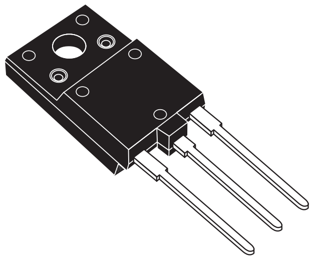
HD1750FX

HIGH VOLTAGE NPN POWER TRANSISTOR FOR HIGH DEFINITION AND NEW SUPER-SLIM CRT DISPLAYS

- STATE-OF-THE-ART TECHNOLOGY: DIFFUSED COLLECTOR "ENHANCED GENERATION" EHVS1
- WIDER RANGE OF OPTIMUM DRIVE CONDITIONS
- LESS SENSITIVE TO OPERATING TEMPERATURE VARIATION
- FULLY INSULATED POWER PACKAGE U.L. COMPLIANT

Figure 1: Package



ISOWATT218FX

APPLICATIONS

- HORIZONTAL DEFLECTION OUTPUT FOR DIGITAL TV, HDTV AND HIGH-END MONITORS

DESCRIPTION

The device is manufactured using Diffused Collector in Planar technology adopting "Enhance High Voltage Structure" (EHVS1) developed to fit High-Definition CRT displays.

The new HD product series show improved silicon efficiency bringing updated performance to the Horizontal Deflection stage.

Figure 2: Internal Schematic Diagram

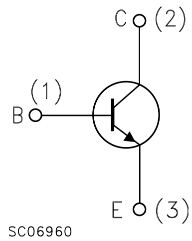


Table 1: Order Codes

Part Number	Marking	Package	Packaging
HD1750FX	HD1750FX	ISOWATT218FX	TUBE

Table 2: Absolute Maximum Ratings

Symbol	Parameter	Value	Unit
V_{CES}	Collector-Emitter Voltage (V_{BE} = 0)	1700	V
V_{CEO}	Collector-Emitter Voltage (I_B= 0)	800	V
V_{EBO}	Emitter-Base Voltage (I_C= 0)	10	V
I_C	Collector Current	24	A
I_{CM}	Collector Peak Current (t_p < 5ms)	36	A
I_B	Base Current	12	A
I_{BM}	Base Peak Current (t_p < 5ms)	18	A
P_{tot}	Total Dissipation at T_C = 25 ^oC	75	W
V_{ins}	Insulation Withstand Voltage (RMS) from All Three Leads to External Heatsink	2500	V
T_{stg}	Storage Temperature	-65 to 150	°C
T_J	Max. Operating Junction Temperature	150	°C

Table 3: Thermal Data

$R_{thj-case}$	Thermal Resistance Junction-Case	Max	1.67	$^oC/W$

Table 4: Electrical Characteristics (T_{case} = 25 ^oC unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CES}	Collector Cut-off Current (V_{BE} = 0)	V_{CE} = 1700 V V_{CE} = 1700 V T_C = 125 ^oC			0.2 2	mA mA
I_{EBO}	Emitter Cut-off Current (I_C = 0)	V_{EB} = 5 V			10	µA
$V_{CEO(sus)}$*	Collector-Emitter Sustaining Voltage (I_B = 0)	I_C = 10 mA	800			V
V_{EBO}	Emitter-Base Voltage (I_C = 0)	I_E = 10 mA	10			V
$V_{CE(sat)}$*	Collector-Emitter Saturation Voltage	I_C = 12 A I_B = 3 A			3	V
$V_{BE(sat)}$*	Base-Emitter Saturation Voltage	I_C = 12 A I_B = 3 A		0.95	1.5	V
h_{FE}	DC Current Gain	I_C = 1 A V_{CE} = 5 V I_C = 12 A V_{CE} = 5 V	 6.5	30	 9.5	
t_s t_f	INDUCTIVE LOAD Storage Time Fall Time	I_C = 12 A f_h = 31250 Hz $I_{B(on)}$ = 1.9 A $I_{B(off)}$ = -8.1 A $V_{CE(fly)}$ = 1320 V $V_{BE(off)}$ = -2.7 V $L_{BB(off)}$ = 0.8 µH		3.1 350	3.8 500	µs ns
t_s t_f	INDUCTIVE LOAD Storage Time Fall Time	I_C = 6.5 A f_h = 100 kHz $I_{B(on)}$ = 1.2 A $I_{B(off)}$ = -5.85 A $V_{CE(fly)}$ = 1220 V $V_{BE(off)}$ = -2.7 V $L_{BB(off)}$ = 0.25 µH		1.7 180	2 250	µs ns

