



# HD1760JL

## High Voltage NPN Power Transistor for High Definition and New Super-Slim CRT Display

PRELIMINARY DATA

### Features

- STATE-OF-THE-ART TECHNOLOGY: DIFFUSED COLLECTOR "ENHANCED GENERATION" EHVS1
- WIDER RANGE OF OPTIMUM DRIVE CONDITIONS
- LESS SENSITIVE TO OPERATING TEMPERATURE VARIATION

### Applications

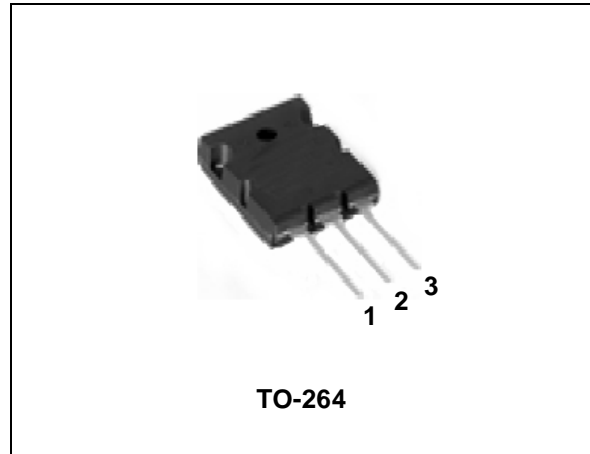
- HORIZONTAL DEFLECTION OUTPUT FOR DIGITAL TV, HDTV AND HIGH -END MONITORS

### Description

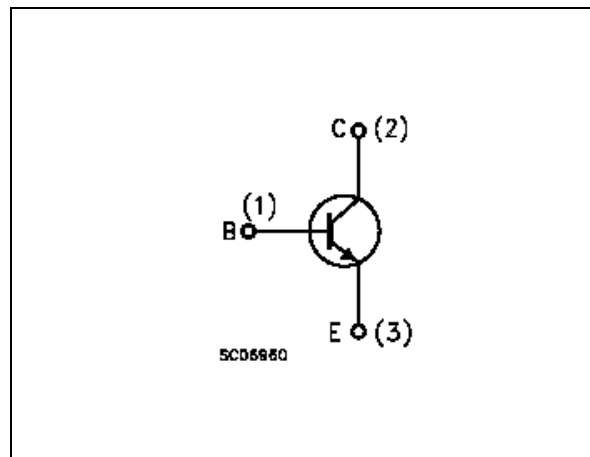
The device uses a Diffused Collector in Planar technology which adopts "Enhanced High Voltage Structure" (EHVS1) that was developed to fit High-Definition CRT displays.

The new HD product series features improved silicon efficiency, bringing updated performance to Horizontal Deflection output stages.

### Order codes



### Internal Schematic Diagram



Part Number	Marking	Package	Packing
HD1760JL	HD1760JL	TO-264	TUBE

# 1 Electrical ratings

**Table 1. Absolute Maximum Rating**

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	36	A
$I_{CM}$	Collector Peak Current ( $t_p < 5\text{ms}$ )	54	A
$I_B$	Base Current	18	A
$I_{BM}$	Base Peak Current ( $t_p < 5\text{ms}$ )	27	A
$P_{TOT}$	Total dissipation at $T_c = 25^\circ\text{C}$	200	W
$T_{STG}$	Storage Temperature	-65 to 150	$^\circ\text{C}$
$T_J$	Max. Operating Junction Temperature	150	$^\circ\text{C}$

**Table 2. Thermal Data**

Symbol	Parameter	Value	Unit
$R_{thJC}$	Thermal Resistance Junction-Case Max	0.625	$^\circ\text{C}/\text{W}$

## 2 Electrical Characteristics

( $T_{CASE} = 25^{\circ}C$ ; unless otherwise specified)

