



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