

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

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 1: Package

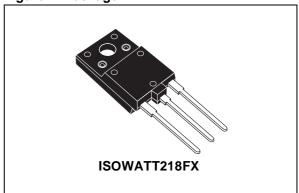


Figure 2: Internal Schematic Diagram

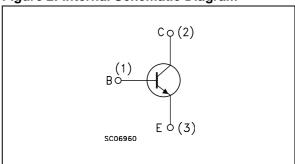


Table 1: Order Codes

Part Number	Marking	Package	Packaging
HD1750FX	HD1750FX	ISOWATT218FX	TUBE

December 2005 Rev. 2

HD1750FX

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	А
I _{CM}	Collector Peak Current (t _p < 5ms)	36	А
I _B	Base Current	12	А
I _{BM}	Base Peak Current (t _p < 5ms)	18	А
P _{tot}	Total Dissipation at T _C = 25 °C	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
TJ	Max. Operating Junction Temperature	150	°C

Table 3: Thermal Data

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

Symbol	Parameter	Test Co	onditions	Min.	Тур.	Max.	Unit
I _{CES}	Collector Cut-off Current	V _{CE} = 1700 V				0.2	mA
	(V _{BE} = 0)	V _{CE} = 1700 V	$T_C = 125$ °C			2	mA
I _{EBO}	Emitter Cut-off Current (I _C = 0)	V _{EB} = 5 V				10	μA
V _{CEO(sus)} *	Collector-Emitter Sustaining Voltage	I _C = 10 mA		800			V
	(I _B = 0)						
V _{EBO}	Emitter-Base Voltage	$I_E = 10 \text{ mA}$		10			V
	$(I_C = 0)$						
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	٧
h _{FE}	DC Current Gain	I _C = 1 A	$V_{CE} = 5 V$		30		
		I _C = 12 A	$V_{CE} = 5 V$	6.5		9.5	
	INDUCTIVE LOAD	I _C = 12 A	f _h = 31250 Hz				
t _s	Storage Time	$I_{B(on)} = 1.9 A$	$I_{B(off)} = -8.1 \text{ A}$		3.1	3.8	μs
t _f	Fall Time	V _{CE(fly)} = 1320 V	$V_{BE(off)} = -2.7 \text{ V}$		350	500	ns
		$L_{BB(off)} = 0.8 \mu H$					
	INDUCTIVE LOAD	I _C = 6.5 A	f _h = 100 kHz				
t _s	Storage Time	$I_{B(on)} = 1.2 A$	$I_{B(off)} = -5.85 A$		1.7	2	μs
t _f	Fall Time	V _{CE(fly)} = 1220 V	$V_{BE(off)} = -2.7 \text{ V}$		180	250	ns
	ad duration 200 ca duty ava	$L_{BB(off)} = 0.25 \mu H$					

^{*} Pulsed: Pulsed duration = 300 μ s, duty cycle \leq 1.5 %.

Figure 3: Safe Operating Area

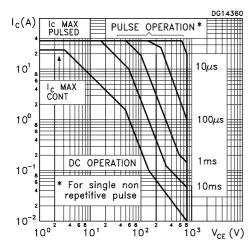


Figure 4: Output Chatacterisctics

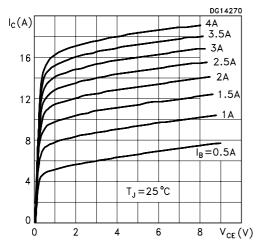


Figure 5: DC Current Gain

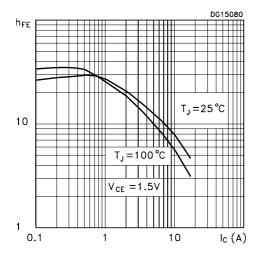


Figure 6: Derating Curve

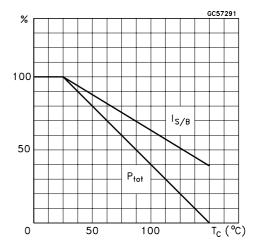


Figure 7: Reverse Biased SOA

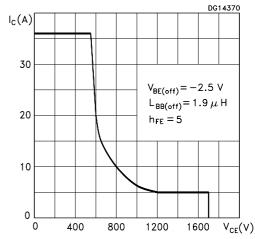
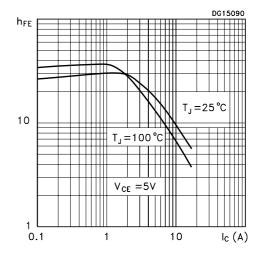