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

Figure 3: Safe Operating Area

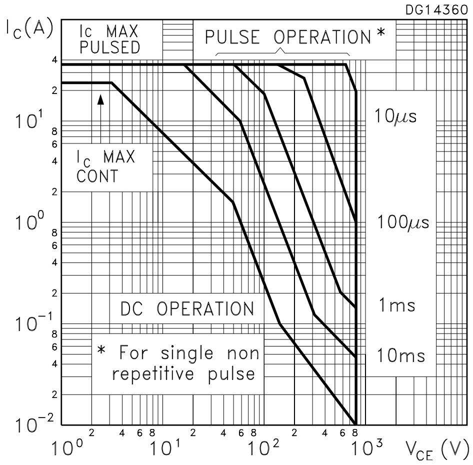


Figure 6: Derating Curve

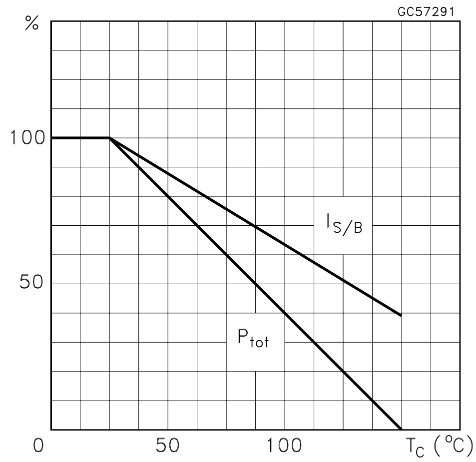


Figure 4: Output Chatacterisctics

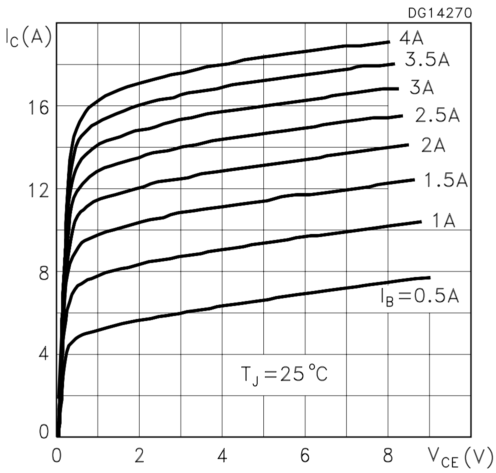


Figure 7: Reverse Biased SOA

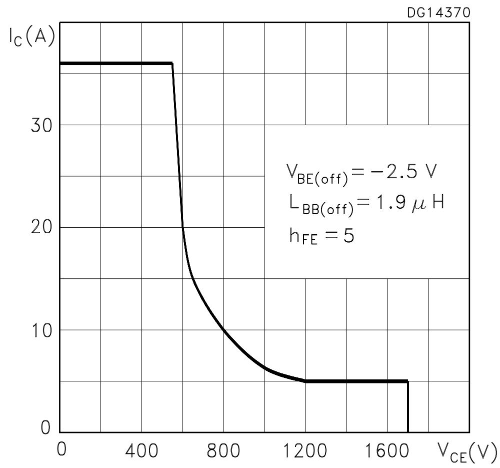


Figure 5: DC Current Gain