**Table 3. Electrical Characteristics**

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$I_{CES}$	Collector Cut-off Current ( $V_{BE} = 0$ )	$V_{CE} = 1700V$			0.2	mA
		$V_{CE} = 1700V$ $T_C = 125^{\circ}C$			2	mA
$I_{EBO}$	Emitter Cut-off Current ( $I_C = 0$ )	$V_{EB} = 5V$			10	$\mu A$
$V_{CEO(sus)}$ <i>Note: 1</i>	Collector-Emitter Sustaining Voltage ( $I_B = 0$ )	$I_C = 10mA$	800			V
$V_{EBO}$	Emitter-Base Voltage ( $I_C = 0$ )	$I_E = 10mA$	10			V
$V_{CE(sat)}$ <i>Note: 1</i>	Collector-Emitter Saturation Voltage	$I_C = 18A$ $I_B = 4.5A$			2	V
$V_{BE(sat)}$ <i>Note: 1</i>	Base-Emitter Saturation Voltage	$I_C = 18A$ $I_B = 4.5A$			1.5	V
$h_{FE}$	DC Current Gain	$I_C = 2A$ $V_{CE} = 5V$		30		
		$I_C = 18A$ $V_{CE} = 5V$	5		8.5	
$t_s$ $t_f$	INDUCTIVE LOAD Storage Time Fall Time	$I_C = 12A$ $f_h = 32 KHz$ $I_{B(on)} = 1A$ $I_{B(off)} = -6.9A$ $V_{CE(fly)} = 1340V$ $V_{BE(off)} = -2.7V$ $L_{BB(on)} = 0.8\mu H$		2.6 300		$\mu s$ ns
		$I_C = 8A$ $f_h = 100kHz$ $I_{B(on)} = 1.3A$ $I_{B(off)} = -5.8A$ $V_{CE(fly)} = 1300V$ $V_{BE(off)} = -2.7V$ $L_{BB(on)} = 0.25\mu H$		2 110		$\mu s$ ns