Figure 8: DC Current Gain



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Figure 9: Collector-Emitter Saturation Voltage

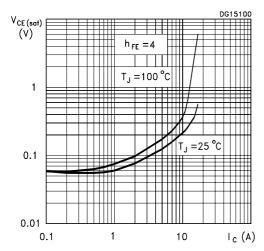


Figure 10: Power Losses

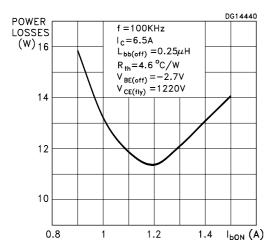


Figure 11: Inductive Load Switching Time

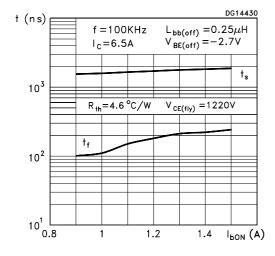


Figure 12: Base-Emitter Saturation Voltage

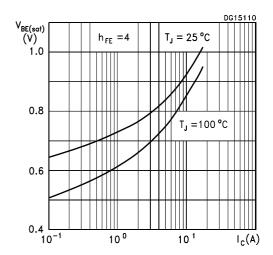


Figure 13: Power Losses

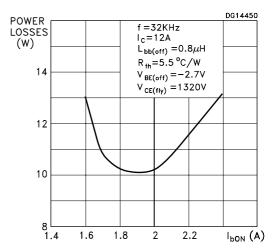


Figure 14: Inductive Load Switching Time

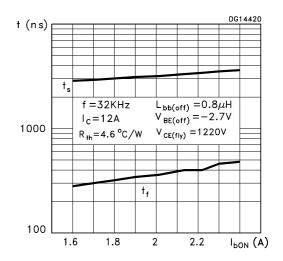


Figure 15: Power Losses and Inductive Load Switching Test Circuit

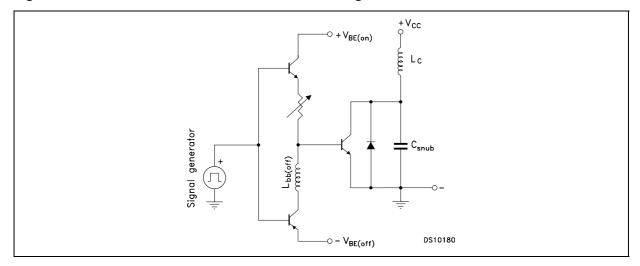
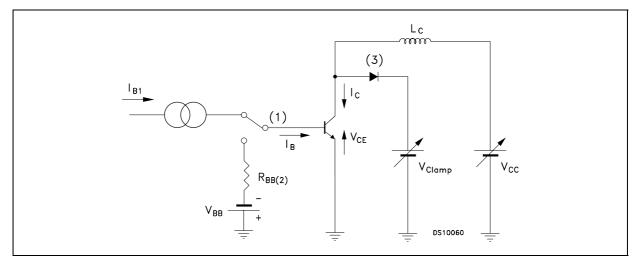


Figure 16: Reverse Biased Safe Operating Area Test Circuit



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ISOWATT218FX MECHANICAL DATA

DIM.	mm.				
	MIN.	TYP	MAX.		
A	5.30		5.70		
С	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			
Н	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		

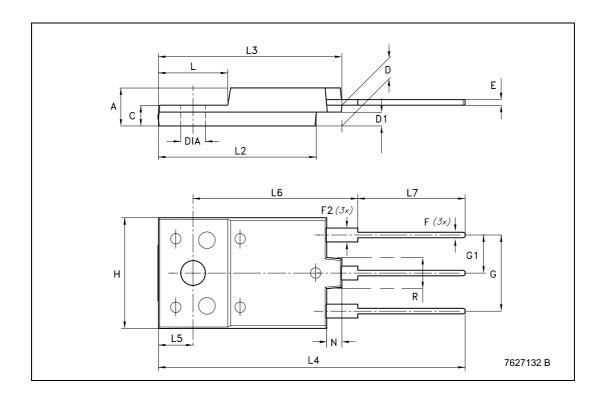


Figure 5: Revision History

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



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