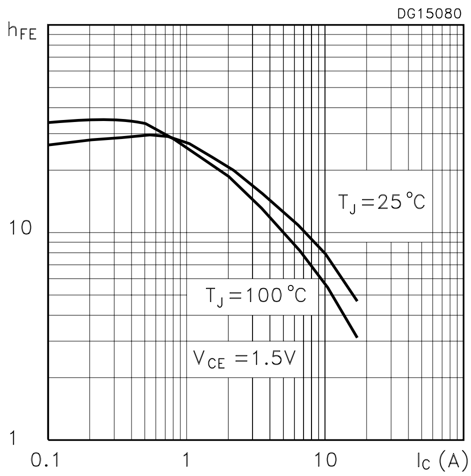


Figure 8: DC Current Gain

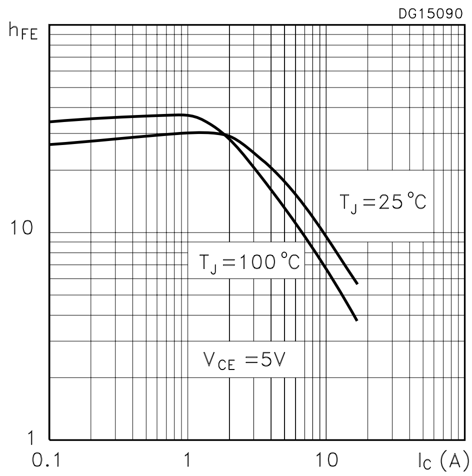


Figure 9: Collector-Emitter Saturation Voltage

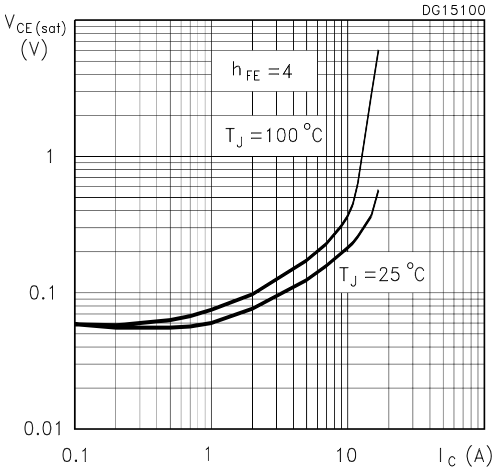


Figure 12: Base-Emitter Saturation Voltage

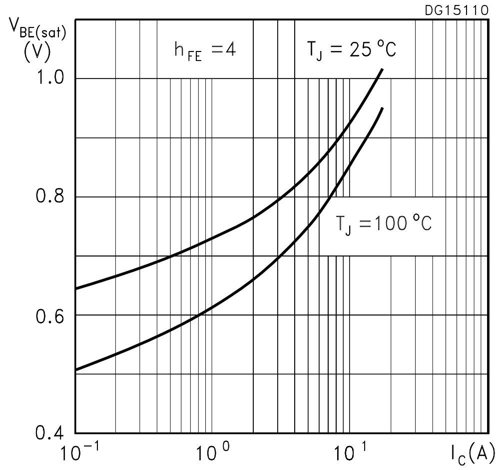


Figure 10: Power Losses

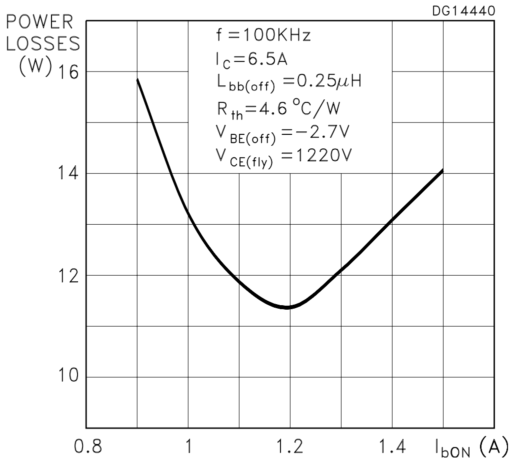


Figure 13: Power Losses