*Note: 1 Pulsed duration = 300  $\mu s$ , duty cycle  $\leq 1.5\%$ .*

### 3 Test circuit

Figure 1. Power Losses and Inductive Load Switching Test Circuit

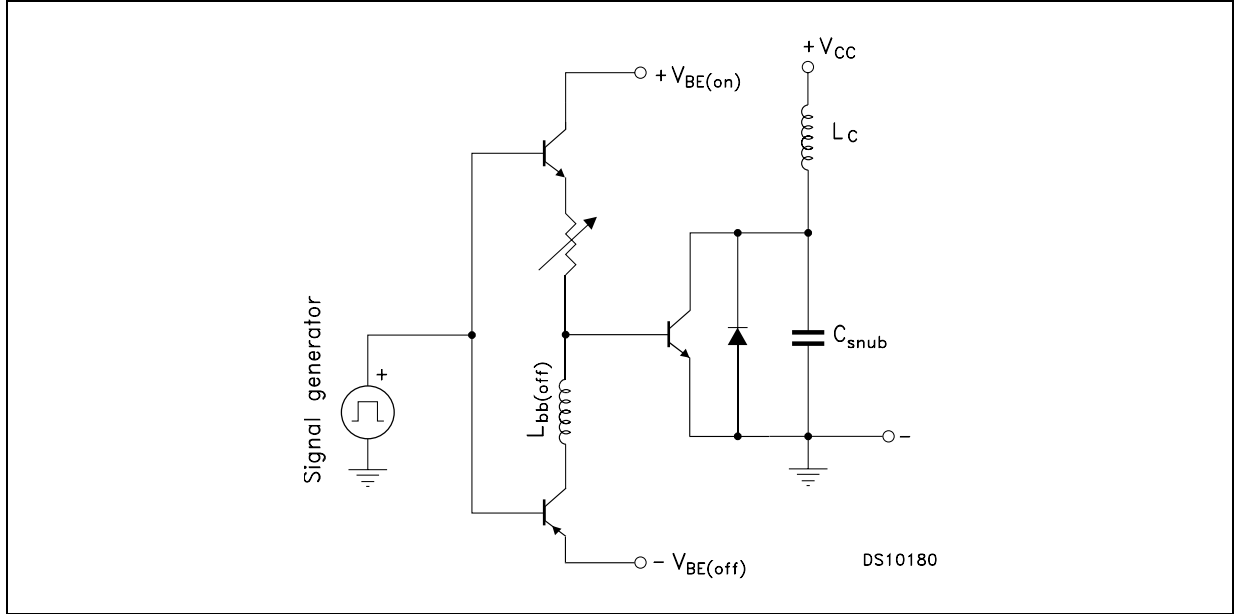
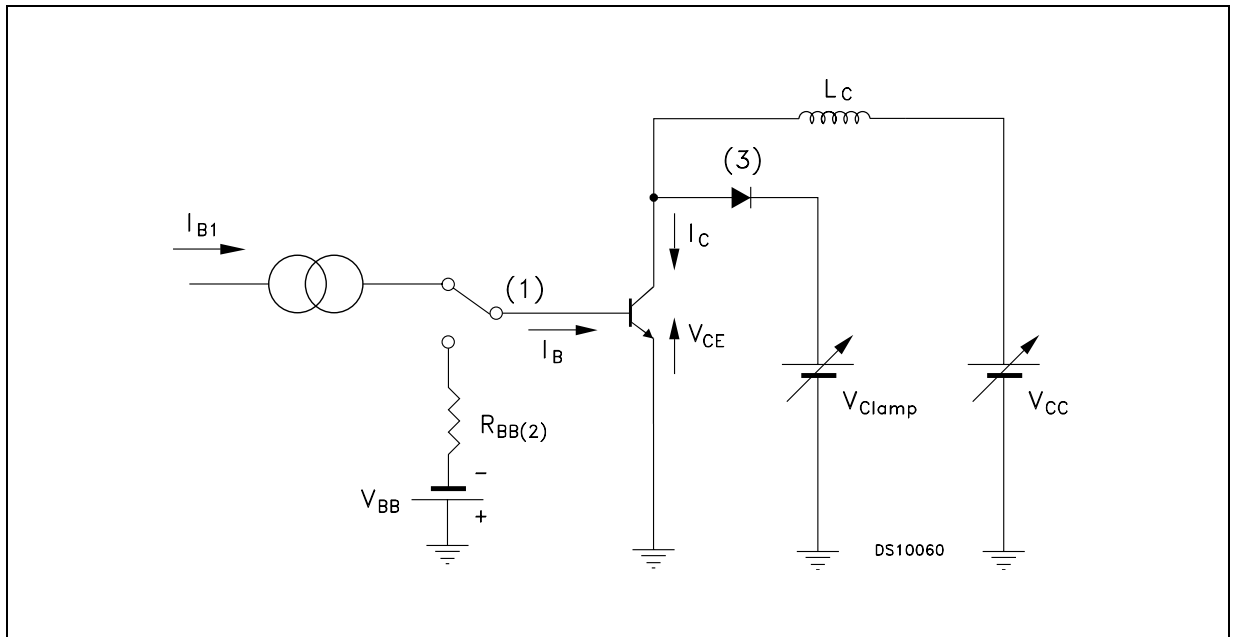