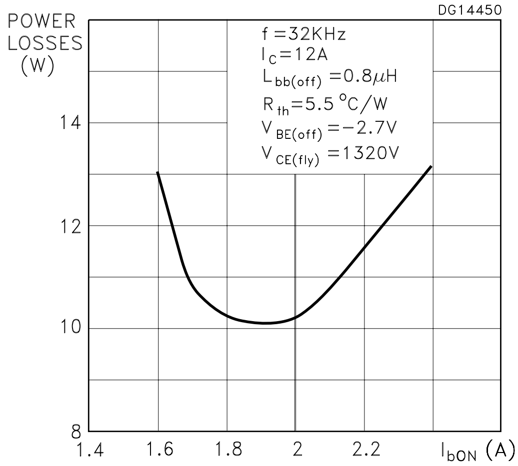


Figure 11: Inductive Load Switching Time

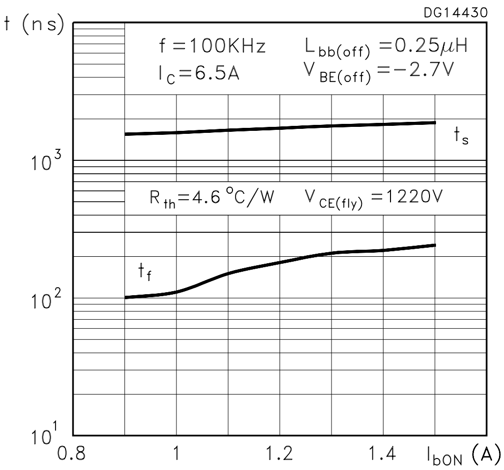


Figure 14: Inductive Load Switching Time

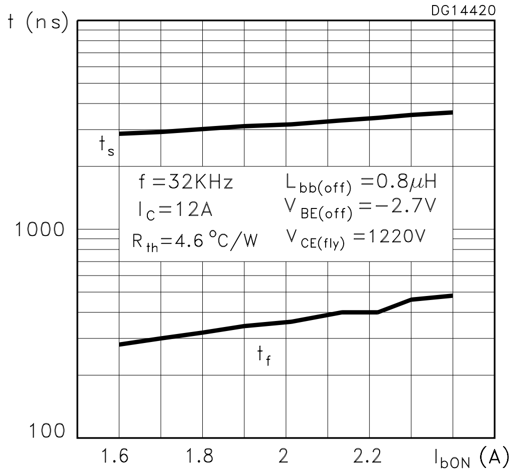


Figure 15: Power Losses and Inductive Load Switching Test Circuit

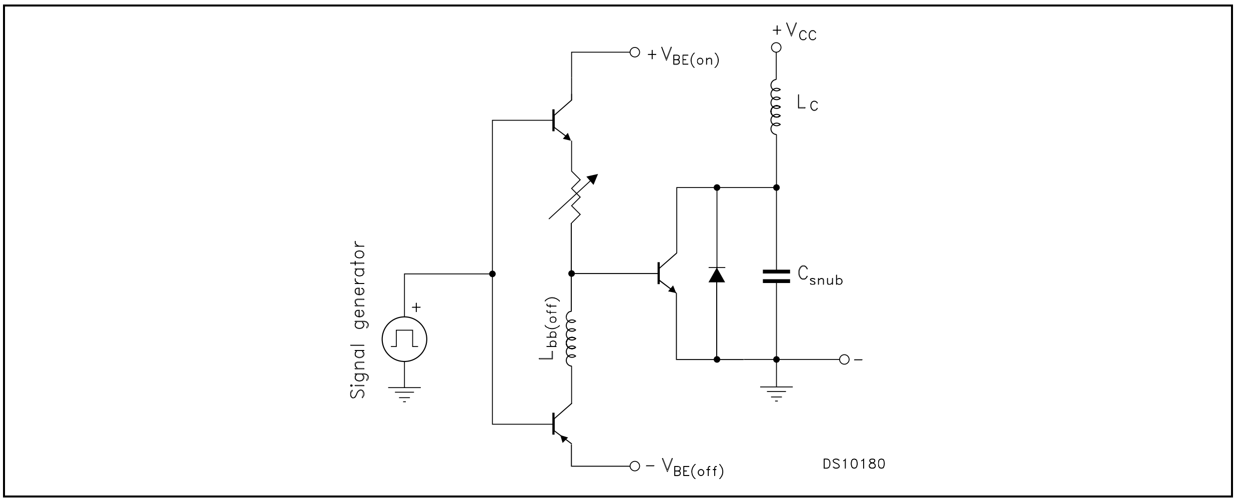
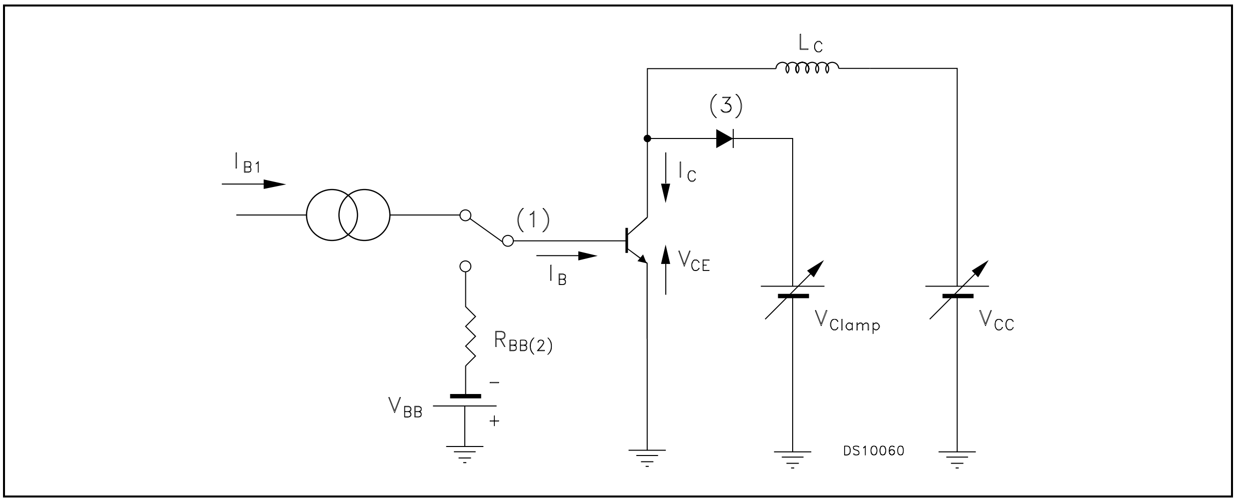


Figure 16: Reverse Biased Safe Operating Area Test Circuit



ISOWATT218FX MECHANICAL DATA

DIM.	mm.		
	MIN.	TYP	MAX.
A	5.30		5.70
C	2.80		3.20
D	3.10		3.50
D1	1.80		2.20
E	0.80		1.10
F	0.65		0.95
F2	1.80		2.20
G	10.30		11.50
G1		5.45	
H	15.30		15.70
L	9		10.20
L2	22.80		23.20
L3	26.30		26.70
L4	43.20		44.40
L5	4.30		4.70
L6	24.30		24.70
L7	14.60		15
N	1.80		2.20
R	3.80		4.20
Dia	3.40		3.80

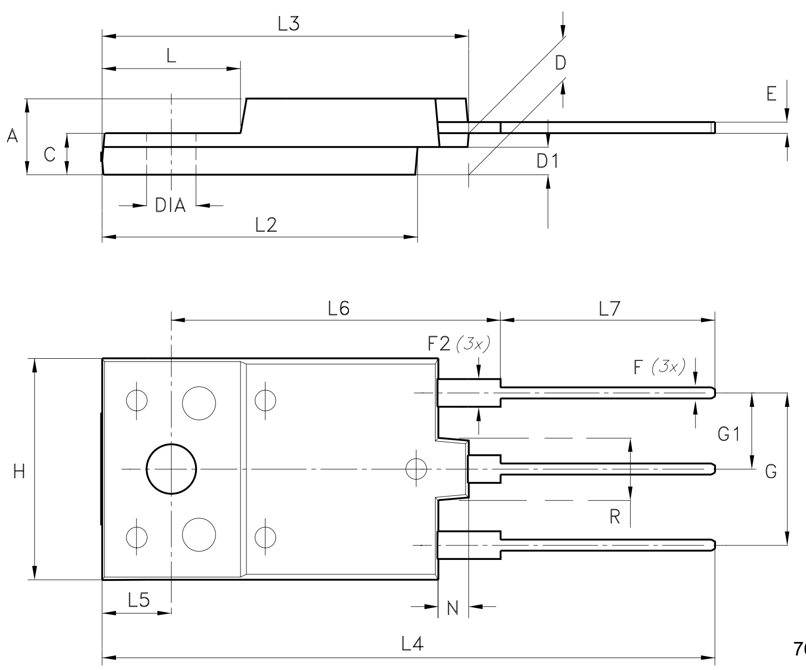


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Figure 5: Revision History

Release Date	Version	Change Designator
30-May-2005	1	Initial Release.
19-Dec-2005	2	New h_{FE} value in table 4