Figure 2. Reverse Biased Safe Operating Area Test Circuit



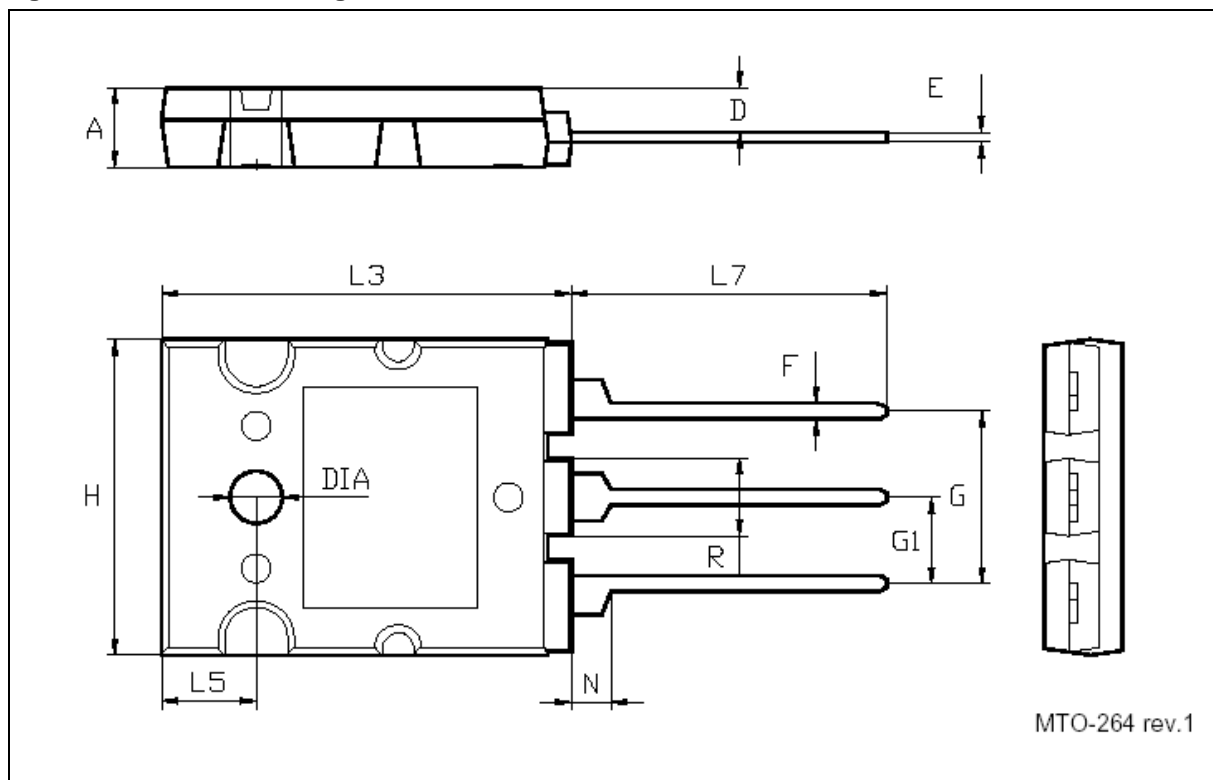
## 4 Package Mechanical Data

In order to meet environmental requirements, ST offers these devices in ECOPACK® packages. These packages have a Lead-free second level interconnect . The category of second level interconnect is marked on the package and on the inner box label, in compliance with JEDEC Standard JESD97. The maximum ratings related to soldering conditions are also marked on the inner box label. ECOPACK is an ST trademark. ECOPACK specifications are available at: [www.st.com](http://www.st.com)

**Table 4. TO-264 Mechanical Data**

DIM.	mm.			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	4.80		5.20	0.189		0.205
D	2.50		3.10	0.098		0.122
E	0.50	0.60	0.85	0.020	0.24	0.033
F	0.90	1.00	1.25	0.036	0.039	0.049
G	10.30		11.50	0.406		0.453
G1		5.45			0.215	
H	19.80		20.20	0.780		0.795
L3	25.80		26.20	1.016		1.031
L5	5.80		6.20	0.228		0.244
L7	19.50		20.50	0.768		0.807
N	2.30		2.70	0.091		0.106
R	4.7		5.10	0.185		0.201
DIA	3.10		3.50	0.122		0.138

**Figure 3. TO-264 Drawing**



## 5 Revision History

Date	Revision	Changes
17-Oct-2005	1	Initial release.
03-Nov-2005	2	h <sub>FE</sub> value has been changed on <a href="#">Table 3</a>

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